Exhibit P-1
Planning Commission EIR Certification Resolution with Final EIR

RESOLUTION NO. 13821

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF FRESNO, CALIFORNIA, CERTIFYING ENVIRONMENTAL IMPACT REPORT (EIR) SCH NO. 2022050265 FOR DEVELOPMENT PERMIT APPLICATION NO. P21-02699 AND VESTING TENTATIVE PARCEL MAP NO. 2021-09; ADOPTING A MITIGATION MONITORING PROGRAM AS REQUIRED BY PUBLIC RESOURCES CODE SECTION 21081.6 AND CEQA GUIDELINES SECTION 15097; ADOPTING THE FINDINGS OF FACT AS REQUIRED BY PUBLIC RESOURCES CODE SECTIONS 21081(A) AND CEQA GUIDELINES SECTIONS 15091; APPROVING A WATER SUPPLY ASSESSMENT IN COMPLIANCE WITH CEQA GUIDELINES SECTION 15097, PURSUANT TO CEQA GUIDELINES SECTION 15183.5(B), AS RELATED TO THE APPROVAL OF DEVELOPMENT PERMIT APPLICATION NO. P21-02699 AND VESTING TENTATIVE PARCEL MAP NO. 2021-09

WHEREAS, Development Permit Application No. P21-02699 and Vesting Tentative Parcel Map No. 2021-09 were submitted by Paul Starn, on behalf of Scannell Properties, and pertain to ± 48.03 acres of property located at the northeast corner of North Marks and West Nielsen Avenues; and

WHEREAS, LSA Associates, Inc., a professional environmental consultant was contracted with to conduct the requisite studies and analyses of the potential environmental impacts and proposed mitigation measures, as applicable, for Development Permit Application No. P21-02699 and Vesting Tentative Parcel Map No. 2021-09; and

WHEREAS, on September 9, 2022, the Planning Department duly issued and circulated a Notice of Preparation, pursuant to CEQA Guidelines Section 15082 and Public Resources Code Section 21080.4; and

WHEREAS, on September 22, 2022, the Planning Department held a scoping meeting pursuant to CEQA Guidelines Section 15082(c) and Public Resources Code Section 21080.4 attended by zero members of the public and at which no written or verbal comments were submitted; and

WHEREAS, on February 24, 2023, the Planning Department staff, exercising their independent judgment, completed the environmental impact report (hereinafter Draft EIR), and the City provided a Notice of Availability of the Draft EIR for public comments pursuant to Public Resources Code Section 21092 and CEQA Guidelines Section 15087, for a public comment period of forty-five days; and

WHEREAS, on February 24, 2023, the City issued a Notice of Completion pursuant to Public Resources Code Section 21161 and CEQA Guidelines Section 15085; and

WHEREAS, on February 24, 2023, a public Notice of Availability of the Draft EIR was posted in the office of the Fresno County Clerk pursuant to Section 15087(d) of the CEQA Guidelines, and was published in the Fresno Bee newspaper to comply with Section 15087(a) of the CEQA Guidelines; and

WHEREAS, on February 24, 2023, the Draft EIR was distributed to the California Office of Planning and Research/State Clearinghouse in accordance with Section 15206 of the CEQA Guidelines; and

WHEREAS, the City engaged in all required posting methods beginning on February 24, 2023, including distributing the Draft EIR to affected agencies, surrounding cities and municipalities, and all interested parties; and

WHEREAS, during the forty-five day public comment, it was discovered Chapter 6.0, CEQA-Required Assessment Conclusions, and Chapter 7.0, Report Preparation were missing from the circulated DEIR; and

WHEREAS, in compliance with the California Public Resources Code (PRC) Section 21092.1 and State CEQA Guidelines Section 15088.5, the City prepared a new Notice of Availability and recirculated the DEIR (RDEIR) to include Chapters 6.0 and 7.0 which commenced a new forty-five day public comment period; and

WHEREAS, on April 4, 2023, the City issued a Notice of Completion pursuant to Public Resources Code Section 21161 and CEQA Guidelines Section 15085; and

WHEREAS, on April 4, 2023, a public Notice of Availability of the Recirculated Draft EIR was posted in the office of the Fresno County Clerk pursuant to Section 15087(d) of the CEQA Guidelines, and was published in the Fresno Bee newspaper to comply with Section 15087(a) of the CEQA Guidelines; and

WHEREAS, on April 4, 2023, the Recirculated Draft EIR was distributed to the California Office of Planning and Research/State Clearinghouse in accordance with Section 15206 of the CEQA Guidelines; and

WHEREAS, the City engaged in all required posting methods beginning on April 4, 2023, including distributing the Recirculated Draft EIR to affected agencies, surrounding cities and municipalities, and all interested parties; and

WHEREAS, pursuant to State CEQA Guidelines Section 15088.5, recirculating an EIR can result in the lead agency receiving more than one set of comments from reviewers. The lead agency may identify the set of comments to which it will respond by: (1) requiring reviewers to submit new comments when an EIR is substantially revised and the entire document is recirculated; or (2) requesting that reviewers limit their comments

to only the revised chapter or portions of the Recirculated EIR. In no case shall the lead agency fail to respond to pertinent comments on significant environmental issues; and

WHEREAS, the City accepted all comments on all chapters of the Draft EIR received between February 24, 2023 through May 19, 2023, during which time the City received a total of eight comment letters; and

WHEREAS, the City prepared responses to the comments received on the Recirculated Draft EIR, encompassing all comment letters, responses to individual comments, as well as minor corrections, and compiled them in the September 2023 Response to Comments Document; and

WHEREAS, the City subsequently prepared a Final EIR (SCH No. 2022050265), completed September 2023 and dated September 2023 ("Final EIR" or "FEIR"), pursuant to CEQA Guidelines Sections 15088 and 15132, which includes the Draft EIR, the September 2023 Response to Comments Document (encompassing all comment letters, responses to individual comments, text revisions to the Draft EIR, as well as minor corrections), the Recirculated Draft EIR, the September 2023 Response to Comments Document (encompassing all comment letters), as well as all appendices to the aforementioned documents; and

WHEREAS on October 4, 2023, the Planning Commission held a duly noticed public hearing at which the Commission considered and discussed the adequacy of proposed Final EIR (which included the Draft EIR, the Recirculated Draft EIR, the September 2023 Response to Comments Document, the Mitigation Monitoring and Reporting Program, and September 2023 Findings of Fact), as an informational document and voted to certification of the Final EIR; and

WHEREAS, pursuant to CEQA Guidelines Sections 15089 and15132 the Final EIR is required to be completed in compliance with CEQA; and

WHEREAS, pursuant to Public Resources Code Section 21092.5 and CEQA Guidelines Section 15088, the City provided written responses to comments to all public agencies that commented on the Draft EIR and Recirculated Draft EIR; and

WHEREAS, on September 28, 2023, LSA Associates, Inc., prepared a memorandum detailing minor changes to Draft EIR Chapter 1.0 Sections 1.2 and 1.7, and Recirculated Draft EIR Chapter 1.0 Section 1.3 to correct errors regarding the required public hearing at Planning Commission (and not City Council) which did not constitute significant new information, change the conclusions of the Draft EIR, or deprive the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project (September 28, 2023 Errata Memorandum); and

WHEREAS, on October 4, 2023, the Planning Commission conducted a public hearing and considered the record of proceedings for the EIR, which includes, but is not limited to the following:

(1) The Final EIR dated September 2023;

(2) The Draft EIR dated February 2023;

(3) The Recirculated Draft EIR dated April 2023;

(4) All written comments submitted by agencies or members of the public during any public review comment period on the Draft EIR and Recirculated Draft EIR;

(5) The September 2023 Response to Comments Document;

(6) The September 2023 Errata Memorandum;

(7) All written and verbal public testimony presented during a noticed public hearing for the Project at which such testimony was taken, including without limitation, the Report to Planning Commission, including all attachments,

any all presentations by City staff, the City's consultants, the applicant and the applicant's consultants, the public, and any other interested party; and

(8) The Mitigation Monitoring and Reporting Program for the Project (the "MMRP");

(9) The reports, studies and technical memoranda included and/or referenced in the Draft EIR, the Recirculated Draft EIR and the FEIR and or their appendices;

(10) All documents, studies, EIRs, or other materials incorporated by reference in the Draft EIR, the Recirculated Draft EIR and the FEIR;

(11) Matters of common knowledge to the City, including but not limited, to federal, state, and local laws and regulations, adopted City plans, policies, and the professional qualifications of its staff members;

(12) Any documents expressly cited in this Resolution and its exhibits, the Report to Planning Commission, the Final EIR, the Draft EIR, or the Recirculated Draft EIR; and

(13) Any other relevant materials required to be in the record of proceedings under Section 21167 .6(e) of the Public Resources Code; and

WHEREAS, the Planning Commission concluded the public comment portion of the hearing on October 4, 2023, deliberated the matter on the same day; and

WHEREAS, on October 4, 2023, the Planning Commission considered and discussed the adequacy of the proposed Final EIR as an informational document and applied its own independent judgment and analysis to the review and hereby desires to take action to certify the Final EIR, as having been completed in compliance with CEQA, based on the findings found herein; and

WHEREAS, the October 4, 2023, Planning Commission hearing was properly noticed at least ten days before the hearing; and

WHEREAS, CEQA guidelines require the following for certification of a final environmental impact report:

Section 15090. Certification of the Final EIR

(a) Prior to approving a project the lead agency shall certify that:

(1) The final EIR has been completed in compliance with CEQA;

(2) The final EIR was presented to the decision-making body of the lead agency and that the decision making body reviewed and considered the information contained in the final EIR prior to approving the project; and

(3) The final EIR reflects the lead agency's independent judgment and analysis.

Section 15091. Findings.

(a) No public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding. The possible findings are:

(1) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR.

(2) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

(3) Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for

highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR.

(b) The findings required by subdivision (a) shall be supported by substantial evidence in the record.

(c) The finding in subdivision (a)(2) shall not be made if the agency making the finding has concurrent jurisdiction with another agency to deal with identified feasible mitigation measures or alternatives. The finding in subdivision (a)(3) shall describe the specific reasons for rejecting identified mitigation measures and project alternatives.

(d) When making the findings required in subdivision (a)(1), the agency shall also adopt a program for reporting on or monitoring the changes which it has either required in the project or made a condition of approval to avoid or substantially lessen significant environmental effects. These measures must be fully enforceable through permit conditions, agreements, or other measures.

(e) The public agency shall specify the location and custodian of the documents or other material which constitute the record of the proceedings upon which its decision is based.

(f) A statement made pursuant to Section 15093 does not substitute for the findings required by this section.

Section 15092. Approval

(a) After considering the final EIR and in conjunction with making findings under Section 15091, the lead agency may decide whether or how to approve or carry out the project.

(b) A public agency shall not decide to approve or carry out a project for which an EIR was prepared unless either:

(1) The project as approved will not have a significant effect on the environment, or

(2) The agency has:

(A) Eliminated or substantially lessened all significant effects on the environment where feasible as shown in findings under Section 15091, and

(B) Determined that any remaining significant effects on the environment found to be unavoidable under Section 15091 are acceptable due to overriding concerns as described in Section 15093.

(c) With respect to a project which includes housing development, the public agency shall not reduce the proposed number of housing units as a mitigation measure if it determines that there is another feasible specific mitigation measure available that will provide a comparable level of mitigation.

Section 15093. Statement of Overriding Considerations

(a) CEQA requires the decision-making agency to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits of a proposal project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered "acceptable."

(b) When the lead agency approves a project which will result in the occurrence of significant effects which are identified in the final EIR but are not avoided or substantially lessened, the agency shall state in writing the specific reasons to support its

action based on the final EIR and/or other information in the record. The statement of overriding considerations shall be supported by substantial evidence in the record.

(c) If an agency makes a statement of overriding considerations, the statement should be included in the record of the project approval and should be mentioned in the notice of determination. This statement does not substitute for, and shall be in addition to, findings required pursuant to Section 15091.

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of the City of Fresno as follows:

1. Recitals. The foregoing recitals are true and correct and incorporated herein by reference.
2. Findings. Planning Commission finds based upon the substantial evidence in the record of proceedings, and its independent judgment and analysis that:
   (a) Compliance with CEQA. The Final EIR in Exhibit 1 to this Resolution, which is attached hereto and incorporated herein by this reference, includes the Draft EIR dated February 2023 and all related appendices; the Recirculated Draft EIR dated April 2023; the September 2023 Response to Comments Document all related appendices and attachments; and the September 2023 Errata Memorandum. The Final EIR was prepared, in both substance and procedures, in compliance with the requirements of the California Environmental Quality Act (CEQA).
   (b) Ratification of Findings and Analysis in the FEIR. In making the findings in this Resolution, the City ratifies, adopts, and incorporates the analysis and explanation in the Final EIR, and ratifies, adopts, and incorporates in these findings the determinations and conclusions in the Final EIR relating to environmental impacts and mitigation measures.
   (c) Findings Regarding Significant Effects that Can Be Mitigated to Less Than Significant. Planning Commission adopts the statements and findings in Exhibit 2 of this resolution, which is attached hereto and incorporated herein by this reference. The Project has potential significant effects that can be mitigated to a less than significant level through the imposition

of mitigation measures. These avoidable significant effects are identified in Exhibit 2. These avoidable significant effects will be reduced to a less than significant effect with the changes that have been required in, or incorporated into, the project through the imposition of mitigation measures as described in Exhibit 2. These mitigation measures identified in Exhibit 2 will be imposed pursuant to the MMRP attached as Exhibit 3. All mitigation measures in the MMRP are feasible.

To the extent that any of the mitigation measures are within the responsibility and jurisdiction of another public agency and not the City, those mitigation measures can and will be adopted and imposed by the other agency based on state and/or federal law, communications by those agencies, and/or existing policies and/or intergovernmental relationships with those agencies.

(e) Finding Regarding Insignificant Impacts. Any and all potential significant impacts discussed in the Final EIR that are not subject to paragraph 2(c) or 2(d), above, as either an avoidable significant impact, or as an unavoidable significant impact, are insignificant impacts to the environment.

(f) Alternatives. The Planning Commission adopts the Statement of Findings on Project Alternatives in Exhibit 2 to this resolution, which is attached hereto and incorporated herein by this reference.

3. FEIR Reviewed and Considered. The Planning Commission certifies that the Final EIR:

(a) has been completed in compliance with CEQA;

(b) was presented to the Planning Commission and that the Planning Commission has reviewed and considered the information contained in the Final EIR prior to approval of the Project, and all of the information contained therein has substantially influenced all aspects of the decision by the Planning Commission; and

(c) reflects Planning Commission's independent judgment and analysis.

5. Mitigation Monitoring. Pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097, the mitigation monitoring and reporting program (MMRP) set forth in Exhibit 3 to this resolution, which sets forth specific monitoring actions, timing requirements and monitoring/verification entities for each mitigation

measure contained in the Final EIR and which is attached hereto and incorporated herein by this reference, is hereby adopted to ensure that all mitigation measures adopted for Development Permit Application No. P21-02699 and Vesting Tentative Parcel Map No. 2021-09 are fully implemented.

6. Location and Custodian of Documents. The record of project approval shall be kept in the office of the City Clerk, City of Fresno, City Hall, 2600 Fresno Street, Fresno, California 93721 which shall be held by the City Clerk as the custodian of the documents; all other record of proceedings shall be kept with the Planning Department and the Director of the Planning Department shall be the custodian of the documents.

7. Certification. Based on the above facts and findings, the Planning Commission of the City of Fresno certifies the Final EIR in Exhibit 1 for Development Permit Application No. P21-02699 and Vesting Tentative Parcel Map No. 2021-09 as accurate and adequate. The Planning Commission further certifies that the FEIR was completed in compliance with CEQA and the CEQA Guidelines. The Director of the Planning Department is directed to file a Notice of Determination as required by the Public Resources Code and CEQA Guidelines within five (5) working days of adoption of this resolution.

8. Adoption of Water Supply Assessment. The Planning Commission hereby finds that projected water supplies are sufficient to satisfy the demands of the potential uses analyzed in the FEIR in addition to existing and future uses. The Planning Commission hereby approves the Water Supply Assessment (WSA), attached to the FEIR as Appendix K in compliance with Section 10910 of the Water Code and Section 15155 of the CEQA Guidelines, and adopts the WSA as a technical addendum to the Environmental Impact Report

9. This resolution shall be effective upon final approval.

* * * * * * * * * * * * * * *

STATE OF CALIFORNIA)
COUNTY OF FRESNO) ss.
CITY OF FRESNO)

I, TODD STERMER, City Clerk of the City of Fresno, certify that the foregoing resolution was adopted by the Planning Commission of the City of Fresno, at a regular meeting held on the 4th day of October 2023.

AYES : Wagner, Vang (Chair), Bray, Diaz, Lyday
NOES : None
ABSENT : Criner
ABSTAIN : Hardie (Vice Chair)

TODD STERMER, CMC
City Clerk

By: _____ 11-30-2023
Deputy Date

APPROVED AS TO FORM:
ANDREW JANZ
City Attorney

By: _____ 11/30/23
Talia Kolluri Date
Assistant City Attorney

Exhibits:
1 - Final EIR
2 - CEQA Findings of Fact
3 - Mitigation Monitoring and Reporting Program

Exhibit 1
Final EIR

PUBLIC REVIEW DRAFT

ENVIRONMENTAL IMPACT REPORT

2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

FRESNO, CALIFORNIA

LSA

February 2023

This page intentionally left blank

PUBLIC REVIEW DRAFT

ENVIRONMENTAL IMPACT REPORT

2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

FRESNO, CALIFORNIA

Submitted to:

City of Fresno
Planning and Development Department
2600 Fresno Street
Fresno, CA 93721

Prepared by:

LSA
2565 Alluvial Avenue, Suite 172
Clovis, California 93611
(559) 490-1210

Project No. SNN2102

LSA

February 2023

This page intentionally left blank

TABLE OF CONTENTS

TABLE OF CONTENTS i
FIGURES AND TABLES iii
1.0 INTRODUCTION 1-1
1.1 Purpose of this EIR 1-1
1.2 Environmental Review Process 1-1
1.3 Intended Uses of this Eir 1-2
1.4 Proposed Project 1-3
1.5 EIR Scope 1-3
1.6 Report Organization 1-4
1.7 Public Participation 1-5
2.0 EXECUTIVE SUMMARY 2-1
2.1 Purpose 2-1
2.2 Project Summary 2-1
2.2.1 Project Location 2-1
2.2.2 Project Description 2-2
2.2.3 Project Objectives 2-2
2.2.4 Significant Unavoidable Adverse Impacts 2-2
2.2.5 Lead Agency and Trustee Agencies 2-2
2.3 Areas of Controversy 2-3
2.4 Summary of Impacts and Mitigation Measures 2-4
2.4.1 Significant Impacts 2-4
2.4.2 Significant Unavoidable Impacts 2-5
2.4.3 Cumulative Impacts 2-5
2.4.4 Alternatives to the Project 2-5
2.5 Executive Summary Matrix 2-6
3.0 PROJECT DESCRIPTION 3-1
3.1 Project Location 3-1
3.1.1 Regional Location and Access 3-1
3.1.2 Site Characteristics and Existing Site Conditions 3-5
3.1.3 Existing Zoning and General Plan Land Use Designation 3-5
3.1.4 Surrounding Land Uses 3-5
3.2 Project Objectives 3-13
3.3 Proposed Project 3-13
3.3.1 Access, Circulation, and Parking 3-13
3.3.2 Open Space and Landscaping 3-17
3.3.3 Utilities and Infrastructure 3-17
3.3.4 Grading and Construction 3-18
3.4 Approvals/Permits 3-18
4.0 EVALUATION OF ENVIRONMENTAL IMPACTS 4-1
4.1 Determination of Significance 4-1
4.2 Issues Addressed in the Draft EIR 4-1

4.3 Cumulative Analysis Context 4-2
4.4 Format of Issue Sections 4-3
4.5 Environmental Issues 4-4
4.1 Aesthetics 4.1-1
4.1.1 Environmental Setting 4.1-1
4.1.2 Regulatory Setting 4.1-3
4.1.3 Impacts and Mitigation Measures 4.1-4
4.2 Air Quality 4.2-1
4.2.1 Environmental Setting 4.2-1
4.2.2 Regulatory Setting 4.2-14
4.2.3 Impacts and Mitigation Measures 4.2-24
4.3 Biological Resources 4.3-1
4.3.1 Environmental Setting 4.3-1
4.3.2 Regulatory Setting 4.3-8
4.3.3 Impacts and Mitigation Measures 4.3-14
4.4 Cultural Resources and Tribal Cultural Resources 4.4-1
4.4.1 Environmental Setting 4.4-1
4.4.2 Regulatory Setting 4.4-3
4.4.3 Impacts and Mitigation Measures 4.4-9
4.5 Energy 4.5-1
4.5.1 Environmental Setting 4.5-1
4.5.2 Regulatory Setting 4.5-3
4.5.3 Impacts and Mitigation Measures 4.5-6
4.6 Greenhouse Gas Emissions 4.6-1
4.6.1 Environmental Setting 4.6-1
4.6.2 Regulatory Setting 4.6-8
4.6.3 Impacts and Mitigation Measures 4.6-20
4.7 Hazards and Hazardous Materials 4.7-1
4.7.1 Environmental Setting 4.7-1
4.7.2 Regulatory Setting 4.7-3
4.7.3 Impacts and Mitigation Measures 4.7-10
4.8 Hydrology and Water Quality 4.8-1
4.8.1 Environmental Setting 4.8-1
4.8.2 Regulatory Setting 4.8-5
4.8.3 Impacts and Mitigation Measures 4.8-6
4.9 Noise 4.9-1
4.9.1 Environmental Setting 4.9-1
4.9.2 Regulatory Setting 4.9-9
4.9.3 Impacts and Mitigation Measures 4.9-15
4.10 Transportation 4.10-1
4.10.1 Environmental Setting 4.10-1
4.10.2 Regulatory Setting 4.10-2
4.10.3 Impacts and Mitigation Measures 4.10-7
4.11 Utilities and Service Systems 4.11-1
4.11.1 Environmental Setting 4.11-1
4.11.2 Regulatory Setting 4.11-9
4.11.3 Impacts and Mitigation Measures 4.11-13
5.0 ALTERNATIVES 5-1

5.1 Selection of Alternatives 5-1
5.2 Proposed Project 5-2
5.2.1 Project Characteristics 5-2
5.2.2 Project Objectives 5-2
5.2.3 Significant Impacts of the Proposed Project 5-2
5.3 Alternatives Considered but Not Selected for Detailed Evaluation 5-3
5.3.1 Develop Residential Uses on the Project Site 5-3
5.3.2 Develop the Proposed Project at an Alternative Location 5-3
5.4 No Project Alternative 5-4
5.4.1 No Project Alternative Description 5-4
5.4.2 Analysis of the No Project Alternative 5-4
5.4.3 Comparison to Project Objectives 5-5
5.5 Reduced Project Alternative 5-6
5.5.1 Reduced Project Alternative Description 5-6
5.5.2 Analysis of the Reduced Project Alternative 5-6
5.5.3 Comparison to Project Objectives 5-10
5.6 Environmentally Superior Alternative 5-10

APPENDICES

A: NOP COMMENTS
B: INITIAL STUDY
C: CALEEMOD OUTPUT SHEETS
D: HEALTH RISK ASSESSMENT
E: BIOLOGICAL EVALUATION
F: PHASE I CULTURAL RESOURCES SURVEY
G: ENERGY CALCULATIONS
H: GREENHOUSE GAS REDUCTION PLAN UPDATE CONSISTENCY CHECKLIST
I: PHASE I ENVIRONMENTAL SITE ASSESSMENT
J: PHASE II ENVIRONMENTAL SITE ASSESSMENT
K: WATER SUPPLY ASSESSMENT
L: NOISE IMPACT ANALYSIS MEMORANDUM
M: TRAFFIC IMPACT STUDY

This page intentionally left blank

FIGURES AND TABLES

FIGURES

Figure 3-1: Regional and Local Context 3-3
Figure 3-2: Aerial Photograph of Project Site and Surrounding Land Uses 3-7
Figure 3-3: Photographs of Existing Site Conditions 3-9
Figure 3-3: Photographs of Existing Site Conditions 3-9
Figure 3-4: Photographs of Existing Site Conditions 3-11
Figure 3-5: Site Plan 3-15
Figure 4.2-1: California Population, Gross State Product (GSP), Diesel Cancer Risk, and Diesel Vehicle Miles Traveled (VMT) Regulatory Context 4.2-14
Figure 5-1: Reduced Project Alternative 5-7

TABLES

Table 2.A: Executive Summary Matrix 2-7
Table 3.A: Surrounding Land Uses and Setting 3-5
Table 4.A: Cumulative Projects in the Vicinity of the Project Site 4-3
Table 4.2.A: Sources and Health Effects of Air Pollutants 4.2-3
Table 4.2.B: Federal and State Ambient Air Quality Standards 4.2-7
Table 4.2.C: SJVAB Air Quality Attainment Status 4.2-11
Table 4.2.D: Ambient Air Quality at Nearby Monitoring Stations 4.2-13
Table 4.2.E: Recommendations on Siting New Sensitive Land Uses Near Toxic Air Contaminant Sources 4.2-17
Table 4.2.F: Screening Levels for Potential Odor Sources 4.2-22
Table 4.2.G: Project Construction Emissions (Tons Per Year) 4.2-28
Table 4.2.H: Project Operation Emissions (Tons Per Year) 4.2-30
Table 4.2.I: Unmitigated Inhalation Health Risks from Project Construction to Off-Site Receptors 4.2-33
Table 4.2.J: Mitigated Inhalation Health Risks from Project Construction to Off-Site Receptors 4.2-33
Table 4.2.K: Health Risks Levels from Project Operation to Off-Site Receptors 4.2-36
Table 4.3.1: Table of Special Status Species Potentially Occurring within Habitats of the Project Site 4.3-3
Table 4.5.A: Energy Consumption Estimates During Construction 4.5-7
Table 4.5.B: Energy Consumption Estimates During Operation 4.5-8
Table 4.6.A: Global Warming Potential of Greenhouse Gases 4.6-2
Table 4.6.B: Potential Impacts of Global Warming and Expected Consequences for California 4.6-6
Table 4.6.C: City of Fresno GHG Emissions by Sector for 2016 ..... 4.6-8
Table 4.6.D: Senate Bill 375 Regional Greenhouse Gas Emissions Reduction Targets 4.6-13
Table 4.6.E: Construction Greenhouse Gas Emissions 4.6-21
Table 4.6.F: Operational Greenhouse Gas Emissions 4.6-22
Table 4.7.A: Hazardous Material Sites Near the Proposed Project 4.7-2

Table 4.7.B: Environmental Issues Related to Hazardous Materials 4.7-13
Table 4.9.A: Definitions of Acoustical Terms 4.9-3
Table 4.9.B: Typical A-Weighted Sound Levels 4.9-4
Table 4.9.C: Human Response to Different Levels of Ground-Borne Noise and Vibration 4.9-5
Table 4.9.D: Long-Term Noise Level Measurements 4.9-7
Table 4.9.E: Existing Traffic Noise Levels Without Project 4.9-8
Table 4.9.F: Interpretation of Vibration Criteria for Detailed Analysis 4.9-10
Table 4.9.G: Construction Vibration Damage Criteria 4.9-10
Table 4.9.H: Transportation (Non-Aircraft) Noise Sources 4.9-11
Table 4.9.I: Stationary Noise Sources 4.9-11
Table 4.9.J: Ambient Noise Levels 4.9-14
Table 4.9.K: Typical Construction Equipment Noise Levels 4.9-16
Table 4.9.L: Traffic Noise Levels Without and With Proposed Project 4.9-19
Table 4.9.M: Hourly Exterior Noise Level Impacts 4.9-22
Table 4.9.N: Maximum Exterior Noise Level Impacts 4.9-23
Table 4.9.O: Vibration Source Amplitudes for Construction Equipment 4.9-25
Table 4.9.P: Potential Construction Vibration Damage Impacts at Nearest Receptor 4.9-25
Table 4.9.Q: Potential Construction Vibration Annoyance Impacts at Nearest Receptor 4.9-26
Table 4.10.A: Project Trip Generation 4.10-10
Table 4.11.A: Citywide Demands for Potable and Non-Potable Water (acre-feet per year) 4.11-2

1.0 INTRODUCTION

1.1 PURPOSE OF THIS EIR

The California Environmental Quality Act (CEQA) requires that all State and local government agencies consider the environmental consequences of programs and projects over which they have discretionary authority before taking action on them. This Environmental Impact Report (EIR) has been prepared in accordance with CEQA to evaluate the potential environmental impacts associated with implementation of proposed 2740 West Nielsen Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map Application No. P21 05930) (herein referred to as the proposed project) for the City of Fresno. This EIR has been prepared in conformance with CEQA, California Public Resources Code Section 21000 et seq; the California CEQA Guidelines (California Code of Regulations, Title 14, Section 15000 et seq); and the rules, regulations, and procedures for implementing CEQA as adopted by the City of Fresno (herein referred to as the City).

This EIR is intended to serve as an informational document for the public agency decision-makers and the public regarding the potential environmental impacts associated with the construction the proposed project. This EIR identifies potential environmental impacts resulting from the proposed project, and identifies potential mitigation measures and alternatives to reduce potential environmental impacts.

Environmental impacts cannot always be mitigated to a level that is considered less than significant. In accordance with Section 15093(b) of the State CEQA Guidelines, if a lead agency, such as the City of Fresno, approves a project that has significant impacts that are not substantially mitigated (i.e., significant unavoidable impacts), the lead agency shall state in writing the specific reasons for approving the project, based on the final CEQA documents and any other information in the public record for the project. This is identified in Section 15093 of the State of CEQA Guidelines, “a statement of overriding considerations.” These potential impacts are discussed in more detail throughout Chapter 4.0 of this EIR.

1.2 ENVIRONMENTAL REVIEW PROCESS

The City of Fresno, serving as Lead Agency responsible for administering the environmental review for the proposed project, determined that preparation of an EIR was required for the proposed project.

CEQA requires that, before a decision can be made to approve a project that could result in adverse physical effects, an EIR must be prepared that fully describes the environmental effects of the project. The EIR is a public information document for use by governmental agencies and the public to identify and evaluate potential environmental impacts of a project, to recommend mitigation measures to lessen or eliminate significant adverse impacts, and to examine feasible alternatives to the project. The information contained in the EIR must be reviewed and considered by the City of Fresno Planning Commission and City Council prior to a decision to approve, disapprove, or modify the project.

As part of the consideration of the proposed project, an agency must prepare findings that identifies that all environmental effects of the project are supported by substantial evidence in the record. CEQA requires that agencies shall neither approve nor implement a project unless the project's significant environmental effects have been reduced to a less-than-significant level, essentially "eliminating, avoiding, or substantially lessening" the potentially significant impacts, except when certain findings are made. If an agency approves a project that will result in the occurrence of significant adverse impacts that cannot be mitigated to less-than-significant levels, the agency must state the reasons for its action in writing, demonstrate that its action is based on the EIR or other information in the record, and adopt a Statement of Overriding Considerations.

1.3 INTENDED USES OF THIS EIR

As noted above and described in the CEQA Guidelines, public agencies are charged with the duty to avoid or substantially lessen significant environmental effects, where feasible. In undertaking this duty, a public agency has an obligation to balance a project's significant effects on the environment with its benefits, including economic, social, technological, legal, and other non-environmental characteristics.

This EIR is intended as an informational document to: evaluate the proposed project and the potential for significant impacts on the environment; examine methods of reducing adverse environmental impacts; identify any significant and unavoidable adverse impacts that cannot be mitigated; and, identify reasonable and feasible alternatives to the proposed project that would eliminate any significant adverse environmental effects or reduce the impacts to a less-than-significant level. The Lead Agency is required to consider the information in the EIR, along with any other relevant information, in making its decisions on the proposed project. This analysis, in and of itself, does not determine whether a project will be approved, but aids the planning and decision-making process by disclosing the potential for significant and adverse impacts.

In conformance with CEQA and the CEQA Guidelines, this EIR provides objective information addressing the environmental consequences of the project and identifies possible means of reducing or avoiding significant impacts, either through mitigation measures or feasible project alternatives. The City of Fresno must certify the Final EIR prior to project approval and implementation. Under CEQA Guidelines Section 15168, this is a project-level EIR. This type of EIR examines a specific project and considers potential construction and operational impacts of implementing the project.

The CEQA Guidelines help define the role and standards of this EIR, as follows:

- **Information Document.** An EIR is an informational document which will inform public agency decision-makers and the public generally of the significant environmental effect(s) of a project, identify possible ways to minimize significant effects, and describe reasonable alternatives to the project. The public agency shall consider the information in the EIR along with other information which may be presented to the agency (CEQA Guidelines Section 15121(a)).

- **Degree of Specificity.** The degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR. An EIR on a

development project will necessarily be more detailed in its discussion of specific effects of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the effects of the construction can be predicted with greater accuracy (CEQA Guidelines Section 15146(a)).

- **Standards for Adequacy of an EIR.** An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information, which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure (CEQA Guidelines Section 15151).

Section 15382 of the CEQA Guidelines defines a significant effect on the environment as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project…" The EIR would identify potentially substantial physical effects of the project and mitigation measures to avoid, reduce, or otherwise alleviate those effects.

1.4 PROPOSED PROJECT

The proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. The proposed project would also subdivide the project site into four separate parcels and would consist of each proposed building on a separate parcel.

A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining 188 spaces would be dedicated for trailers and would be located along the eastern and western edges of the project site and would be located behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.

1.5 EIR SCOPE

A Notice of Preparation (NOP) of the EIR was circulated for 30 days on September 9, 2022 to help identify the types of impacts that could result from implementation of the proposed project, as well as potential areas of controversy. The NOP was mailed to public agencies, organizations, and individuals likely to be interested in the project and its potential impacts. Additionally, a public

scoping meeting to inform interested parties and the public about the proposed project was held on September 22, 2022. A total of seven comment letters regarding the NOP were received, and no verbal comments were provided at the scoping session. Copies of the NOP and the comment letters are included in Appendix A.

The Initial Study prepared for this EIR (Appendix B) evaluated the environmental issue topics required by CEQA. The individual environmental topics evaluated in the Initial Study include the following:

- Agriculture and Forestry Resources
- Geology and Soils
- Land Use and Planning
- Mineral Resources
- Population and Housing
- Public Services
- Recreation
- Wildfire

The Initial Study identified potentially significant environmental issue topics that will be analyzed in more detail in this Draft EIR. The topics include:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources and Tribal Cultural Resources
- Energy
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Transportation
- Utilities and Service Systems

1.6 REPORT ORGANIZATION

This EIR is organized into the following chapters:

- **Chapter 1.0 – Introduction**: Discusses the overall EIR purpose, provides a summary of the proposed project, describes the EIR scope, and summarizes the organization of the EIR.

- **Chapter 2.0 - Executive Summary**: Provides a summary of the impacts that would result from implementation of the proposed project, describes mitigation measures recommended to reduce or avoid significant impacts, and describes the alternatives to the proposed project.

- **Chapter 3.0 - Project Description**: Provides a description of the project site, the project objectives, the proposed project, and intended uses of this EIR.

- **Chapter 4.0 – Evaluation of Environmental Impacts**: Describes the following for each environmental technical topic: existing conditions (setting), potential environmental impacts and their level of significance, and mitigation measures recommended to mitigate identified impacts. Potential adverse impacts are identified by levels of significance, as follows: less-than-significant impact (LTS), significant impact (S), and significant and unavoidable impact (SU). The significance of each impact is categorized before and after implementation of any recommended mitigation measures(s). Cumulative impacts are also addressed.

- **Chapter 5.0 - Alternatives**: Provides an evaluation of the alternatives to the proposed project in addition to the CEQA-required No Project alternative.

- **Chapter 6.0 – CEQA-Required Assessment Conclusions**: Provides an analysis of effects found not to be significant, growth-inducing impacts, unavoidable significant environmental impacts, and significant irreversible changes.

- **Chapter 7.0 - Report Preparation**: Identifies preparers of the EIR, references used, and the persons and organizations contacted.

- **Appendices***:* The appendices contain the NOP and comment letters on the NOP (Appendix A), Initial Study (Appendix B), technical calculations, and other documentation prepared in conjunction with this EIR.

1.7 PUBLIC PARTICIPATION

The CEQA Guidelines encourage public participation in the planning and environmental review processes. The City will provide opportunities for the public to present comments and concerns regarding the CEQA and planning processes. These opportunities will occur during the Draft EIR public review and comment period and public hearings before the City of Fresno Planning Commission and City Council.

This Draft EIR, in compliance with Section 15105 of the CEQA Guidelines, has been distributed to responsible and trustee agencies, and other interested organizations, agencies and individuals for review and comment on the adequacy of the environmental analysis.

The Draft EIR 45-day public review and comment period for this project began on February 24, 2023 and will end on April 10, 2023.

Written public comments may be submitted to the Planning and Development Department during the specified public review and comment period, and oral comments may be presented at the Draft EIR public hearing before the City of Fresno Planning Commission and City Council. Written comments should be delivered in person or by courier service, or be sent by mail or email to:

Steven Martinez
Planner
City of Fresno – Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8047
Steven.Martinez@fresno.gov

This page intentionally left blank

2.0 EXECUTIVE SUMMARY

This chapter provides an overview of the purpose of this Environmental Impact Report (EIR), the proposed project, and its environmental impacts based on the analysis included in this EIR, including a discussion of alternatives and cumulative project impacts. As required under the California Environmental Quality Act (CEQA), this chapter also includes potential areas of public controversy known to the City of Fresno, the lead agency for the proposed project.

2.1 PURPOSE

This Draft EIR has been prepared in accordance with CEQA to evaluate the potential environmental impacts associated with the proposed 2740 West Nielsen Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map Application No. P21 05930). This EIR has been prepared in conformance with CEQA, California Public Resources Code Section 21000 et seq; the *State CEQA Guidelines* (California Code of Regulations, Title 14, Section 15000 et seq); and the rules, regulations, and procedures for implementing CEQA as adopted by the City of Fresno (herein referred to as the City).

This EIR is intended to serve as an informational document for the public agency decision-makers and the public regarding the potential environmental impacts associated with the construction of the proposed project. In addition to identifying potential environmental impacts, this EIR also identifies potential mitigation measures and alternatives to reduce potential significant environmental impacts.

Environmental impacts cannot always be mitigated to a level that is considered less than significant. In accordance with Section 15093(b) of the *State CEQA Guidelines,* if a lead agency, such as the City of Fresno, approves a project that has significant impacts that are not substantially mitigated (i.e., significant unavoidable impacts), the lead agency shall state in writing the specific reasons for approving the project, based on the final CEQA documents and any other information in the public record for the project. This is identified in Section 15093 of the *State CEQA Guidelines,* "a statement of overriding considerations." These potential impacts are discussed in more detail throughout Chapter 4.0 of this EIR.

2.2 PROJECT SUMMARY

The following provides a summary of the project location, project description, project objectives, potential significant and unavoidable impacts that could result from the proposed project, and a list of the agencies responsible for implementation of the proposed project and approvals required for subsequent projects.

2.2.1 Project Location

The City of Fresno is located in the San Joaquin Valley, in the central portion of Fresno County. The approximately 48.03-acre project site is located in the City of Fresno, on the northeast corner of the intersection of North Marks Avenue and West Nielsen Avenue, and is located on Assessor's Parcel Number (APNs) 458-020-71 and 458-020-72. The project site itself is generally bounded to the north

by vacant, undeveloped land and industrial uses, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue.

2.2.2 Project Description

The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. A total of 594 on-site parking spaces would be provided for vehicles and trucks.

2.2.3 Project Objectives

The objectives of the proposed project are to:

- Provide industrial warehousing consistent with the General Plan land use and zoning designation and that helps fulfil the unmet demands of businesses located in the City;
- Provide a variety of new employment opportunities for the residents of Fresno and surrounding communities;
- Provide new industrial development that is attractive and minimizes conflicts with the surrounding existing uses; and
- Promote sustainable development and operations.

2.2.4 Significant Unavoidable Adverse Impacts

The proposed project is not expected to result in any significant unavoidable adverse impacts.

2.2.5 Lead Agency and Trustee Agencies

The lead agency for the proposed project is the City of Fresno. The City is the public agency that has the principal responsibility for certifying the EIR, approving or carrying out the project, or disapproving the project.

The responsible agencies are State and local public agencies other than the lead agency that have authority to carry out or approve a project or that are required to approve a portion of a project for which the lead agency is preparing or has prepared an EIR or Negative Declaration. There are no agencies other than the City of Fresno that have approval or permitting authority for the adoption of the proposed project.

In addition, implementation of the proposed project would involve many responsible agencies depending upon the specifics of the subsequent projects. Following are some of the agencies that could be required to act as responsible agencies for subsequent projects:

- Pacific Gas & Electric (PG&E), electrical and natural gas connection
- Central Valley Regional Water Quality Control Board (RWQCB) Storm Water Pollution Prevention Plan
- San Joaquin Valley Air Pollution Control District (SJVAPCD) (e.g., Dust Control Plan Approval letter and compliance with Rule 9510 – Indirect Source Review)

2.3 AREAS OF CONTROVERSY

A total of seven written comment letters were submitted in response to the Notice of Preparation (NOP). No verbal comments were received at the public scoping session held on September 22, 2022. Comments in response to the NOP generally identified the following areas of potential concern:

- The project's potential to affect aesthetics in the area, including increased lighting and truck traffic.
- Incorporation of mitigation measures, including using zero-emission vehicles and equipment, installing light shields and anti-glare lighting, hiring employees from the surrounding neighborhood, avoiding asphalt, evaluating truck routing, and implementing vegetative buffers.
- Evaluation of project construction and operational emissions and reducing impacts by utilizing the cleanest available off-road construction equipment and incorporation of design elements such as the use of cleaner heavy heavy-duty (HHD) trucks and vehicles, measures that reduce vehicle miles traveled (VMTs), and measures that increase energy efficiency.
- Evaluation of potential health risk impacts on surrounding receptors (residences, businesses, hospitals, day-care facilities, health care facilities, etc.) and mitigation of any potentially significant risk to help limit exposure of sensitive receptors to emissions.
- The project's contribution to heat island effect.
- Consideration of existing environmental conditions, including CalEnviroScreen scores.
- Tribal consultation requirements and the potential for the project to affect tribal cultural resources.
- Consistency with the Airport Land Use Plan and accommodation of emergency aircraft landings.
- Fresno Metropolitan Flood Control District review and approval of the final improvement plans to ensure consistency with the approved Storm Drainage Master Plan and payment of drainage fees.

- Availability of fire access and water service connections for private fire hydrants and fire sprinkler systems.
- Increase in water used, wastewater generated, and pollutants emitted near residents.
- Direct and indirect environmental impacts of VMT associated with the project, including impacts to air quality, pedestrian, cyclist, and public transit user safety, ambient noise levels, aesthetics, and road quality.
- Evaluation of cumulative impacts and existing environmental conditions of the area.
- Suggested other locations for the project.

The analyses included in the EIR are based on current regulatory requirements, including the current *State CEQA Guidelines*. Comments related to lighting aesthetics were considered and addressed in Section 4.1, Aesthetics. An evaluation of the project's construction and operational emissions, health risk impacts, existing environmental conditions, and heat island effect were considered and addressed in Section 4.2, Air Quality. Comments pertaining to tribal cultural resources were considered and addressed in Section 4.4, Cultural and Tribal Cultural Resources. The project's consistency with the Airport Land Use Plan was considered and addressed in Section 4.7, Hazards and Hazardous Materials. Drainage impacts, availability of water service, and increase in water and wastewater used were considered and addressed in Section 4.8, Hydrology and Water Quality, and Section 4.11, Utilities and Service Systems. Potential VMT impacts were considered and addressed in Section 4.10, Transportation. Evaluation of cumulative impacts and existing environmental conditions were considered and addressed throughout the EIR, and finally, comments related to alternatives to the project were considered and addressed in Chapter 5.0, Alternatives.

2.4 SUMMARY OF IMPACTS AND MITIGATION MEASURES

This summary provides an overview of the analysis contained Chapter 4.0, Evaluation of Environmental Impacts, and Chapter 6.0, Other CEQA Considerations, of this EIR. In determining that an EIR was the appropriate environmental document, based on the preliminary analysis conducted within the Initial Study, the City determined that the following environmental resource topics would be potentially significant and would be analyzed in detail for the proposed project: Aesthetics, Air Quality, Biological Resources, Cultural and Tribal Cultural Resources, Energy, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Transportation, and Utilities and Service Systems. Other environmental resource topics not included in Chapter 4.0 of the EIR are analyzed in the Initial Study. The environmental resource topics discussed in the Initial Study include: Agriculture and Forestry Resources, Geology and Soils, Land Use and Planning, Mineral Resources, Population and Housing, Public Services, Recreation, and Wildfire.

2.4.1 Significant Impacts

CEQA defines a significant impact on the environment as "…a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." As discussed in more detail in Chapter 4.0, Evaluation of Environmental Impacts,

impacts in the following areas would be potentially significant without the implementation of mitigation measures but would be reduced to a less than significant level if the mitigation measures recommended in this report are implemented: Section 4.1, Aesthetics; Section 4.2, Air Quality; Section 4.3, Biological Resources; Section 4.4, Cultural and Tribal Cultural Resources; Section 4.7, Hazards and Hazardous Materials; and Section 4.9, Noise.

2.4.2 Significant Unavoidable Impacts

The project would not result in any significant and unavoidable impacts.

2.4.3 Cumulative Impacts

CEQA defines cumulative impacts as "two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impacts." Section 15130 of the *State CEQA Guidelines* requires that an EIR evaluate potential environmental impacts that are individually limited, but cumulatively significant. These impacts can result from the proposed project when combined with other past, present, or reasonably foreseeable future projects. As described in Chapter 4.0 of this EIR, the cumulative impacts analysis in this EIR is based on information provided by the City on currently planned, approved, or proposed projects and regional projections for the project area. All cumulative impacts of the proposed project would be individually limited and would not make a cumulatively considerable contribution to cumulative impacts.

2.4.4 Alternatives to the Project

In accordance with CEQA and the *State CEQA Guidelines* (Section 15126.6), an EIR must describe a reasonable range of alternatives to the project, or to the project's location, that could attain most of the project's basic objectives while avoiding or substantially lessening any of the significant adverse environmental effects of the project. The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives that are feasible and necessary to permit a reasoned choice. The *State CEQA Guidelines* state that an EIR should not consider alternatives "whose effect cannot be ascertained and whose implementation is remote and speculative."

The two alternatives to the proposed project that are discussed and analyzed in Chapter 5.0, Alternatives, of this EIR are:

- **No Project Alternative.** Under the No Project Alternative, the project site would continue to be vacant. No modifications to existing site access or infrastructure would occur.

- **Reduced Project Alternative.** The Reduced Project Alternative would reduce the size of Building 1 to 250,956 square feet and the project total square footage would be reduced to 683,582 square feet. The building would have similar site access and infrastructure improvements as those identified for the proposed project.

Each alternative is compared to the proposed project and discussed in terms of its various mitigating or adverse effects on the environment. Analysis of the alternatives focuses on those topics for which significant adverse impacts would result from the proposed project.

2.5 EXECUTIVE SUMMARY MATRIX

Table 2.A below summarizes the impacts, mitigation measures, and resulting level of significance after mitigation for the relevant environmental issue areas evaluated in the Initial Study document prepared for this EIR, and in this Draft EIR. Table 2.A is intended to provide an overview; narrative discussions for the issue areas included in the corresponding sections of this Draft EIR. Table 2.A is included in the Draft EIR pursuant to CEQA Guidelines Section 15123(b)(1).

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.1: AESTHETICS			
Threshold 4.1.1: *The proposed project would not have a substantial adverse effect on a scenic vista.*	Less than Significant Impact.	No mitigation is required.	N/A
Threshold 4.1.2: *The proposed project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.*	No Impact.	No mitigation is required.	N/A
Threshold 4.1.3: *The proposed project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point), and due to the location of the project in an urbanized area, the project would conflict with applicable zoning and other regulations governing scenic quality.*	Less than Significant Impact.	No mitigation is required.	N/A
Threshold 4.1.4: *The project would create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.*	Potentially Significant Impact.	**Mitigation Measure AES-1:** Lighting systems for street and parking areas shall include shields to direct light to the roadway surfaces and parking areas. Vertical shields on the light fixtures shall also be used to direct light away from adjacent light sensitive land uses such as residences. **Mitigation Measure AES-2:** Lighting systems for public facilities such as active play areas shall provide adequate illumination for the activity; however, low intensity light fixtures and shields shall be used to minimize spillover light onto adjacent properties. **Mitigation Measure AES-3:** Lighting systems for non-residential uses, not including public facilities, shall provide shields on the light fixtures and orient the lighting system away from adjacent properties. Low intensity light fixtures shall also be used if excessive spillover light onto adjacent properties will occur. **Mitigation Measure AES-4:** Lighting systems for freestanding signs shall not exceed 100 foot Lamberts (FT-L) when adjacent to streets which have an average light intensity of less than 2.0 horizontal	Less than Significant with implementation of Mitigation Measures AES-1 through AES-5.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		footcandles and shall not exceed 500 FT-L when adjacent to streets which have an average light intensity of 2.0 horizontal footcandles or greater. **Mitigation Measures AES-5**: Materials used on building facades shall be non-reflective.	
Threshold 4.1.5: *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to aesthetics.*	Potentially Significant Impact.	Refer to Mitigation Measures AES-1 through AES-5 above.	Less than Significant with implementation of Mitigation Measures AES-1 through AES-5.
4.2: AIR QUALITY			
Threshold 4.2.1: *The project would not conflict with or obstruct implementation of the applicable air quality plan*	Potentially Significant Impact.	Refer to Mitigation Measure AIR-1 below.	Less than Significant with implementation of Mitigation Measure AIR-1.
Threshold 4.2.2: *Implementation of the proposed project would not result in a cumulatively considerable net increase of criteria pollutants for which the project region is non-attainment under an applicable federal or State ambient air quality standards.*	Potentially Significant Impact.	**Mitigation Measure AIR-1:** Consistent with SJVAPCD Regulation VIII (Fugitive PM_{10} Prohibitions), the following controls are required to be included as specifications for the proposed project and implemented at the construction site: ● All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover. ● All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant. ● All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking. ● When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container shall be maintained.	Less than Significant with implementation of Mitigation Measure AIR-1.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		• All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.) • Following the addition of materials to, or the removal of materials from, the surface of out-door storage piles, said piles shall be effectively stabilized of fugitive dust emission utilizing sufficient water or chemical stabilizer/suppressant.	
Threshold 4.2.3: *Implementation of the proposed project would expose sensitive receptors to substantial pollutant concentrations.*	Potentially Significant Impact.	**Mitigation Measure AIR-2**: During construction of the proposed project, the project contractor shall ensure all off-road diesel-powered construction equipment of 50 horsepower or more used for the project construction at a minimum meets the California Air Resources Board Tier 4 emissions standards or equivalent. **Mitigation Measure AIR-3**: The project applicant shall ensure that the proposed project provides the infrastructure for AC and/or DC chargers for electric heavy-duty trucks. The infrastructure provided shall accommodate a minimum of one future charger per 50,000 square feet.	Less than Significant with implementation of Mitigation Measures AIR-2 and AIR-3.
Threshold 4.2.4: *The project would not result in significant odors that could adversely affect a substantial number of people.*	Less than Significant Impact.	No mitigation is required.	N/A
Threshold 4.2.5: *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to air quality.*	Potentially Significant Impact.	Refer to Mitigation Measures AIR-1 through AIR-3 above.	Less than Significant with Mitigation Measures AIR-1 through AIR-3.
4.3: BIOLOGICAL RESOURCES			
Threshold 4.3.1: *The project would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department*	Potentially Significant Impact.	**Mitigation Measure BIO-1:** If project construction activities occur during nesting season (between February 1 and August 31), a qualified biologist shall conduct pre-construction surveys for active migratory bird nests at the project site within 14 days of the onset of these activities. Should any active nests be discovered in or near proposed construction zones, the biologist shall identify a suitable	Less than Significant with implementation of Mitigation Measure BIO-1

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
of Fish and Wildlife or U.S. Fish and Wildlife Service.		construction-free buffer around the nest. This buffer shall be identified on the ground with flagging or fencing, and shall be maintained until the biologist has determined that the young have fledged.	
Threshold 4.3.2: *The project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community.*	No Impact.	No mitigation is required.	N/A
Threshold 4.3.3: *The project would not have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*	No Impact.	No mitigation is required.	N/A
Threshold 4.3.4: *The project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.3.5: *The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*	No Impact.	No mitigation is required.	N/A
Threshold 4.3.6: *The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan*	No Impact.	No mitigation is required.	N/A
Threshold 4.3.7: *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to biological resources.*	Potentially Significant Impact.	Refer to Mitigation Measure BIO-1 above.	Less than Significant with implementation of Mitigation Measure BIO-1.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.4: CULTURAL AND TRIBAL RESOURCES			
Threshold 4.4.1: *The project would cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines.*	Potentially Significant Impact.	Refer to Mitigation Measure CUL-1 below.	Less than Significant with implementation of Mitigation Measure CUL-1.
Threshold 4.4.2: *The project would cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5 of the CEQA Guidelines.*	Potentially Significant Impact.	**Mitigation Measure CUL-1:** If previously unknown resources are encountered before or during any ground disturbing activities, construction shall stop in the immediate vicinity of the find and a qualified archaeologist shall be consulted to determine whether the resource requires further study. The qualified archaeologist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the State CEQA Guidelines and the City's Historic Preservation Ordinance. If the resources are determined to be unique archeological resources as defined under Section 15064.5 of the State CEQA Guidelines, measures shall be identified by a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology and recommended to the lead agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further ground disturbing activity shall occur in the area of the discovery until the lead agency approves the measures to protect identified resources. Any significant or unique recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.	Less than Significant with implementation of Mitigation Measure CUL-1.
Threshold 4.4.3: *The project would disturb human remains, including those interred outside of formal cemeteries.*	Potentially Significant Impact.	**Mitigation Measure CUL-2:** In the event that human remains are unearthed during excavation and grading activities of any future development project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC	Less than Significant with implementation of Mitigation Measure CUL-2.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.	
Threshold 4.4.4: *The project would result in a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe.*	Potentially Significant Impact.	Refer to Mitigation Measure CUL-1 above.	Less than Significant with implementation of Mitigation Measure CUL-1.
Threshold 4.4.5: *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to cultural resources.*	Potentially Significant Impact.	Refer to Mitigation Measures CUL-1 and CUL-2 above.	**Less than Significant with implementation of Mitigation Measures CUL-1 and CUL-2.**
4.5: ENERGY			
Threshold 4.5.1: *The project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.*	Less than Significant Impact.	No mitigation is required.	N/A

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Threshold 4.5.2: *The project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.*	Less than Significant Impact.	No mitigation is required.	N/A
Threshold 4.5.3: *The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative impact with respect to aesthetics.*	Less than Significant Impact.	No mitigation is required.	N/A
4.6: GREENHOUSE GAS EMISSIONS			
Threshold 4.6.1: *The project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.*	Less than Significant Impact.	No mitigation is required.	N/A
Threshold 4.6.2: *The project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*	Less than Significant Impact.	No mitigation is required.	N/A
Threshold 4.6.3: *The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative impact with respect to greenhouse gas emissions.*	Less than Significant Impact.	No mitigation is required.	N/A
4.7: HAZARDS AND HAZARDOUS MATERIALS			
Threshold 4.7.1: *The project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.*	Less than Significant Impact.	No mitigation is required.	N/A
Threshold 4.7.2: *The project would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.*	Potentially Significant Impact.	**Mitigation Measure HAZ-1:** Prior to soil disturbance, a consultant qualified under American Society for Testing and Materials (ASTM) International Standard E1527-13 for the purposes of identifying hazardous materials shall be retained to prepare a Soil Management Plan (SMP) address soil management procedures that may arise based on historical use of the project site and the known total petroleum hydrocarbons (TPH) and arsenic impacts. Construction may not proceed until the extent and nature of the TPH and arsenic	Less than Significant with implementation of Mitigation Measure HAZ-1.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		impacts are determined by qualified personnel and in consultation with appropriate City staff. The removal and/or disposal of any contaminants shall be in accordance with all applicable local, State, and federal standards to the degree that adequate public health and safety standards are maintained, to the satisfaction of the City.	
Threshold 4.7.3: *The project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.*	Less than Significant Impact.	No mitigation is required.	N/A
Threshold 4.7.4: *The project would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment.*	No Impact.	No mitigation is required.	N/A
Threshold 4.7.5: *The project would be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and would not result in a safety hazard for people residing or working in the project area.*	Less than Significant Impact.	No mitigation is required.	N/A
Threshold 4.7.6: *The project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.*	Less than Significant Impact.	No mitigation is required.	N/A
Threshold 4.7.7: *The project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.*	Less than Significant Impact.	No mitigation is required.	N/A
Threshold 4.7.8: *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to*	Potentially Significant Impact.	Refer to Mitigation Measure HAZ-1 above.	Less than Significant with implementation of Mitigation Measure HAZ-1.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
hazards and hazardous materials.			
4.8: HYDROLOGY AND WATER QUALITY			
Threshold 4.8.1: *The project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.8.2: *The project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.8.3: *The project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.8.4: *The project would not release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zones.*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.8.5: *The project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan (SGMA).*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.8.6: *The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative impact with respect to hydrology and water quality.*	Less Than Significant Impact.	No mitigation is required.	N/A
4.9: NOISE			
Threshold 4.9.1: *The proposed project would generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in*	Potentially Significant Impact.	**Mitigation Measure NOI-1:** The project contractor shall implement the following measures during construction of the project: ● Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.	Less than Significant with Mitigation Measures NOI-1 and NOI-2.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
other applicable local, State, or federal standards.		• Designate a "disturbance coordinator" at the City who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem. **Mitigation Measure NOI-2:** All loading dock activities shall be prohibited at the loading dock doors on the south end of Building 1 during the nighttime hours (10:00 p.m. to 7:00 a.m.) or once operational, the project proponent shall provide documentation to the City of Fresno Planning and Development Department that demonstrates that nighttime loading dock activities would comply with the noise level specifications of the City's Municipal Code.	
Threshold 4.9.2: *The proposed project would not generate excessive groundborne vibration or groundborne noise levels.*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.9.3: *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, the proposed project would not expose people residing or working in the project area to excessive noise levels.*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.9.4: *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to noise.*	Potentially Significant Impact.	Refer to Mitigation Measures NOI-1 and NOI-2.	Less than Significant with Mitigation Measures NOI-1 and NOI-2.
4.10: TRANSPORTATION			
Threshold 4.10.1: *The project would not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.*	Less Than Significant Impact.	No mitigation is required.	N/A

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Threshold 4.10.2: *The proposed project would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.10.3: *The project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.10.4: *The project would not result in inadequate emergency access.*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.10.: *The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative impact with respect to transportation.*	Less Than Significant Impact.	No mitigation is required.	N/A
4.11: UTILITIES			
Threshold 4.11.1: *The project would not require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.11.2: *The project would have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.11.3: *The project would result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.*	Less Than Significant Impact.	No mitigation is required.	N/A

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Threshold 4.11.4: *The project would not the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.11.5: *The project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.*	Less Than Significant Impact.	No mitigation is required.	N/A
Threshold 4.11.6: *The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative impact with respect to aesthetics.*	Less Than Significant Impact.	No mitigation is required.	N/A
Initial Study			
AGRICULTURE AND FORESTRY RESOURCES			
Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.	No Impact.	No mitigation is required.	No Impact.
Conflict with existing zoning for agricultural use or a Williamson Act contract.	No Impact.	No mitigation is required.	No Impact.
Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).	No Impact.	No mitigation is required.	No Impact.
Result in the loss of forest land or conversion of forest land to non-forest use.	No Impact.	No mitigation is required.	No Impact.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.	No Impact.	No mitigation is required.	No Impact.
GEOLOGY AND SOILS			
Directly or Indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:			
Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	No Impact.	No mitigation is required.	No Impact.
Strong seismic ground shaking.	Less than Significant Impact.	No mitigation is required.	Less than Significant Impact.
Seismic-related ground failure, including liquefaction.	Less than Significant Impact.	No mitigation is required.	Less than Significant Impact.
Landslides.	Less than Significant Impact.	No mitigation is required.	Less than Significant Impact.
Result in substantial soil erosion or the loss of topsoil.	Less than Significant Impact.	No mitigation is required.	Less than Significant Impact.
Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.	Less than Significant Impact.	No mitigation is required.	Less than Significant Impact.
Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.	Less than Significant Impact.	No mitigation is required.	Less than Significant Impact.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water	No Impact.	No mitigation is required.	No Impact.
Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Potentially Significant Impact.	**Mitigation Measure GEO-1:** Subsequent to a preliminary City review of the project grading plans, if there is evidence that a project will include excavation or construction activities within previously undisturbed soils, a field survey and literature search for unique paleontological/geological resources shall be conducted. The following procedures shall be followed: ● If unique paleontological/geological resources are not found during either the field survey or literature search, excavation and/or construction activities can commence. In the event that unique paleontological/geological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified paleontologist shall be consulted to determine whether the resource requires further study. The qualified paleontologist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to, excavation of the finds and evaluation of the finds. If the resources are determined to be significant, mitigation measures shall be identified by the monitor and recommended to the lead agency. Appropriate mitigation measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the lead agency approves the measures to protect these resources. Any paleontological/geological resources recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study. ● If unique paleontological/geological resources are found during the field survey or literature review, the resources shall be inventoried and evaluated for significance. If the resources are	Less Than Significant Impact.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		found to be significant, mitigation measures shall be identified by the qualified paleontologist. Similar to above, appropriate mitigation measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. In addition, appropriate mitigation for excavation and construction activities in the vicinity of the resources found during the field survey or literature review shall include a paleontological monitor. The monitoring period shall be determined by the qualified paleontologist. If additional paleontological/geological resources are found during excavation and/or construction activities, the procedure identified above for the discovery of unknown resources shall be followed.	
LAND USE AND PLANNING			
Physically divide an established community.	No Impact.	No mitigation is required.	No Impact.
Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	No Impact.	No mitigation is required.	No Impact.
MINERAL RESOURCES			
Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.	No Impact.	No mitigation is required.	No Impact.
Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan	No Impact.	No mitigation is required.	No Impact.
POPULATION AND HOUSING			
Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).	Less than Significant Impact.	No mitigation is required.	Less than Significant Impact.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.	No Impact.	No mitigation is required.	No Impact.
PUBLIC SERVICES			
Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:			
Fire protection?	Less than Significant Impact.	No mitigation is required.	Less than Significant Impact.
Police protection?	Less than Significant Impact.	No mitigation is required.	Less than Significant Impact.
Schools?	No Impact.	No mitigation is required.	No Impact.
Parks?	Less than Significant Impact.	No mitigation is required.	Less than Significant Impact.
Other public facilities?	Less than Significant Impact.	No mitigation is required.	Less than Significant Impact.
RECREATION			
Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.	No Impact.	No mitigation is required.	No Impact.
Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	No Impact.	No mitigation is required.	No Impact.
WILDFIRE			
Substantially impair an adopted emergency response plan or emergency evacuation plan.	No Impact.	No mitigation is required.	No Impact.

Table 2.A: Executive Summary Matrix

Potential Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.	No Impact.	No mitigation is required.	No Impact.
Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.	No Impact.	No mitigation is required.	No Impact.
Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.	No Impact.	No mitigation is required.	No Impact.

This page intentionally left blank

3.0 PROJECT DESCRIPTION

The following describes the proposed 2740 West Nielsen Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map Application No. P21 05930) proposed by Scannell Properties (Project Applicant). The project would consist of developing a 48.03-acre project site into four office/warehouse buildings with a total area of 901,438 square feet. The City of Fresno (City) is the lead agency for review of the proposed project under the California Environmental Quality Act (CEQA).

Pursuant to Section 15124(c) of the CEQA Guidelines, this chapter includes a description of the proposed project's location, objectives, and technical, economic, and environmental characteristics, which is followed by a summary of the intended uses of the EIR, including a list of agencies that are expected to use the EIR in their decision-making, a list of required permits and other approvals required to implement the project, and a list of related environmental review and consultation requirements required by federal, State, or local laws, regulations, or policies.

3.1 PROJECT LOCATION

The following section describes the location and characteristics of the project site and provides a brief overview of the existing land uses within and in the vicinity of the project site.

3.1.1 Regional Location and Access

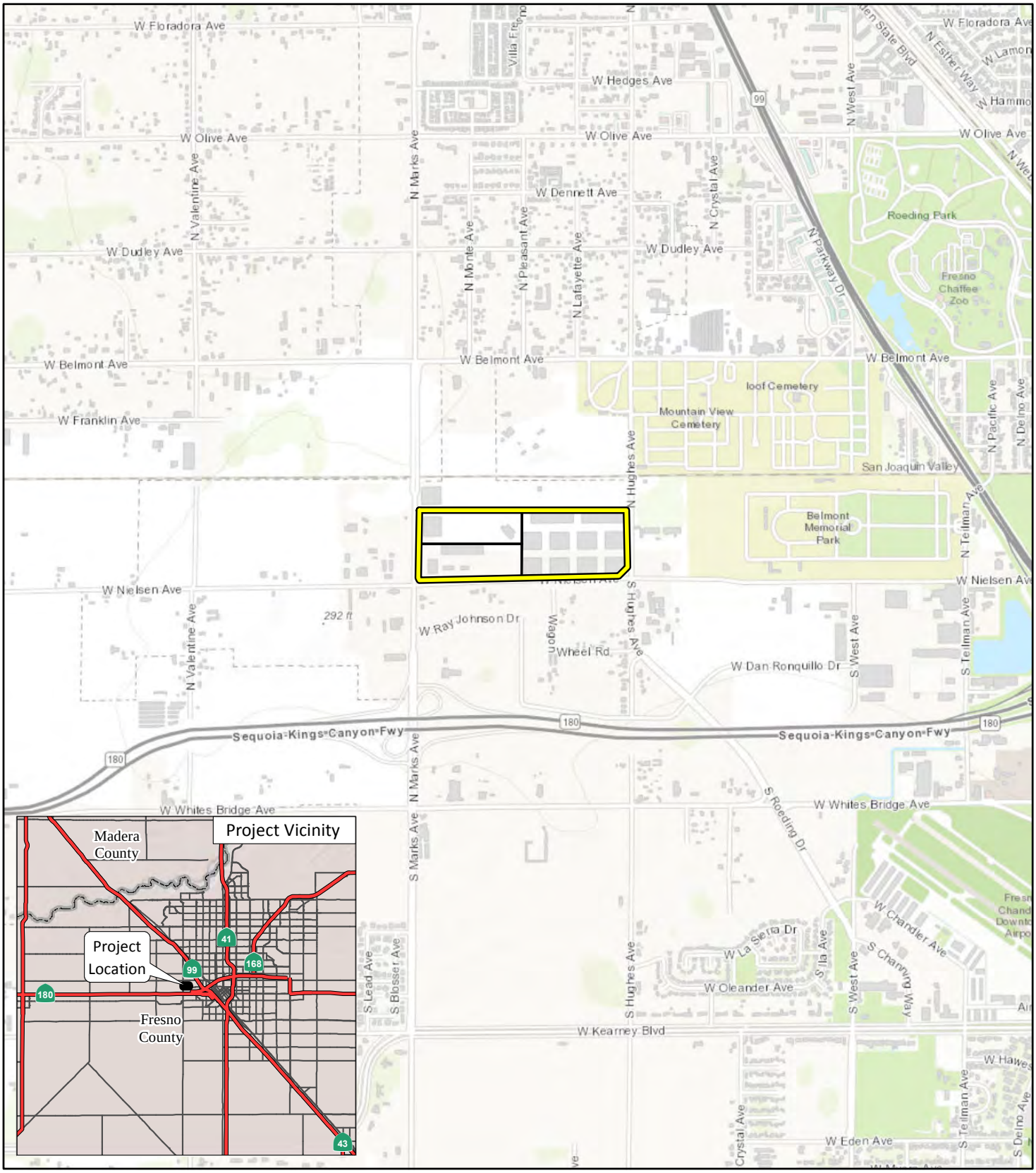
The approximately 48.03-acre project site is located in the City of Fresno, on the northeast corner of the intersection of North Marks Avenue and West Nielsen Avenue and (Assessor's Parcel Number [APNs] 458-020-71 and 458-020-72). The project site itself is generally bounded to the north by vacant, undeveloped land and industrial uses, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue. Figure 3-1 shows the project site's regional and local context.

Regional access to the site is provided by State Route 180 (SR-180), which is located approximately 0.3 mile south of the project site and traverses the City in an east-west direction, and State Route 99 (SR-99), which is located approximately 0.8 miles east of the project site and traverses the City in a north-south direction.

The City of Fresno is located in Fresno County in the central San Joaquin Valley. The City is located approximately 200 miles north of Los Angeles, and 170 miles south of Sacramento. To the north of Fresno is Madera County, to the northeast and adjacent to Fresno, is the City of Clovis. Unincorporated land is located to the east, south, and west of Fresno. The Fresno Chandler Executive Airport is located approximately 0.8 mile from the project site, the Sierra Sky Airport is located approximately 6.7 miles from the project site, and the Fresno International Airport is located approximately 7.1 miles from the project site.

Fresno Area Express (FAX) is the Transportation Service Agency within the City and is responsible for coordinating transit services within its service area. FAX provides services via Route 1/Q (Bus Rapid

This page intentionally left blank



LSA

LEGEND

Project Location

Proposed Parcels

N

0 1000 2000

FEET

FIGURE 3-1

2740 West Nielsen Avenue Office/Warehouse Project

Regional Project Location

SOURCE: Esri Topographic Map (2021)

I:\SNN2102\GIS\MXD\Project_Location.mxd (6/7/2021)

This page intentionally left blank

Transit) as well as 17 other routes throughout the City, and four routes for Clovis Transit. There are currently no transit routes present within the project area.

3.1.2 Site Characteristics and Existing Site Conditions

The project site consists of a vacant urban lot with ruderal vegetation surrounded by chain link fencing. The site was formerly occupied by an industrial warehouse that has since been demolished.

3.1.3 Existing Zoning and General Plan Land Use Designation

The project site is zoned within the Heavy Industrial District (IH). The IH district allows for manufacturing, assembly, wholesaling, distribution, and storage activities that are essential to the development of a balanced economic base. Small-scale commercial services and ancillary office uses are also permitted. The Heavy Industrial (IH) zoning districts are intended to accommodate the broadest range of industrial uses on sites identified in the General Plan.

The project site is designated Heavy Industrial in the City of Fresno General Plan. This land use is intended to accommodate the broadest range of industrial uses including manufacturing, assembly, wholesaling, distribution, and storage activities that are essential to the development of a balanced economic base. Small-scale commercial services and ancillary office uses are also permitted. The maximum floor area ratio (FAR) is 1.5.

3.1.4 Surrounding Land Uses

The project site is surrounded by low density residential, light and heavy industrial, and cemetery uses, as well as vacant, undeveloped land, as indicted in Table 3.A. Figure 3-2 shows the project site and surrounding land uses. Photographs of existing site conditions are depicted in Figures 3-3 and 3-4.

Table 3.A: Surrounding Land Uses and Setting

	Planned Land Use	Existing Zoning	Existing Land Use
North	Heavy Industrial	Heavy Industrial (IH)	Heavy Industrial
East	Light Industrial	Light Industrial (IH)/ Public and Institutional (PI)	Light Industrial/ Public Facilities
South	Highway & Auto/ Business Park	Commercial Highway & Auto (CH)/ Business Park (BP)	Highway & Auto/ Business Park
West	Light Industrial	Light Industrial (IH)	Light Industrial

Source: Compiled by LSA (September 2022).

As indicated in Table 3.A above, the areas adjacent to the project site include the following uses:

- **North:** Existing vacant, undeveloped land and industrial uses;
- **East:** Cemetery and industrial uses opposite North Hughes Avenue;
- **South:** Existing single-family residential and industrial uses and vacant, undeveloped land opposite West Nielsen Avenue; and
- **West:** Existing industrial uses opposite North Marks Avenue.

This page intentionally left blank

LSA

FIGURE 3-2

Project Site

Proposed Parcels

N

0 500 1000

FEET

2740 West Nielsen Office/Warehouse Project

Aerial Photograph of Project Site and Surrounding Land Uses

SOURCES: Google Earth, 9/9/2019; LSA 2021

FreP:\SNN2102 2740 W. Nielsen\PRODUCTS\Graphics\Figure 2.ai (1/20/2022)

This page intentionally left blank

LSA

FIGURE 3-3

2740 West Nielsen Avenue Office/Warehouse Project

Existing Photos of the Project Site from West Nielsen Avenue

SOURCE: LSA, 2022

I:\SNN2102\G\Exist Photos of Site from W Nielsen Ave.ai (10/18/2022)

This page intentionally left blank

LSA

FIGURE 3-4

2740 West Nielsen Avenue Office/Warehouse Project
Existing Photos of the Project Site from North Marks Avenue

SOURCE: LSA, 2022

I:\SNN2102\G\Exist Photos of Site from N Marks Ave.ai (10/18/2022)

This page intentionally left blank

3.2 PROJECT OBJECTIVES

The objectives of the proposed project are to:

- Provide industrial warehousing consistent with the General Plan land use and zoning designation and that helps fulfil the unmet demands of businesses located in the City;
- Provide a variety of new employment opportunities for the residents of Fresno and surrounding communities;
- Provide new industrial development that is attractive and minimizes conflicts with the surrounding existing uses; and
- Promote sustainable development and operations.

3.3 PROPOSED PROJECT

The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. The proposed project would also subdivide the project site into four separate parcels and would consist of each proposed building on a separate parcel. Figure 3-5 shows the project site plan.

As identified above, future tenants have not been identified. Therefore, it is conservatively assumed that the proposed project would be operational 24 hours per day, 7 days per week; however, it is possible that future tenants may operate fewer hours.

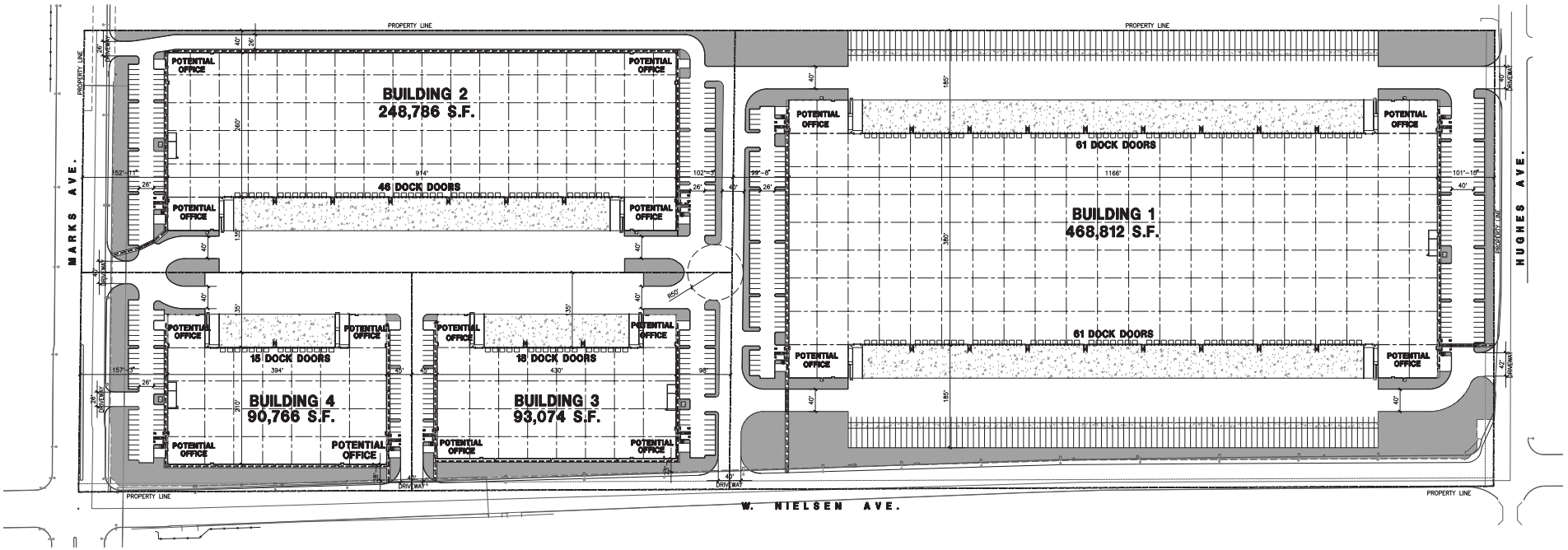
The proposed project would comply with the latest California Green Building Standards Code (CALGreen) building measures and 2022 Title 24 Building Energy Efficiency Standards (Title 24 Standards). The proposed project would also include cool roof materials.

3.3.1 Access, Circulation, and Parking

As shown in Figure 3-5, vehicular access to the site would be provided by North Hughes Avenue, West Nielsen Avenue, and North Marks Avenue.

A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining

This page intentionally left blank



LSA

FIGURE 3-5

0 120 240

FEET

N

2740 West Nielsen Office/Warehouse Project

Site Plan

SOURCE: HPA Architecture, Inc., 2021

FreP:\SNN2102 2740 W. Nielsen\PRODUCTS\Graphics\Figure 3.ai (10/5/2021)

This page intentionally left blank

188 spaces would be dedicated for trailers and would be located along the eastern and western edges of the project site and would be located behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.

3.3.2 Open Space and Landscaping

Consistent with City requirements, landscaping would be provided throughout the project site. The project would also include a vegetative plan that includes the planning of trees and other landscaping materials throughout the perimeter of the project site.

3.3.3 Utilities and Infrastructure

The project site is located in an urban area and is currently served by existing utilities, including: water, sanitary sewer, storm drainage, electricity, and natural gas infrastructure. Proposed utility connections are discussed below.

3.3.3.1 Water

Water service to the project site would be provided by the City. New water within the project site would connect to the existing 14-inch main located on North Marks Avenue, the 14-inch main on West Nielsen Avenue, and the 16-inch main on North Hughes Avenue. The project would also include an on-site private 12-inch main.

3.3.3.2 Wastewater

The City would provide wastewater collection and treatment for the proposed project, and maintains an existing 12- to 18-inch line located in West Nielsen Avenue, a 36-inch main on North Marks Avenue, and an 8-inch main located on North Hughes Avenue. The proposed project includes the installation of a new on-site private 8-inch wastewater line that would connect to the City's existing lines.

3.3.3.3 Stormwater

The proposed project would include construction of a new curb and gutter along North Marks Avenue, West Nielsen Avenue, and North Hughes Avenue that would connect to the existing Fresno Metropolitan Flood Control District (FMFCD) stormwater system.

3.3.3.4 Solid Waste

Solid waste collection for the project site would be provided by the City of Fresno through the Department of Public Utilities (DPU) Solid Waste and Recycling Division.

3.3.3.5 Electricity, Natural Gas and Telecommunication

Electricity and natural gas services to the site are provided by Pacific Gas and Electric Company (PG&E). Existing underground utility connections and gas mains provide electricity and gas to the project site. New underground electrical lines would be installed. Telecommunication services to the project site would be provided by Comcast and AT&T.

3.3.4 Grading and Construction

The proposed project would include demolition of the existing asphalt on the project site, which would be collected and hauled off site for disposal. Construction of the proposed project is anticipated to occur in two phases occurring over a total 24-month period starting in the third quarter of 2023 and ending in 2025. The first phase would include the construction of Buildings 2, 3, and 4 and would occur for 12 months. The second phase would include the construction of Building 1 and would occur for 12 months. The proposed project would not require any soil import or export.

3.4 APPROVALS/PERMITS

While the City is the CEQA Lead Agency for the project, other agencies also have discretionary authority related to the project and approvals, or serve as a responsible and/or trustee agency in connection to the project. A list of these agencies and potential permits and approvals that may be required is provided below.

- City of Fresno, Certification of an Environmental Impact Report (EIR)
- City of Fresno, Design Review
- City of Fresno, Tentative Parcel Map
- City of Fresno, water connection(s)
- City of Fresno, sanitary sewer connection(s)
- Pacific Gas & Electric (PG&E), electrical and natural gas connection
- Central Valley Regional Water Quality Control Board (RWQCB) Storm Water Pollution Prevention Plan
- San Joaquin Valley Air Pollution Control District (SJVAPCD) (e.g., Dust Control Plan Approval letter and compliance with Rule 9510 – Indirect Source Review)

4.0 EVALUATION OF ENVIRONMENTAL IMPACTS

This chapter contains an analysis of each potentially significant environmental issue that has been identified for the proposed 2740 West Nielsen Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map No. P21 05930) ("proposed project"). The following: 1) identifies how a determination of significance is made; 2) identifies the environmental issues addressed in this chapter; 3) describes the context for the evaluation of cumulative effects; 4) lists the format of the topical issue section; and 5) provides an evaluation of each potentially significant issue in Sections 4.1 through 4.11.

4.1 DETERMINATION OF SIGNIFICANCE

Under the California Environmental Quality Act (CEQA), a significant effect is defined as a substantial, or potentially substantial, adverse change in the environment. The CEQA Guidelines direct that this determination be based on scientific and factual data. The impact evaluation in this chapter is prefaced by criteria of significance, which are the thresholds for determining whether an impact is significant. These criteria of significance are based on the CEQA Guidelines and applicable City policies.

4.2 ISSUES ADDRESSED IN THE DRAFT EIR

Sections 4.1 through 4.11 of this chapter describe the environmental setting of the project as evaluated in this Environmental Impact Report (EIR) and the impacts that are expected to result from implementation of the proposed project. Mitigation measures are proposed to reduce potential impacts, where appropriate.

4.1 Aesthetics
4.2 Air Quality
4.3 Biological Resources
4.4 Cultural and Tribal Cultural Resources
4.5 Energy
4.6 Greenhouse Gas Emissions
4.7 Hazards and Hazardous Materials
4.8 Hydrology and Water Quality
4.9 Noise
4.10 Transportation
4.11 Utilities and Service Systems

It has been determined that the following potential environmental effects of the proposed project would be less than significant or have no impact, and therefore, these topics are "scoped out" and not further studied in detail in this EIR: agriculture and forestry resources, geology and soils, land use and planning, population and housing, mineral resources, public services, recreation, and wildfire. Each of these topic areas is summarized in the Initial Study (Appendix B) prepared for the proposed project.

4.3 CUMULATIVE ANALYSIS CONTEXT

CEQA defines cumulative impacts as "two or more individual effects which, when considered together, are considerable, or which can compound to increase other environmental impacts." Section 15130 of the CEQA Guidelines requires that an EIR evaluate potential environmental impacts when the project's incremental effect is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of "reasonably foreseeable probable future" projects, per CEQA Section 15355. Cumulative impacts can result from a combination of the proposed project together with other closely related projects that cause an adverse change in the environment. Cumulative impacts can result from individually minor but collectively significant projects taking place over time.

The methodology used for assessing cumulative impacts typically varies depending on the specific topic being analyzed. CEQA requires that cumulative impacts be discussed using either a list of past, present, and probable future projects producing related or cumulative impacts, or a summary of projections contained in an adopted local, regional, or Statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. This EIR uses both approaches to evaluate cumulative impacts, and the particular approach used depends on the topical area under consideration. Refer to the cumulative discussion in the individual topic sections for further discussion and the identification of the cumulative study are for each topic.

The cumulative context for land use development project effects is typically localized within the immediate vicinity of the project site or at the neighborhood level. Cumulative development in the project vicinity includes the projects listed in Table 4.A. For purposes of such analysis, cumulative projects are typically those within a 1-mile radius of the project site; however, to be conservative, this analysis includes projects within an approximately 2-mile radius of the project site. These projects are either projects for which the City has a project application on file or projects that have been entitled but were not yet operational at the time that the EIR analysis began (September 2022). Refer to the appropriate discussion in each topical section for further discussion of the cumulative assumptions relevant to each issue topic.

Table 4.A: Cumulative Projects in the Vicinity of the Project Site

Project/Location	Project Description	Project Status
Appliance Storage and Distribution Warehouse (1625 West Nielsen Avenue)	The project (Development Permit Application No. P21-02699) proposes the development of approximately 6.43 acres of property located in the southeast quadrant of Nielsen Avenue and Hughes Avenue with a 53,760 square foot warehouse, a future warehouse expansion of approximately 50,193 square feet, and a second future building of approximately 6,271 square feet. The project would not require changes to the Development Code, General Plan, Community Plan, Specific Plan, or Zoning Maps.	Under review
Truck Service Facility (50 South Hughes Avenue)	The project (Development Permit Application No. P19-02113) was filed by Sandeep Seghal of Royalty Holding Services Inc. and pertains to the 5.86 acres located at 50 South Hughes Avenue (Assessor's Parcel Number [APN]: 458-050-39). The applicant proposes to construct a new 26,143-square-foot truck service facility for truck repair, lube, washing, and tire repair. The parcel is zoned BP/UGM.	Compliance review
Truck Wash Building (125 South Pleasant)	The project (Development Permit Application No. P21-05148) was filed by Cynthia Zamora of CE Design Group and pertains to the 6.91 acres located at 125 South Pleasant. The applicant proposes a 9,090-square-foot new truck wash building and fully develop the site. The parcel is zoned BP/UGM.	On hold/under review
Large Vehicle and Equipment Sales (1984 West Dan Ronquillo Drive)	The project (Conditional Use Permit Application No. P22-04254) was filed by Nik Kirby of WW Enterprises on behalf of Jesus Sandoval and pertains to approximately 1.12 acres of property generally located on the northwest corner of South Roeding Drive and West Dan Ronquillo Drive, at 1984 West Dan Ronquillo Drive (APN 458-090-80). The application proposes construction of an approximately 3,750 square-foot building, including 3 service bays and attached 1,000 square-foot canopy. The project would be utilized by a large vehicle and equipment sales and service use. In addition, on and off-site improvements are proposed, including one new drive approach, 5 parking stalls, trash enclosure, fencing, landscaping, curbs, gutters, and sidewalks. The project would operate Monday through Friday 7:00 a.m. to 6:00 p.m.. The property is zoned CG (Commercial General).	On hold/under review
Single-Family Residential (Vesting Tentative Tract Map Nos. 5456, 5463, 6183, and 6184)	Development Agreement by and between the City of Fresno and Fagundes Bros. Dairy, relating to the development of the Oasis Master Plan Area, which consists of a total of 599 single-family residential homes as a component of Vesting Tentative Tract Map Nos. 5456, 5463, 6183, and 6184.	Approved

Source: City of Fresno, 2023

4.4 FORMAT OF ISSUE SECTIONS

The environmental topical section comprises two primary parts: 1) Environmental Setting, and 2) Impacts and Mitigation Measures. An overview of the general organization and the information provided in the two parts is provided below:

- **Environmental Setting.** The Environmental Setting section for the environmental topic generally provides a description of the applicable physical setting (e.g., existing land uses, existing traffic conditions) for the project site. An overview of regulatory considerations that are applicable to each specific environmental topic is also provided.

- **Impacts and Mitigation Measures.** The Impacts and Mitigation Measures section for the environmental topic presents a discussion of the impacts that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine whether an impact is significant. The latter part of this section presents the impacts from the proposed project and mitigation measures, as appropriate. Cumulative impacts are also addressed.

Impacts are numbered and shown in bold type, and the corresponding mitigation measures are numbered and indented. Impacts and mitigation measures are numbered consecutively and begin with an acronymic or abbreviated reference to the impact section (e.g., TRA for Transportation). The following symbols are used for individual topics:

AES	Aesthetics
AIR	Air Quality
BIO	Biological Resources
CUL	Cultural Resources and Tribal Cultural Resources
EN	Energy
GHG	Greenhouse Gas Emissions
HAZ	Hazards and Hazardous Materials
HYDRO	Hydrology and Water Quality
NOI	Noise
TRA	Transportation
UTL	Utilities and Service Systems

Impacts are also categorized by type of impact, as follows: No Impact, Less-Than-Significant, Less-Than-Significant with Mitigation Incorporated, and Potentially Significant.

4.5 ENVIRONMENTAL ISSUES

Sections 4.1 through 4.11 of this chapter describe the environmental setting of the project as it relates to each specific environmental topic evaluated in the EIR and the impacts that are expected to result from implementation of the proposed project. Mitigation measures are proposed to reduce potential impacts, where appropriate.

4.1 AESTHETICS

This section describes the existing visual and aesthetic resources of the project site and evaluates the potential for changes in aesthetic character that could result from implementation of the proposed project. This section also evaluates the potential loss of existing visual resources, effects on public views, visual compatibility with existing uses, and light and glare impacts.

4.1.1 Environmental Setting

This section provides a discussion of the existing visual and aesthetic resources in the project area.

4.1.1.1 Project Site and Surroundings

The 48.03-acre project site is currently vacant and located in the Heavy Industrial (IH) zoning district of the City of Fresno. The project site consists of a generally level, vacant lot with ruderal vegetation surrounded by chain link fencing. In addition, the project site is mainly paved over with a few areas of exposed soils; however, the soils are heavily disturbed. The site is mostly barren of vegetation; however, ruderal vegetation does occur in pavement cracks and in unpaved areas. The project site is bounded to the north by vacant, undeveloped land, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue. Nearby parcels consist mostly of low density residential, light and heavy industrial, and cemetery uses, and vacant, undeveloped land. Surrounding buildings generally consist of one-story, ranch single-family residences and low rise, primarily one- to two-story industrial buildings.

4.1.1.2 Scenic Resources

Scenic resources are defined as natural or man-made elements that contribute to an area's scenic value and are visually pleasing. Scenic resources include landforms, vegetation, water, or adjacent scenery and may include a cultural modification to the natural environment. The degree to which these resources are present in a community is subject to personal and cultural interpretation. However, it is possible to qualify certain resources as having aesthetic characteristics and establish general guidelines for assessing the aesthetic impacts of new development.

Scenic resources within the City of Fresno include landscaped open space areas including parks and golf courses; areas along the San Joaquin River due to varying topography; and the San Joaquin River Bluffs, which provide a unique geological feature in the San Joaquin Valley. Man-made scenic resources include historic buildings in Downtown Fresno, which provide a unique skyline. However, there are no trees, rock outcroppings, and/or historic buildings located on or near the project site that have been identified as important scenic resources or would otherwise constitute significant landscape features.

4.1.1.3 Scenic Vistas

A scenic vista is viewpoint that provides expansive views of a highly valued landscape for the public's benefit. It is usually viewed from some distance away. Aesthetic components of a scenic vista include (1) scenic quality; (2) sensitivity level; and (3) view access. A scenic vista can be impacted in two ways: a development project can have visual impacts by either directly diminishing the scenic quality of the vista or by blocking the view corridors or "vista" of the scenic resource. Important

factors in determining whether a proposed project would block scenic vistas include the project's proposed height, mass, and location relative to surrounding land uses and travel corridors. Typical scenic vistas are locations where views of rivers, hillsides, and open space areas are accessible from public vantage points.

Although no scenic vista has been designated for the City, the City's General Plan identifies six locations along the San Joaquin River Bluffs as designated vista points from which views should be maintained.[1] However, the project site is located approximately 8 miles south of the San Joaquin River Bluffs. Additionally, there are several locations throughout the eastern portion of the City that provide distant views of the Sierra Nevada foothills.

4.1.1.4 Scenic Corridors

Scenic corridors are channels that facilitate movement (primarily by automobile, transit, bicycle, or foot) from one location to another with expansive views of natural landscapes that may also include visually attractive development. Scenic corridors analyzed under the California Environmental Quality Act (CEQA) typically include State-designated scenic highways or local corridors defined in applicable planning documents. According to the California Department of Transportation (Caltrans) State Scenic Highway Mapping System, there are no eligible or officially designated State Scenic Highways within the City of Fresno.[2] However, Fresno County has three eligible State Scenic Highways; the nearest eligible highways include a portion of SR 180 (approximately 7 miles east of the City) and a portion of SR 168 (approximately 5 miles east of the City). The nearest officially designated State Scenic Highway is located more than 30 miles northeast of the City within the County of Madera. The City of Fresno General Plan does not identify any scenic corridors within the City.

4.1.1.5 Visual Character and Quality

The visual aesthetic character or quality of a streetscape, building, group of buildings, or other man-made or natural feature creates an overall impression of an area within an urban context. For example, a scenic vista along the boundary of a community, a pleasing streetscape with trees, and well-kept residences and yards are scenic resources that create a pleasing impression of an area. In general, concepts of visual character and quality can be organized around four basic elements: (1) site utilization; (2) buildings and structures; (3) landscaping; and (4) signage. Adverse visual quality effects can include the loss of aesthetic features or the introduction of contrasting features that could contribute to a decline in overall visual character. In addition, the degree of access to a visual resource contributes to the value of that resource so that an adverse visual quality effect can also occur if access to a visual resource is restricted.

---

1 City of Fresno. 2014. Fresno General Plan. Chapter 5: Parks, Open Space, and Schools. Figure POSS-2: San Joaquin River Parkway Path & Trail Access Points. pg.5-19. Website: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2019/07/General-Plan-5-Parks-Open-Space-and-Schools-7-19.pdf (accessed September 1, 2022).

2 Caltrans. 2017. Scenic Highway Program. Website: dot.ca.gov/-/media/dot-media/programs/ design/ documents/2017-03desigandeligible-a11y.xlsx (accessed September 6, 2019).

The visual quality and character of the project site is characterized by various aesthetic attributes including low density residential, light and heavy industrial, cemetery, and vacant, undeveloped uses. Surrounding buildings generally consist of one-story, ranch single-family residences and low rise, primarily one- to two-story industrial buildings.

4.1.1.6 Light Sources and Glare

A light source is a device that produces illumination, including incandescent and light-emitting diode (LED) bulbs, fluorescent and neon tubes, halogen and other vapor lamps, and reflecting surfaces or refractors incorporated into a lighting fixture. Any translucent enclosure of a light source is considered to be part of the light source. Glare is defined as a continuous or periodic intense light that may cause eye discomfort or be temporarily blinding to humans.

The project site and surrounding area is urbanized and is subject to preexisting sources of light and glare, including streetlights and light emitted from residential and non-residential buildings. Cemetery, and vacant, undeveloped lands that are located within the project area are not characterized by significant sources of light and glare.

4.1.2 Regulatory Setting

4.1.2.1 Federal Regulations

No federal policies or regulations pertaining to aesthetics are applicable to the proposed project.

4.1.2.2 State Regulations

Caltrans Scenic Highway Program. The Caltrans Scenic Highway Program protects the natural scenic beauty of the State's highways and corridors through designating scenic highways throughout the State. Caltrans defines a scenic highway as any freeway, highway, road, or other public right-of-way that traverses an area of exceptional scenic quality. Other considerations given to a scenic highway designation include how much of the natural landscape a traveler may see and the extent to which visual intrusions degrade the scenic corridor.

California Building Energy Efficiency Standards. Title 24, Part 6 of the California Code of Regulations outlines mandatory provisions for lighting control devices and luminaires for all new developments. This code encourages buildings (both residential and nonresidential) to be constructed and operated utilizing energy-efficient development strategies.

4.1.2.3 Local Regulations

City of Fresno General Plan. The City of Fresno's General Plan Urban Form, Land Use, and Design Element includes objectives and policies that work to establish a comprehensive Citywide land use planning strategy to meet economic development objectives, achieve efficient and equitable use of resources and infrastructure, and create an attractive living environment. The following policies related to aesthetics are applicable to the proposed project.

- **Policy UF-12-g: Impacts on Surrounding Uses.** Establish design standards and buffering requirements for high-intensity Activity Centers to protect surrounding residential uses from

increased impacts from traffic noise and vehicle emissions, visual intrusion, interruption of view and air movement, and encroachment upon solar access.

- **Policy LU-1-a: Promote Development within the Existing City Limits as of December 31, 2012.** Promote new development, infill, and rehabilitation of existing building stock in the Downtown Planning Area, along BRT corridors, in established neighborhoods generally south of Herndon Avenue, and on other infill sites and vacant land within the City.

- **Policy LU-5-g: Scale and Character of New Development.** Allow new development in or adjacent to established neighborhoods that is compatible in scale and character with the surrounding area by promoting a transition in scale and architectural character between new buildings and established neighborhoods, as well as integrating pedestrian circulation and vehicular routes.

- **Policy D-4-f: Design Compatibility with Residential Uses.** Strive to ensure that all new non-residential land uses are developed and maintained in a manner complementary to and compatible with adjacent residential land uses, to minimize interface problems with the surrounding environment and to be compatible with public facilities and services.

- **Policy LU-2-a: Infill Development and Redevelopment.** Promote development of vacant, underdeveloped, and re-developable land within the City Limits where urban services are available by considering the establishment and implementation of supportive regulations and programs

- **Policy LU-7-b: Business and Industrial Parks.** Promote business and industrial park sites that are of sufficient size, unified in design, and diversified in activity to attract a full range of business types needed for economic growth

- **Policy LU-7-c: Efficiency of Industrial Uses.** Promote industrial land use clusters to maximize the operational efficiency of similar activities.

City of Fresno Municipal Code. The City's Zoning Ordinance (Chapter 15 of the Municipal Code) is intended to provide a guide for the physical development of the city in order to achieve the arrangement of land uses depicted in the approved General Plan, as well as implement goals, objectives, and policies of the approved General Plan. Among the aspects of development regulated by the Municipal Code are types of allowable land uses, setback and height requirements, landscaping, walls, fencing, signage, access, parking requirements, storage areas, and trash enclosures. Article 25, Performance Standards, of the Zoning Ordinance includes standards related to lighting and glare.

4.1.3 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to aesthetics that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the

recommended mitigation measures. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less-than-significant level. Cumulative impacts are also addressed.

4.1.3.1 Significance Criteria

The thresholds for impacts related to aesthetics used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed project would result in a significant impact related to aesthetics if it would:

Threshold 4.1.1 **Have a substantial adverse effect on a scenic vista;**

Threshold 4.1.2 **Substantially damage scenic resources, including, but not limited to, trees, rock out-croppings, and historic buildings within a State scenic highway;**

Threshold 4.1.3 **In non-urbanized areas, substantially degrade the existing visual character or quality public views of the site and its surroundings (Public views are those that are experienced from publicly accessible vantage point). If in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality; or**

Threshold 4.1.4 **Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.**

4.1.3.2 Project Impacts

The following discussion describes the potential impacts related to aesthetics that could result from implementation of the proposed project.

Threshold 4.1.1 **Would the project have a substantial adverse effect on a scenic vista?**

A scenic vista is generally defined as a public vantage point with an expansive view of a significant landscape feature. An impact on scenic vistas is considered significant if it substantially diminishes, blocks, or impedes an expansive view of a significant landscape feature from a public vantage point.

The City of Fresno contains views of highly valued features such as the San Joaquin River, Sierra Nevada foothills, and buildings in Downtown Fresno. The General Plan also identifies six locations along the San Joaquin River Bluffs as designated vista points from which views should be maintained. However, the project site is located approximately 8 miles south of the San Joaquin River Bluffs. Additionally, there are several locations throughout the eastern portion of the City that provide distant views of the Sierra Nevada foothills.

The project site is located in a partially developed area of the city and is not located in an area with expansive or far field views. The proposed project would include the construction of four office/warehouse buildings that would be configured for heavy industrial uses. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed

with a total of 201 loading dock doors on the north and south sides of the buildings. Adjacent parcels consist mostly of single-story residential, and low-rise, primarily one- to two-story, light and heavy industrial, a cemetery, and vacant, undeveloped uses. There are no significant trees, rock outcroppings, and/or historic buildings located on or adjacent to the project site that have been identified as important scenic resources or would otherwise constitute significant landscape features. Therefore, the proposed project would not substantially diminish any scenic vistas within or near the project area and would likewise not substantially block or impede surrounding views. Therefore, the proposed project would result in a less-than-significant impact related to a substantial adverse effect on a scenic vista.

Level of Significance Without Mitigation**:** Less than Significant Impact.

Threshold 4.1.2 Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

According to Caltrans mapping of State Scenic Highways,[3] the County of Fresno has one officially designated State Scenic Highway located along SR-180, east of the City of Fresno. Three eligible State Scenic Highways are also located within the County of Fresno, the nearest of which is located along SR-168 east of the City of Clovis. None of these are in the immediate vicinity of the project site. Since there are no eligible or officially designated State Scenic Highways within the immediate vicinity of the project site, the project would not impact a designated State Scenic Highway. Furthermore, the eligibility of the three State Scenic Highways, scenic resources located within the highway segments or its viewshed would not be impacted by the proposed project. Therefore, no impact on scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway would occur as a result of the proposed project.

Level of Significance Without Mitigation**:** No Impact.

Threshold 4.1.3 In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

The project site is located in a primarily urbanized area surrounded by existing developed uses. The project site is generally level with no existing structures and is disturbed. Nearby parcels consist mostly of low-density residential, light and heavy industrial, cemetery, and vacant, undeveloped uses. Surrounding buildings generally consist of one-story, ranch single-family residences and low rise, primarily one- to two-story industrial buildings. The proposed project would include four office/warehouse buildings that would be configured for heavy industrial uses. Although the

[3] California Department of Transportation (Caltrans). State Scenic Highways. Website: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways (accessed on September 1, 2022).

proposed project would change the visual characteristics of the project site by developing the site with industrial buildings, the design of the project would be consistent with the visual character within the project area.

Additionally, the project site is zoned within the City's Heavy Industrial (IH) district and designated Heavy Industrial in the General Plan. This land use is intended to accommodate the broadest range of industrial uses including manufacturing, assembly, wholesaling, distribution, and storage activities that are essential to the development of a balanced economic base. Small-scale commercial services and ancillary office uses are also permitted. The project would not require a change of the project site's current General Plan land use designation or current zoning and would be consistent with the City's General Plan and Zoning Ordinance. As such, the proposed project would not conflict with any applicable zoning or other regulations governing scenic quality. Therefore, this impact would be less than significant.

Level of Significance Without Mitigation**:** Less than Significant Impact.

Threshold 4.1.4 Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The project site is located in a primarily urbanized area, which is subject to preexisting exterior lighting from surrounding development and existing street lighting.

Construction of the proposed project would include temporary light and glare resulting from construction activities that could adversely affect day or nighttime views. Sources of construction-related light and glare include usage of construction vehicles and equipment; however, construction activities are anticipated to occur primarily during daylight hours and once construction is completed, light and glare from these activities would cease to occur.

The main sources of daytime glare are generally sunlight reflecting from structures and other reflective surfaces and windows. Implementation of the proposed project would introduce new sources of daytime glare through the construction of new structures and use of automobiles traveling to and from the project site. Building materials (i.e., reflective glass and polished surfaces) are the most substantial sources of glare.

Implementation of the proposed project would result in an increase of nighttime lighting levels over current levels in the project area, associated with parking lot lights and security-related lighting in the project site. While compliance with California Building Code (Title 24, California Code of Regulations [CCR]) standards would minimize the proposed project's light and glare impacts, the proposed project's lighting systems could constitute substantial new sources of light relative to baseline conditions if the project's lighting systems are significantly more intense than existing lighting sources or if they are not appropriately shielded to prevent light diffusion. Additionally, the proposed project could create a substantial new source of glare if highly reflective building materials are used.

All exterior lighting at the project site would be pointed downward toward the project site to minimize lighting levels at nearby uses. In addition, the proposed project would be required to

comply with Article 25, Performance Standards, of the Zoning Ordinance, which includes standards related to lighting and glare. Further, Mitigation Measures AES-1 through AES-3 would ensure that the proposed project's lighting systems do not create a substantial new source of light by requiring shielding mechanisms to direct light away from nearby uses. As a result, any new sources of light resulting from the proposed project would not be substantial in the context of existing lighting sources. Implementation of Mitigation Measure AES-4 would ensure that the proposed project's lighting systems do not create a substantial new source of light by imposing a cap on the intensity of lighting systems based on the average intensity of the surrounding streets.

Additionally, while the project does not propose use of highly reflective glass elements or building materials, Mitigation Measure AES-5 requires materials used on building façades to be non-reflective. Therefore, any new source of glare would not be substantial.

Accordingly, with the incorporation of Mitigation Measures AES-1 through AES-5, the project's potential impacts would be less than significant.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measure AES-1: Lighting systems for street and parking areas shall include shields to direct light to the roadway surfaces and parking areas. Vertical shields on the light fixtures shall also be used to direct light away from adjacent light sensitive land uses such as residences.

Mitigation Measure AES-2: Lighting systems for public facilities such as active play areas shall provide adequate illumination for the activity; however, low intensity light fixtures and shields shall be used to minimize spillover light onto adjacent properties.

Mitigation Measure AES-3: Lighting systems for non-residential uses, not including public facilities, shall provide shields on the light fixtures and orient the lighting system away from adjacent properties. Low intensity light fixtures shall also be used if excessive spillover light onto adjacent properties will occur.

Mitigation Measure AES-4: Lighting systems for freestanding signs shall not exceed 100 foot Lamberts (FT-L) when adjacent to streets which have an average light intensity of less than 2.0 horizontal footcandles and shall not exceed 500 FT-L when adjacent to streets which have an average light intensity of 2.0 horizontal footcandles or greater.

Mitigation Measures AES-5: Materials used on building facades shall be non-reflective.

Level of Significance With Mitigation**:** Less than Significant with implementation of Mitigation Measures AES-1 through AES-5.

4.1.3.3 Cumulative Impacts

The cumulative geographical context for aesthetics consists of the project site in addition to past, current, and reasonably foreseeable future projects in the region. Development of the proposed project would result in the construction of four office/warehouse buildings on a currently vacant and disturbed 48.03-acre project site which would contribute to the alteration of the visual character of the region anticipated from growth and development (e.g., growth and development in the City and County of Fresno).

As discussed above, there are no designated scenic vistas or publicly accessible vantage points near the project site that provide views of scenic vistas that would be altered or obstructed as a result of project construction. Similarly, other projects in the project area would also not obstruct or alter views of scenic vistas. Therefore, there would not be a cumulative effect on scenic vistas.

With regard to a cumulative impact on scenic resources within a State Scenic Highway, as noted above, the project site is not within the viewshed of a State Scenic Highway. Since there are no designated State Scenic Highways within or in the vicinity of the project site, the proposed project and any other projects in the project area would not impact eligible or officially designated State Scenic Highways. There would not be a cumulative impact on scenic resources.

The project would not require a change of the project site's General Plan land use designation or the current zoning and would be consistent with the City's General Plan and Zoning Ordinance. As such, the proposed project would not conflict with any applicable zoning or other regulations governing scenic quality. Similarly, other reasonably foreseeable projects would be reviewed by the City for their consistency with the applicable zoning and approved following the determination that they comply with the City's design standards. The development review process is intended to assure the proposed development is well designed, in and of itself, and in relation to surrounding properties, and that individual rights are weighed against the needs and requirements of the community. As a result, cumulative development in the project area, including the proposed project, would not result in a significant cumulative impact on visual quality of this part of the City.

Although the project and other projects in the project area would increase the amount of nighttime light and glare in the City, all projects are subject to the Article 25, Performance Standards, of the Zoning Ordinance, which includes standards related to lighting and glare. Additionally, the project's contribution of the illumination of the night sky would be less than significant with implementation of Mitigation Measures AES-1 through AES-5. As such the proposed project would not contribute to cumulative aesthetic impacts in the study area. Therefore, the combined increase in light and glare would not be substantial. With the implementation of Mitigation Measures AES-1 through AES-5, the project would not make a considerable contribution to cumulative light and glare impacts. The cumulative impact would be less than significant.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measures AES-1 through AES-5 above.

Level of Significance With Mitigation: Less than Significant with implementation of Mitigation Measures AES-1 through AES-5.

4.2 AIR QUALITY

This section has been prepared using the methodologies and assumptions contained in the San Joaquin Valley Air Pollution Control District's (SJVAPCD) Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI). This section describes existing air quality and the regulatory framework for air quality. The section also describes the potential air quality effects of the proposed project, including the effects of construction and operational traffic on regional pollutant levels and health risks. The analysis in this section is based on the California Emissions Estimator Model version 2020.4.0 (CalEEMod) and the findings of the Health Risk Assessment[1] prepared for the proposed project (Appendix C and D, respectively).

4.2.1 Environmental Setting

The following discussion provides an overview of existing air quality conditions in the region and in the City of Fresno. Ambient air quality standards and the regulatory framework are summarized and climate, air quality conditions, and typical air pollutant types and sources are also described.

4.2.1.1 Project Area

The project site is located in the City of Fresno in the San Joaquin Valley Air Basin (SJVAB). The SJVAB consists of Kings, Madera, San Joaquin, Merced, Stanislaus, and Fresno counties, as well as a portion of Kern County. The local agency with jurisdiction over air quality in the Basin is the San Joaquin Valley Air Pollution Control District (SJVAPCD). Regional and local air quality is impacted by topography, dominant airflows, atmospheric inversions, location, and season.

4.2.1.2 Air Pollutants and Health Effects

Both State and federal governments have established health-based ambient air quality standards for six criteria air pollutants: carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and suspended particulate matter. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Two criteria pollutants, O_3 and NO_2, are considered regional pollutants because they (or their precursors) affect air quality on a regional scale. Pollutants such as CO, SO_2, and Pb are considered local pollutants that tend to accumulate in the air locally.

The primary pollutants of concern in the City are O_3, CO, and suspended particulate matter. Significance thresholds established by an air quality district are used to manage total regional and local emissions within an air basin based on the air basin's attainment status for criteria pollutants. These emission thresholds were established for individual development projects that would contribute to regional and local emissions and could adversely affect or delay the air basin's projected attainment target goals for nonattainment criteria pollutants.

Because of the conservative nature of the significance thresholds, and the basin-wide context of individual development project emissions, there is no direct correlation between a single project

[1] LSA. 2023. *Health Risk Assessment for the 2740 West Nielsen Avenue Office/Warehouse Project*. February 3.

and localized air quality-related health effects. One individual project that generates emissions exceeding a threshold does not necessarily result in adverse health effects for residents in the project vicinity. This condition is especially true when the criteria pollutants exceeding thresholds are those with regional effects, such as ozone precursors like nitrogen oxides (NO_X) and reactive organic gases (ROG).

Further, by its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to by itself result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant. In developing thresholds of significance for air pollutants, the air quality districts have considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

Occupants of facilities such as schools, daycare centers, parks and playgrounds, hospitals, and nursing and convalescent homes are considered to be more sensitive than the general public to air pollutants because these population groups have increased susceptibility to respiratory disease. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. Residential areas are considered more sensitive to air quality conditions, compared to commercial and industrial areas, because people generally spend longer periods of time at their residences, with greater associated exposure to ambient air quality conditions. Recreational uses are also considered sensitive compared to commercial and industrial uses due to greater exposure to ambient air quality conditions associated with exercise. These populations are referred to as sensitive receptors.

Air pollutants and their health effects, and other air pollution-related considerations are summarized in Table 4.2.A and are described in more detail below.

Ozone. Ozone (O_3) is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NO_X. The main sources of ROG and NO_x, often referred to as ozone precursors, are combustion processes (including combustion in motor vehicle engines) and the evaporation of solvents, paints, and fuels. Automobiles are typically the largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide. CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles. CO transport is limited – it disperses with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels that adversely affect local sensitive receptors (e.g., residents, schoolchildren, the elderly, and hospital patients). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service (LOS) or with extremely high traffic volumes. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of

Table 4.2.A: Sources and Health Effects of Air Pollutants

Pollutants	Sources	Primary Effects
Ozone (O_3)	● Precursor sources:[1] motor vehicles, industrial emissions, and consumer products.	● Respiratory symptoms. ● Worsening of lung disease leading to premature death. ● Damage to lung tissue. ● Crop, forest, and ecosystem damage. ● Damage to a variety of materials, including rubber, plastics, fabrics, paints, and metals.
Particulate Matter Less than 2.5 Microns in Diameter ($PM_{2.5}$)	● Cars and trucks (especially diesels). ● Fireplaces, woodstoves. ● Windblown dust from roadways, agriculture, and construction.	● Premature death. ● Hospitalization for worsening of cardiovascular disease. ● Hospitalization for respiratory disease. ● Asthma-related emergency room visits. ● Increased symptoms, increased inhaler usage.
Particulate Matter Less than 10 Microns in Diameter (PM_{10})	● Cars and trucks (especially diesels). ● Fireplaces, woodstoves. ● Windblown dust from roadways, agriculture, and construction.	● Premature death and hospitalization, primarily for worsening of respiratory disease. ● Reduced visibility and material soiling.
Nitrogen Oxides (NO_X)	● Any source that burns fuels such as cars, trucks, construction and farming equipment, and residential heaters and stoves.	● Lung irritation. ● Enhanced allergic responses.
Carbon Monoxide (CO)	● Any source that burns fuels such as cars, trucks, construction and farming equipment, and residential heaters and stoves.	● Chest pain in patients with heart disease. ● Headache. ● Light-headedness. ● Reduced mental alertness.
Sulfur Oxides (SO_X)	● Combustion of sulfur-containing fossil fuels. ● Smelting of sulfur-bearing metal ores. ● Industrial processes.	● Worsening of asthma: increased symptoms, increased medication usage, and emergency room visits.
Lead (Pb)	● Contaminated soil.	● Impaired mental functioning in children. ● Learning disabilities in children. ● Brain and kidney damage.
Toxic Air Contaminants (TACs)	● Cars and trucks (especially diesels). ● Industrial sources, such as chrome platers. ● Neighborhood businesses, such as dry cleaners and service stations. ● Building materials and products.	● Cancer. ● Reproductive and developmental effects. ● Neurological effects.

Source: California Air Resources Board (2018).

[1] Ozone is not generated directly by these sources. Rather, chemicals emitted by these precursor sources react with sunlight to form ozone in the atmosphere.

the blood and can cause headaches, nausea, dizziness, and fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Extremely high levels of CO, such as those generated when a vehicle is running in an unventilated garage, can be fatal.

Particulate Matter. Particulate matter is a class of air pollutants that consists of heterogeneous solid and liquid airborne particles from human-made and natural sources. Particulate matter is categorized in two size ranges: PM_{10}, for particles less than 10 microns in diameter, and $PM_{2.5}$, for

particles less than 2.5 microns in diameter. Motor vehicles are the primary generators of particulates, through tailpipe emissions as well as brake pad, tire wear, and entrained road dust. Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities such as construction are other sources of such fine particulates. These fine particulates are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the California Air Resources Board (CARB), studies in the United States and elsewhere have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks, and studies of children's health in California have demonstrated that particle pollution may significantly reduce lung function growth in children.[2] Statewide attainment of particulate matter standards could reduce premature deaths, hospital admissions for cardiovascular and respiratory disease, asthma-related emergency room visits, and episodes of respiratory illness in California.

Nitrogen Dioxide. NO_2 is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO_2 may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. NO_2 decreases lung function and may reduce resistance to infection.

Sulfur Dioxide. SO_2 is a colorless acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO_2 has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease. SO_2 also reduces visibility and the level of sunlight at the ground surface.

Lead. Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery factories. Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the United States Environmental Protection Agency (USEPA) established national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The USEPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of USEPA regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically.

Toxic Air Contaminants. In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. Some examples of TACs include: benzene, butadiene, formaldehyde, and hydrogen sulfide. Potential human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types

[2] California Air Resources Board (CARB). 2020. *Inhalable Particulate Matter and Health ($PM_{2.5}$ and PM_{10})*. Website: ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health (accessed September 2022).

of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

TACs do not have ambient air quality standards, but are regulated by the USEPA, CARB, and the SJVAPCD. In 1998, the CARB identified particulate matter from diesel-fueled engines as a TAC. The CARB has completed a risk management process that identified potential cancer risks for a range of activities and land uses that are characterized by use of diesel-fueled engines.[3] High volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (distribution centers, truck stops) were identified as posing the highest risk to adjacent receptors. Other facilities associated with increased risk include warehouse distribution centers, large retail or industrial facilities, high volume transit centers, and schools with a high volume of bus traffic. Health risks from TACs are a function of both concentration and duration of exposure.

Unlike TACs emitted from industrial and other stationary sources noted above, most diesel particulate matter is emitted from mobile sources—primarily "off-road" sources such as construction and mining equipment, agricultural equipment, and truck-mounted refrigeration units, as well as trucks and buses traveling on freeways and local roadways.

The CARB Diesel Risk Reduction Plan is intended to substantially reduce diesel particulate matter emissions and associated health risks through introduction of ultra-low-sulfur diesel fuel—a step already implemented—and cleaner-burning diesel engines.[4] The technology for reducing diesel particulate matter emissions from heavy-duty trucks is well established, and both State and federal agencies are moving aggressively to regulate engines and emission control systems to reduce and remediate diesel emissions.

High Volume Roadways. Air pollutant exposures and their associated health burdens vary considerably within places in relation to sources of air pollution. Motor vehicle traffic is perhaps the most important source of intra-urban spatial variation in air pollution concentrations. Air quality research consistently demonstrates that pollutant levels are substantially higher near freeways and busy roadways, and human health studies have consistently demonstrated that children living within 100 to 200 meters (328 to 656 feet) of freeways or busy roadways have reduced lung function and higher rates of respiratory disease. At present, it is not possible to attribute the effects of roadway proximity on non-cancer health effects to one or more specific vehicle types or vehicle pollutants. Engine exhaust, from diesel, gasoline, and other combustion engines, is a complex mixture of particles and gases, with collective and individual toxicological characteristics.

Valley Fever. Valley fever is a fungal infection caused by coccidioides organisms. It can cause fever, chest pain and coughing, among other signs and symptoms. The coccidioides species of fungi that cause valley fever are commonly found in the soil in certain areas. These fungi can be stirred into the air by anything that disrupts the soil, such as farming, construction and wind. The fungi can then

[3] CARB. 2000. *Fact Sheet – California's Plan to Reduce Diesel Particulate Matter Emissions*. October. Website: www.arb.ca.gov/diesel/factsheets/rrpfactsheet.pdf (accessed September 2022).

[4] CARB. 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October. Prepared by the Stationary Source Division and Mobile Source Control Division. Website: www.arb.ca.gov/diesel/documents/rrpFinal.pdf (accessed September 2022).

be breathed into the lungs and cause valley fever, also known as acute coccidioidomycosis. A mild case of valley fever usually goes away on its own. In more severe cases of valley fever, doctors prescribe antifungal medications that can treat the underlying infection. Valley Fever is not contagious and therefore does not spread from person to person. Most cases (approximately 60 percent) have no symptoms or only very mild flu-like symptoms and do not see a doctor. When symptoms are present, the most common are fatigue, cough, fever, profuse sweating at night, loss of appetite, chest pain, generalized muscle and joint aches particularly of the ankles and knees. There may also be a rash that resembles measles or hives but develops more often as tender red bumps on the shins or forearms.

4.2.1.3 National and State Ambient Air Quality Standards

Both State and federal governments have established health-based ambient air quality standards for criteria air pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health.

Both the USEPA and the CARB have established ambient air quality standards for the following common pollutants: CO, O_3, NO_2, SO_2, Pb, and suspended particulate matter. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. These ambient air quality standards are levels of contaminants that avoid specific adverse health effects associated with each pollutant.

Federal standards include both primary and secondary standards. Primary standards establish limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, and buildings.[5] State and federal standards for the criteria air pollutants are listed in Table 4.2.B.

4.2.1.4 Existing Climate and Air Quality

The following provides a discussion of the local and regional air quality and climate in the Fresno area.

Regional and Local Air Quality. Air quality is a function of both local climate and local sources of air pollution. The amount of a given pollutant in the atmosphere is determined by the amount of the pollutant released and the atmosphere's ability to transport and dilute the pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain, and for photochemical pollutants, sunshine.

[5] United States Environmental Protection Agency (USEPA). 2017. Criteria Air Pollutants. October. Website: www.epa.gov/criteria-air-pollutants (accessed September 2022).

Table 4.2.B: Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1-Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 µg/m³)		0.070 ppm (137 µg/m³)		
Respirable Particulate Matter (PM_{10})[9]	24-Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		–		
Fine Particulate Matter ($PM_{2.5}$)[9]	24-Hour	–		35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12.0 µg/m³		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	–	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m³)		–	–	
Nitrogen Dioxide (NO_2)[10]	Annual Arithmetic Mean	0.03 ppm (57 µg/m³)	Gas Phase Chemi-luminescence	53 ppb (100 µg/m³)	Same as Primary Standard	Gas Phase Chemi-luminescence
	1-Hour	0.18 ppm (339 µg/m³)		100 ppb (188 µg/m³)	–	
Lead (Pb)[12,13]	30-Day Average	1.5 µg/m³	Atomic Absorption	–	–	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m³ (for certain areas)[l]	Same as Primary Standard	
	Rolling 3-Month Average [i]	–		0.15 µg/m³		
Sulfur Dioxide (SO_2)[11]	24-Hour	0.04 ppm (105 µg/m³)	Ultraviolet Fluorescence	0.14 ppm (for certain areas)	–	Ultraviolet Fluorescence; Spectro-photometry (Pararosaniline Method)
	3-Hour	–		–	0.5 ppm (1300 µg/m³)	
	1-Hour	0.25 ppm (655 µg/m³)		75 ppb (196 µg/m³)[11]	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[11]	–	
Visibility-Reducing Particles [12]	8-Hour	See footnote [14]	Beta Attenuation and Transmittance through Filter Tape	No Federal Standards		
Sulfates	24-Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride [10]	24-Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

Source: Ambient Air Quality Standards (California Air Resources Board 2016).

Table notes continued on the following page

[1] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact USEPA for further clarification and current national policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent measurement method which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the USEPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the USEPA.

[8] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[9] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24- hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[10] To attain the 1-hour national standard, the three-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[11] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the three-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[12] The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[13] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[14] In 1989, the CARB converted both the general Statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the Statewide and Lake Tahoe Air Basin standards, respectively.

°C = degrees Celsius
µg/m^3 = micrograms per cubic meter
CARB = California Air Resources Board
mg/m^3 = milligrams per cubic meter
ppb = parts per billion
ppm = parts per million
USEPA = United States Environmental Protection Agency

The project site is located within the SJVAB and is under the jurisdiction of the SJVAPCD. A region's topographic features have a direct correlation with air pollution flow and therefore are used to determine the boundary of air basins. The SJVAB is comprised of approximately 25,000 square miles and covers of eight counties including Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare, and the western portion of Kern. The SJVAB is defined by the Sierra Nevada mountains in the east (8,000 to 14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 8,000 feet in elevation). The valley is basically flat with a slight downward gradient to the northwest. The valley opens to the sea at the Carquinez Straits where the San Joaquin-Sacramento Delta empties into San Francisco Bay. An aerial view of the SJVAB would simulate a "bowl" opening only to the north. These topographic features restrict air movement through and out of the basin.

Although marine air generally flows into the basin from the San Joaquin River Delta, the Coast Range hinders wind access into the SJVAB from the west, the Tehachapi Mountains prevent southerly passage of air flow, and the high Sierra Nevada range is a significant barrier to the east. These topographic features result in weak air flow which becomes blocked vertically by high barometric pressure over the SJVAB. As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500 to 3,000 feet).

Local climatological effects, including wind speed and direction, temperature, inversion layers, precipitation and fog, can exacerbate the air quality in the SJVAB. Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing vertically and by transporting it to other locations. For example, in the summer, wind usually originates at the north end of the SJVAB and flows in a south-southeasterly direction through the SJVAB, through Tehachapi pass, into the Southeast Desert Air Basin. In the winter, wind direction is reversed and flows in a north-northwesterly direction. In addition to the seasonal wind flow, a sea breeze flows into SJVAB during the day and a land breeze flowing out of the SJVAB at night. The diversified wind flow enhances the pollutant transport capability within SJVAB.

The annual average temperature varies throughout the SJVAB, ranging from the low 40s to high 90s, measured in degrees Fahrenheit (°F). With a more pronounced valley influence, inland areas show more variability in annual minimum and maximum temperatures than coastal areas. The climatological station closest to the site is the Fresno Yosemite International Airport Station (043257). The monthly average maximum temperature recorded at this station from January 1948 to June 2016 ranged from 54.6°F in January to 98.3°F in July, with an annual average maximum of 76.5°F. The monthly average minimum temperature recorded at this station ranged from 35.3°F in December to 65.7°F in July, with an annual average minimum of 50.4F.[6] These levels are still representative of the project area. January and December are typically the coldest months and July is typically the warmest month in this area of the SJVAB.

[6] Western Regional Climate Center. n.d. Fresno Yosemite International Airport (043257), Period of Record Monthly Climate Summary. Website: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3257 (accessed September 2022).

The majority of annual rainfall in the SJVAB occurs between November and March. Summer rainfall is minimal and is generally limited to scattered thundershowers in desert regions and slightly heavier showers near the lower portion of the Basin and along the Sierra Nevada mountains to the east. Average monthly rainfall during that period varied from 0.01 inches in July and August to 2.09 inches in January, with an annual total of 10.89 inches.[7] Patterns in monthly and yearly rainfall totals are predictable due to the recognizable differences in seasons within the valley.

The vertical dispersion of air pollutants in the SJVAB is limited by the presence of persistent temperature inversions. Because of cooling of the atmosphere, air temperature usually decreases with altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. Inversions can exist at the surface, or at any height above the ground. The height of the base of the inversion is known as the "mixing height." This is the level within which pollutants can mix vertically. Air above and below the inversion base does not mix because of the differences in air density. Semi-permanent systems of high barometric pressure fronts frequently establish themselves over the SJVAB, preventing low pressure systems that might otherwise bring rain and winds that clean the air.

Inversion layers are significant in determining ozone formation, and CO and PM_{10} concentrations. Ozone and its precursors will mix and react to produce higher ozone concentrations under an inversion. The inversion will also simultaneously trap and hold directly emitted pollutants such as carbon monoxide. PM_{10} is both directly emitted and created in the atmosphere as a chemical reaction. Concentration levels of pollutants are directly related to inversion layers due to the limitation of mixing space.

Surface or radiation inversions are formed when the ground surface becomes cooler than the air above it during the night. The earth's surface goes through a radiative process on clear nights, where heat energy is transferred from the ground to a cooler night sky. As the earth's surface cools during the evening hours, the air directly above it also cools, while air higher up remains relatively warm. The inversion is destroyed when heat from the sun warms the ground, which in turn heats the lower layers of air; this heating stimulates the ground level air to float up through the inversion layer.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. Periods of low inversions and low wind speeds are conditions favorable to high concentrations of CO and PM_{10}. In the winter, the greatest pollution problems are CO and NO_x because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and oxides of nitrogen to form photochemical smog.

In addition, the Office of Environmental Health Hazard Assessment (OEHHA), on behalf of the California Environmental Protection Agency (CalEPA), released Version 4.0 of the California

[7] Western Regional Climate Center. n.d. Fresno Yosemite International Airport (043257), Period of Record Monthly Climate Summary. Website: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3257 (accessed September 2022.

Communities Environmental Health Screening Tool (CalEnviroScreen) in October 2021. CalEnviroScreen identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution. Pollution Burden scores for each census tract are derived from the average percentiles of the seven Exposures indicators (ozone and $PM_{2.5}$ concentrations, diesel PM emissions, drinking water contaminants, pesticide use, toxic releases from facilities, and traffic density) and the five Environmental Effects indicators (cleanup sites, impaired water bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities). According to the CalEnviroScreen 4.0 Map,[8] the project site has a pollution burden percentile of 97. Surrounding areas have pollution burdens ranging from 56 to 100.0. In addition, according to the Senate Bill (SB) 535 Disadvantaged Communities Map,[9] the project area is designated as an SB 535 disadvantaged community.

Attainment Status. The USEPA and the CARB designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified."

National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Each standard has a different definition, or "form" of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring value exceeds the threshold per year. In contrast, the federal annual $PM_{2.5}$ standard is met if the 3-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard. The current attainment designations for the basin are shown in Table 4.2.C.

Table 4.2.C: SJVAB Air Quality Attainment Status

Pollutant	State	Federal
Ozone (1-hour)	Severe/Nonattainment	Not Applicable
Ozone (8-hour)	Nonattainment	Extreme Nonattainment
PM_{10}	Nonattainment	Attainment (Maintenance)
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment (Maintenance)
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Lead	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified
Sulfates	Attainment	No Federal Regulation
Hydrogen Sulfide	Unclassified	No Federal Regulation

Source: California Air Resources Board and USEPA, 2016.

[8] Office of Environmental Health Hazard Assessment (OEHHA). 2021. *CalEnviroScreen 4.0.* Website: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40 (accessed May 2021).

[9] OEHHA. 2022. *SB 535 Disadvantaged Communities using CalEnviroScreen 4.0 results.* Website: https://experience.arcgis.com/experience/1c21c53da8de48f1b946f3402fbae55c/page/SB-535-Disadvantaged-Communities/.pdf (accessed October 2022).

Air Quality Monitoring Results. Air quality monitoring stations are located throughout the nation and maintained by the local air pollution control district and state air quality regulating agencies. Ambient air data collected at permanent monitoring stations are used by the USEPA to identify regions as attainment or nonattainment depending on whether the regions met the requirements stated in the primary National Ambient Air Quality Standards (NAAQS). Attainment areas are required to maintain their status through moderate, yet effective air quality maintenance plans. Nonattainment areas are imposed with additional restrictions as required by the USEPA. In addition, different classifications of attainment such as marginal, moderate, serious, severe, and extreme are used to classify each air basin in the state on a pollutant-by-pollutant basis. Different classifications have different mandated attainment dates and are used as guidelines to create air quality management strategies to improve air quality and comply with the NAAQS by the attainment date. A region is determined to be unclassified when the data collected from the air quality monitoring stations do not support a designation of attainment or nonattainment, due to lack of information, or a conclusion cannot be made with the available data.

The SJVAPCD, together with CARB, maintains ambient air quality monitoring stations in the SJVAB. The air quality monitoring stations closest to the project area are 4706 E. Drummond St. and 3727 N. First Street in Fresno, California.

Pollutant monitoring results for years 2019 to 2021 at the Fresno monitoring stations, shown in Table 4.2.D indicate that air quality in the vicinity of the City has generally been moderate. As indicated in the monitoring results, the federal PM_{10} standard was exceeded one time in 2019 and 2020 only. The State PM_{10} standard was exceeded 13 times in 2019, 25 times in 2020, and 20 times in 2021. $PM_{2.5}$ levels exceeded the federal standard an unknown number of times during the three-year period. The State 1-hour ozone standards were exceeded 1 time in 2019, 11 times in 2020, and 9 times in 2021. The State 8-hour ozone standards were exceeded 11 times in 2019, 27 times in 2020, and 41 times in 2021. The federal 8-hour standards were exceeded 10 times in 2019, 27 times in 2020, and 39 times in 2021. The CO, SO_2, and NO_2 standards were also not exceeded in this area during the 3-year period.

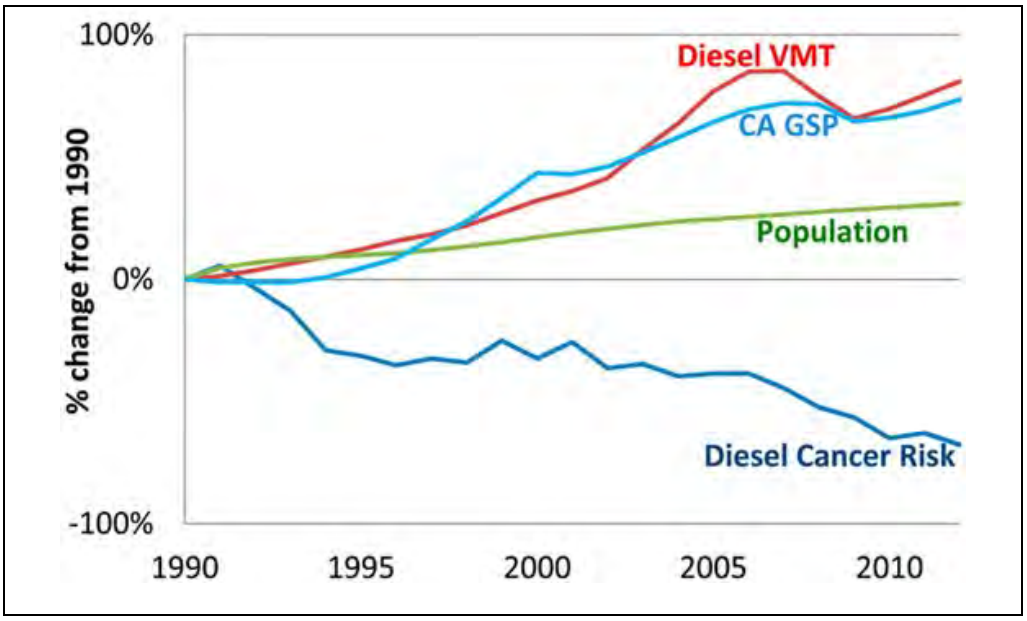
Toxic Air Contaminant Trends. In 1984, the CARB adopted regulations to reduce TAC emissions from mobile and stationary sources, as well as consumer products. A CARB study showed that ambient concentrations and emissions of the seven TACs responsible for the most cancer risk from airborne exposure declined by 76 percent between 1990 and 2012.[10] Concentrations of diesel particulate matter, a key TAC, declined by 68 percent between 1990 and 2012, despite a 31 percent increase in State population and an 81 percent increase in diesel vehicle miles traveled (VMT), as shown on Figure 4.2-1, below. The study also found that the significant reductions in cancer risk to California residents from the implementation of air toxics controls are likely to continue.

[10] Propper, Ralph, et al. 2015. Ambient and Emission Trends of Toxic Air Contaminants in California. *American Chemical Society: Environmental Science & Technology*. Website: pubs.acs.org/doi/full/ 10.1021/acs.est. 5b02766 (accessed September 2022).

Table 4.2.D: Ambient Air Quality at Nearby Monitoring Stations

Pollutant	Standard	2019	2020	2021
Carbon Monoxide (CO)[2]				
Maximum 1-hour concentration (ppm)		1.9	5.0	1.9
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8-hour concentration (ppm)		1.5	2.5	1.7
Number of days exceeded:	State: > 9 ppm	0	0	0
	Federal: > 9 ppm	0	0	0
Ozone (O_3)[1]				
Maximum 1-hour concentration (ppm)		0.099	0.123	0.125
Number of days exceeded:	State: > 0.09 ppm	1	11	9
Maximum 8-hour concentration (ppm)		0.080	0.092	0.100
Number of days exceeded:	State: > 0.07 ppm	11	27	41
	Federal: > 0.07 ppm	10	27	39
Coarse Particulates (PM_{10})[1]				
Maximum 24-hour concentration (µg/m^3)		181.3	349.2	149.8
Number of days exceeded:	State: > 50 µg/m^3	13	25	20
	Federal: > 150 µg/m^3	1	1	0
Annual arithmetic average concentration (µg/m^3)		39.6	ND	ND
Exceeded for the year:	State: > 20 µg/m^3	Yes	ND	ND
	Federal: > 50 µg/m^3	No	ND	ND
Fine Particulates ($PM_{2.5}$)[2]				
Maximum 24-hour concentration (µg/m^3)		51.3	168.6	99.9
Number of days exceeded:	Federal: > 35 µg/m^3	ND	ND	ND
Annual arithmetic average concentration (µg/m^3)		11.2	18.1	15.6
Exceeded for the year:	State: > 12 µg/m^3	No	Yes	Yes
	Federal: > 15 µg/m^3	No	No	No
Nitrogen Dioxide (NO_2)[1]				
Maximum 1-hour concentration (ppm)		0.042	0.066	0.064
Number of days exceeded:	State: > 0.250 ppm	0	0	0
Annual arithmetic average concentration (ppm)		ND	ND	0.0011
Exceeded for the year:	Federal: > 0.053 ppm	ND	ND	No
Sulfur Dioxide (SO_2)[2]				
Maximum 1-hour concentration (ppm)		0.0089	0.0162	0.0075
Number of days exceeded:	State: > 0.25 ppm	0	0	0
Maximum 24-hour concentration (ppm)		0.0021	0.0022	0.0027
Number of days exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.00042	0.00046	0.00043
Exceeded for the year:	Federal: > 0.030 ppm	No	No	No

Sources: CARB (2021) and USEPA (2021).
[1] Data taken from 4706 E. Drummond St., Fresno monitoring station
[2] Data were taken from 3727 N. First Street, Fresno monitoring station
CARB = California Air Resources Board
ND = No data. There were insufficient (or no) data to determine the value.
ppm = parts per million
USEPA = United States Environmental Protection Agency



Source: Ambient and Emission Trends of Toxic Air Contaminants in California (Propper, Ralph, et al. 2015).

Figure 4.2-1: California Population, Gross State Product (GSP), Diesel Cancer Risk, and Diesel Vehicle Miles Traveled (VMT) Regulatory Context

The USEPA and the CARB regulate direct emissions from motor vehicles. The SJVAPCD is the regional agency primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and indirect sources (e.g., traffic associated with new development), as well as monitoring ambient pollutant concentrations.

4.2.2 Regulatory Setting

The USEPA and CARB regulate direct emissions from motor vehicles. The SJVAPCD is the regional agency primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and indirect sources (e.g., traffic associated with new development), as well as monitoring ambient pollutant concentrations.

The applicable federal, State, regional, and local regulatory framework is discussed below.

4.2.2.1 Federal Regulations

Federal Clean Air Act. At the federal level, the USEPA has been charged with implementing national air quality programs. The USEPA air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was enacted in 1963. The FCAA was amended in 1970, 1977, and 1990.

The FCAA required the USEPA to establish primary and secondary NAAQS and required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The FCAA Amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air

basins as reported by their jurisdictional agencies. The USEPA has responsibility to review all state SIPs to determine conformity with the mandates of the FCAA and determine if implementation will achieve air quality goals. If the USEPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area, which imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions on transportation funding and stationary air pollution sources in the air basin.

The USEPA is also required to develop National Emission Standards for Hazardous Air Pollutants, which are defined as those which may reasonably be anticipated to result in increased deaths or serious illness, and which are not already regulated. An independent science advisory board reviews the health and exposure analyses conducted by the USEPA on suspected hazardous pollutants prior to regulatory development.

4.2.2.2 State Regulations

The CARB is the lead agency for implementing air quality regulations in the State. Key efforts by the State are described below.

California Clean Air Act. In 1988, the California Clean Air Act (CCAA) required that all air districts in the State endeavor to achieve and maintain California ambient air quality standards (CAAQS) for carbon monoxide, ozone, sulfur dioxide and nitrogen dioxide by the earliest practical date. The California Clean Air Act provides districts with authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each nonattainment district is required to adopt a plan to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. A Clean Air Plan shows how a district would reduce emissions to achieve air quality standards. Generally, the State standards for these pollutants are more stringent than the national standards.

Legal authority for California to regulate sources of air pollution is found in federal and State law. The CARB is charged with coordinating regional and local efforts to attain and maintain State and nation air quality standards. The CARB has been given authority to regulate many sources that would normally be pre-empted by federal regulations through the issuance of waivers.

Pursuant to these authorities, CARB has adopted the world's most stringent standards for passenger cars, light-duty trucks, and medium-duty vehicles. CARB has also adopted regulations establishing standards for heavy-duty vehicles, offroad vehicles and engines, offroad recreational vehicles, off road diesel engines and equipment, offroad gasoline and liquefied petroleum gas (LPG) engines and equipment, and marine pleasure craft. Descriptions of these regulations are provided below.

Low-Emission Vehicle Program. The CARB first adopted Low-Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent continuing progress in emission reductions. As the State's passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in

the 1994 State Implementation Plan (SIP). In 2012, CARB adopted the LEV III amendments to California's Low- Emission Vehicle (LEV) regulations. These amendments include more stringent emission standards for both criteria pollutants and greenhouse gases for new passenger vehicles.

On-Road Heavy-Duty Vehicle Program. The CARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California's emission standards for on-road heavy-duty engines and vehicles, and test procedures.[11] CARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others.

In addition, the CARB's Truck and Bus regulation was established to meet federal attainment standards. This regulation requires heavy-duty diesel vehicles that operate in California to reduce TAC emissions from their exhaust. Diesel exhaust is responsible for 70 percent of the cancer risk from airborne toxics. Therefore, by January 1, 2023, nearly all trucks and buses will be required to have 2010 or newer model year engines to reduce PM and NO_x emissions. To help ensure that the benefits of this regulation are achieved, starting in 2020, only vehicles compliant with this regulation will be registered by the California Department of Motor Vehicles (DMV).[12]

Air Quality Land Use Handbook. The CARB has developed an Air Quality and Land Use Handbook[13] which is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. According to the CARB Handbook, recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high traffic roadways. Other studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the overall cancer risk from airborne toxics in California. The CARB Handbook recommends that county and city planning agencies strongly consider proximity to these sources when finding new locations for "sensitive" land uses such as homes, medical facilities, daycare centers, schools and playgrounds.

Land use designations with air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners and large gasoline service stations. Key recommendations in the CARB Handbook include taking steps to avoid siting new, sensitive land uses:

- Within 500 feet of a freeway, urban roads with 100,000 vehicles/day or rural roads with 50,000 vehicles/day;

[11] California Air Resources Board. 2019. *On-Road Heavy-Duty Vehicle Program*. Last reviewed July 2. Website: ww3.arb.ca.gov/msprog/onroadhd/onroadhd.htm (accessed September 2022).

[12] California Air Resources Board. 2019. *Truck and Bus Regulation.* Website: ww2.arb.ca.gov/our-work/programs/truck-and-bus-regulation (accessed September 2022).

[13] California Air Resources Board. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective.* April.

- Within 1,000 feet of a major service and maintenance rail yard;
- Immediately downwind of ports (in the most heavily impacted zones) and petroleum refineries;
- Within 300 feet of any dry cleaning operation (for operations with two or more machines, provide 500 feet); and
- Within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater).

The CARB Handbook specifically states that its recommendations are advisory and acknowledges land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

The recommendations are generalized and do not consider site specific meteorology, freeway truck percentages or other factors that influence risk for a particular project site. The purpose of the land use compatibility analysis is to further examine the project site for actual health risk associated with the location of new housing on the project site.

Recommendations on siting new sensitive land uses such as residences, schools, daycare centers, playgrounds, or medical facilities are provided in Table 4.2.E.

Table 4.2.E: Recommendations on Siting New Sensitive Land Uses Near Toxic Air Contaminant Sources

Source Category	Advisory Recommendation
Freeways and High-Traffic Roads	Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week).
	Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Rail Yards	Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Refineries	Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district.
	Do not site new sensitive land uses in the same building with Perchloroethylene dry cleaning operations.
Gasoline Dispensing Facilities	Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gas dispensing facilities.

Source: CARB (2006).
Note: These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

4.2.2.3 Regional Regulations

San Joaquin Valley Air Pollution Control District. The SJVAPCD is responsible for controlling emissions primarily from stationary sources. The SJVAPCD maintains air quality monitoring stations throughout the basin. The SJVAPCD, in coordination with the eight county transportation agencies, is also responsible for developing, updating, and implementing air quality attainment plans for the Air Basin. The SJVAPCD also has roles under CEQA.

Guide for Assessing and Mitigating Air Quality Impacts. The SJVAPCD provides guidance and thresholds for CEQA air quality and greenhouse gas analyses. The result of this guidance as well as State regulations to control air pollution is an overall improvement in the Basin. In particular, the SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) states the following:

The SJVAPCD's Air Quality Attainment Plans include measures to promote air quality elements in county and city general plans as one of the primary means of reducing indirect emissions such as those from land use development projects. The approved General Plan is the primary long range planning document used by cities and counties to direct development. Since air districts have no authority over land use decisions, it is up to cities and counties to ensure that their general plans help achieve air quality goals. Section 65302.1 of the California Government Code requires cities and counties in the San Joaquin Valley to amend appropriate elements of their general plans to include data, analysis, comprehensive goals, policies, and feasible implementation strategies to improve air quality in their next housing element revisions. This was completed for the City of Fresno with the adoption of the Fresno General Plan Resource Conservation and Resilience Element adopted December 18, 2014, which includes an air quality and greenhouse gas emissions section.

The Air Quality Guidelines for General Plans (AQGGP), adopted by the SJVAPCD in 1994 and amended in 2005, is a guidance document containing goals and policy examples that cities and counties may want to incorporate into their General Plans to satisfy Section 65302.1. When adopted in a general plan and implemented, the suggestions in the AQGGP can reduce vehicle trips and miles traveled and improve air quality. The specific suggestions in the AQGGP are voluntary. The SJVAPCD strongly encourages cities and counties to use their land use and transportation planning authority to help achieve air quality goals by adopting the suggested policies and programs. The approved General Plan integrates many of the recommended goals and policies of the AQGGP.

The SJVAB is classified nonattainment for ozone, PM_{10}, and $PM_{2.5}$. The SJVAPCD had adopted project level thresholds based on a cumulative contribution of ozone precursors ROG and NO_x of 10 tons per year and thresholds for PM_{10} and $PM_{2.5}$ of 15 tons per year. Although these thresholds are project specific, a conservative interpretation of this threshold would apply the annual emission thresholds to annual emission generated during continued implementation of the approved General Plan. The combined annual emissions of projects during construction and operation are compared to the annual threshold.

Current Air Quality Plans. The SJVAPCD is responsible for formulating and implementing the Air Quality Management Plan (AQMP) for the Basin. The main purpose of an AQMP is to bring the area into compliance with federal and State air quality standards. The SJVAPCD does not have one single AQMP for criteria pollutants, rather the SJVAPCD address each criteria pollutant with its own Plan. The SJVAPCD has the following AQMPs:

- 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards
- 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ standard
- 2016 Plan for the 2008 8-Hour Ozone Standard
- 2013 Plan for the Revoked 1-Hour Ozone Standard
- 2007 PM_{10} Maintenance Plan
- 2004 Revision to the California State Implementation Plan for Carbon Monoxide

The SJVAPCD's AQMPs incorporate the latest scientific and technological information and planning assumptions, including updated emission inventory methodologies for various source categories. The SJVAPCD's AQMPs included the integrated strategies and measures needed to meet the national ambient air quality standards (NAAQS), implementation of new technology measures, and demonstrations of attainment of the 1-hour and 8-hour ozone NAAQS as well as the latest 24-hour and annual $PM_{2.5}$ standards.

The SJVAPCD's current air quality plans are discussed blow.

Ozone Plans. The SJVAPCD's Governing Board approved the 2016 Plan for the 2008 8-Hour Ozone Standard on June 16, 2016. The comprehensive strategy in this plan will reduce NO_x emissions by over 60 percent between 2012 and 2031, and will bring the San Joaquin Valley into attainment of USEPA's 2008 8-hour ozone standard as expeditiously as practicable, no later than December 31, 2031.

Particulate Matter Plans. The SJVAPCD adopted the 2007 PM_{10} Maintenance Plan in September 2007 to assure the SJVAB's continued attainment of the USEPA's PM_{10} standard. The USEPA designated the valley as an attainment/maintenance area for PM_{10}.

The 2008 $PM_{2.5}$ Plan builds upon the comprehensive strategy adopted in the 2007 Ozone Plan to bring the Basin into attainment of the 1997 national standards for $PM_{2.5}$. The USEPA has identified NO_x and SO_2 as precursors that must be addressed in air quality plans for the 1997 $PM_{2.5}$ standards. The 2008 $PM_{2.5}$ Plan is a continuation of the SJVACPD's strategy to improve the air quality in the SJVAB.

The SJVAPCD prepared the 2012 $PM_{2.5}$ Plan to bring the San Joaquin Valley into attainment of the USEPA's most recent 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$. The CARB approved the SJVAPCD's 2012 $PM_{2.5}$ Plan at a public hearing on January 24, 2013. The plan, approved by the SJVAPCD Governing Board on December 20, 2012, will bring the Valley into attainment of USEPA's 1997 $PM_{2.5}$ standard as expeditiously as practicable, but no later than, December 31, 2020.

The SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards on November 15, 2018. This plan addresses the USEPA federal 1997 annual $PM_{2.5}$ standard of 15 µg/m³ and 24-hour $PM_{2.5}$ standard of 65 µg/m³; the 2006 24-hour $PM_{2.5}$ standard of 35 µg/m³; and the 2012 annual $PM_{2.5}$ standard of 12 µg/m³. This plan demonstrates attainment of the federal $PM_{2.5}$ standards as expeditiously as practicable.

Rules and Regulations. The SJVAPCD rules and regulations that may apply to projects that will occur during buildout of the Plan Area include but are not limited to the following:

- Rule 2280—Portable Equipment Registration. Portable equipment used at project sites for less than six consecutive months must be registered with the SJVAPCD. The SJVAPCD will issue the registrations 30 days after receipt of the application.

- Rule 2303-Mobile Source Emission Reduction Credits. A project may qualify for SJVAPCD vehicle emission reduction credits if it meets the specific requirements of Rule 2303 for any of the following categories:

    - Low-Emission Transit Buses
    - Zero-Emission Vehicles
    - Retrofit Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles
    - Retrofit Heavy-Duty Vehicles

- Rule 4102 – Nuisance. The purpose of this rule is to protect the health and safety of the public, and applies to any source operation that emits or may emit air contaminants or other materials.

- Rule 4601 – Architectural Coatings. The purpose of this rule is to limit Volatile Organic Compounds (VOC) emissions from architectural coatings. Emissions are reduced by limits on VOC content and providing requirements on coatings storage, cleanup, and labeling.

- Rule 4641 – Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations. The purpose of this rule is to limit VOC emissions from asphalt paving and maintenance operations. The paving operations for new development and existing paved surfaces will be subject to Rule 4641.

- Rule 8011—General Requirements: Fugitive Dust Emission Sources. Fugitive dust regulations are applicable to outdoor fugitive dust sources. Operations, including construction operations, must control fugitive dust emissions in accordance with SJVAPCD Regulation VIII. According to Rule 8011, the SJVAPCD requires the implementation of control measures for fugitive dust emission sources. For projects in which construction-related activities would disturb equal to or greater than 1 acre of surface area, the SJVAPCD recommends that demonstration of receipt of an SJVAPCD-approved Dust Control Plan or Construction Notification Form, before issuance of the first grading permit, be made a condition of approval.

- Regulation VIII – Fugitive PM_{10} Prohibitions. Rules 8011-8081 are designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, etc. All development projects that involve soil disturbance are subject to at least one provision of the Regulation VIII series of rules.

- Rule 9410 – Employer Based Trip Reduction. The purpose of this rule is to reduce vehicle miles traveled (VMT) from private vehicles used by employees to commute to and from their worksites in order to reduce emissions of NO_x, VOC and PM. The rule requires larger employers (those with 100 or more eligible employees) to establish employee trip reduction programs to reduce VMT, reducing emissions associated with work commutes. The rule uses a menu-based Employer Trip Reduction Implementation Plan and periodic reporting requirements to evaluate performance on a phased-in compliance schedule.

- Rule 9510 – Indirect Source Review. This rule reduces the impact of NO_x and PM_{10} emissions from new development projects. The rule places application and emission reduction requirements on development projects meeting applicability criteria in order to reduce emissions through onsite mitigation, offsite SJVAPCD-administered projects, or a combination of the two. Compliance with SJVAPCD Rule 9510 reduces emissions impacts through incorporation of onsite measures as well as payment of an offsite fee that funds emission reduction projects in the Air Basin. The emissions analysis for Rule 9510 is detailed and is dependent on the exact project design that is expected to be constructed or installed. Compliance with Rule 9510 is separate from the CEQA process, though the control measures used to comply with Rule 9510 may be used to mitigate significant air quality impacts.

- Odor impacts on residential areas and other sensitive receptors, such as hospitals, day-care centers, schools, etc., warrant the closest scrutiny, but consideration could also be given to other land uses where people may congregate, such as recreational facilities, worksites, and commercial areas. While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the SJVAPCD.

  Two situations create a potential for odor impact. The first occurs when a new odor source is located near an existing sensitive receptor. The second occurs when a new sensitive receptor locates near an existing source of odor. The SJVAPCD has determined the common land use types that are known to produce odors in the Basin. These types are shown in Table 4.2.F.

Table 4.2.F: Screening Levels for Potential Odor Sources

Odor Generator	Distance
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g., auto body shop)	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile

Source: San Joaquin Valley Air Pollution Control District, 2015.

Community Emissions Reductions Program: Assembly Bill 617. AB 617 requires the CARB and air districts to develop and implement a Community Emission Reduction Plan (CERP) with additional emissions reporting, monitoring, and reduction plans and measures in an effort to reduce air pollution exposure in disadvantaged communities. Given that 20 of the 30 most disadvantaged communities in California are in the San Joaquin Valley, this process is expected to bring additional clean air resources and strategies to many Valley communities.

South Central Fresno and the City of Shafter are the first Valley communities selected by the California Air Resources Board for investment of additional resources under AB 617. The Valley Air District has established a steering committee for each of these communities comprising community residents, businesses, community advocates, and government representatives to assist in the development and implementation of community air monitoring and emission reduction programs. Fresno's CERP was adopted by CARB and is now in the implementation phase.

Fresno Council of Governments. Fresno Council of Governments (FCOG) is responsible for regional transportation planning in Fresno county and participates in developing mobile source emission inventories used in air quality attainment plans.

Regional Transportation Plan/Sustainable Communities Strategy. Regional Transportation Plans (RTPs) are State-mandated plans that identify long-term transportation needs for a region's transportation network. Fresno Council of Governments' (FCOG) 2018 RTP charts the long-range vision of regional transportation in Fresno county through the year 2042. The RTP identifies existing and future transportation related needs, while considering all modes of travel, analyzing alternative solutions, and identifying priorities for the anticipated available funding for the 1,100 projects and multiple programs included within it. Senate Bill 375 (SB 375), which went into effect in 2009, added statutes to the California Government Code to encourage planning practices that create sustainable communities. It calls for each metropolitan planning organization to prepare a Sustainable Communities Strategy (SCS) as an integrated element of

the RTP that is to be updated every four years. The SCS is intended to show how integrated land use and transportation planning can lead to lower greenhouse gas (GHG) emissions from autos and light trucks. Fresno COG has included the SCS in its 2018 RTP.

Transportation Conformity. FCOG must ensure that transportation plans and projects comply with Federal Transportation Conformity. Transportation conformity is a way to ensure that Federal funding and approval are given to those transportation activities that are consistent with air quality goals. It ensures that these transportation activities do not worsen air quality or interfere with the "purpose" of the State Implementation Plan, which is to meet the NAAQS. Meeting the NAAQS often requires emissions reductions from mobile sources. According to the Clean Air Act, transportation plans, programs, and projects cannot:

- Create new NAAQS violations;
- Increase the frequency or severity of existing NAAQS violations; or
- Delay attainment of the NAAQS.

In practice, air quality plans include criteria pollutant emission budgets required for attainment of air quality standards by mandated deadlines. The budgets must not be exceeded considering projected growth in mobile source activity. The FCOG 2019 Conformity Analysis determined that the conformity tests for ozone, PM_{10} and $PM_{2.5}$ revealed that all years are projected to be less than the approved emissions budgets and, as such, the conformity tests are satisfied.

4.2.2.4 Local Regulations

City of Fresno General Plan. The City of Fresno's General Plan Resources Conservation and Resilience Element includes objectives and policies that work to achieve and maintain compliance with State and federal air quality standards for criteria pollutants. The following policies related to air quality are applicable to the proposed project:

- **Policy RC-4-a: Support Regional Efforts.** Support and lead, where appropriate, regional, State and federal programs and actions for the improvement of air quality, especially the SJVAPCD's efforts to monitor and control air pollutants from both stationary and mobile sources and implement Reasonably Available Control Measures in the Ozone Attainment Plan.

- **Policy RC-4-b: Conditions of Approval.** Develop and incorporate air quality maintenance requirements, compatible with Air Quality Attainment and Maintenance Plans, as conditions of approval for General Plan amendments, community plans, Specific Plans, neighborhood plans, Concept Plans, and development proposals.

- **Policy RC-4-c: Evaluate Impacts with Models.** Continue to require the use of computer models used by SJVAPCD to evaluate the air quality impacts of plans and projects that require such environmental review by the City.

- **Policy RC-4-e: Support Employer-Based Efforts.** Support and promote employer implementation of staggered work hours and employee incentives to use carpools, public transit, and other measures to reduce vehicular use and traffic congestion.

- **Policy RC-4-k: Electric Vehicle Charging.** Develop standards to facilitate electric vehicle charging infrastructure in both new and existing public and private buildings, in order to accommodate these vehicles as the technology becomes more widespread.

4.2.3 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to air quality that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less-than-significant level. Cumulative impacts are also addressed.

4.2.3.1 Significance Criteria

The thresholds for impacts related to air quality used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed project would result in a significant impact related to air quality if it would:

Threshold 4.2.1 **Conflict with or obstruct implementation of the applicable air quality plan;**

Threshold 4.2.2 **Result in a cumulatively considerable net increase of any criteria pollutant for which the project is nonattainment under an applicable federal or state ambient air quality standard;**

Threshold 4.2.3 **Expose sensitive receptors to substantial pollutant concentrations; or**

Threshold 4.2.4 **Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.**

4.2.3.2 Project Impacts

The following discussion describes the potential impacts related to air quality that could result from implementation of the proposed project.

Threshold 4.2.1 **Would the project conflict with or obstruct implementation of the applicable air quality plan?**

An air quality plan describes air pollution control strategies to be implemented by a city, county, or region classified as a nonattainment area. The main purpose of the air quality plan is to bring the area into compliance with the requirements of the federal and State air quality standards. To bring the San Joaquin Valley into attainment, the SJVAPCD adopted the 2016 Plan for the 2008 8-Hour

Ozone Standard in June 2016 to satisfy Clean Air Act requirements and ensure attainment of the 75 parts per billion (ppb) 8-hour ozone standard.[14]

To ensure the SJVAB's continued attainment of the USEPA PM_{10} standard, the SJVAPCD adopted the 2007 PM_{10} Maintenance Plan in September 2007.[15] The SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards in November 2018 to address the USEPA 1997 annual $PM_{2.5}$ standard of 15 micrograms per cubic meter ($\mu g/m^3$) and 24-hour $PM_{2.5}$ standard of 65 $\mu g/m^3$, the 2006 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$, and the 2012 annual $PM_{2.5}$ standard of 12 $\mu g/m^3$.[16]

CEQA requires that certain proposed projects be analyzed for consistency with the applicable air quality plan as it relates to a region's non-attainment status. An air quality plan describes air pollution control strategies to be implemented in a non-attainment area. The main purpose of the air quality plan is to bring the area into compliance with the requirements of the federal and State air quality standards. As discussed above, the SJVAB is designated as non-attainment for O_3 and $PM_{2.5}$ for federal standards and non-attainment for O_3, PM_{10}, and $PM_{2.5}$ for State standards. Therefore, to bring the SJVAB into attainment, the SJVAPCD adopted the 2016 Plan for the 2008 8-Hour Ozone Standard in June 2016 to satisfy Clean Air Act requirements and ensure attainment of the 75 parts per billion (ppb) 8-hour ozone standard.

To assure the SJVAB's continued attainment of the USEPA PM_{10} standard, the SJVAPCD adopted the 2007 PM_{10} Maintenance Plan in September 2007. SJVAPCD Regulation VIII (Fugitive PM_{10} Prohibitions) is designed to reduce PM_{10} emissions generated by human activity. The SJVAPCD adopted the 2018 plan for the 1997, 2006, and 2012 $PM_{2.5}$ standards to address the USEPA federal annual $PM_{2.5}$ standard of 12 $\mu g/m^3$, established in 2012.

For a project to be consistent with SJVAPCD air quality plans, the pollutants emitted from a project should not exceed the SJVAPCD emission thresholds or cause a significant impact on air quality. In addition, emission reductions achieved through implementation of offset requirements are a major component of the SJVAPCD air quality plans. As discussed below, construction of the proposed project is anticipated to occur in two phases occurring over a total 24-month period starting in the third quarter of 2023 and ending in 2025 and would not result in the generation of criteria air pollutants that would exceed SJVAPCD thresholds of significance. Implementation of Mitigation Measure AIR-1, which requires the implementation of measures required under SJVAPCD's Regulation VIII would further reduce construction dust impacts. As discussed below and shown in Table 4.2.G, long-term operational emissions associated with the proposed project, including area, energy, and mobile source emissions, would also not exceed SJVAPCD established significance

[14] San Joaquin Valley Air Pollution Control District, 2016. *2016 Plan for the 2008 8-Hour Ozone Standard*. June 16. Website: www.valleyair.org/Air_Quality_Plans/Ozone-Plan-2016.htm (accessed September 2022).

[15] San Joaquin Valley Air Pollution Control District, 2007. *2007 PM_{10} Maintenance Plan and Request for Redesignation*. Available online at: www.valleyair.org/Air_Quality_Plans/docs/Maintenance%20Plan10-25-07.pdf (accessed September 2022).

[16] San Joaquin Valley Air Pollution Control District, 2018. *2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards*. November 15. Website: http://valleyair.org/pmplans/documents/2018/pm-plan-adopted/2018-Plan-for-the-1997-2006-and-2012-PM2.5-Standards.pdf (accessed September 2022).

thresholds. Therefore, impacts related to the proposed project's potential to conflict with or obstruct implementation of the applicable air quality plan would be less than significant with implementation of Mitigation Measure AIR-1.

Conclusion. The proposed project's potential air quality impacts from construction and operation would not exceed any applicable threshold of significance and would not conflict with or obstruct the applicable clean air plan. Therefore, the proposed project's potential impacts on the applicable air quality plan are less than significant with implementation of Mitigation Measure AIR-1.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measure AIR-1 below.

Level of Significance With Mitigation: Less than Significant with implementation of Mitigation Measure AIR-1.

Threshold 4.2.2 Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project is nonattainment under an applicable federal or state ambient air quality standard?

The SJVAB is designated as non-attainment for O_3 and $PM_{2.5}$ for federal standards and non-attainment for O_3, PM_{10}, and $PM_{2.5}$ for State standards. The SJVAPCD's nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the SJVAPCD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. The following analysis assesses the potential heat island effect, construction- and operation-related air quality impacts.

Heat Island Effect. The heat island effect occurs when natural land cover is replaced with pavement, buildings, and other surfaces that absorb and retain heat. This effect increases energy costs, air pollution levels, and heat-related illness. CEQA does not require an analysis of heat island effects, and neither the SJVACD nor the City of Fresno have adopted specific criteria for this topic. However, the project's potential for increasing the heat island effect in Fresno has been evaluated as it relates to potentially resulting in a net increase in pollutants related to the Basin's non-attainment status as heat islands increase ozone production.

The proposed project would include cool roof materials. Cool roofs work to reflect heat and stay cooler. The project would also include a vegetative plan that includes the planning of trees and other landscaping materials throughout the perimeter of the project site. Trees provide shade and building cooling. With the implementation of the project's cool roofing material and landscape plan, the proposed project would not result in a significant localized heat island effect.

Short-Term Construction Emissions. The proposed project's short-term construction emissions would consist of: (1) dust-related PM_{10} emissions and (2) exhaust-related emissions consisting of CO, SO_2, NO_x, ROG, and some soot particulates ($PM_{2.5}$ and PM_{10}) from heavy trucks and construction equipment powered by gasoline and diesel engines.

Emissions Sources. During construction, short-term degradation of air quality may occur due to the release of particulate matter emissions (i.e., fugitive dust) generated by grading, hauling, and other activities. Emissions from construction equipment are also anticipated and would include CO, NO_x, ROG, directly emitted particulate matter ($PM_{2.5}$ and PM_{10}), and TACs such as diesel exhaust particulate matter.

Project construction activities would include site preparation, grading, building construction, paving, and architectural coating activities. Construction-related effects on air quality from the proposed project would be greatest during the site preparation phase due to the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions. Sources of fugitive dust would include disturbed soils at the construction site. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. The SJVAPCD has implemented Regulation VIII measures for reducing fugitive dust emissions (PM_{10}). Regulation VIII is a series of rules designed to reduce fugitive dust from construction sites, parking and staging areas, open areas, material storage areas, etc. No permits are required by Regulation VIII, but failure to comply can result in fines and penalties. The SJVAPCD provides a synopsis describing requirements and exemptions from Regulation VIII when commenting on proposed projects. In addition to dust-related PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_x, ROG, and some soot particulates ($PM_{2.5}$ and PM_{10}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles idle in traffic. These emissions would be temporary in nature and limited to the immediate area surrounding the construction site.

Significance Thresholds. The SJVAPCD has established construction emissions thresholds on an annual basis as shown in Table 4.2.G below. If a project's potential emissions exceed any applicable threshold, then the project's emissions are potentially significant.

Impact Analysis. Construction emissions for the proposed project were analyzed using the CalEEMod. Construction of the proposed project is anticipated to occur in two phases occurring over a total 24-month period starting in the third quarter of 2023 and ending in 2025. In addition, this analysis assumes that the proposed project would be constructed using Tier 2 construction equipment, which was included in CalEEMod. Other precise details of construction activities are unknown at this time; therefore, default assumptions (e.g., construction worker and truck trips and construction fleet activities) from CalEEMod were used. Construction-related emissions are presented in Table 4.2.G. CalEEMod output sheets are included in Appendix C.

Table 4.2.G: Project Construction Emissions (Tons Per Year)

Project Construction	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
2023	0.1	2.5	2.0	<0.1	0.5	0.2
2024	0.3	4.3	4.0	<0.1	0.8	0.3
2025	6.4	1.5	1.4	<0.1	0.2	0.1
Maximum Annual Construction Emissions	**6.4**	**4.3**	**4.0**	**<0.1**	**0.8**	**0.3**
SJVAPCD Thresholds	**10.0**	**10.0**	**100.0**	**27.0**	**15.0**	**15.0**
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA (September 2022).

CO = carbon monoxide
NO_X = nitrous oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic compounds
SJVAPCD = San Joaquin Valley Air Pollution Control District
SO_2 = sulfur dioxide

As shown in Table 4.2.G, construction emissions for the proposed project would not exceed the SJVAPCD annual threshold for construction emissions. In addition to the construction period thresholds of significance, the SJVAPCD has implemented Regulation VIII measures for dust control during construction. These control measures are intended to reduce the amount of PM_{10} emissions during the construction period. Implementation of the fugitive dust control measures outlined in Mitigation Measure AIR-1, would ensure that the proposed project complies with Regulation VIII and further reduces the short-term construction period air quality impacts.

With implementation of Mitigation Measure AIR-1, construction of the proposed project would result in a less-than-significant impact related to a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State ambient air quality standard.

Long-Term Operational Emissions. Long-term air pollutant emission impacts associated with the proposed project are those related to (1) mobile sources (e.g., vehicle trips), (2) energy sources (e.g., electricity and natural gas), and (3) area sources (e.g., architectural coatings and the use of landscape maintenance equipment).

Emissions Sources. PM_{10} emissions result from running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways. Entrainment of PM_{10} occurs when vehicle tires pulverize small rocks and pavement, and the vehicle wakes generate airborne dust. The contribution of tire and brake wear is small

compared to the other PM emission processes. Gasoline-powered engines have small rates of particulate matter emissions compared with diesel-powered vehicles.

Energy source emissions result from activities in buildings for which natural gas is used. The quantity of emissions is the product of usage intensity (i.e., the amount of natural gas) and the emission factor of the fuel source. The proposed project would be consistent with 2022 Title 24 standards (or building code standards applicable at the time the buildings are constructed); however, based on available modeling tools, the CalEEMod analysis of energy use assumed the construction of buildings based on the 2019 Title 24 standards which is a conservative analysis.

As identified in Chapter 3.0, Project Description, the proposed project would be consistent with 2022 Title 24 Building Energy Efficiency Standards (Title 24 Standards) and would include "cool roof" materials for the roof. The Title 24 Standards contain energy and water efficiency requirements (and indoor air quality requirements) for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. The Title 24 Standards establish performance metrics in the form of an "energy budget" based on energy consumption per square foot of floor space. For this reason, the Title 24 Standards include both a prescriptive option, allowing builders to comply by using methods known to be efficient, and a performance option, allowing builders complete freedom in their designs provided the building achieves the same overall efficiency as an equivalent building using the prescriptive option. Reference appendices are adopted along with the Title 24 Standards containing data and various compliance tools to help builders achieve compliance.

Typically, area source emissions consist of direct sources of air emissions located at the project site, including architectural coatings and the use of landscape maintenance equipment. Area source emissions associated with the project would include emissions from the use of landscaping equipment and the use of consumer products.

Significance Thresholds. The SJVAPCD has established operational emissions thresholds on an annual basis as shown in Table 4.2.H below. If a project's potential emissions exceed any applicable threshold, then the project's emissions are potentially significant.

Impact Analysis. Emission estimates for operation of the project were calculated using CalEEMod. Model results are shown in Table 4.2.H. Trip generation rates for the proposed project were based on the project's trip generation estimate, as identified in Section 4.10, Transportation. As discussed in Section 4.10, Transportation, the proposed project would generate approximately 1,920 average daily trips, including 1,578 vehicle trips and 342 truck trips.

The primary emissions associated with the project are regional in nature, meaning that air pollutants are rapidly dispersed on release or, in the case of vehicle emissions associated with the project, emissions are released in other areas of the SJVAB. The annual emissions associated with project operational trip generation, energy, and area sources are identified in Table 4.2.H for ROG, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$. CalEEMod output sheets are included in Appendix C.

Table 4.2.H: Project Operation Emissions (Tons Per Year)

	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area Source Emissions	4.2	<0.1	<0.1	0.0	<0.1	<0.1
Energy Source Emissions	0.1	0.8	0.7	<0.1	0.1	0.1
Mobile Source Emissions	0.5	3.1	5.7	<0.1	2.2	0.6
Total Project Operation Emissions	**4.8**	**3.9**	**6.4**	**<0.1**	**2.3**	**0.7**
SJVAPCD Significance Threshold	**10.0**	**10.0**	**100.0**	**27.0**	**15.0**	**15.0**
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA (September 2022).
Note: Some values may not appear to add up correctly due to rounding.
CO = carbon monoxide
NO_X = nitrous oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic compounds
SJVAPCD = San Joaquin Valley Air Pollution Control District
SO_X = sulfur oxide

The results shown in Table 4.2.H indicate the proposed project's operational emissions would not exceed the significance criteria for annual ROG, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ emissions. Therefore, operation of the proposed project would result in a less-than-significant impact related to a cumulatively considerable net increase of any criteria pollutant for which the proposed project region is in nonattainment under an applicable federal or State ambient air quality standard.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measure AIR-1 Consistent with SJVAPCD Regulation VIII (Fugitive PM_{10} Prohibitions), the following controls are required to be included as specifications for the proposed project and implemented at the construction site:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at

least 6 inches of freeboard space from the top of the container shall be maintained.

- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)

- Following the addition of materials to, or the removal of materials from, the surface of out-door storage piles, said piles shall be effectively stabilized of fugitive dust emission utilizing sufficient water or chemical stabilizer/suppressant.

With the implementation of Regulation VIII measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

Level of Significance With Mitigation**:** Less than Significant with implementation of Mitigation Measure AIR-1.

Threshold 4.2.3 Would the project expose sensitive receptors to substantial pollutant concentrations?

This section describes the potential impact on sensitive receptors from construction and operation of the proposed project based on a health risk assessment (HRA) prepared for the project, included in Appendix D.[17] Sensitive receptors are defined as residential uses, schools, daycare centers, nursing homes, and medical centers. Individuals particularly vulnerable to diesel particulate matter are children, whose lung tissue is still developing, and the elderly, who may have serious health problems that can be aggravated by exposure to diesel particulate matter. The closest sensitive receptors include the single-family residences located approximately 110 feet south of the project site across West Nielsen Avenue.

Project Construction – Toxic Air Contaminants. A construction HRA, which evaluates construction-period health risk to off-site receptors, was performed for the proposed project and is included in Appendix D and is summarized below. The project site is located near existing residential uses that could be exposed to diesel emission exhaust during the construction period.

Emissions Sources. To estimate the potential cancer risk associated with equipment exhaust (including diesel particulate matter) released during construction of the proposed project, a dispersion model was used to translate an emission rate from the source location to a concentration at the receptor location of interest (i.e., a nearby residence and worksites). Dispersion modeling varies from a simpler, more conservative screening-level analysis to a more complex and refined detailed analysis. This refined assessment was conducted using the CARB

17 LSA. 2023. op. cit.

exposure methodology with the air dispersion modeling performed using the USEPA dispersion model AERMOD. The model provides a detailed estimate of exhaust concentrations based on site and source geometry, source emissions strength, distance from the source to the receptor, and meteorological data.

Significance Thresholds. Both the State and federal governments have established health-based AAQS for seven air pollutants. For other air pollutants without defined significance standards, the definition of substantial pollutant concentrations varies. For TACs, "substantial" is taken to mean that the individual health risk exceeds a threshold considered to be a prudent risk management level.

The following limits for maximum individual cancer risk (MICR) and noncancer acute and chronic Hazard Index (HI) from project emissions of TACs are considered appropriate for use in determining the health risk for projects in the Basin:

- **MICR:** MICR is the estimated probability of a maximum exposed individual (MEI) contracting cancer as a result of exposure to TACs over a period of 70 years for adults and 9 years for children in residential locations, 350 days per year. The SJVAPCD's *Update to the District's Risk Management Policy to Address the OEHHA Revised Risk Assessment Guidance Document* states that emissions of TACs are considered significant if an HRA shows an increased risk of greater than 20 in 1 million.

- **Chronic HI:** Chronic HI is the ratio of the estimated long-term level of exposure to a TAC for a potential MEI to its chronic reference exposure level. The chronic HI calculations include multi-pathway consideration when applicable. The project would be considered significant if the cumulative increase in total chronic HI for any target organ system would exceed 1.0 at any receptor location.

- **Acute HI:** Acute HI is the ratio of the estimated maximum 1-hour concentration of a TAC for a potential MEI to its acute reference exposure level. The project would be considered significant if the cumulative increase in total acute HI for any target organ system would exceed 1.0 at any receptor location.

Impact Analysis. Table 4.3.I, below, identifies the results of the analysis assuming the use of Tier 2 construction equipment, as proposed by the project, at the maximally exposed individual (MEI), which is the nearest sensitive receptor. Model snap shots of the sources are shown in Appendix D of this EIR.

Table 4.2.I: Unmitigated Inhalation Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index
Sensitive Receptor Risk	41.59	0.030	0.000
Worker Receptor Risk	0.35	0.014	0.000
Threshold	**20.0**	**1.0**	**1.0**
Exceed?	**Yes**	**No**	**No**

Source: LSA (October 2022).
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
$\mu g/m^3$ = micrograms per cubic meter

As shown in Table 4.2.I, the maximum cancer risk for the sensitive receptor MEI would be 41.59 in one million, which would exceed the SJVAPCD cancer risk threshold of 20 in one million. The worker receptor risk would be lower at 0.35 in one million, which would not exceed the threshold. The total chronic hazard index would be 0.030 for the sensitive receptor MEI and 0.0014 for the worker receptor MEI, which would both be below the threshold of 1.0. In addition, the total acute hazard index would be nominal (0.000), which would also not exceed the threshold of 1.0. Therefore, since the maximum cancer risk for the worker sensitive receptor MEI would exceed the SJVAPCD threshold, implementation of Mitigation Measure AIR-2 would be required to reduce substantial pollutant concentrations during project construction by requiring the use of Tier 4 construction equipment.

Table 4.2.J identifies the results of the analysis with implementation of Mitigation Measure AIR-2.

Table 4.2.J: Mitigated Inhalation Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index
Sensitive Receptor Risk	4.33	0.003	0.000
Worker Receptor Risk	0.04	0.002	0.000
Threshold	**20.0**	**1.0**	**1.0**
Exceed?	**No**	**No**	**No**

Source: LSA (October 2022).
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
$\mu g/m^3$ = micrograms per cubic meter

As shown in Table 4.2.J, the mitigated cancer risk at the sensitive receptor MEI would be 4.33 in one million, which would not exceed the SJVAPCD cancer risk of 20 in one million. Therefore, with implementation of Mitigation Measure AIR-2, construction of the proposed project would not exceed SJVAPCD thresholds and would not expose nearby sensitive receptors to substantial pollutant concentrations and this impact would be less than significant.

Project Operation – Toxic Air Contaminants. To determine the potential health risk to people living and working near the proposed project associated with the exhaust of diesel-powered trucks and equipment, LSA conducted an HRA for the proposed project that is included in Appendix D.

The HRA was prepared in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment (OEHHA) and the SJVAPCD. It evaluates the project against the significance criteria established by the SJVAPCD and was prepared in compliance with all applicable requirements, including, but not limited to, City of Fresno General Plan Program Environmental Impact Report Mitigation Measure AIR-3.1.

In order to assess the dispersion of emissions associated with the project, air dispersion modeling was performed using AERMOD. The model is approved by the USEPA when estimating the air quality impacts associated with point and fugitive sources in simple and complex terrain. The model was used to calculate the annual average pollutant concentrations associated with each emitting source.

CARB's HARP2 model was used to translate the TAC concentrations from AERMOD into long-term carcinogenic and chronic, and short-term acute health risk levels following the guidance in the SJVAPCD risk assessment guidelines. To estimate chronic noncancer risks at residential receptors, the "OEHHA-Derived Method" risk-calculation option was used. Following the OEHHA guidance, an 8-hour chronic noncancer risk was calculated for residential receptors because the project would operate more than 8 hours per day and 5 days per week.

Discrete variants for daily breathing rates, exposure frequency, and exposure duration were obtained from relevant distribution profiles presented in the OEHHA guidance document entitled *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* and guidance from SJVAPCD.

Emissions Sources. The first step of an HRA is to characterize the project-related emissions of TACs.

The proposed project would generate a total of 1,920 daily trips, with up to 342 truck trips per day. The trucks would access the site by North Hughes Avenue, West Nielsen Avenue, and North Marks Avenue. As identified in the Project Description, Building 1 would provide 122 loading dock doors; Building 2 would provide 46 loading dock doors; Building 3 would provide 18 loading dock doors; and Building 4 would provide 15 loading dock doors. As such, the proposed project would have a total of 201 loading dock doors. As the project would contain multiple loading docks, offsite queuing of trucks is not anticipated. While the TAC emissions from gasoline-powered vehicles have a small health effect compared to DPM, this HRA includes both gasoline- and diesel-powered vehicle emissions. For the diesel exhaust emissions, it is sufficient to only consider the DPM (PM_{10} and $PM_{2.5}$) portions of the exhaust; all the TACs for the gasoline exhaust emissions are contained in the ROG emissions. Using speciation data from CARB, the emission rates of the TAC components are derived from the total ROG emissions.

Project trucks would operate in two modes: stationary idling and moving on and off the site. The emissions from trucks while idling result in a much higher concentration of TACs at nearby sensitive receptors compared to the emissions from moving trucks. This is due to the dispersion

of emissions that occurs with distance and with travel of the vehicle. For this HRA, the truck travel emissions were modeled as a series of volume sources along the on-site driveway and along East Avenue going north and south of the site driveway. LSA assumed vehicles traveling on site would maneuver slowly, averaging approximately 5-15 miles per hour (mph), and that vehicles traveling on roadways would average 5–55 mph.

The idling emissions of trucks operating on the project site were modeled as point sources within the area sources representing the planned loading docks. EMFAC2021 was used to determine the emissions factors of idling and operating diesel trucks to determine the total emissions of DPM. While it is expected that the truck emissions rate will continue to reduce over time, an HRA only allows for a single emission rate to represent the entire 70-year exposure period. The use of emissions factors for the year 2022, was used as a conservative estimate of emissions, although, the project is not expected to be fully operational until 2025.

Significance Thresholds. Both the State and federal governments have established health-based AAQS for seven air pollutants. For other air pollutants without defined significance standards, the definition of substantial pollutant concentrations varies. For TACs, "substantial" is taken to mean that the individual health risk exceeds a threshold considered to be a prudent risk management level.

The following limits for maximum individual cancer risk (MICR) and noncancer acute and chronic Hazard Index (HI) from project emissions of TACs are considered appropriate for use in determining the health risk for projects in the Basin:

- **MICR:** MICR is the estimated probability of a maximum exposed individual (MEI) contracting cancer as a result of exposure to TACs over a period of 70 years for adults and 9 years for children in residential locations, 350 days per year. The SJVAPCD's *Update to the District's Risk Management Policy to Address the OEHHA Revised Risk Assessment Guidance Document* states that emissions of TACs are considered significant if an HRA shows an increased risk of greater than 20 in 1 million.

- **Chronic HI:** Chronic HI is the ratio of the estimated long-term level of exposure to a TAC for a potential MEI to its chronic reference exposure level. The chronic HI calculations include multi-pathway consideration when applicable. The project would be considered significant if the cumulative increase in total chronic HI for any target organ system would exceed 1.0 at any receptor location.

- **Acute HI:** Acute HI is the ratio of the estimated maximum 1-hour concentration of a TAC for a potential MEI to its acute reference exposure level. The project would be considered significant if the cumulative increase in total acute HI for any target organ system would exceed 1.0 at any receptor location.

Impact Analysis. The carcinogenic and chronic health risks from the proposed project are shown in Table 4.2.K. The residential risk incorporates both the risk for a child living in a nearby residence for 9 years (the standard period of time for child risk) and an adult living in a nearby

residence for 70 years (considered a conservative period of time for an individual to live in any one residence).

Table 4.2.K: Health Risks Levels from Project Operation to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index
Sensitive Receptor Risk	6.154	0.001	0.001
Worker Receptor Risk	0.417	0.001	0.001
Threshold	**20.0**	**1.0**	**1.0**
Exceed?	**No**	**No**	**No**

Source: LSA (October 2022).
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
$\mu g/m^3$ = micrograms per cubic meter

For the nearest residential receptor, the maximum cancer risk for the MEI would be 6.154 in one million, less than the threshold of 20 in one million. The chronic health risks from the project's activity would be 0.001, which would not exceed the threshold of 1.0. In addition, the total acute hazard index would be 0.001, which would also not exceed the threshold of 1.0. See Appendix D for additional details on the modeling.

For the nearest worker receptor, the maximum cancer risk for the MEI would be 0.417 in one million, less than the threshold of 20 in one million. The chronic health risks from the project's activity would be 0.001, which would not exceed the threshold of 1.0. In addition, the total acute hazard index would be 0.001, which would also not exceed the threshold of 1.0.

As demonstrated in the analysis, the health risk levels to nearby residents from project operation-related emissions of TACs would be well below the SJVAPCD's HRA thresholds. However, as discussed above, CalEnviroScreen identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution. Pollution Burden scores for each census tract are derived from the average percentiles of the seven exposures indicators (ozone and $PM_{2.5}$ concentrations, diesel PM emissions, drinking water contaminants, pesticide use, toxic releases from facilities, and traffic density) and the five Environmental Effects indicators (cleanup sites, impaired water bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities). According to the CalEnviroScreen 4.0 Map,[18] the project site has a pollution burden percentile of 97. Surrounding areas have pollution burdens ranging from 56 to 100.0. In addition, according to the SB 535 Disadvantaged Communities Map,[19] the project area is designated as an SB 535 disadvantaged community. Based on the CalEnviroScreen results, the project area is already at an elevated risk level. Therefore, although the maximum cancer risk for the MEI would be 6.154 in one million is

[18] Office of Environmental Health Hazard Assessment (OEHHA). 2021. *CalEnviroScreen 4.0.* Website: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40 (accessed May 2021).

[19] OEHHA. 2022. *SB 535 Disadvantaged Communities using CalEnviroScreen 4.0 results.* Website: https://experience.arcgis.com/experience/1c21c53da8de48f1b946f3402fbae55c/page/SB-535-Disadvantaged-Communities/.pdf (accessed October 2022).

less than the project risk criteria, any additional risk increase is cumulatively potentially significant. Therefore, to reduce the cumulative health risk, the project applicant shall ensure that the proposed project would provide the infrastructure for AC and/or DC chargers for electric heavy-duty trucks, which would further reduce TAC emissions. The infrastructure provided shall accommodate a minimum of one future charger per 50,000 square feet. With implementation of Mitigation Measure AIR-3, cumulative health risk impacts would be less than significant related to the exposure of sensitive receptors to substantial pollutant concentrations during project operation.

Conclusion. With implementation of Mitigation Measures AIR-2 and AIR-3, the proposed project's potential air quality impacts from construction and operation would not expose sensitive receptors to substantial pollutant concentrations. As such, the proposed project would not result in any individual health risk in excess of the thresholds considered to be prudent risk management levels. Therefore, the proposed project's potential air quality impacts on sensitive receptors are less than significant with mitigation incorporated.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measure AIR-2 During construction of the proposed project, the project contractor shall ensure all off-road diesel-powered construction equipment of 50 horsepower or more used for the project construction at a minimum meets the California Air Resources Board Tier 4 emissions standards or equivalent.

Mitigation Measure AIR-3 The project applicant shall ensure that the proposed project provides the infrastructure for AC and/or DC chargers for electric heavy-duty trucks. The infrastructure provided shall accommodate a minimum of one future charger per 50,000 square feet.

Level of Significance With Mitigation**:** Less than Significant with implementation of Mitigation Measures AIR-2 and AIR-3.

Threshold 4.2.4 Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

During construction, the various diesel-powered vehicles and equipment in use on site would create localized odors. These odors would be temporary and are not likely to be noticeable for extended periods of time beyond the project site. Because the project's potential construction-related odor impacts are localized and temporary, they would not adversely affect a substantial number of people. Therefore, the project's potential construction-related odor impacts are less than significant.

Once operational, the proposed project would include truck activity, which could result in diesel odor impacts. The closest sensitive receptors include the single-family residences located approximately 110 feet south of the project site across West Nielsen Avenue. These residences would be located approximately 260 feet south of the loading docks south of Building 1. These odor

emissions may be noticeable from time to time near the project site; however, they would be localized and are not likely to adversely affect a substantial number of people by resulting in confirmed odor complaints. In addition, idling of trucks would be limited by the CARB's In-Use Off-Road Diesel Vehicles regulation, which limits idling to 5 minutes or less. Minimizing idling time reduces odors, as unburned fuel and products of combustion from some engines condense in the exhaust, particularly during warmup or shortly after engine startup, resulting in more intense odors.[20] Therefore, the proposed project would result in a less-than-significant impact related to other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Level of Significance Without Mitigation: Less Than Significant Impact.

4.2.3.3 Cumulative Impacts

According to the SJVAPCD, regional air pollution is largely a cumulative impact. No single project is sufficient in size to independently create regional nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts.

The SJVAPCD is currently designated as a nonattainment area for State and national ozone standards and national particulate matter ambient air quality standards. SJVAPCD nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the SJVAPCD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

Therefore, if the proposed project's annual emissions of construction- or operational-related criteria air pollutants exceed any applicable threshold established by the SJVAPCD, the proposed project would result in a considerable contribution to a cumulatively significant impact. As shown in Table 4.2.G and Table 4.2.H, with implementation of Mitigation Measure AIR-1, the proposed project would not generate significant construction operational emissions. As shown in the project-specific air quality impacts discussion above, the proposed project would not result in individually significant impacts and therefore the proposed project would not result in a cumulatively considerable contribution to regional air quality impacts. Cumulative impacts would be considered less than significant.

[20] USEPA, 1971. *Guide to Reduction of Smoke and Odor from Diesel-Powered Vehicles*. September. Website: https://nepis.epa.gov/Exe/ZyPDF.cgi/9100JLQ0.PDF?Dockey=9100JLQ0.PDF (accessed April 2022).

In addition, as demonstrated in the analysis, with implementation of Mitigation Measures AIR-2 and AIR-3, the health risk levels to nearby residents from project construction- and operation-related emissions of TACs would be well below the SJVAPCD's HRA thresholds. Therefore, the proposed project would not result in any individual health risk in excess of the thresholds considered to be prudent risk management levels. Therefore, the proposed project's cumulative air quality impacts on sensitive receptors are less than significant with mitigation.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measures AIR-1 through AIR-3 above.

Level of Significance With Mitigation: Less than Significant with Mitigation Measures AIR-1 through AIR-3.

This page intentionally left blank

4.3 BIOLOGICAL RESOURCES

This section describes how the proposed project may affect biological resources occurring in the project vicinity, both at the individual and cumulative levels. This section also addresses local, State, and federal regulations as they pertain to project impacts on biological resources. The analysis in this section is based on findings of the Biological Evaluation[1] prepared for the proposed project (Appendix E).

4.3.1 Environmental Setting

4.3.1.1 Biotic Habitat

The project site consists of a vacant urban lot surrounded by chain link fencing and supports a single biotic habitat/land use type characterized as ruderal. In addition, the project site has mostly been paved over with a few areas of exposed soils; however, the soils here have been significantly disturbed through decades of industrial and agricultural activity. The site is mostly barren of vegetation; however, vegetation does occur in pavement cracks and in unpaved areas. Where vegetation is present, it consists of non-native herbaceous weed species such as red brome (*Bromus madritensis ssp. rubens*), telegraphweed (*Heterotheca grandiflora*), red-stemmed filaree (*Erodium cicutarium*), prickly lettuce (*Lactuca serriola*), and common and small-flowered fiddleneck (*Amsinckia intermedia and menziesii*). A few non-native trees and shrubs occur on the site including Mexican fan palm (*Washingtonia robusta*), oleander (*Nerium oleander*), and red gum (*Eucalyptus camaldulensis*).

Due to the site's extensive hardscape, lack of vegetation, and perimeter fencing, it provides limited habitat value for native wildlife species. Amphibians are absent from the site due to the absence of aquatic habitats on the site. A limited number of reptile species would be expected to forage on the site. Two lizard species were observed during the field survey of the site: the western fence lizard (*Sceloporus occidentalis*) and common side-blotched lizard (*Uta stansburiana*). Few, if any, other reptile species are expected to occur on the site. The few shrubs and trees on the site, as well as the ground, provide possible nesting habitat for a few urban adapted avian species. Birds potentially nesting on the site include mourning doves (*Zenaida macroura*), killdeer (*Charadrius vociferus*), and northern mockingbird (*Mimus polyglottos*). The likelihood of nesting is however diminished by the limited foraging opportunity on the site. At the time of the field survey, the only bird species actually observed utilizing the site was the killdeer.

Although small mammal burrows were scarce on the site at the time of the field survey, a few small mammal species would be expected to occasionally occur in earthen areas of the site. These include California ground squirrels (*Otospermophilus beecheyi*), deer mice (*Peromyscus maniculatus*), house mice (*Mus musculus*), and Botta's pocket gophers (*Thomomys bottae*). Mammalian predators potentially occurring on the site would be limited by the surrounding fence. Species that may occasionally occur on the site include the raccoon (*Procyon lotor*) and feral cat (*Felis catus*).

[1] Live Oak Associates, Inc. 2021. *Biological Evaluation Nielsen Avenue Office/Warehouse Project, Fresno County, California*. April 13.

4.3.1.2 Special Status Plants and Animals

A number of species of plants and animals within the project area have low populations and/or limited distributions. Such species may be considered “rare” and are vulnerable to extirpation as the State’s human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described in Section 4.3.2 Regulatory Setting, federal and State regulations have provided the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) with a mechanism for conserving and protecting the diversity of plant and animal species native to the State. A sizable number of native plants and animals have been formally designated as “threatened” or “endangered” under federal and State endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as “species of special concern” by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists (i.e., California Rare Plant Ranks [CRPR]) of native plants considered rare, threatened, or endangered). Collectively, these plants and animals are referred to as “special status species.”

The California Natural Diversity Data Base (CNDDB) was queried for special status species occurrences in the nine U.S. Geological Survey (USGS) 7.5-minute quadrangles containing and surrounding the project site. These quads included Fresno South, Malaga, Conejo, Caruthers, Raisin, Kearney Park, Herndon, Fresno North, and Clovis. These species, and their potential to occur on the project site, are listed in Table 4.3.1. Other sources of information for this table included California’s Wildlife, Volumes I, II, and III, The Jepson Manual: Vascular Plants of California, second edition, the California Native Plant Society’s Inventory of Rare and Endangered Vascular Plants of California, Calflora.org, and eBird.org.

4.3.1.3 Sensitive Natural Communities

Sensitive natural communities are those that are of limited distribution, distinguished by significant biological diversity, home to special status plant and animal species, of importance in maintaining water quality or sustaining flows, etc. Examples of sensitive natural communities include various types of wetlands, riparian habitat, and valley scrub habitats. CDFW has assigned State Ranks to California’s natural communities that reflect the condition and imperilment of that community throughout its range within the State. State Ranks are represented with a letter and number score. Older ranks, which need to be updated in the CNDDB, may still contain a decimal "threat" rank of .1, .2, or .3, where .1 indicates very threatened status, .2 indicates moderate threat, and .3 indicates few or no current known threats. The project site does not support sensitive natural communities.

4.3.1.4 Wildlife Movement Corridors

Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and interpopulation movements. Movement corridors in California are typically associated with valleys, rivers and creeks supporting riparian vegetation, and ridgelines. The project site does not contain features that would function as a wildlife movement corridor and the existing perimeter fencing would greatly inhibit wildlife movement on or off the site.

Table 4.3.1: Table of Special Status Species Potentially Occurring within Habitats of the Project Site

Species	Status	Habitat/Range	Occurrence within the Project Site
Plants			
Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act			
Succulent Owl's Clover (*Castilleja campestris ssp. succulenta*)	FT, CE, CRPR 1B	Occurs in vernal pools and swales in valley foothills and grasslands of the San Joaquin and Sacramento Valleys from Fresno County on the south to Solano County on the north; blooms April to May.	**Absent.** Vernal pool habitat required by this species is absent from the project site.
California Jewel-flower (*Caulanthus californicus*)	FT, CT, CRPR 1B	Chenopod scrub, pinyon juniper woodland, valley and foothill scrub. Blooms February to May.	**Absent.** Suitable habitat for this species is absent from the project site.
San Joaquin Valley Orcutt Grass (*Orcuttia ineaqualis*)	FT, CE, CRPR 1B	Occurs in deep vernal pools of California's San Joaquin Valley; blooms April to September.	**Absent.** Vernal pool habitat required by this species is absent from the project site.
Hairy Orcutt Grass (*Orcuttia pilosa*)	FE, CE, CRPR 1B	Occurs in vernal pools of California's Central Valley. Requires deep pools with prolonged periods of inundation; blooms May to September.	**Absent.** Vernal pool habitat required by this species is absent from the project site.
Greene's Tuctoria (*Tuctoria greenei*)	FE, CRPR 1B	Occurs in vernal pools of California's Central Valley from Shasta County on the north to Tulare County on the south; blooms May to September.	**Absent.** Vernal pool habitat required by this species is absent from the project site.
CNPS-listed Species			
Lesser Saltscale (Atriplex minuscula)	CRPR 1B	Occurs in sandy, alkaline soils of alkali sinks and grasslands. Blooms May to October.	**Absent.** Habitat and soils required by this species are absent from the project site. No Atriplex species were observed during the field survey.
California Satintail (Imperata brevifolia)	CRPR 2B	This perennial grass is found in scrubland and chaparral habitats where water is available. Blooms September to May.	**Absent.** Suitable habitat for this species is absent from the project site.
Alkali-Sink Goldfields (Lasthenia chrysantha)	CRPR 1B	Occurs in alkaline vernal pools. Blooms February to June.	**Absent.** Suitable habitat in the form of vernal pools is absent from the project site.

Table 4.3.1: Table of Special Status Species Potentially Occurring within Habitats of the Project Site

Species	Status	Habitat/Range	Occurrence within the Project Site
Madera Leptosiphon (Leptosiphon serrulatus)	CRPR 1B	Occurs in cismontane woodland, lower montane coniferous forests, and annual grasslands of the Sierra foothills from Madera County on the north to Kern County on the south. This species prefers dry slopes, often on decomposed granite in woodland. Blooms April to May.	**Absent.** Suitable habitat for this species is absent from the project site.
Sanford's Arrowhead (Sagittaria sanfordii)	CRPR 1B	Occurs in freshwater marshes, pond margins, sloughs, canals of California's Central Valley and low Sierra Foothills. Blooms May to October.	**Absent.** Suitable habitat for this species is absent from the project site.
Animals			
Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act			
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	FT	Primarily found in vernal pools of California's Central Valley.	**Absent.** Vernal pool habitat required by this species is absent from the project site.
Crotch Bumble Bee (*Bombus crotchii*)	CCE	Inhabits open grassland and scrub habitats of the southern 2/3 of California. Historically in, but largely extirpated from the Central Valley. Flight period for queens is late February to late October peaking in April and July; flight period for males and workers is March through September peaking in early July. Constructs nests underground in animal burrows. Overwintering sites are likely in soft soils or in debris or leaf litter. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia*, and *Eriogonum*.	**Absent.** Suitable habitat for this species is absent from the project site.
Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)	FT	Lives in mature elderberry shrubs of California's Central Valley and Sierra foothills.	**Absent.** Blue elderberry shrubs required by this species are absent from the project site. Furthermore, the current opinion of the USFWS is that Fresno County is outside the range of this subspecies.

Table 4.3.1: Table of Special Status Species Potentially Occurring within Habitats of the Project Site

Species	Status	Habitat/Range	Occurrence within the Project Site
California Tiger Salamander (*Ambystoma californiense*)	FT, CT	Found primarily in annual grasslands; requires vernal pools for breeding and rodent burrows for refuge.	**Absent.** Suitable breeding habitat in the form of large vernal pools within grassland habitat is absent from the project site and surrounding lands.
Giant Garter Snake (*Thamnophis gigas*)	FT, CT	Requires permanent or summer water with vegetative cover and a dense prey population at higher elevation uplands not prone to flooding.	**Absent.** Suitable habitat for this species is absent from the project site and surrounding lands.
Least Bell's Vireo (*Vireo bellii pusillus*)	FE, CE	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms. Typically nests in willow, *Baccharis*, or mesquite shrubs.	**Absent.** The project site provides no breeding or foraging habitat for this species. Moreover, this species has been extirpated from the project vicinity.
Swainson's Hawk (*Buteo swainsoni*)	CT	Summer migrant in the Central Valley. Forages in grasslands and fields close to riparian areas.	**Unlikely.** Suitable nesting habitat is absent from the project site. Foraging habitat is absent to extremely marginal on the site due to the predominance of paved surfaces on the site. At most, this species may occasionally pass over the site during migration.
Tricolored Blackbird (*Agelaius tricolor*)	CT	Breeds colonially near fresh water in dense bulrush, cattails, or thickets of willows or shrubs. Occasionally nests in wheat fields. Forages in a wide variety of habitats.	**Absent.** Suitable habitat for this species is absent from the project site and surrounding lands. Furthermore, this species is currently only known to occur in Kings County.
Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)	CE	Frequents valley foothill and desert riparian habitats in scattered locations in California	**Absent.** Suitable habitat for this species is absent to extremely marginal. While this species has adapted to urban environments in the Bakersfield area, no urban adapted populations of San Joaquin kit fox are known to occur in the Fresno metropolitan area.
Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*)	FE, CE	Inhabits grassland on gentle slopes of generally less than 10°, with friable, sandy-loam soils.	**Absent.** Suitable habitat for this species is absent from the project site and surrounding lands. Furthermore, this species is currently only known to occur in Kings County.

Table 4.3.1: Table of Special Status Species Potentially Occurring within Habitats of the Project Site

Species	Status	Habitat/Range	Occurrence within the Project Site
San Joaquin Kit Fox (*Vulpes macrotis mutica*)	FE, CT	Occurs in desert alkali scrub and annual grasslands of California's San Joaquin Valley and Tulare Basin, extending west into San Luis Obispo County. This species may forage in adjacent agricultural habitats.	**Absent.** Suitable habitat for this species is absent to extremely marginal. While this species has adapted to urban environments in the Bakersfield area, no urban adapted populations of San Joaquin kit fox are known to occur in the Fresno metropolitan area.
State Species of Special Concern			
Western Spadefoot (*Spea hammondii*)	CSC	Primarily occurs in grasslands, but also occurs in valley and foothill hardwood woodlands. Requires vernal pools or other temporary wetlands for breeding.	**Absent.** Suitable breeding habitat in the form of vernal pools is absent from the project site and surrounding lands.
Western Pond Turtle (*Emys marmorata*)	CSC	Occurs in ponds and slow-moving rivers and streams of the Sierra foothills and Central Valley.	**Absent.** Suitable aquatic habitat required by this species is absent from the project site and surrounding lands.
Coast Horned Lizard (*Phrynosoma blainvillii*)	CSC	Occurs in a wide variety of natural habitats. Most common in lowlands along sandy washes with scattered low bushes where there are open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	**Absent.** Suitable habitat for this species is absent from the project site and surrounding lands.
Northern California Legless Lizard (*Anniella pulchra*)	CSC	Moist sandy or loose loamy soils under sparse vegetation.	**Absent.** Suitably loose and moist soils are absent from the project site. Furthermore, the only documented occurrence in the region is an 1880s specimen collection.
California Glossy Snake (*Arizona elegans occidentalis*)	CSC	Occurs in arid scrub, rocky washes, grasslands, and chaparral from the eastern San Francisco Bay Area south to northwestern Baja, excluding coastal areas in Central California. Known from up to 7,200 feet in elevation.	**Absent.** Ruderal habitat found on the project site provides unsuitable habitat for this species.

Table 4.3.1: Table of Special Status Species Potentially Occurring within Habitats of the Project Site

Species	Status	Habitat/Range	Occurrence within the Project Site
Burrowing Owl (*Athene cunicularia hypugaea*)	CSC	Found in open, dry grasslands, deserts, and ruderal areas; requires ground squirrel burrows for cover and nesting.	**Unlikely.** The site's urban setting and preponderance of paved surfaces are generally incompatible with burrowing owl ecology. No evidence of burrowing owl occupation such as cough pellets, whitewash, or feathers was observed during the field survey. The nearest documented occurrence is approximately 6.5 miles to the northeast at the Fresno International Airport.
Western Mastiff Bat (*Eumops perotis ssp. californicus*)	CSC	Frequents open, semi-arid to arid habitats, including conifer, and deciduous woodlands, coastal scrub, grasslands, palm oasis, chaparral and urban. Roosts in cliff faces, high buildings, and tunnels.	**Possible.** The project site provides possible foraging habitat for this species. Roosting and breeding habitat is absent from the site.
Pallid Bat (*Antrozous pallidus*)	CSC	Grasslands, chaparral, woodlands, and forests of California; most common in dry rocky open areas providing roosting opportunities.	**Possible.** The site could be used for foraging; roosting and breeding habitat is absent.
American Badger (*Taxidea taxus*)	CSC	This species inhabits open and dry sections of grasslands, shrub, and forest habitats with friable soil.	**Absent.** The site provides unsuitable habitat conditions for this species based on its urban setting and predominance of paved surfaces.

Source: Live Oak Associates, Inc. (April 2021)
Notes:
Present: Species observed on the Site at time of field surveys or during recent past.
Likely: Species not observed on the Site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the Site, but it could occur there from time to time.
Unlikely: Species not observed on the Site, and would not be expected to occur there except, perhaps, as a transient
Absent: Species not observed on the Site and precluded from occurring there because habitat requirements not met.
CCE = California Candidate Endangered
CE = California Endangered
CFP = California Fully Protected
CNPS = California Native Plant Society Listing
CSC = California Species of Special Concern
CT = California Threatened
FC = Federal Candidate
FE = Federally Endangered
FPD = Federally (Proposed) Delisted
FPT – Federally Proposed Threatened
FT = Federally Threatened

4.3.1.5 Designated Critical Habitat

The USFWS often designates areas of "critical habitat" when it lists species as threatened or endangered. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Designated critical habitat is absent from the project site and immediately surrounding lands.

4.3.2 Regulatory Setting

4.3.2.1 Federal Regulations

Federal Endangered Species Act. The United States Fish and Wildlife Service (USFWS) administers the Federal Endangered Species Act (ESA). The ESA provides a process for listing species as either threatened or endangered and methods of protecting listed species. The ESA defines as "endangered" any plant or animal species that is in danger of extinction throughout all or a significant portion of its known geographic range. A "threatened" species is a species that is likely to become endangered. A "proposed" species is one that has been officially proposed by the USFWS for addition to the federal threatened and endangered species list.

Per Section 9 of the ESA, "take" of threatened or endangered species is prohibited. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct (codified at 16 U.S.C.A. § 1532(19). "Take" can include disturbance to habitats used by a threatened or endangered species during any portion of its life history. The presence of any federally threatened or endangered species in a project area generally imposes severe constraints on development, particularly if development would result in "take" of the species or its habitat. Under the regulations of the ESA, the USFWS may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act.

Federal Clean Water Act - Section 404. The US Army Corps of Engineers (USACE) administers Section 404 of the federal Clean Water Act (CWA). This section regulates the discharge of dredge and fill material into waters of the United States. "Discharge of fill material" is defined as the addition of fill material into waters of the United States, including, but not limited to, the following: placement of fill that is necessary for the construction of any structure or impoundment requiring rock, sand, dirt, or other material for the structure's construction; site development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and sub-aqueous utility lines (33 C.F.R. §328.2[f]).

The USACE has established a series of nationwide permits that authorize certain activities in waters of the United States, if a proposed activity can demonstrate compliance with standard conditions. Normally, USACE requires an individual permit for an activity that will affect an area equal to or in excess of 0.5 acre of waters of the United States. Projects that result in impacts to less than 0.5 acre can normally be conducted pursuant to one of the nationwide permits, if consistent with the standard permit conditions. USACE also has discretionary authority to require an Environmental Impact Statement for projects that result in impacts to an area between 0.1 and 0.5 acre. Use of any nationwide permit is contingent on the activities having no impacts to endangered species.

Federal Clean Water Act - Section 401. Per Section 401 of the CWA, "any applicant for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable waters at the point where the discharge originates or will originate, that any such discharge will comply with the applicable provisions of sections 1311, 1312, 1313, 1316, and 1317 of this title" (33 U.S.C.A. § 1341(a)(1)). Therefore, before the USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 water quality certification from the Regional Water Quality Control Board.

Waters of the United States. USACE has primary federal responsibility for administering regulations that concern "waters of the U.S." The Corps acts under two statutory authorities, the Rivers and Harbors Act (Sections 9 and 10), which governs specified activities in "navigable waters of the U.S.," and the Clean Water Act (CWA) (Section 404), which governs specified activities in "other waters of the U.S.," including wetlands. The Corps requires that a permit be obtained if a project proposes placing structures within, over, or under navigable waters or discharging dredged or fill material into "waters of the U.S." below the ordinary high-water mark in non-tidal waters. The U.S. Environmental Protection Agency (USEPA), USFWS, NMFS, and several other agencies can provide comments on Corps permit applications.

The federal government defines wetlands in CWA Section 404 as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR § 328.3(b) and 40 CFR § 230.3). The federal definition of wetlands requires three wetland identification parameters to be present: wetland hydrology, hydric soils, and hydrophytic vegetation.

"Other waters of the U.S." refers to those hydric features that are regulated by the CWA but are not wetlands (33 CFR § 328.4). To be considered jurisdictional, these features must exhibit a defined bed and bank and an ordinary high-water mark. Examples of other waters of the U.S. include rivers, creeks, intermittent and ephemeral channels, ponds, and lakes. Human-made wetland areas that are not regulated under this act include stock watering ponds and created water treatment facilities.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act (MBTA) protects all common wild birds found in the United States except the house sparrow, starling, feral pigeon, and resident game birds such as pheasant, grouse, quail, and wild turkey. Resident game birds are managed separately by each state. Under the MBTA, "it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof …" (16 U.S.C.A. § 703(a)).

4.3.2.2 State Regulations

California Endangered Species Act. The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA). CESA applies to "endangered" or "threatened" birds, mammals, fish, amphibians, reptiles, and plants, but does not apply to insects (see 81 Cal. Op. Att'y Gen. 222 (1998)). The State of California considers an "endangered" species one whose prospects of survival and reproduction are in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease. Any species determined by the commission as "endangered" on or before January 1, 1985, is an "endangered species." A "threatened" species is one present in such small numbers throughout its range that it is likely to become an endangered species in the foreseeable future in the absence of special protection or management. The California Endangered Species Act of 1970 created the categories of "Endangered" and "Rare." The California Endangered Species Act of 1984 created the categories of "Endangered" and "Threatened." On January 1, 1985, all animal species designated as "Rare" were reclassified as "Threatened" (see Fish and Game Code § 2067).

Section 2080 of the Fish and Game Code prohibits "take" of any species that the commission determines to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate mitigation planning to offset project caused losses of listed species populations and their essential habitats.

"Candidate species" means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list (Fish and Game Code § 2068).

The CDFW exercises authority over mitigation projects involving State-listed species, including those resulting from CEQA mitigation requirements. Lead agencies are directed by the CESA to consult with the CDFW on projects or actions that could affect listed species. A "taking" may be authorized by the CDFW if an approved habitat management plan or management agreement that avoids or compensates for possible jeopardy is implemented. In addition, the CDFW requires preparation of mitigation plans in accordance with published guidelines.

California Department of Fish and Wildlife "Species of Special Concern." A Species of Special Concern (SSC) is a species, subspecies, or distinct population of an animal (i.e., fish, amphibian, reptile, bird and mammal) native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:

- is extirpated from the State or, in the case of birds, in its primary seasonal or breeding role;
- is listed as Federally-, but not State-, threatened or endangered;

- meets the State definition of threatened or endangered but has not formally been listed;
- is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status;
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

SSCs tend to have a number of factors in common, including that they:

- occur in small, isolated populations or in fragmented habitat, and are threatened by further isolation and population reduction;
- show marked population declines;
- depend on a habitat that has shown substantial historical or recent declines in size and/or quality or integrity;
- have few California records, or which historically occurred in the State but for which there are no recent records; and
- occur largely in areas where current management practices are inconsistent with the animal's persistence.

"Species of Special Concern" is an administrative designation that carries no formal legal status per se, but signifies that the species is recognized as sensitive by the CDFW. Section 15380 of the State CEQA Guidelines clearly indicates that species of special concern should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein.

California Native Plant Protection Act. In 1977, the Legislature formally recognized the status of rare or endangered plants with the passage of the Native Plant Protection Act (NPPA) (Fish and Game Code, Section 1900 et seq.). The NPPA directed the CDFW to preserve, protect, and enhance rare and endangered plants in California. The NPPA also authorized the Fish and Game Commission to designate native plants as "rare" or "endangered" and to require permits for collecting, transporting, or selling such plants.

Under Section 1901 of the Fish and Game Code, "native plant" means a plant growing in a wild uncultivated state, which is normally found native to the plant life of this state. A species, subspecies, or variety is considered "endangered" when its prospects of survival and reproduction are in immediate jeopardy from one or more causes. A species, subspecies, or variety is considered "rare" when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens.

Under Section 1913(c) of the NPPA, the owner of land where a rare or endangered native plant is growing is required to notify the department at least 10 days in advance of changing the land use to allow for salvage of plant.

Fish and Wildlife Protection - California Fish and Game Code, Sections 1600 to 1603. The California Fish and Game Code mandates that "it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds, without first notifying the department of such activity." CDFW jurisdiction includes ephemeral, intermittent, and perennial watercourses, including dry washes, characterized by the presence of hydrophytic vegetation, the location of definable bed and banks, and the presence of existing fish or wildlife resources.

Furthermore, CDFW jurisdiction is often extended to habitats adjacent to watercourses, such as oak woodlands in canyon bottoms or willow woodlands that function as part of the riparian system. Historic court cases have further extended CDFW jurisdiction to include watercourses that seemingly disappear, but re-emerge elsewhere. Under the CDFW definition, a watercourse need not exhibit evidence of an OHWM to be claimed as jurisdiction. However, CDFW does not regulate isolated wetlands; that is, those that are not associated with a river, stream, or lake.

Porter-Cologne Water Quality Act. The RWQCB regulates actions that would involve "discharging waste, or proposing to discharge waste, within any region that could affect the water of the state" (Water Code Section 13260(a)), pursuant to provisions of the Porter-Cologne Water Quality Act. "Waters of the State" are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code Section 13050 (e)).

Regional Water Quality Control Board Regulated Activities. Under Section 401 of the CWA, the RWQCB regulates all activities that are regulated by the USACE. Additionally, under the Porter-Cologne Water Quality Act, the RWQCB regulates all activities, including dredging, filling, or discharge of materials into waters of the state that are not regulated by the USACE due to a lack of connectivity with a navigable water body and/or lack of an OHWM.

California Fish and Game Code - Section 3503 and Section 3511. The CDFW administers the California Fish and Game Code. There are particular sections of the Fish and Game Code that are applicable to natural resource management. For example, Section 3503 of the Fish and Game Code states it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird that is protected under the MBTA. Fish and Game Code Section 3503.5 further protects all birds in the orders Falconiformes and Strigiformes, birds of prey such as hawks and owls, and their eggs and nests, from any form of take. Disturbance that causes nest abandonment and/or loss of reproductive effort is also considered a "taking" by the CDFW. Fish and Game Code Section 3511 lists fully protected bird species where the CDFW is unable to authorize the issuance of permits or licenses to take these species.

Natural Community Conservation Planning Act - Fish and Game Code Sections 2800 et seq. The State of California has adopted the Natural Community Conservation Planning and Habitat Conservation Planning (NCCP/HCP) program to focus on creating a multiple-species, multiple-habitat subregional Reserve System and implementing a long-term "adaptive management" program. To accomplish this, the NCCP/HCP creates a subregional habitat Reserve System and implements a coordinated program to manage biological resources within the habitat reserve. The creating of a defined Reserve System provides certainty to the public and to affected landowners with respect to the location of future development and open space within the subregion. The NCCP/HCP was

developed with coordination through the CDFW and the USFWS, in order to account for the CESA and the federal ESA. The City does not occur within any NCCP/HCP designated area.

California Native Plant Society. The California Native Plant Society (CNPS) maintains a list of plant species native to California that have low numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Plants of California. Potential impacts to populations of CNPS-listed plants require consideration under CEQA. The following identifies the definitions of the California Rare Plant Ranks (formerly known as the CNPS lists):

- California Rare Plant Rank 1A: Plants believed extirpated in California and either rare or extinct elsewhere.
- California Rare Plant Rank 1B: Plants rare, threatened, or endangered in California and elsewhere.
- California Rare Plant Rank 2A: Plants presumed extirpated in California, but more common elsewhere.
- California Rare Plant Rank 2B: Plants rare threatened or endangered in California but more common elsewhere.
- California Rare Plant Rank 3: Plants about which more information is needed - a review list.
- California Rare Plant Rank 4: Plants of limited distribution – a watch list.

The CNPS Threat Rank is an extension added onto the California Rare Plant Rank, which designates the level of threats by a 1 to 3 ranking, with 1 being the most threatened and 3 being the least threatened. Each threat rank is defined as follows:

- 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat).
- 0.2-Moderately threatened in California (20 - 80% occurrences threatened / moderate degree and immediacy of threat).
- 0.3-Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known).

4.3.2.3 Local Regulations

City of Fresno General Plan. The City of Fresno's General Plan Parks, Open Space, and Schools Element includes objectives and policies that work to provide for long-term preservation, enhancement, and enjoyment of plant, wildlife, and aquatic habitat. The following policies related to biological resources are applicable to the proposed project:**Policy POSS-5-c: Buffers for Natural Areas.** Require development projects, where appropriate and warranted, to incorporate natural

features (such as ponds, hedgerows, and wooded strips) to serve as buffers for adjacent natural areas with high ecological value.

- **Policy POSS-6-b: Effects of Stormwater Discharge.** Support efforts to identify and mitigate cumulative adverse effects on aquatic life from stormwater discharge to the San Joaquin River.
    - Avoid discharge of runoff from urban uses to the San Joaquin River or other riparian corridors.
    - Approve development on sites having drainage (directly or indirectly) to the San Joaquin River or other riparian areas only upon a finding that adequate measures for preventing pollution of natural bodies of water from their runoff will be implemented.
    - Periodically monitor water quality and sediments near drainage outfalls to riparian areas. Institute remedial measures promptly if unacceptable levels of contaminant(s) occur.
- **Policy POSS-7-a: Preserve Wildlife Corridors.** Acquire and expand natural reserves and wildlife corridors through purchase, easements, mitigation for proposed activities, or other mutually satisfactory transactions.

City of Fresno Municipal Code. Chapter 13, Article 3, Street Trees and Parkways of the City of Fresno Municipal Code provides guidelines and requirements for the preservation and protection existing street trees, as well as guidelines establishing the installation of city-owned trees along streets.

4.3.3 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to biological resources that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less than significant level. Cumulative impacts are also addressed.

4.3.3.1 Significance Criteria

The thresholds for impacts related to biological resources used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed project would result in a significant impact related to biological resources if it would:

Threshold 4.3.1 **Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;**

Threshold 4.3.2 **Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;**

Threshold 4.3.3 **Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;**

Threshold 4.3.4 **Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or**

Threshold 4.3.5 **Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or**

Threshold 4.3.6 **Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.**

4.3.3.2 Project Impacts

The following discussion describes the potential impacts related to biological resources that could result from implementation of the proposed project.

Threshold 4.3.1 **Would the project have substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

The Fresno region supports various special-status natural communities, plants, and animals. Table 4.3.A above identifies those special-status plant and animal species known to occur or that potentially occur in the vicinity of the project site (based on a literature review and experience in the region) and includes detailed information about each species' habitat and distribution, State and federal status designations, and probability of occurrence within the project site. As stated in the Environmental Setting section above, the background research included occurrence records from nine USGS topographic quadrangles surrounding the survey area. A nine-USGS quadrangle search covers a large, variable geographic and topographic area containing numerous habitat types not found within or around the project site.

Special-Status Plants. Ten special-status vascular plant species are known to occur in the region. However, no special-status plants exist within the project site or in adjacent parcels. The project site does not contain suitable habitat and is situated outside of the species' known distribution.

Therefore, as the project site does not contain any special-status plants, special-status plants would not be impacted by the proposed project.

Special-Status Species. In total, 20 special-status species could potentially occur in the project vicinity; however, 18 are considered absent or unlikely to occur on the project site due to past and ongoing disturbance of the site and surrounding lands, the absence of suitable habitat, and/or the project site being situated outside of the species' known distribution. The 18 species considered absent or unlikely to occur on the project site include vernal pool fairy shrimp, Crotch bumble bee, valley elderberry longhorn beetle, California tiger salamander, giant garter snake, least Bell's vireo, Swainson's hawk, tricolored blackbird, western yellow-billed cuckoo, Fresno kangaroo rat, San Joaquin kit fox, western spadefoot, western pond turtle, coast horned lizard, northern California legless lizard, California glossy snake, burrowing owl, and American badger. The proposed project does not have the potential to impact these species through project-related mortality or loss of habitat as there is little or no likelihood that they are present or would be present during construction activity.

The two special-status species that have the potential to forage over the project site from time to time, but would not roost on the site, include western mastiff bat and pallid bat. These two bat species would not be adversely affected from project-related loss of habitat nor is foraging habitat uniquely important for these species. These species would not be vulnerable to construction-related injury or mortality while foraging because they are highly mobile during foraging and are expected to avoid active construction zones. These bats would be expected to continue to use the project site for foraging after redevelopment. No other special-status species were determined to have a moderate or high probability of occurrence on the project site.

However, the project site does contain suitable nesting habitat for a few urban adapted native avian species. The on-site trees and shrubs have the potential to support nesting birds such as northern mockingbird or mourning dove. In addition, the project site also has the potential to support the ground-nesting and disturbance-tolerant killdeer. Nearly all native birds are protected by the Federal Migratory Bird Treaty Act, the California Migratory Bird Protection Act, and the California Fish and Game Code. Construction activities that occur during the nesting bird season (typically February 1 through August 31 have potential to result in the mortality/disturbance of nesting birds.

Without avoidance or mitigation, these potential impacts on nesting birds could be considered potentially significant. However, avoidance, conducting pre-construction surveys, and establishing buffers would prevent or compensate for impacts on special-status bird species. Therefore, implementation of Mitigation Measure BIO-1, which would require avoidance, conducting pre-construction surveys, and establishing buffers, would effectively mitigate any impacts on special-status species to less-than-significant levels.

Critical Habitat. The project would not result in any impacts to critical habitat, and no additional mitigation is required.

Summary. The proposed project would have a less-than-significant impact with implementation of Mitigation Measure BIO-1 related to a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or

regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measure BIO-1: If project construction activities occur during nesting season (between February 1 and August 31), a qualified biologist shall conduct pre-construction surveys for active migratory bird nests at the project site within 14 days of the onset of these activities. Should any active nests be discovered in or near proposed construction zones, the biologist shall identify a suitable construction-free buffer around the nest. This buffer shall be identified on the ground with flagging or fencing, and shall be maintained until the biologist has determined that the young have fledged.

Level of Significance With Mitigation: Less than Significant with implementation of Mitigation Measure BIO-1.

Threshold 4.3.2 Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Habitat values of the urban project site have been severely diminished due to the extensive hardscape, scarcity of vegetation, and perimeter chain-link fencing. No riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulation by the CDFW or USFWS is present on the project site. Designated critical habitat, sensitive natural communities, and other sensitive habitats are absent from the project site and adjacent lands. Therefore, implementation of the proposed project would have no impact on riparian habitat and other sensitive natural communities identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service,.

Level of Significance Without Mitigation: No Impact.

Threshold 4.3.3 Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means

No aquatic resources occur within the project site, or within the vicinity of the project site. The project site consists entirely of previously developed areas. As a result, no impact would occur related to a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Level of Significance Without Mitigation: No Impact.

Threshold 4.3.4 Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Wildlife movement corridors are linear habitats that function to connect two or more areas of significant wildlife habitat. These corridors may function on a local level as links between small habitat patches (e.g., streams in urban settings) or may provide critical connections between regionally significant habitats (e.g., deer movement corridors). Wildlife corridors typically include vegetation and topography that facilitate the movements of wild animals from one area of suitable habitat to another, in order to fulfill foraging, breeding, and territorial needs. These corridors often provide cover and protection from predators that may be lacking in surrounding habitats. Wildlife corridors generally include riparian zones and similar linear expanses of contiguous habitat.

The project site does not contain any features that would function as wildlife movement corridors for resident or migratory wildlife species. In addition, the perimeter chain-link fence would inhibit the movement of native or migratory wildlife. Therefore, the proposed project would not place any permanent barriers within any known wildlife movement corridors or interfere with habitat connectivity. The proposed project would result in a less-than-significant impact related to the potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

Level of Significance With Mitigation: Less Than Significant Impact.

Threshold 4.3.5 Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The project would not conflict with any local policies or ordinances protecting biological resources. Buildout of the proposed project would not impact any biological resources protected by local policies or ordinances. As a result, no impact would occur related to local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Level of Significance Without Mitigation: No Impact.

Threshold 4.3.6 Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The City of Fresno is not located within the boundaries of any approved or draft Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other adopted local, regional or State HCP. Therefore, development within the City would not result in any impacts to an adopted HCP or NCCP.

The PG&E San Joaquin Valley Operation and Maintenance (O&M) Habitat Conservation Plan (HCP) was approved in 2007 and covers portions of nine counties, including Fresno County and the City of Fresno. This HCP covers PG&E activities which occur as a result of ongoing O&M that would have an

adverse impact on any of the 65 covered species and provides incidental take coverage from the USFWS and CDFW. The project site is not located within the covered area of any other HCP, Natural Community Conservation Plan, or other approved local, regional, or State HCP.

Therefore, the project would not conflict with the provisions of the PG&E HCP. The proposed project would have no impact to the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Level of Significance Without Mitigation: No Impact.

4.3.3.3 Cumulative Impacts

Cumulative impacts arise due to the linking of impacts from past, current, and reasonably foreseeable future projects in the region. Future development activities in the City of Fresno would result in impacts on the same habitat types and species that would be affected by the proposed project. The proposed project, in combination with other projects in the area and other activities that impact the species that are affected by this project, could contribute to cumulative effects on special-status species.

The cumulative impact on biological resources resulting from the project in combination with other projects in the project area and larger region would be dependent on the relative magnitude of adverse effects of these projects on biological resources compared to the relative benefit of impact avoidance and minimization efforts prescribed by planning documents, CEQA mitigation measures, and permit requirements for each project; and compensatory mitigation and proactive conservation measures associated with each project. In the absence of such avoidance, minimization, compensatory mitigation, and conservation measures, cumulatively significant impacts on biological resources would occur.

However, the City of Fresno General Plan contains conservation measures that would benefit biological resources. Further, the project would implement Mitigation Measure BIO-1 to reduce impacts on nesting birds, as described above. The proposed project is not expected to have a substantial adverse effect on any other special-status species. Thus, the project would not contribute to any significant cumulative impacts to biological resources, and cumulative impacts to these resources would be less than significant.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measure BIO-1 above.

Level of Significance With Mitigation: Less than Significant with implementation of Mitigation Measure BIO-1.

This page intentionally left blank

4.4 CULTURAL RESOURCES AND TRIBAL CULTURAL RESOURCES

This section describes the baseline conditions for cultural resources in the project area, identifies potentially-significant impacts to cultural resources that may result from project implementation, and recommends mitigation measures to reduce the severity of potentially significant impacts. Cultural resources include prehistoric-era archaeological sites, historic-era archaeological sites, Native American traditional cultural properties, sites of religious and cultural significance, and historical buildings, structures, objects, and sites. Appendix G of the California Environmental Quality Act (CEQA) Guidelines separates the resource topic areas of Cultural Resources and Tribal Cultural Resources. This Environmental Impact Report (EIR) combines these two resource topic areas to provide the reader one condensed location with pertinent information. The analysis in this section is based on the Phase I Cultural Resources Survey[1] prepared for the proposed project (Appendix F).

4.4.1 Environmental Setting

The project site is depicted on the United States Geological Survey (USGS) Fresno South, California 7.5-minute topographic quadrangle map in Section 06 of Township 14 South, Range 20 East, Mount Diablo Baseline and Meridian. The project site is relatively flat and is at an elevation of 290 feet. The nearest current water source is a man-made ditch, and the nearest natural freshwater source (the San Joaquin River) is 7.5 miles north of the project site. Subsurface sediments of the project site consist of Quaternary marine and nonmarine alluvium, lake, playa, and terrace deposits that date to the Pleistocene and Holocene (ranging from 2.58 million years ago to the present).

To characterize the setting for cultural resources at the project site, the following tasks were completed: (1) a records search at the Southern San Joaquin Valley Information Center (SSJVIC) to identify prior cultural resource studies and previously recorded cultural resources in the project area and surrounding 0.5-mile area; (2) a search of the Native American Heritage Commission (NAHC) Sacred Lands File; (3) additional background research including a review of aerial photographs and historic-period maps that include the project site; and (4) a pedestrian field survey of the project area to identify potential historical resources within the project area.

4.4.1.1 Southern San Joaquin Valley Information Center

A record search of the project site and a 0.5-mile search radius was conducted on May 10, 2021, by staff members at the SSJVIC of the California Historical Resources Information System (CHRIS) at California State University, Bakersfield (SSJVIC Records Search File No. 21-161). The SSJVIC, an affiliate of the California Office of Historic Preservation (OHP), is the official repository of cultural resources records and reports for Fresno County. Background research also included a review of the following State and federal inventories:

[1] LSA. 2021. *Phase I Cultural Resources Survey for the 2740 West Nielsen Avenue Office/Warehouse Project in Fresno, Fresno County, California (LSA Project No. SNN2102)*. August 3.

- Built Environment Resources Directory (BERD)[2]
- California Historical Landmarks[3]
- California Points of Historical Interest[4]
- *Five Views: An Ethnic Historic Site Survey for California*[5]
- California Inventory of Historic Resources[6]

The record search results indicate that no previous cultural resources studies have included the project site and that four previous studies have included a portion of the area within a 0.5 mile radius of the project site. All four previous studies were field surveys. No cultural resources have been previously recorded in the project site, and one cultural resource (P-10-003930, the historic-period Southern Pacific Railroad) has been recorded within 0.5 miles of the project site. No resources listed in the BERD are within the project site.

4.4.1.2 Native American Heritage Commission

LSA submitted a request to the NAHC for review of the Sacred Lands File (SLF) for the presence of Native American cultural resources that might be impacted by the proposed project. The NAHC maintains the SLF database and is the official State repository of Native American sacred-site location records in California. Nancy Gonzalez-Lopez, NAHC Cultural Resources Analyst, responded to the SLF search request on May 18, 2021, stating that the results were negative and that no Native American cultural resources were known in the area. The NAHC also provided a suggested list of Native American individuals to contact for information regarding the project site.

4.4.1.3 Aerial Photographs and Historic Maps

Additional background research included a review of aerial photographs and historic-period maps that include the project site.[7] The purpose of this review was to assess the potential for historic period archaeological deposits in the project site. The oldest available aerial photograph that includes the project site dates to 1962, at which time the project site was already disturbed with buildings on the western portion and cleared land on the eastern portion. By 1972, the square buildings on the eastern portion of the project site were constructed. The rectangular buildings on the eastern portion of the project site were constructed by 1998. All buildings were demolished by 2014.

---

2 California Office of Historic Preservation. Built Environment Resources Directory (BERD). n.d. Website: https://ohp.parks.ca.gov/?page_id=30338 (accessed July 31, 2021).

3 California Office of Historic Preservation. 1996. California Historical Landmarks. California Department of Parks and Recreation, Sacramento.

4 California Office of Historic Preservation. 1992. California Points of Historical Interest. California Department of Parks and Recreation, Sacramento.

5 California Office of Historic Preservation. 1988. *Five Views: An Ethnic Historic Site Survey for California*. California Department of Parks and Recreation, Sacramento.

6 California Office of Historic Preservation. 1976. California Inventory of Historic Resources. California Department of Parks and Recreation, Sacramento.

7 National Environmental Title Research. n.d. Historic Aerials. Website: http://www.historicaerials.com (accessed July 31, 2021).

The earliest available topographic quadrangle reviewed by LSA dates to 1923 and depicts the roads along the borders of the project site but depicts no buildings on the project site itself. Buildings in the southwestern corner of the project site are depicted on a 1947 map, and the remainder of the buildings on the western portion of the project site are depicted on a 1964 map along with two reservoirs just west of the center of the southern edge of the project site. The map dating to 1974 depicts the square buildings on the eastern portion of the project site (which were visible on the 1972 aerial photograph). The remaining building foundations within the project site are not 50 years old and as such do not meet the age threshold for evaluation per CEQA.

4.4.1.4 Field Survey

On June 11, 2021, a pedestrian survey of the project site was conducted by spot-checking areas of exposed sediment. Areas not surveyed were covered with concrete or asphalt. Transects spaced less than 5 meters (16.4 feet) apart were walked within the survey areas. A trowel was used to periodically expose native soil to obtain a better view of the ground surface. Rodent burrowing holes and backdirt piles were examined for indications of archaeological deposits and/or human remains. The field survey did not identify any cultural resources in the project site. Observed sediments consisted of a light-brown loam and were recently disturbed by mechanical equipment. Much of the project site was covered by concrete (building foundations) or asphalt (driving areas).

4.4.2 Regulatory Setting

State and local laws, regulations, plans, or guidelines that are potentially applicable to the project are summarized below.

4.4.2.1 Federal Regulations

National Historic Preservation Act. The National Historic Preservation Act of 1966 (NHPA) is the most concise and effective federal law dealing with historic preservation. While federal preservation law does not apply to the proposed project, applicable State and local requirements have been derived from this legislation. The NHPA established guidelines to "preserve important historic, cultural, and natural aspects of our cultural heritage, and to maintain, wherever possible, an environment that supports diversity and a variety of individual choice." The NHPA includes regulations specifically for federal land-holding agencies, but also includes regulations (known as Section 106) which pertain to all projects that are funded, permitted, or approved by any federal agency and which have the potential to affect cultural resources. In addition, the NHPA authorizes the Secretary of the Interior to establish a National Register of Historic Places (National Register). The National Register is an inventory of districts, sites, buildings, structures and objects significant at a national, State, or local level in American history, architecture, archaeology, engineering, and culture. The National Register is wholly maintained by the National Park Service, the Advisory Council on Historic Preservation, and the State Office of Historic Preservation (SHPO) and grants-in-aid programs.

4.4.2.2 State Regulations

California Register of Historical Resources. The California Register of Historical Resources (California Register or CRHR) is an inventory of significant architectural, archaeological, and historical resources in the State of California. Important cultural resources can be listed in the California Register

through a number of methods, and listing requires approval from the State Historical Resources Commission. Properties can be nominated to the California Register by local governments, private organizations, or citizens. State Historical Landmarks and National Register-listed properties gain automatic listing in the California Register. The evaluative criteria used by the California Register for determining eligibility are closely based on those developed by the National Park Service for the National Register of Historic Places. For a cultural resource to be significant, or eligible, for listing in the California Register, it must reflect one or more of the following criteria (PRC 5024.1c):

- Criterion 1 (Events): Resources that are associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

- Criterion 2 (Persons): Resources that are associated with the lives of persons important to local, California, or national history.

- Criterion 3 (Architecture): Resources that embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of a master, or possess high artistic values.

- Criterion 4 (Information Potential): Resources or sites that have yielded or have the potential to yield information important to the prehistory or history of the local area, California, or the nation.

California Environmental Quality Act. CEQA requires that public agencies assess the effects on historical resources of public or private projects that the agencies finance or approve. Historical resources are defined as buildings, sites, structures, objects, areas, places, records, or manuscripts that the lead agency determines to have historical significance, including architectural, archaeological, cultural, or scientific significance. CEQA requires that if a project results in an effect that may cause a substantial adverse change in the significance of a historical resource, alternative plans or mitigation measures must be considered.

However, only significant historical resources need to be addressed. Therefore, before the assessment of effects or development of mitigation measures, the significance of cultural resources must be determined. The steps that are normally taken in a cultural resources investigation for CEQA compliance are as follows:

1. Identify potential historical resources.
2. Evaluate the eligibility of historical resources.
3. Evaluate the effects of the project on all eligible historical resources.

In addition, properties that are listed in or eligible for listing in the NRHP are considered eligible for listing in the CRHR and thus are significant historical resources for the purposes of CEQA (PRC Section 5024.1[d][1]).

According to CEQA, a project with an effect that may cause a substantial adverse change in the significance of a historical resource may have a significant impact on the environment (State CEQA

Guidelines 15064.5[b]). CEQA also states that a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of an historical resource or its immediate surroundings such that the significance of the resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or materially and adversely alter the physical characteristics of a historical resource that convey its historical significance and qualify or justify its eligibility for inclusion in the CRHR or in a local register or survey that meet the requirements of PRC Sections 5020.1(k) and 5024.1(g).

Significant Historical Resources under State CEQA Guidelines. In completing an analysis of a project under CEQA, it must first be determined if the project site possesses a historical resource. A site may qualify as a historical resource if it falls within at least one of four categories listed in State CEQA Guidelines Section 15064.5(a). The four categories are:

1. A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code Section 5024.1, Title 14 CCR, Section 4850 et seq.).

2. A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of section 5024.1 (g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

3. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852).

These conditions are related to the eligibility criteria for inclusion in the CRHR (PRC Sections 5020.1[k], 5024.1, 5024.1[g]). A cultural resource may be eligible for inclusion in the CRHR if it:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

- Is associated with the lives of persons important in our past;

- Embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values; or

- Has yielded, or may be likely to yield, information important in prehistory or history.

The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Pub. Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Pub. Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Pub. Resources Code sections 5020.1(j) or 5024.1.

A lead agency must consider a resource that has been listed in, or determined to be eligible for listing in the California Register (Category 1) as an historical resource for CEQA purposes. In general, a resource that meets any of the other three criteria listed in State CEQA Guidelines Section 15064.5(a) is also considered to be a historical resource unless "the preponderance of evidence demonstrates" that the resource is not historically or culturally significant."

State Health and Safety Code. The discovery of human remains is regulated according to California Health and Safety Code Section 7050.5, which states, "If human remains are encountered, no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified to the find immediately. If the remains are determined to be precontanct, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify Most Likely Descendant (MLD). With the permission of the landowner or his or her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 24 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials."

California Government Code 65352.3-5: Local Government-Tribal Consultation. California Government Code Sections 65092, 65351, 65352, 65352.3, and 65352.4, formally known as Senate Bill (SB) 18, regulate the consultation with California Native American tribes having traditional lands located within the jurisdiction of applicable cities and counties. The intent of the underlying legislation was to provide all California Native American tribes that are on the contact list maintained by the Native American Heritage Commission, an opportunity to consult with specific local governments for the purpose of preserving and protecting their sacred places. Such consultations apply to the preparation, adoption, and amendment of general plans.

Senate Bill 18. Senate Bill (SB) 18, signed into law in September 2004, requires local (city and county) governments to consult with California Native American tribes to aid in the protection of traditional tribal cultural places through local land use planning. The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting or mitigating impacts to cultural places. The consultation and notice requirements apply to adoption and amendment of both general plans (Government Code Section 65300 et seq.) and specific plans (Government Code Section 65450 et seq.). Specifically, Government Code Section 65352.3 requires local governments, prior to making a decision to adopt or amend a general plan, to consult with California Native American tribes identified by the NAHC for the purpose of protecting or mitigating impacts to cultural places. As previously discussed, the NAHC is the State agency responsible for the protection of Native American burial and sacred sites.

Assembly Bill 52. Assembly Bill (AB) 52, the Native American Historic Resource Protection Act, sets forth a proactive approach intended to reduce the potential for delay and conflicts between Native American and development interests. Projects subject to AB 52 are those that file a notice of preparation for an EIR or notice of intent to adopt a negative or mitigated negative declaration on or after July 1, 2015. AB 52 adds tribal cultural resources (TCR) to the specific cultural resources protected under CEQA. Under AB 52, a TCR is defined as a site, feature, place, cultural landscape (must be geographically defined in terms of size and scope), sacred place, or object with cultural value to a California Native American tribe that is either included or eligible for inclusion in the California Register, or included in a local register of historical resources. A Native American Tribe or the lead agency, supported by substantial evidence, may choose at its discretion to treat a resource as a TCR. AB 52 also mandates lead agencies to consult with tribes, if requested by the tribe, and sets the principles for conducting and concluding consultation.

4.4.2.3 Local Regulations

City of Fresno General Plan. The City of Fresno's General Plan Historic and Cultural Resources Element includes objectives and policies that work to identify and preserve Fresno's historic and cultural resources that reflect important cultural, social, economic, and architectural features. The following policies related to biological resources are applicable to the proposed project:

- **Policy HCR-1-c: Historic Preservation Ordinance.** Maintain the provisions of the City's Historic Preservation Ordinance, as may be amended, and enforce the provisions as appropriate.

- **Policy HCR-2-a: Identification and Designation of Historic Properties.** Work to identify and evaluate potential historic resources and districts and prepare nomination forms for Fresno's Local Register of Historic Resources and California and National registries, as appropriate.

- **Policy HCR-2-b: Historic Surveys.** Prepare historic surveys according to California Office of Historic Preservation protocols and City priorities as funding is available.

- **Policy HCR-2-c: Project Development.** Prior to project approval, continue to require a project site and its Area of Potential Effects (APE), without benefit of a prior historic survey, to be evaluated and reviewed for the potential for historic and/or cultural resources by a professional who meets the Secretary of Interior's Qualifications. Survey costs shall be the responsibility of the project developer. Council may, but is not required, to adopt an ordinance to implement this policy.

- **Policy HCR-2-d: Native American Sites.** Work with local Native American tribes to protect recorded and unrecorded cultural and sacred sites, as required by State law, and educate developers and the community-at-large about the connections between Native American history and the environmental features that characterize the local landscape.

- **Policy HCR-2-f: Archaeological Resources.** Consider State Office of Historic Preservation guidelines when establishing CEQA mitigation measures for archaeological resources.

- **Policy HCR-2-n: Property Database and Informational System.** Identify all historic resources within the city designated on the Local, State, or National register, and potential significant resources (building, structure, object or site) in existence for at least 45 years, and provide this information on the City's website.

- **Policy HCR-3-c: Context Sensitive Design.** Work with architects, developers, business owners, local residents and the historic preservation community to ensure that infill development is context-sensitive in its design, massing, setbacks, color, and architectural detailing.

City of Fresno Municipal Code. The City of Fresno has established a Historic Preservation Commission and a Local Register of Historic Resources (Fresno Municipal Code, Chapter 12, Article 16). The Ordinance is used to provide local levels of control over the historical aesthetics of cultural resources within the city, and to ensure that the potential impact to locally significant historical resources that may be the subject of redevelopment are given reasonable consideration. The purpose of the Ordinance is to:

> […] continue to preserve, promote and improve the historic resources and districts of the City of Fresno for educational, cultural, economic and general welfare of the public; to continue to protect and review changes to these resources and districts which have a distinctive character or a special historic, architectural, aesthetic or cultural value to this city, state and nation; to continue to safeguard the heritage of this city by preserving and regulating its historic buildings, structures, objects, sites and districts which reflect elements of the city's historic, cultural, social, economic, political and architectural history; to continue to preserve and enhance the environmental quality and safety of these landmarks and districts; to continue to establish, stabilize and improve property values and to foster economic development. (Article 16 Section 12-1602(a).)

The Ordinance provides legislative mechanisms to protect certain historical resources. Local registers of identified historical resources are known, including:

1. **Heritage Properties.** These are defined as a resource which is worthy of preservation because of its historical, architectural, or aesthetic merit but which is not proposed for and is not designated as an Historic Resource under the ordinance.

2. **Historic Resources.** These are defined as any building, structure, object or site that has been in existence more than fifty years and possesses integrity of location, design, setting, materials, workmanship, feeling and association, and is associated with events that have made a significant contribution to the broad patterns of city history, or is associated with the lives of persons significant in our past, or embodies the distinctive characteristics of a type, period or method of construction, or represents the work of a master or possesses high artistic values; or has yielded, or may be likely to yield, important information in prehistory or history; and has been designated as such by the Council pursuant to the provisions of the Ordinance.

3. **Local Historic Districts.** These are defined as any finite group of resources related to one another in a clearly distinguishable way or any geographically definable area which possesses a

significant concentration, linkage or continuity of sites, buildings, structures or objects united historically or aesthetically by plan or physical development. The Local Historic District must be significant as well as identifiable and it must meet Local Register Criteria for listing on that Register. Contributors to Historic Districts are defined as any Historic Resource that contributes to the significance of the specific Local Historic District or a proposed National Register Historic District under the criteria set forth in the Ordinance.

4. **National Register Historic Districts**, which shall mean any finite group of resources related to one another in a clearly distinguishable way or any geographically definable area which possesses a significant concentration, linkage or continuity of sites, buildings, structures or objects united historically or aesthetically by plan or physical development. A National Register Historic District must be significant as well as identifiable and it must meet National Register Criteria for listing on that Register. Contributors to a National Register Historic District are defined as any individual Historic Resource which contributes to the significance of a National Register Historic District under the criteria set forth in the Ordinance.

4.4.3 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to cultural and tribal cultural resources that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less-than-significant level. Cumulative impacts are also addressed.

4.4.3.1 Significance Criteria

The thresholds for impacts related to cultural resources used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed project would result in a significant impact related to cultural resources if it would:

Threshold 4.4.1 **Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;**

Threshold 4.4.2 **Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5;**

Threshold 4.4.3 **Disturb any human remains, including those interred outside of formal cemeteries; or**

Threshold 4.4.4 **Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:**

- **Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or**

- **A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

4.4.3.2 Project Impacts

The following discussion describes the potential impacts related to cultural resources that could result from implementation of the proposed project.

Threshold 4.4.1 Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

A historical resource defined by CEQA includes one or more of the following criteria:

1. The resource is listed, or found eligible for listing in, the California Register of Historical Resources

2. The resource is listed in a local register of historical resources as defined by Public Resources Code (PRC) Section 5020.1(k)

3. The resource is identified as significant in a historical resources survey meeting the requirements of PRC Section 5024.1(g), or

4. The resource is determined to be a historical resource by the project's lead agency (PRC Section 21084.1; *State CEQA Guidelines* Section 15064.(a)).

Under CEQA, historical resources include built-environment resources and archaeological sites.

As discussed above, the Cultural Survey included: (1) a records search at the SSJVIC to identify prior cultural resource studies and previously recorded cultural resources in the project area and surrounding 0.5-mile area; (2) a search of the NAHC's Sacred Lands File; (3) additional background research including a review of aerial photographs and historic-period maps that include the project site; and (4) a pedestrian field survey of the project area to identify potential historical resources within the project area.

No historical resources were identified within or adjacent to the project site. In the event that unknown resources are discovered during project construction, existing federal, State, and local laws and regulations would require construction activities to cease until such artifacts are properly examined and determined not to be of significance by a qualified professional. Additionally, implementation of Mitigation Measure CUL-1, described in Threshold 4.4.2, would require

consultation with a historical resources specialist to assess if the discovered resource qualifies as a historical resource and to identify appropriate mitigation measures, if applicable. Therefore, potential impacts related to a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5 would be less than significant with mitigation.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measure CUL-1 below.

Level of Significance With Mitigation: Less than Significant. See Mitigation Measure CUL-1.

Threshold 4.4.2 Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

According to the State CEQA Guidelines, "When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource" (State CEQA Guidelines Section 15064.5(c)(1)). Those archaeological sites that do not qualify as historical resources shall be assessed to determine if these qualify as "unique archaeological resources" (California PRC Section 21083.2). No archaeological resources were identified in the project site. However, there is a potential for unknown archaeological resources to be discovered during construction of the proposed project. Mitigation Measure CUL-1 requires that if unknown archaeological resources are discovered during construction, work in the area would halt and a qualified archaeologist would be contacted and consulted regarding how to appropriately address the situation. This would minimize or eliminate any potential for an adverse change to the significance of any discovered archaeological resources. Therefore, adherence to the requirements in Mitigation Measure CUL-1 would reduce potential impacts to a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 to less than significant with mitigation.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measure CUL-1: If previously unknown resources are encountered before or during any ground disturbing activities, construction shall stop in the immediate vicinity of the find and a qualified archaeologist shall be consulted to determine whether the resource requires further study. The qualified archaeologist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the State CEQA Guidelines and the City's Historic Preservation Ordinance.

If the resources are determined to be unique archeological resources as defined under Section 15064.5 of the State CEQA Guidelines, measures shall be identified by a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology and recommended to the lead agency.

Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds.

No further ground disturbing activity shall occur in the area of the discovery until the lead agency approves the measures to protect identified resources. Any significant or unique artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.

Level of Significance With Mitigation**:** Less than Significant with implementation of Mitigation Measure CUL-1.

Threshold 4.4.3 Would the project disturb any human remains, including those interred outside of formal cemeteries?

Disturbance of human remains interred outside of formal cemeteries would result in a significant impact. If human remains are identified during project construction, Section 7050.5 of the California Health and Safety Code and PRC Section 5097.98 shall apply, as appropriate. Mitigation Measure CUL-2 requires adherence to Section 7050.5 of the California Health and Safety Code and PRC Section 5097.98. With implementation of Mitigation Measure CUL-2, potential impacts related to disturbance of any human remains, including those interred outside of formal cemeteries would be less than significant with mitigation.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measure CUL-2: In the event that human remains are unearthed during excavation and grading activities of any future development project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The

landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

Level of Significance With Mitigation**:** Less than Significant with implementation of Mitigation Measure CUL-2.

Threshold 4.4.4 Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code sections, 21074, 5020.1(k), or 5024.1?

The State requires lead agencies to consider the potential effects of proposed projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the State CEQA Guidelines. Pursuant to PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Register or local historic register, or, the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a)(1 2)).

Additional information may also be available from the California NAHC's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

AB 52, which became law January 1, 2015, requires that, as part of the CEQA review process, public agencies provide early notice of a project to California Native American Tribes to allow for consultation between the tribe and the public agency. The purpose of AB 52 is to provide the opportunity for public agencies and tribes to consult and consider potential impacts to Tribal Cultural Resources (TCRs), as defined by PRC Section 2107(a). Under AB 52, public agencies shall reach out to California Native American Tribes who have requested to be notified of projects in areas within or which may have been affiliated with their tribal geographic range. Pursuant to AB 52, the Table Mountain Rancheria Tribe and the Dumna Wo Wah Tribe were invited to consult under AB 52. A certified letter was mailed to the above-mentioned tribes on December 17, 2021. The 30-day request for consultation period ended on January 17, 2022. Neither tribe requested consultation.

The site is currently vacant. While there is no evidence to suggest the presence of TCRs, if any artifacts are inadvertently discovered during ground-disturbing activities, existing federal, State, and local laws and regulations would require construction activities to cease until such artifacts are properly examined and determined not to be of significance by a qualified cultural resource professional. In addition, Mitigation Measure CUL-1 included above under Threshold 4.4.2, requires that if unknown archaeological resources are discovered during construction, work in the area would halt and a qualified archaeologist would be contacted. Therefore, adherence to the requirements in Mitigation Measure CUL-1 would reduce potential impacts related to the substantial adverse change in the significance of a tribal cultural resource to less than significant.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measure CUL-1 above.

Level of Significance With Mitigation**:** Less than Significant with implementation of Mitigation Measure CUL-1.

4.4.3.3 Cumulative Impacts

Potential impacts of the proposed project to cultural resources and tribal cultural resources, when combined with the impacts of past, present, and probable future projects in the City of Fresno, could contribute to a cumulatively significant impact due to the overall loss of historical and archaeological artifacts unique to the region.

Archaeological and historical resources are recorded throughout the City of Fresno, and it is possible that previously unknown archaeological and historical resources also exist within the City of Fresno. Compliance within Mitigation Measures CUL-1 requires that if unknown historical or archaeological resources are discovered during construction of the proposed project, work in the area would halt and a qualified historical resource specialist or archaeologist would be contacted and consulted regarding how to appropriately address the situation. In addition, each discretionary development proposal received by the City would be required to evaluate the potential to impact unknown historical and archaeological resources. If there were any potential for significant impacts to archaeological or historical resources as a result of present or reasonably foreseeable projects in Fresno, an investigation would be required to determine the nature and extent of the resources and identify appropriate mitigation measures. When archaeological and historical resources are assessed and/or protected as they are discovered, impacts to these resources are less than significant. Similarly, implementation of Mitigation Measure CUL-1 would ensure that the proposed project would not make a cumulatively considerable contribution to any cumulative impact on cultural resources.

In addition, no known precontanct or Native American human remains have been identified within or in the vicinity of the project site. There is a possibility that ground-disturbing activities associated with cumulative development may uncover previously unknown buried human remains. The uncovering of human remains that may be of precontanct or Native American origin is considered a significant impact. However, Mitigation Measure CUL-2 requires adherence to Section 7050.5 of the California Health and Safety Code and PRC Section 5097.98. With implementation of Mitigation Measure CUL-2, potential impacts related to the potential disturbance of any human remains would be less than significant with mitigation. Similar measures are required for other projects per regulatory requirements. Thus, the project would not contribute to any significant cumulative impacts to human remains.

Additionally, the presence of listed tribal cultural resources was not identified near the project site and no tribes affiliated to the project site requested consultation under AB 52. However, if tribal cultural resources are found during construction of the proposed project, compliance with applicable federal, State, and local laws and regulations and compliance with Mitigation Measure CUL-1 would reduce impacts to tribal cultural resources to less than significant. Similar measures are

required for other projects per regulatory requirements. The proposed project would not contribute to cumulative impacts to tribal cultural resources.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measures CUL-1 and CUL-2 above.

Level of Significance With Mitigation**:** Less than Significant with implementation of Mitigation Measures CUL-1 and CUL-2.

This page intentionally left blank

4.5 ENERGY

This section discusses energy use resulting from the proposed project and evaluates whether the proposed project would result in the wasteful, inefficient, or unnecessary consumption of energy resources or conflict with any applicable plans for renewable energy and energy efficiency. The analysis in this section is based on the California Emissions Estimator Model version 2020.4.0 (CalEEMod) prepared for the proposed project (Appendix C). Energy calculations are included in Appendix G.

4.5.1 Environmental Setting

4.5.1.1 Energy Resources

Electricity. Electricity is a man-made resource. The production of electricity requires the consumption or conversion of energy resources (including water, wind, oil, gas, coal, solar, geothermal, or nuclear resources) into energy. Electricity is used for a variety of purposes (e.g., lighting, heating, cooling, and refrigeration, and for operating appliances, computers, electronics, machinery, and public transportation systems).[1]

According to the most recent data available, in 2021, California's electricity was generated primarily by natural gas (37.9 percent), renewable sources (33.6 percent), large hydroelectric (9.2 percent), nuclear (9.3 percent), coal (3.0 percent), and other unspecified sources. Total electric generation in California in 2021 was 277,764 gigawatt-hours (GWh), up 2 percent from the 2020 total generation of 272,576 GWh.[2]

The City receives its electricity from PG&E. According to the California Energy Commission (CEC), total electricity consumption in the PG&E service area in 2020 was 78,518 gigawatt hours (GWh) (78,518,835,142 kilowatt-hours [kWh]).[3] Total electricity consumption in Fresno County in 2020 was 8,017.8 GWh (8,017,830,742 kWh).[4]

Natural Gas. Natural gas is a non-renewable fossil fuel. Fossil fuels are formed when layers of decomposing plant and animal matter are exposed to intense heat and pressure under the surface of the Earth over many years. Natural gas is a combustible mixture of hydrocarbon compounds (primarily methane) that is used as a fuel source. Natural gas is found in naturally occurring reservoirs in deep underground rock formations. Natural gas is used for a variety of uses (e.g.,

1 United States Energy Information Administration (EIA). 2019a. Electricity Explained. Website: eia.gov/energyexplained/electricity/ (accessed September 2022).

2 California Energy Commission (CEC). 2022a. *2021 Total System Electric Generation*. Website: https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation (accessed September 2022).

3 CEC. 2019b. Electricity Consumption by Entity. Website: ecdms.energy.ca.gov/elecbyutil.aspx (accessed September 2022).

4 CEC. 2019c. Electricity Consumption by County. Website: ecdms.energy.ca.gov/elecbycounty.aspx (accessed September 2022).

heating buildings, generating electricity, and powering appliances such as stoves, washing machines and dryers, gas fireplaces, and gas grills).[5]

Natural gas consumed in California is used for electricity generation (45 percent), residential uses (21 percent), industrial uses (25 percent), and commercial uses (9 percent). California continues to depend on out-of-state imports for nearly 90 percent of its natural gas supply.[6]

PG&E is the natural gas service provider for the City of Fresno. According to the CEC, total natural gas consumption in the PG&E service area in 2020 was 4,508.5 million therms (4,508,542,540 therms).[7] Total natural gas consumption in Fresno County in 2020 was 325.9 million therms (325,915,257 therms).[8]

Fuel. Petroleum is also a non-renewable fossil fuel. Petroleum is a thick, flammable, yellow-to-black mixture of gaseous, liquid, and solid hydrocarbons that occurs naturally beneath the earth's surface. Petroleum is primarily recovered by oil drilling. It is refined into a large number of consumer products, primarily fuel oil and gasoline.

The average fuel economy for light-duty vehicles (autos, pickups, vans, and SUVs) in the United States has steadily increased from about 14.9 miles per gallon (mpg) in 1980 to 22.9 mpg in 2020.[9] Federal fuel economy standards have changed substantially since the Energy Independence and Security Act was passed in 2007. The Act, which originally mandated a national fuel economy standard of 35 mpg by year 2020[10], applies to cars and light trucks of Model Years 2011 through 2020. In March 2020, the United States Environmental Protection Agency (USEPA) and National Highway Traffic Safety Administration (NHTSA) finalized the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, further detailed below.

Gasoline is the most used transportation fuel in California, with 97 percent of all gasoline being consumed by light-duty cars, pickup trucks, and sport utility vehicles. According to the most recent data available, total gasoline consumption in California was 289,918 thousand barrels or 1,464.7 trillion British Thermal Units (BTU) in 2020.[11] Of the total gasoline consumption, 273,289 thousand

5 EIA. 2019b Natural Gas Explained-Use of Natural Gas. Website: eia.gov/energyexplained/index.php?page=natural_gas_use (accessed September 2022).

6 CEC. 2020d. Supply and Demand of Natural Gas in California. Website: https://www.energy.ca.gov/data-reports/energy-almanac/californias-natural-gas-market/supply-and-demand-natural-gas-california (accessed September 2022).

7 CEC. 2019e. Gas Consumption by Entity. Website: ecdms.energy.ca.gov/gasbyutil.aspx (accessed September 2022).

8 CEC. 2019f Gas Consumption by County. Website: ecdms.energy.ca.gov/gasbycounty.aspx (accessed September 2022).

9 U.S. Department of Transportation (DOT). "Table 4-23: Average Fuel Efficiency of U.S. Light Duty Vehicles." Website: https://www.bts.dot.gov/bts/bts/content/average-fuel-efficiency-us-light-duty-vehicles (accessed September 2022).

10 U.S. Department of Energy. 2007. "Energy Independence & Security Act of 2007." Website: https://www.afdc.energy.gov/laws/eisa (accessed September 2022).

11 A British Thermal Unit is defined as the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit.

barrels or 1,380.7 trillion BTU were consumed for transportation.[12] Based on fuel consumption obtained from EMFAC2021, 157.1 million gallons of diesel and 375.2 million gallons of gasoline will be consumed from vehicle trips in Fresno County in 2022.

4.5.2 Regulatory Setting

This section includes applicable federal, State, and City regulations.

4.5.2.1 Federal Regulations

Energy Policy Act of 2005. The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under this Act, consumers and businesses can obtain federal tax credits for purchasing fuel-efficient appliances and products (including hybrid vehicles), building energy-efficient buildings, and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

Safer Affordable Fuel-Efficient Vehicles Rule. On March 21, 2020, the USEPA and National Highway Traffic Safety Administration (NHTSA) finalized the SAFE Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks (SAFE Vehicles Rule). The SAFE Vehicles Rule amends certain existing corporate average fuel economy (CAFE) and tailpipe CO_2 emissions standards for passenger cars and light trucks and establishes new standards, all covering model years 2021 through 2026. More specifically, the NHTSA set new CAFE standards for model years 2022 through 2026 and amended its 2021 model year CAFE standards, and the USEPA amended its CO_2 emissions standards for model years 2021 and later.

The current administration withdrew portions of the SAFE Rule, concluding that the SAFE Rule overstepped the agency's legal authority and finalized updated CAFE Standards for model years 2024 through 2026. The final rule establishes standards that would require an industry-wide fleet average of approximately 49 mpg for passenger cars and light trucks in model year 2026, by increasing fuel efficiency by 8 percent annually for model years 2024 and 2025, and 10 percent annually for model years 2026. The agency projects the final standards will save consumers nearly $1,400 in total fuel expenses over the lifetimes of vehicles produced in these model years and avoid the consumption of about 234 billion gallons of gas between model years 2030 to 2050. The NHTSA also projects that the standards will cut greenhouse gases from the atmosphere, reduce air pollution, and reduce the country's dependence on oil.

4.5.2.2 State Regulations

Assembly Bill 1575, Warren-Alquist Act. In 1975, largely in response to the oil crisis of the 1970s, the State Legislature adopted Assembly Bill (AB) 1575 (also known as the Warren-Alquist Act), which created the California Energy Commission (CEC). The statutory mission of the CEC is to forecast future energy needs; license power plants of 50 megawatts (MW) or larger; develop energy

[12] EIA. 2020a. California State Profile and Energy Estimates. Table F3: Motor gasoline consumption, price, and expenditure estimates, 2018. Website: eia.gov/state/seds/data.php?incfile=/state/seds/sep_fuel/html/fuel_mg.html&sid=CA (accessed September 2022).

technologies and renewable energy resources; plan for and direct State responses to energy emergencies; and, perhaps most importantly, promote energy efficiency through the adoption and enforcement of appliance and building energy efficiency standards. AB 1575 also amended Public Resources Code (PRC) Section 21100(b)(3) and *State CEQA Guidelines* Section 15126.4 to require EIRs to include, where relevant, mitigation measures proposed to minimize the wasteful, inefficient, and unnecessary consumption of energy caused by a project. Thereafter, the State Resources Agency created Appendix F to the *State CEQA Guidelines*. Appendix F assists EIR preparers in determining whether a project will result in the inefficient, wasteful, and unnecessary consumption of energy. Appendix F of the *State CEQA Guidelines* also states that the goal of conserving energy implies the wise and efficient use of energy and the means of achieving this goal, including (1) decreasing overall per capita energy consumption; (2) decreasing reliance on fossil fuels such as coal, natural gas, and oil; and (3) increasing reliance on renewable energy sources.

Senate Bill 1389, Energy: Planning and Forecasting. In 2002, the State Legislature passed Senate Bill (SB) 1389, which required the CEC to develop an integrated energy plan every 2 years for electricity, natural gas, and transportation fuels for the California Energy Policy Report. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero emission vehicles (ZEVs) and their infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled (VMT) and accommodate pedestrian and bicycle access.

In compliance with the requirements of SB 1389, the CEC adopts an Integrated Energy Policy Report every 2 years and an update every other year. The most recently adopted reports include the *2021 Integrated Energy Policy Report*[13] and the *2022 Integrated Energy Policy Report Update.*[14] The *Integrated Energy Policy Report* covers a broad range of topics, including decarbonizing buildings, integrating renewables, energy efficiency, energy equity, integrating renewable energy, updates on Southern California electricity reliability, climate adaptation activities for the energy sector, natural gas assessment, transportation energy demand forecast, and the California Energy Demand Forecast. The *Integrated Energy Policy Report* provides the results of the CEC's assessments of a variety of energy issues facing California. Many of these issues will require action if the State is to meet its climate, energy, air quality, and other environmental goals while maintaining energy reliability and controlling costs.

Renewable Portfolio Standards. SB 1078 established the California Renewable Portfolio Standards program in 2002. SB 1078 initially required that 20 percent of electricity retail sales be served by renewable resources by 2017; however, this standard has become more stringent over time. In 2006, SB 107 accelerated the standard by requiring that the 20 percent mandate be met by 2010. In April 2011, SB 2 required that 33 percent of electricity retail sales be served by renewable resources by 2020. In 2015, SB 350 established tiered increases to the Renewable Portfolio Standards of

[13] CEC. 2021. *2021 Integrated Energy Policy Report*. California Energy Commission. Docket Number: 21-IEPR-01.

[14] CEC. 2022. *2020 Integrated Energy Policy Report Update*. California Energy Commission. Docket Number: 22-IEPR-01.

40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. In 2018, SB 100 increased the requirement to 60 percent by 2030 and required that all State's electricity to come from carbon-free resources by 2045. SB 100 took effect on January 1, 2019.[15]

Title 24, California Building Code. Energy consumption by new buildings in California is regulated by the Building Energy Efficiency Standards, embodied in Title 24 of the California Code of Regulations (CCR), known as the California Building Code (CBC). The CEC first adopted the Building Energy Efficiency Standards for Residential and Nonresidential Buildings in 1978 in response to a legislative mandate to reduce energy consumption in the State. The CBC is updated every 3 years, and the current 2019 CBC went into effect on January 1, 2020. The efficiency standards apply to both new construction and rehabilitation of both residential and non-residential buildings, and regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building permit process. Local government agencies may adopt and enforce energy standards for new buildings, provided these standards meet or exceed those provided in CCR Title 24. Title 24 standards are updated every 3 years and was most recently updated in 2019 to include new mandatory measures for residential as well as non-residential uses; the new measures took effect on January 1, 2020. The next set of standards will be adopted in 2022 and apply to projects seeking building permits on or after January 1, 2023.

California Green Building Standards Code (CALGreen Code). In 2010, the California Building Standards Commission (CBSC) adopted Part 11 of the Title 24 Building Energy Efficiency Standards, referred to as the California Green Building Standards Code (CALGreen Code). The CALGreen Code took effect on January 1, 2011. The CALGreen Code is updated on a regular basis, with the most recent update consisting of the 2019 CALGreen Code standards that became effective January 1, 2020. The CALGreen Code established mandatory measures for residential and non-residential building construction and encouraged sustainable construction practices in the following five categories: (1) planning and design, (2) energy efficiency, (3) water efficiency and conservation, (4) material conservation and resource efficiency, and (5) indoor environmental quality. Although the CALGreen Code was adopted as part of the State's efforts to reduce greenhouse gas (GHG) emissions, the CALGreen Code standards have co-benefits of reducing energy consumption from residential and non-residential buildings subject to the standard.

California Energy Efficiency Strategic Plan. On September 18, 2008, the California Public Utilities Commission (CPUC) adopted California's first Long-Term Energy Efficiency Strategic Plan, presenting a roadmap for energy efficiency in California. The Plan articulates a long-term vision and goals for each economic sector and identifies specific near-term, mid-term, and long-term strategies to assist in achieving those goals. The Plan also reiterates the following four specific programmatic goals known as the "Big Bold Energy Efficiency Strategies" that were established by the CPUC in Decisions D.07-10-032 and D.07-12-051:

- All new residential construction will be zero net energy (ZNE) by 2020.
- All new commercial construction will be ZNE by 2030.

[15] California Public Utilities Commission (CPUC). 2020. Renewables Portfolio Standard (RPS) Program. Website: https://www.cpuc.ca.gov/rps/ (accessed September 2022).

- 50 percent of commercial buildings will be retrofitted to ZNE by 2030.
- 50 percent of new major renovations of State buildings will be ZNE by 2025.

4.5.2.3 Local Regulations

City of Fresno General Plan. The City of Fresno's General Plan Resource and Conservation Element includes objectives and policies that work to reduce the consumption of non-renewable energy resources by requiring and encouraging conservation measures and the use of alternative energy sources. The following policies related to energy are applicable to the proposed project:**Policy RC8-b: Energy Reduction Targets.** Strive to reduce per capita residential electricity use to 1,800 KWh per year and non-residential electricity use to 2,700 KWh per year per capita by developing and implementing incentives, design and operation standards, promoting alternative energy sources, and cost-effective savings.

- **Policy RC-8-c: Energy Conservation in New Development.** Consider providing an incentive program for new buildings that exceed California Energy Code requirements by fifteen percent.

- **Policy RC8-i: Renewable Target.** Adopt and implement a program to increase the use of renewable energy to meet a given percentage of the city's peak electrical load within a given time frame.

- **Policy RC8-j: Alternative Fuel Network.** Support the development of a network of integrated charging and alternate fuel station for both public and private vehicles, and if feasible, open up municipal stations to the public as part of network development.

4.5.3 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to energy that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less-than-significant level. Cumulative impacts are also addressed.

4.5.3.1 Significance Criteria

The thresholds for impacts related to energy used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed project would result in a significant impact related to energy if it would:

Threshold 4.5.1 **Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or**

Threshold 4.5.2 **Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.**

4.5.3.2 Project Impacts

The following discussion describes the potential impacts related to energy that could result from implementation of the proposed project.

Threshold 4.5.1 **Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?**

The proposed project would increase the demand for energy through day-to-day operations and fuel consumption associated with project construction. This section discusses energy use resulting from implementation of the proposed project and evaluates whether the proposed project would result in the wasteful, inefficient, or unnecessary consumption of energy resources or conflict with any applicable plans for renewable energy and energy efficiency.

Construction-Period Energy Use. Project construction would require energy resources primarily in the form of fuel consumption to operate heavy equipment, light-duty vehicles, machinery, and generators. Construction of the proposed project would begin in the third quarter of 2023 and would occur for 24 months, ending in 2025. The proposed project would require site preparation, grading, infrastructure, surface paving activities during construction, and architectural coatings (painting). The construction-related equipment would not be powered by natural gas, and no natural gas demand is anticipated during construction.

Transportation energy represents the largest energy use during construction and would occur from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction worker vehicles that would use petroleum fuels (e.g., diesel fuel and/or gasoline). Therefore, the analysis of energy use during construction focuses on fuel consumption. Construction trucks and vendor trucks hauling materials to and from the project site would be anticipated to use diesel fuel, whereas construction workers traveling to and from the project site would be anticipated to use gasoline-powered vehicles. Fuel consumption from transportation uses depends on the type and number of trips, VMT, the fuel efficiency of the vehicles, and the travel mode.

Estimates of fuel consumption (diesel fuel and gasoline) from construction equipment, construction trucks, and construction worker vehicles were based on default construction equipment assumptions and trip estimates from CalEEMod and fuel efficiencies from EMFAC2021. Fuel consumption estimates are presented in Table 4.5.A. CalEEMod output sheets are included in Appendix C and detailed energy calculations are included in Appendix G.

Table 4.5.A: Energy Consumption Estimates During Construction

Energy Type	Total Energy Consumption	Percentage Increase Countywide
Gasoline (total gallons)	155,125.8	0.04
Diesel (total gallons)	212,178.9	0.14

Source: Compiled by LSA (October 2022).

As indicated in Table 4.5.A, the project would consume approximately 155,125.8 gallons of gasoline and approximately 212,178.9 gallons of diesel fuel during project construction. Based on fuel

consumption obtained from EMFAC2021, approximately 375.2 million gallons of gasoline and 157.1 million gallons of diesel will be consumed from vehicle trips in Fresno County in 2022. Therefore, construction of the proposed project would increase the annual fuel use in Fresno County by approximately 0.04 percent for gasoline fuel usage and by approximately 0.14 percent for diesel fuel usage. As such, project construction would have a negligible effect on local and regional energy supplies. Furthermore, impacts related to energy use during construction would be temporary and relatively small in comparison to Fresno County's overall use of the State's available energy resources. No unusual project characteristics would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in the region or the State. In addition, construction activities are not anticipated to result in an inefficient use of energy as gasoline and diesel fuel would be supplied by construction contractors who would conserve the use of their supplies to minimize their costs on the project. The project would not cause or result in the need for additional energy facilities or an additional or expanded delivery system. For these reasons, fuel consumption during construction would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature, and impacts would be less than significant.

Operational Energy Use. Energy use consumed by the proposed project would be associated with natural gas use, electricity consumption, and fuel used for vehicle and truck trips associated with the project. Energy and natural gas consumption was estimated for the project using default energy intensities by land use type in CalEEMod. The proposed buildings would likely be constructed using the 2022 Title 24 standards; however, based on available modeling tools, the CalEEMod analysis of energy use assumed the construction of buildings based on the 2019 Title 24 standards which is a conservative analysis.

The 2022 Title 24 Building Energy Efficiency Standards (Title 24 Standards) contain energy efficiency requirements for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. The Title 24 Standards establish performance metrics in the form of an "energy budget" based on energy consumption per square foot of floor space. For this reason, the Title 24 Standards include both a prescriptive option, allowing builders to comply by using methods known to be efficient, and a performance option, allowing builders complete freedom in their designs provided the building achieves the same overall efficiency as an equivalent building using the prescriptive option. Reference appendices are adopted along with the Title 24 Standards containing data and various compliance tools to help builders achieve compliance. Electricity and natural gas usage estimates associated with the proposed project are shown in Table 4.5.B.

In addition, the proposed project would also result in energy usage associated with gasoline and diesel fuel consumed by project-related vehicle trips. Trip generation rates for the proposed project were based on the project's trip generation estimates, as identified in Section 4.10, Transportation. As discussed in Section 4.10, Transportation, the proposed project would generate approximately 1,920 average daily trips, including 1,578 vehicle trips and 342 truck trips. Gasoline and diesel fuel usage associated with the proposed project is also shown in Table 4.5.B.

Table 4.5.B: Energy Consumption Estimates During Operation

Energy Type	Annual Energy Consumption	Percentage Increase Countywide
Electricity Consumption (kWh/year)	8,448,500	0.11
Natural Gas Consumption (therms/year)	161,487	0.05
Automotive Fuel Consumption		
Gasoline (gallons/year)	175,434.7	0.05
Diesel Fuel (gallons/year)	144,777.4	0.09

Source: Compiled by LSA (October 2022).
kWh = kilowatt-hours

As shown in Table 4.5.B, the estimated potential increase in electricity demand associated with the operation of the proposed project is 8,448,500 kWh per year. Total electricity consumption in Fresno County in 2020 was 8,017.8 GWh (8,017,830,742 KWh). Therefore, operation of the proposed project would increase the annual electricity consumption in Fresno County by approximately 0.11 percent.

As shown in Table 4.5.B, the estimated potential increase in natural gas demand associated with the proposed project is 161,487 therms per year. Total natural gas consumption in Fresno County in 2020 was 325,915,257 therms. Therefore, operation of the proposed project would negligibly increase the annual natural gas consumption in Fresno County by approximately 0.05 percent.

The proposed project would also result in energy usage associated with gasoline and diesel fuel consumed by project-related vehicle trips. As shown in Table 4.5.B, fuel use associated with the vehicle trips generated by the proposed project is estimated at 175,434.7 gallons of gasoline and 144,777.4 gallons of diesel fuel per year. This analysis conservatively assumes that all vehicle trips generated as a result of project operation would be new to Fresno County. Based on fuel consumption obtained from EMFAC2021, approximately 157.1 million gallons of diesel and approximately 375.2 million gallons of gasoline will be consumed from vehicle trips in Fresno County in 2022. Therefore, vehicle and truck trips associated with the proposed project would increase the annual fuel use in Fresno County by approximately 0.11 percent for gasoline fuel usage and approximately 0.05 percent for diesel fuel usage. Therefore, gasoline and diesel fuel demand generated by vehicle trips associated with the proposed project would be a minimal fraction of gasoline and diesel fuel consumption in Fresno County.

In addition, proposed new development would be constructed using energy efficient modern building materials and construction practices, and the proposed project also would use new modern appliances and equipment, in accordance with the Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608). The expected energy consumption during construction and operation of the proposed project would be consistent with typical usage rates for industrial uses; however, energy consumption is largely a function of personal choice and the physical structure and layout of buildings.

PG&E is the private utility that would supply the proposed project's electricity and natural gas services. In 2021, a total of 50 percent of PG&E's delivered electricity came from renewable sources,

including solar, wind, geothermal, small hydroelectric and various forms of bioenergy.[16] PG&E reached California's 2020 renewable energy goal in 2017, and is positioned to meet the State's 60 percent by 2030 renewable energy mandate set forth in Senate Bill (SB) 100. In addition, PG&E plans to continue to provide reliable service to their customers and upgrade their distribution systems as necessary to meet future demand.

Therefore, the proposed project would result in a less than significant impact during project operation.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.5.2 Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

In 2002, the Legislature passed SB 1389, which required the California Energy Commission (CEC) to develop an integrated energy plan every two years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero emission (ZE) vehicles and their infrastructure needs, and encouragement of urban designs that reduce VMT and accommodate pedestrian and bicycle access.

The most recently adopted reports include the *2021 Integrated Energy Policy Report*[17] and the *2022 Integrated Energy Policy Report Update.*[18] The *2021 Integrated Energy Policy Report* and the *2022 Integrated Energy Policy Report Update* provide the results of the CEC's assessments of a variety of energy issues facing California. Many of these issues will require action if the State is to meet its climate, energy, air quality, and other environmental goals while maintaining energy reliability and controlling costs. The 2020 Integrated Energy Policy Report covers a broad range of topics, including implementation of SB 350, integrated resource planning, distributed energy resources, transportation electrification, solutions to increase resiliency in the electricity sector, energy efficiency, transportation electrification, barriers faced by disadvantaged communities, demand response, transmission and landscape-scale planning, the California Energy Demand Preliminary Forecast, the preliminary transportation energy demand forecast, renewable gas (in response to SB 1383), updates on California electricity reliability, natural gas outlook, and climate adaptation and resiliency.

---

16 PG&E, 2022. *Exploring Clean Energy Solutions*. https://www.pge.com/en_US/about-pge/environment/what-we-are-doing/clean-energy-solutions/clean-energy-solutions.page?WT.mc_id=Vanity_cleanenergy (accessed October 2022).

17 CEC. 2021. *2021 Integrated Energy Policy Report*. California Energy Commission. Docket Number: 21-IEPR-01.

18 CEC. 2022. *2020 Integrated Energy Policy Report Update*. California Energy Commission. Docket Number: 22-IEPR-01.

As indicated above, the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. Because California's energy conservation planning actions are conducted at a regional level, and because the proposed project's total impact to regional energy supplies would be minor, the proposed project would not conflict with California's energy conservation plans as described in the CEC's 2021 Integrated Energy Policy Report and 2021 Integrated Energy Policy Report Update.

In addition, the proposed project would comply with the CALGreen Code (CCR Title 24, Part 11) and the California Energy Code (CCR Title 24, Part 6), which includes provisions related to insulation and design aimed at minimizing energy consumption. The California Energy Code includes solar photovoltaic system requirements for all newly constructed low-rise residential buildings; however, it currently does not include solar requirements for nonresidential buildings. The proposed project would also comply with objectives and policies included in the City's General Plan that are aimed at reducing energy consumption. In addition, as discussed in Section 4.6, Greenhouse Gas Emissions, the proposed project would be consistent with the applicable strategies from the GHG Reduction Plan.

Thus, as shown above, the proposed project would be consistent with applicable State and local plans related to renewable energy and energy efficiency. Therefore, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and impacts would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

4.5.3.3 Cumulative Impacts

The cumulative geographical context for energy consists of the project site in addition to past, current, and reasonably foreseeable future projects in the PG&E service area for electricity and natural gas demand and Fresno County for gasoline and diesel fuel usage. Development of the proposed project would result in the construction of four office/warehouse buildings on a currently vacant 48.03-acre project site which would contribute to energy demand in the region anticipated from growth and development (e.g., growth and development in the City and County of Fresno).

Development of cumulative projects within the PG&E service area which encompasses 70,000 square miles would result in a substantial increase in electricity and natural gas demand as well as an increase in the consumption of fuel for vehicles. Although the proposed project would result in a net increase in demand for electricity, implementation of the proposed project would not result in the construction of new electric or natural gas infrastructure beyond what has already been assumed and will be included in PG&E's regional forecasts.

As discussed previously, the total annual electricity consumption in the PG&E service area in 2020 was 78,518 GWh (78,518,835,142 kWh). As shown in Table 4.5.B, the estimated potential increase in electricity demand associated with the operation of the proposed project is 8,448,500 kWh per year. Therefore, operation of the proposed project would increase the annual electricity consumption in the PG&E service area by approximately 0.01 percent. As such, the proposed project's share of cumulative electricity consumption would negligible.

Total natural gas consumption in the PG&E service area in 2020 was 4,508.5 million therms (4,508,542,540 therms). As shown in Table 4.5.B, the estimated potential increase in natural gas demand associated with the proposed project is 161,487 therms per year. Therefore, operation of the proposed project would increase the annual natural gas consumption in the PG&E service area by less than 0.01 percent. The proposed project's share of cumulative consumption of natural gas in the PG&E service area would be negligible.

In addition, as identified above, in 2021, a total of 50 percent of PG&E's delivered electricity came from renewable sources, including solar, wind, geothermal, small hydroelectric and various forms of bioenergy.[19] PG&E reached California's 2020 renewable energy goal in 2017, and is positioned to meet the State's 60 percent by 2030 renewable energy mandate set forth in Senate Bill (SB) 100. In addition, PG&E plans to continue to provide reliable service to their customers and upgrade their distribution systems as necessary to meet future demand.

Transportation energy use would also increase; however, as described above, fuel use associated with the vehicle trips generated by the proposed project is estimated at 175,434.7 gallons of gasoline and 144,777.4 gallons of diesel fuel per year. This analysis conservatively assumes that all vehicle trips generated as a result of project operation would be new to Fresno County. Based on fuel consumption obtained from EMFAC2021, approximately 157.1 million gallons of diesel and approximately 375.2 million gallons of gasoline will be consumed from vehicle trips in Fresno County in 2022. Therefore, vehicle and truck trips associated with the proposed project would increase the annual fuel use in Fresno County by approximately 0.11 percent for gasoline fuel usage and approximately 0.05 percent for diesel fuel usage. Therefore, gasoline and diesel fuel demand generated by vehicle trips associated with the proposed project would be a minimal fraction of gasoline and diesel fuel consumption in Fresno County. As such, the project's share of cumulative consumption of gasoline and diesel fuel consumption in Fresno County would be negligible.

Therefore, implementation of the proposed project would result in a less-than-significant cumulative impact related to the inefficient, wasteful and unnecessary consumption of energy.

Level of Significance Without Mitigation: Less Than Significant Impact.

[19] PG&E, 2022. *Exploring Clean Energy Solutions*. https://www.pge.com/en_US/about-pge/environment/what-we-are-doing/clean-energy-solutions/clean-energy-solutions.page?WT.mc_id=Vanity_cleanenergy (accessed October 2022).

4.6 GREENHOUSE GAS EMISSIONS

This section summarizes existing greenhouse gas (GHG) emissions and discusses global climate change, its causes, and the contribution of human activities. This section also estimates the likely GHG emissions that would result from construction and operational activities associated with implementation of the proposed project, including vehicular and truck traffic, energy consumption and other emission sources. The project's consistency with the City of Fresno's Greenhouse Gas Reduction Plan Update Consistency Checklist is included in Appendix H.

4.6.1 Environmental Setting

The following discussion describes existing GHG emissions in the City of Fresno and the San Joaquin Valley Air Basin (SJVAB), beginning with a discussion of typical GHG types and sources, impacts of global climate changes, the regulatory framework surrounding these issues, and current emission levels.

4.6.1.1 Background

The following section provides background information on GHGs and global climate change.

Global Climate Change. Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. The Earth's average near-surface atmospheric temperature rose 0.6 ± 0.2° Celsius (°C) or 1.1 ± 0.4° Fahrenheit (°F) in the 20th century. The prevailing scientific opinion on climate change is that most of the warming observed over the last 50 years is attributable to human activities. The increased amounts of carbon dioxide (CO_2) and other GHGs are the primary causes of the human-induced component of warming. GHGs are released by the burning of fossil fuels, land clearing, agriculture, and other activities, and lead to an increase in the greenhouse effect.[1]

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are the following:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF_6)

[1] The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse allows heat from sunlight in and reduces the heat escaping, GHGs like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of GHGs results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, which is believed to be causing global warming. While manmade GHGs include naturally occurring GHGs such as CO_2, methane, and N_2O, some gases, like HFCs, PFCs, and SF_6 are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. For the purposes of this analysis, the term "GHGs" will refer collectively only to the six gases listed above.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The global warming potential is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to carbon dioxide, the most abundant GHG; the definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e). Table 4.6.A shows the GWP for each type of GHG. For example, sulfur hexafluoride is 22,800 times more potent at contributing to global warming than carbon dioxide.

Table 4.6.A: Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-year Time Horizon)
Carbon Dioxide (CO_2)	50-200	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoromethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: *Climate Change 2007: The Physical Science Basis* (Intergovernmental Panel on Climate Change [IPCC] 2007).

The following summarizes the characteristics of the six GHGs and black carbon. Black carbon also contributes to climate change and is therefore discussed below.

Carbon Dioxide. In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals and plants, volcanic out gassing, decomposition of organic matter and evaporation from the oceans. Human caused sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral

production, and deforestation. Natural sources release approximately 150 billion tons of CO_2 each year, far outweighing the 7 billion tons of man-made emissions of CO_2 each year. Nevertheless, natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of man-made CO_2, and consequently, the gas is building up in the atmosphere.

In 2020, total annual CO_2 accounted for approximately 80.2 percent of California's overall GHG emissions.[2] Transportation is the single largest source of CO_2 in California, which is primarily comprised of on-road travel. Electricity production, industrial, and residential sources also make important contributions to CO_2 emissions in California.

Methane. Methane (CH_4) is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands and oceans. Decomposition occurring in landfills accounts for the majority of human generated CH_4 emissions in California and in the United States as a whole. Agricultural processes such as intestinal fermentation in dairy cows, manure management, and rice cultivation are also significant sources of CH_4 in California. Total annual emissions of CH_4 accounted for approximately 10.5 percent of GHG emissions in California in 2020.

Nitrous Oxide. Nitrous oxide (N_2O) is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for most natural source emissions. Nitrous oxide is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human generated N_2O emissions in California. N_2O emissions in California. Nitrous oxide emissions accounted for approximately 3.5 percent of GHG emissions in California in 2020.

Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride. HFCs are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.[3] PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry has resulted in greater use of PFCs. HFCs, PFCs, and SF_6 accounted for about 5.5 percent of GHG emissions in California in 2020.[4]

Black Carbon. Black carbon is the most strongly light-absorbing component of particulate matter (PM) formed by burning fossil fuels such as coal, diesel, and biomass. Black carbon is

2 California Air Resources Board (CARB). 2022. GHGs Descriptions & Sources in California. Website: ww2.arb.ca.gov/ghg-descriptions-sources (accessed January 2023).

3 The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.

4 CARB. 2022. op cit.

emitted directly into the atmosphere in the form of particulate matter less than 2.5 microns in size ($PM_{2.5}$) and is the most effective form of PM, by mass, at absorbing solar energy. Per unit of mass in the atmosphere, black carbon can absorb one million times more energy than CO_2.[5] Black carbon contributes to climate change both directly, such as absorbing sunlight, and indirectly, such as affecting cloud formation. However, because black carbon is short-lived in the atmosphere, it can be difficult to quantify its effect on global warming.

Most U.S. emissions of black carbon come from mobile sources (52 percent), particularly from diesel fueled vehicles.[6] The other major source of black carbon is open biomass burning, including wildfires, although residential heating and industry also contribute. The CARB estimates that the annual black carbon emissions in California will be reduced approximately 50 percent below 2013 levels by 2030.[7]

Effects of Global Climate Change. Effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme weather events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems. Heat-related problems include heat rash and heat stroke. In addition, climate-sensitive diseases may increase, such as those spread by mosquitoes and other disease-carrying insects. Such diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding, and hurricanes can displace people and agriculture. Global climate change may also result in impacts to local air quality from increased ground-level ozone and particulate matter.[8]

Additionally, according to the 2006 California Climate Action Team (CAT) Report,[9] the following climate change effects, which are based on trends established by the United Nations Intergovernmental Panel on Climate Change (IPCC), can be expected in California over the course of the next century:

- The loss of sea ice and mountain snowpack, resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;[10]

5 United States Environmental Protection Agency (USEPA). 2017. Black Carbon, Basic Information. February 14, 2017. Website: 19january2017snapshot.epa.gov/www3/airquality/blackcarbon/basic.html (accessed September 2022).

6 Ibid.

7 CARB. 2017. *Short-Lived Climate Pollutant Reduction Strategy.* March. Website: https://ww2.arb.ca.gov/sites/default/files/2020-07/final_SLCP_strategy.pdf (accessed September 2022).

8 USEPA. 2020. Air Quality and Climate Change Research. Website: https://www.epa.gov/air-research/air-quality-and-climate-change-research (accessed September 2022).

9 California Environmental Protection Agency (CalEPA). 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

10 California Environmental Protection Agency (CalEPA). 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

- Rise in global average sea level, primarily due to thermal expansion and melting of glaciers and ice caps in the Greenland and Antarctic ice sheets;[11]

- Changes in weather that include widespread changes in precipitation, ocean salinity, wind patterns, and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;[12]

- Decline of the Sierra snowpack, which accounts for approximately one-half of the surface water storage in California by 70 percent to as much as 90 percent over the next 100 years;[13]

- Increase in the number of days conducive to ozone (O_3) formation by 25 to 85 percent (depending on the future temperature scenario) in high O_3 areas of Los Angeles and the San Joaquin Valley by the end of the 21st century;[14] and

- High potential for erosion of California's coastlines and seawater intrusion into the Delta and levee systems due to the rise in sea level.[15]

A summary of these potential effects is provided in Table 4.6.B, below.

Effects of Rising Ocean Levels in California. Rising ocean levels, more intense coastal storms, and warmer water temperatures may increasingly threaten the Long Beach coastal region. As previously described, global surface temperatures have increased by 1.5 degrees Fahrenheit (°F) during the period from 1880 to 2012, with temperatures anticipated to rise in California by 3 to 10.5°F by the end of the century.

Rising sea levels may affect the natural environment in the coming decades by eroding beaches, converting wetlands to open water, exacerbating coastal flooding, and increasing the salinity of estuaries and freshwater aquifers. Coastal headlands and beaches are expected to erode at a faster pace in response to future sea level rise. The California Coastal Commission estimates that 450,000 acres of wetlands exist along the California coast,[16] but additional work is needed to evaluate the extent to which these wetlands would be degraded over time, or to what extent new wetland habitat would be created if those lands are protected from further development. Cumulatively, the effects of sea level rise may be combined with other potential long-term factors such as changes in

11 Ibid.

12 Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis, Summary for Policymakers*. February.

13 CalEPA. 2006, op. cit.

14 CalEPA. 2006, op. cit.

15 Ibid.

16 California Coastal Commission (CCC). Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone. Website: http://www.coastal.ca.gov/wetrev/wetch4.html (accessed September 2022).

sediment input and nutrient runoff. The cumulative impacts of physical and biological change due to sea level rise on the quality and quantity of coastal habitats are not well understood. [17]

Table 4.6.B: Potential Impacts of Global Warming and Expected Consequences for California

Potential Water Resource Impacts	Anticipated Consequences Statewide
Reduction of the State's average annual snowpack	● The decline of the Sierra snowpack would lead to a loss in half of the surface water storage in California by 70% to 90% over the next 100 years ● Potential loss of 5 million acre-feet or more of average annual water storage in the State's snowpack ● Increased challenges for reservoir management and balancing the competing concerns of flood protection and water supply ● Higher surface evaporation rates with a corresponding increase in tropospheric water vapor
Rise in average sea level	● Potential economic impacts related to coastal tourism, commercial fisheries, coastal agriculture, and ports ● Increased risk of flooding, coastal erosion along the State's coastline, seawater intrusion into the Sacramento-San Joaquin River Delta (Delta) and levee systems
Changes in weather	● Changes in precipitation, ocean salinity, and wind patterns ● Increased likelihood for extreme weather events, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones
Changes in the timing, intensity, location, amount, and variability of precipitation	● Potential increased storm intensity and increased potential for flooding ● Possible increased potential for droughts ● Long-term changes in vegetation and increased incidence of wildfires ● Changes in the intensity and timing of runoff ● Possible increased incidence of flooding and increased sedimentation ● Sea level rise and inundation of coastal marshes and estuaries ● Increased salinity intrusion into the Delta ● Increased potential for Delta levee failure ● Increased potential for salinity intrusion into coastal aquifers (groundwater) ● Increased potential for flooding near the mouths of rivers due to backwater effects
Increased water temperatures	● Increased environmental water demand for temperature control ● Possible increased problems with foreign invasive species in aquatic ecosystems ● Potential adverse changes in water quality, including the reduction of dissolved oxygen levels ● Possible critical effects on listed and endangered aquatic species
Changes in urban and agricultural water demand	● Changes in demand patterns and evapotranspiration
Increase in the number of days conducive to O3 formation	● Increased temperatures ● Potential health effects, including adverse impacts to respiratory systems

Source: *Environmental Water Account Draft Supplemental EIS/EIR to the Environmental Water Account Final EIS/EIR, Bureau of Reclamation Mid-Pacific Region*, Sacramento, California (U.S. Department of the Interior, October 2007).
EIR = Environmental Impact Report
EIS = Environmental Impact Statement
O_3 = ozone

[17] Climate Change Science Program (CCSP) 4.1. January 15, 2009, 1 of 784 Final Report, United States CCSP, Synthesis and Assessment Product 4.1. Coastal Sensitivity to Sea-Level Rise: A Focus on the Mid-Atlantic Region. Lead Agency: U.S. Environmental Protection Agency, Other Key Participating Agencies: U.S. Geological Survey, National Oceanic and Atmospheric Administration. Contributing Agencies: Department of Transportation.

Sea level along the west coast of the United States is affected by a number of factors, including climate patterns such as El Niño, effects from the melting of modern and ancient ice sheets, and geologic processes such as plate tectonics. Regional projections for California, Oregon, and Washington show a sharp distinction at Cape Mendocino in northern California. South of that point, sea-level rise is expected to be very close to global projections. Projections are lower north of Cape Mendocino because the land is being pushed upward as the ocean plate moves under the continental plate along the Cascadia Subduction Zone.

Emissions Inventories. An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for addressing climate change. This section summarizes the latest information on global, United States, and California GHG emission inventories.

Global Emissions. Worldwide emissions of GHGs in 2018 totaled 25.6 billion metric tons (MT) of CO_2e. Global estimates are based on country inventories developed as part of the programs of the United Nations Framework Convention on Climate Change.[18]

United States Emissions. In 2019, the year for which the most recent data are available, the United States emitted about 6,558 million metric tons of CO_2e (MMT CO_2e). Overall, emissions in 2019 decreased by 1.7 percent since 2018 and were 13 percent lower than 2005 levels. This decrease was driven largely by a decrease in emissions from fossil fuel combustion resulting from a decrease in total energy use in 2019 compared to 2018 and a continued shift from coal to natural gas and renewables in the electric power sector. Of the six major sectors – residential, commercial, agricultural, industry, transportation, and electricity generation – transportation accounted for the highest amount of GHG emissions in 2019 (approximately 29 percent), with electricity generation second at 25 percent and emissions from industry third at 23 percent.[19]

State of California Emissions. The State emitted approximately 369.2 MMT CO_2e emissions in 2020, 35.3 MMT CO_2e lower than 2019 levels and 61.8 MMT CO_2e below the 2020 GHG limit of 431 MMT CO_2e.[20] The CARB estimates that transportation was the source of approximately 37 percent of the State's GHG emissions in 2020, which is a smaller share than recent years, as the transportation sector saw a significant decrease of 26.6 MMT CO_2e in 2020, likely due in large part to the impact of the COVID-19 pandemic. The next largest sources included industrial sources at approximately 20 percent and electricity generation at 16 percent. The remaining

18 United Nations Framework Convention on Climate Change (UNFCCC). 2021. GHG Data from UNFCCC. Website: unfccc.int/process-and-meetings/transparency-and-reporting/greenhouse-gas-data/ghg-data-unfccc/ghg-data-from-unfccc (accessed June 2022).

19 USEPA. 2021. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019. Website: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019 (accessed September 2022).

20 CARB. 2022. *California Greenhouse Gas Emissions for 2000 to 2020, Trends of Emissions and Other Indicators Report*. Website: https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf (accessed January 2023).

sources of GHG emissions were commercial and residential activities at 10 percent, agriculture at 9 percent, high GWP at 6 percent, and waste at 2 percent.[21]

City of Fresno Emissions. The City of Fresno baseline inventory year was 2010. The City has prepared an updated inventory for 2016 that accounts for regulations adopted to that point in time. Therefore, 2016 provides the best available baseline for the GHG Plan and can be compared directly with State progress to date and targets. Table 4.6.C shows the baseline inventory.

Table 4.6.C: City of Fresno GHG Emissions by Sector for 2016

Sector	2016 (MT CO_2e)	Percent of Total Emissions
Motor Vehicles	1,520,052	52
Residential Energy	479,371	16
Commercial Energy	524,838	18
Fugitive Emissions	270,130	9
Solid Waste	119,167	4
Industrial Energy	10,055	<1
Agriculture Energy	20	<1
Total	**2,923,633**	**100**

Source: ICLEI Local Governments for Sustainability, City of Fresno 2016 Inventory Update, 2018.

As shown in Table 4.6.C, motor vehicles were the largest source at approximately 52 percent of the City's GHG emissions in 2016, followed by commercial and residential energy at 18 and 16 percent respectively. The remaining sources included fugitive emissions at 9 percent and solid waste sources at 4 percent. Agriculture and industrial energy emissions each account for less than 1 percent of total emissions.

4.6.2 Regulatory Setting

4.6.2.1 Federal Regulations

Federal Clean Air Act. The United States has historically had a voluntary approach to reducing GHG emissions. However, on April 2, 2007, the United States Supreme Court ruled that the United States Environmental Protection Agency (USEPA) has the authority to regulate CO_2 emissions under the Federal Clean Air Act (FCCA). While there currently are no adopted federal regulations for the control or reduction of GHG emissions, the USEPA commenced several actions in 2009 to implement a regulatory approach to global climate change.

This includes the 2009 USEPA final rule for mandatory reporting of GHGs from large GHG emission sources in the United States. Additionally, the USEPA Administrator signed an endangerment finding action in 2009 under the Federal Clean Air Act, finding that six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to global climate change, leading to national GHG emission standards.

[21] Ibid.

In October 2012, the USEPA and the NHTSA, on behalf of the U.S. Department of Transportation, issued final rules to further reduce GHG emissions and improve corporate average fuel economy (CAFE) standards for light-duty vehicles for model years 2017 and beyond (77 *Federal Register* 62624). The NHTSA's CAFE standards have been enacted under the Energy Policy and Conservation Act since 1978. This national program requires automobile manufacturers to build a single light-duty national fleet that meets all requirements under both federal programs and the standards of California and other states. This program would increase fuel economy to the equivalent of 54.5 miles per gallon, limiting vehicle emissions to 163 grams of CO_2 per mile for the fleet of cars and light-duty trucks by model year 2025 (77 *Federal Register* 62630).

On March 21, 2020, the USEPA and NHTSA finalized the SAFE Vehicles Rule. The SAFE Vehicles Rule amends certain existing CAFE and tailpipe CO_2 emissions standards for passenger cars and light trucks and establish new standards, all covering model years 2021 through 2026. More specifically, NHTSA set new CAFE standards for model years 2022 through 2026 and amended its 2021 model year CAFE standards, and the USEPA amended its CO_2 emissions standards for model years 2021 and later. On May 12, 2021, the NHTSA published a notice of proposed rulemaking in the *Federal Register*, proposing to repeal key portions of the SAFE Vehicles Rule that would have reduced CAFE standards. The final rule repealing portions of the SAFE Vehicles Rule was published on December 29, 2021. The repeal will allow California to set its own GHG standards if it chooses, even if the emissions standards conflict with CAFE standards enacted by the U.S. Department of Transportation.

4.6.2.2 State Regulations

The California Air Resources Board (CARB) is the lead agency for implementing climate change regulations in the State. Since its formation, the CARB has worked with the public, the business sector, and local governments to find solutions to California's air pollution problems. Key efforts by the State are described below.

Assembly Bill 1493 (2002). In a response to the transportation sector's significant contribution to California CO_2 emissions, Assembly Bill (AB) 1493 was enacted on July 22, 2002. AB 1493 requires the CARB to set GHG emission standards for passenger vehicles and light duty trucks (and other vehicles whose primary use is noncommercial personal transportation in the State) manufactured in 2009 and all subsequent model years. These standards (starting in model years 2009 to 2016) were approved by the CARB in 2004, but the needed waiver of Clean Air Act Preemption was not granted by the USEPA until June 30, 2009. CARB responded by amending its original regulation, now referred to as Low Emission Vehicle III, to take effect for model years starting in 2017 to 2025. The Trump administration revoked California's waiver in 2019, but the Biden administration restored California's waiver in 2021.

Executive Order S-3-05 (2005). Governor Arnold Schwarzenegger signed Executive Order (EO) S-3-05 on June 1, 2005, which proclaimed that California is vulnerable to the impacts of climate change. To combat those concerns, the executive order established California's GHG emissions reduction targets, which established the following goals:

- GHG emissions should be reduced to 2000 levels by 2010;
- GHG emissions should be reduced to 1990 levels by 2020; and

- GHG emissions should be reduced to 80 percent below 1990 levels by 2050.

The Secretary of the California Environmental Protection Agency (CalEPA) is required to coordinate efforts of various State agencies to collectively and efficiently reduce GHGs. A biannual progress report must be submitted to the Governor and State Legislature disclosing the progress made toward GHG emission reduction targets. In addition, another biannual report must be submitted illustrating the impacts of global warming on California's water supply, public health, agriculture, the coastline, and forestry, and report possible mitigation and adaptation plans to address these impacts.

The Secretary of CalEPA leads this CAT made up of representatives from State agencies as well as numerous other boards and departments. The CAT members work to coordinate statewide efforts to implement global warming emission reduction programs and the State's Climate Adaptation Strategy. The CAT is also responsible for reporting on the progress made toward meeting the statewide GHG targets that were established in the executive order and further defined under AB 32, the "Global Warming Solutions Act of 2006." The first CAT Report to the Governor and the Legislature was released in March 2006, which it laid out 46 specific emission reduction strategies for reducing GHG emissions and reaching the targets established in the Executive Order. The most recent report was released in December 2020.

Assembly Bill 32 (2006), California Global Warming Solutions Act. California's major initiative for reducing GHG emissions is AB 32, passed by the State legislature on August 31, 2006. This effort aims at reducing GHG emissions to 1990 levels by 2020. The CARB has established the level of GHG emissions in 1990 at 427 million metric tons (MMT) of CO_2e. The emissions target of 427 MMT requires the reduction of 169 MMT from the State's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires the CARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global climate change. The Scoping Plan was approved by the CARB on December 11, 2008 and contains the main strategies California will implement to achieve the reduction of approximately 169 MMT CO_2e, or approximately 30 percent, from the State's projected 2020 emissions level of 596 MMT CO_2e under a business-as-usual scenario (this is a reduction of 42 MMT CO_2e, or almost 10 percent from 2002–2004 average emissions). The Scoping Plan also includes CARB-recommended GHG reductions for each emissions sector of the State's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e);
- The Low-Carbon Fuel Standard (15.0 MMT CO_2e);
- Energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e); and
- A renewable portfolio standard for electricity production (21.3 MMT CO_2e).

The Scoping Plan identifies 18 emission reduction measures that address cap-and-trade programs, vehicle gas standards, energy efficiency, low carbon fuel standards, renewable energy, regional

transportation-related GHG targets, vehicle efficiency measures, goods movement, solar roof programs, industrial emissions, high speed rail, green building strategies, recycling, sustainable forests, water, and air. The measures would result in a total reduction of 174 MMT CO_2e by 2020.

On August 24, 2011, the CARB unanimously approved both the new supplemental assessment and reapproved its Scoping Plan, which provides the overall roadmap and rule measures to carry out AB 32. The CARB also approved a more robust CEQA equivalent document supporting the supplemental analysis of the cap-and-trade program. The cap-and-trade took effect on January 1, 2012, with an enforceable compliance obligation that began January 1, 2013.

CARB has not yet determined what amount of GHG reductions it recommends from local government operations and local land use decisions; however, the Scoping Plan states that land use planning and urban growth decisions will play an important role in the State's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions (meanwhile, CARB is also developing an additional protocol for community emissions). CARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The Scoping Plan states that the ultimate GHG reduction assignment to local government operations is to be determined. With regard to land use planning, the Scoping Plan expects an approximately 5.0 MMT CO_2e reduction due to implementation of SB 375.

In addition to reducing GHG emissions to 1990 levels by 2020, AB 32 directed the CARB and the CAT to identify a list of "discrete early action GHG reduction measures" that could be adopted and made enforceable by January 1, 2010. On January 18, 2007, Governor Schwarzenegger signed EO S-1-07, further solidifying California's dedication to reducing GHGs by setting a new Low Carbon Fuel Standard (LCFS). This executive order sets a target to reduce the carbon intensity of California transportation fuels by at least 10 percent by 2020 and directs the CARB to consider the LCFS as a discrete early action measure. In 2011, U.S. District Court Judge Lawrence O'Neil issued an injunction preventing implementation of the LCFS, ruling that it is unconstitutional. In 2012, the Ninth Circuit Court of Appeal stayed the District Court's injunction, allowing implementation of the LCFS. The Ninth Circuit decided to uphold the LCFS.

In June 2007, the CARB approved a list of 37 early action measures, including three discrete early action measures (LCFS, Restrictions on GWP Refrigerants, and Landfill CH_4 Capture).[22] Discrete early action measures are measures that were required to be adopted as regulations and made effective no later than January 1, 2010, the date established by Health and Safety Code Section 38560.5. The CARB adopted additional early action measures in October 2007 that tripled the number of discrete early action measures. These measures relate to truck efficiency, port electrification, reduction of PFCs from the semiconductor industry, reduction of propellants in consumer products, proper tire

[22] CARB. 2007. *Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration*. October.

inflation, and SF_6 reductions from the non-electricity sector. The combination of early action measures is estimated to reduce statewide GHG emissions by nearly 16 MMT.[23]

The CARB approved the First Update to the Climate Change Scoping Plan on May 22, 2014. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update defines CARB climate change priorities until 2020, and sets the groundwork to reach long-term goals set forth in EOs S-3-05 and B-16-2012. The Update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals as defined in the initial Scoping Plan. It also evaluates how to align the State's "longer-term" GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use. CARB released a second update to the Scoping Plan, the 2017 Scoping Plan,[24] to reflect the 2030 target set by EO B-30-15 and codified by SB 32.

The 2022 Scoping Plan[25] was approved in December 2022 and assesses progress toward achieving the SB 32 2030 target and laying out a path to achieve carbon neutrality no later than 2045. The 2022 Scoping Plan focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

Senate Bill 97 (2007). SB 97, signed by the Governor in August 2007 (Chapter 185, Statutes of 2007; Public Resources Code [PRC], Sections 21083.05 and 21097), acknowledges climate change is a prominent environmental issue that requires analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Resources Agency guidelines for mitigating GHG emissions or the effects of GHG emissions, as required by CEQA.

The California Natural Resources Agency adopted the amendments to the *State CEQA Guidelines* in November 2018, which went into effect in December 2018. The amendments do not identify a threshold of significance for GHG emissions, nor do they prescribe assessment methodologies or specific mitigation measures. The amendments encourage lead agencies to consider many factors in performing a CEQA analysis, but preserve the discretion granted by CEQA to lead agencies in making their own determinations based on substantial evidence. The amendments also encourage public agencies to make use of programmatic mitigation plans and programs when they perform individual project analyses.

Senate Bill 375 (2008). SB 375, the Sustainable Communities and Climate Protection Act, which establishes mechanisms for the development of regional targets for reducing passenger vehicle GHG emissions, was adopted by the State on September 30, 2008. On September 23, 2010, the CARB

[23] CARB. 2007. "ARB approves tripling of early action measures required under AB 32" News Release 07-46. October 25.

[24] CARB. 2017. *California's 2017 Climate Change Scoping Plan*. November.

[25] CARB. 2022. *2022 Scoping Plan*. November 16. Website: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf (accessed January 2023).

adopted the vehicular GHG emissions reduction targets that had been developed in consultation with the Metropolitan Planning Organization (MPOs); the targets require a 6 to 15 percent reduction by 2020 and between 13 to 19 percent reduction by 2035 for each MPO. SB 375 recognizes the importance of achieving significant GHG reductions by working with cities and counties to change land use patterns and improve transportation alternatives. Through the SB 375 process, MPOs such as the Fresno Council of Governments will work with local jurisdictions in the development of Sustainable Communities Strategy (SCS) designed to integrate development patterns and the transportation network in a way that reduces GHG emissions while meeting housing needs and other regional planning objectives. Pursuant to SB 375, the Central Valley/San Joaquin reduction targets for per capita vehicular emissions were 6 to 13 percent by 2020 and are 13 to 16 percent by 2035 as shown in Table 4.6.D.

Table 4.6.D: Senate Bill 375 Regional Greenhouse Gas Emissions Reduction Targets

Metropolitan Planning Organization	By 2020 (%)	By 2035 (%)
San Francisco Bay Area	10	19
San Diego	15	19
Sacramento	7	19
Central Valley/San Joaquin	6–13	13–16
Los Angeles/Southern California	8	19

Source: California Air Resources Board (2018).

Executive Order B-30-15 (2015). Governor Jerry Brown signed EO B-30-15 on April 29, 2015, which added the immediate target of:

- GHG emissions should be reduced to 40 percent below 1990 levels by 2030.

All State agencies with jurisdiction over sources of GHG emissions were directed to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 targets. CARB was directed to update the AB 32 Scoping Plan to reflect the 2030 target, and therefore, is moving forward with the update process. The mid-term target is critical to help frame the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure needed to continue reducing emissions.

Senate Bill 350 (2015) Clean Energy and Pollution Reduction Act. SB 350, signed by Governor Jerry Brown on October 7, 2015, updates and enhances AB 32 by introducing the following set of objectives in clean energy, clean air, and pollution reduction for 2030:

- Raise California's renewable portfolio standard from 33 percent to 50 percent; and
- Increasing energy efficiency in buildings by 50 percent by the year 2030.

The 50 percent renewable energy standard will be implemented by the CPUC for the private utilities and by the CEC for municipal utilities. Each utility must submit a procurement plan showing it will purchase clean energy to displace other non-renewable resources. The 50 percent increase in energy efficiency in buildings must be achieved using existing energy efficiency retrofit funding and

regulatory tools already available to state energy agencies under existing law. The addition made by this legislation requires state energy agencies to plan for and implement those programs in a manner that achieves the energy efficiency target.

Senate Bill 32, California Global Warming Solutions Act of 2016, and Assembly Bill 197. In summer 2016 the Legislature passed, and the Governor signed, SB 32, and AB 197. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in Governor Brown's April 2015 EO B-30-15. SB 32 builds on AB 32 and keeps us on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels, consistent with an IPCC analysis of the emissions trajectory that would stabilize atmospheric GHG concentrations at 450 parts per million CO_2e and reduce the likelihood of catastrophic impacts from climate change.

The companion bill to SB 32, AB 197, provides additional direction to CARB related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 meant to provide easier public access to air emissions data that are collected by CARB was posted in December 2016.

Senate Bill 100 (SB 100). On September 10, 2018, Governor Brown signed SB 100, which raises California's Renewables Portfolio Standard (RPS) requirements to 60 percent by 2030, with interim targets, and 100 percent by 2045. The bill also establishes a state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all State agencies by December 31, 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Executive Order B-55-18. EO B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." EO B-55-18 directs the CARB to work with relevant State agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

Title 24, Building Standards Code and CALGreen Code. In November 2008, the California Building Standards Commission established the California Green Building Standards Code (CALGreen Code), which sets performance standards for residential and non-residential development to reduce environmental impacts and encourage sustainable construction practices. The CALGreen Code addresses energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality. The CALGreen Code is updated every 3 years and was most recently updated in 2019 to include new mandatory measures for residential as well as non-residential uses; the new measures took effect on January 1, 2020. The next set of standards will be adopted in 2022 and apply to projects seeking building permits on or after January 1, 2023.

California Building Efficiency Standards (Title 24, Part 6). The California Building Standards Code, or Title 24 of the California Code of Regulations (CCR) contains the regulations that govern the

construction of buildings in California. Within the Building Standards Code, two parts pertain to the incorporation of both energy efficient and green building elements into land use development. Part 6 is California's Energy Efficiency Standards for Residential and Non-Residential Buildings. These standards were first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption and are updated on an approximately 3-year cycle to allow consideration and possible incorporation of new energy efficient technologies and methods. All buildings for which an application for a building permit is submitted on or after January 1, 2020, must follow the 2019 standards. The next set of standards is anticipated for release in 2022. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions.

Cap and Trade. The development of a cap-and-trade program was included as a key reduction measure of the CARB AB 32 Climate Change Scoping Plan. The cap-and-trade program will help put California on the path to meet its goal of reducing GHG emissions to 1990 levels by 2020 and ultimately achieving an 80 percent reduction from 1990 levels by 2050. The cap-and-trade emissions trading program developed by the CARB took effect on January 1, 2012, with enforceable compliance obligations beginning January 1, 2013. The cap-and-trade program aims to regulate GHG emissions from the largest producers in the State by setting a statewide firm limit, or cap, on allowable annual GHG emissions. The cap was set in 2013 at approximately 2 percent below the emissions forecast for 2020. In 2014, the cap declined approximately 2 percent. Beginning in 2015 and continuing through 2020, the cap has been declining approximately 3 percent annually. The CARB administered the first auction on November 14, 2012, with many of the qualified bidders representing corporations or organizations that produce large amounts of GHG emissions, including energy companies, agriculture and food industries, steel mills, cement companies, and universities. On January 1, 2015, compliance obligation began for distributors of transportation fuels, natural gas, and other fuels. The cap-and-trade program was initially slated to sunset in 2020 but the passage of SB 398 in 2017 extended the program through 2030.[26]

Executive Order N-79-20. EO N-79-20, which was signed by the Governor on September 23, 2020, sets the following goals for the State: 100 percent of in-state sales of new passenger cars and trucks shall be zero-emission by 2035; 100 percent of medium- and heavy-duty vehicles in the State shall be zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks; and 100 percent of off-road vehicles and equipment in the State shall be zero-emission by 2035, where feasible.

California Integrated Waste Management Act. To minimize the amount of solid waste that must be disposed of in landfills, the State Legislature passed the California Integrated Waste Management Act of 1989 (AB 939), effective January 1990. According to AB 939, all cities and counties were required to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000. Through other statutes and regulations, this 50 percent diversion rate also applies to State agencies. In order of priority, waste reduction efforts must promote source reduction, recycling and composting, and environmentally safe transformation and land disposal. In 2011, AB 341 modified the California Integrated Waste Management Act and directed the California

[26] CARB. 2014. Cap-and-Trade Program. Website: www.arb.ca.gov/cc/capandtrade/capandtrade.htm (accessed September 2022).

Department of Resources Recycling and Recovery (CalRecycle) to develop and adopt regulations for mandatory commercial recycling. The resulting 2012 Mandatory Commercial Recycling Regulation requires that on and after July 1, 2012, certain businesses that generate four cubic yards or more of commercial solid waste per week shall arrange recycling services. To comply with this requirement, businesses may either separate recyclables and self-haul them or subscribe to a recycling service that includes mixed waste processing. AB 341 also established a statewide recycling goal of 75 percent; the 50 percent disposal reduction mandate still applies for cities and counties under AB 939, the Integrated Waste Management Act. In April 2016, AB 1826 further modified the California Integrated Waste Management Act, requiring businesses that generate a specified amount of organic waste per week to arrange for recycling services for that organic waste in a specified manner. If CalRecycle determines that statewide disposal of organic waste has not been reduced by 50 percent below 2014 levels by 2020, businesses generating more than two cubic yards of organic waste per week would be subject to these waste collection requirements. CalRecycle plans to make this assessment in the fall of 2020. Diverting organic waste from landfills reduces emissions of CH_4. This is equivalent to reducing anaerobic decomposition of organic waste that would have otherwise occurred in landfills where organic waste is often buried with other inorganic waste.

Low Carbon Fuel Standard. In January 2007, EO S-01-07 established an LCFS. This executive order calls for a statewide goal to be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020, and that an LCFS for transportation fuels be established for California. The LCFS applies to all refiners, blenders, producers, or importers ("Providers") of transportation fuels in California, including fuels used by off-road construction equipment. In June 2007, CARB adopted the LCFS under AB 32 pursuant to Health and Safety Code Section 38560.5, and, in April 2009, CARB approved the new rules and carbon intensity reference values with new regulatory requirements taking effect in January 2011. The standards require providers of transportation fuels to report on the mix of fuels they provide and demonstrate they meet the LCFS intensity standards annually. This is accomplished by ensuring that the number of "credits" earned by providing fuels with a lower carbon intensity than the established baseline (or obtained from another party) is equal to or greater than the "deficits" earned from selling higher intensity fuels. In response to certain court rulings, CARB re-adopted the LCFS regulation in September 2015, and the LCFS went into effect on January 1, 2016. In 2018, CARB approved amendments to the regulation to readjust carbon intensity benchmarks to meet California's 2030 GHG reductions targets under SB 32. These amendments include opportunities to promote zero emission vehicle (ZEV) adoption, carbon capture and sequestration, and advanced technologies for decarbonization of the transportation sector.

Advanced Clean Cars Program. In January 2012, CARB approved the Advanced Clean Cars program, which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of ZEVs, into a single package of regulatory standards for vehicle model years 2017 through 2025. The new regulations strengthen the GHG standard for 2017 models and beyond. This will be achieved through existing technologies, the use of stronger and lighter materials, and more efficient drivetrains and engines. The program's ZEVs regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025. The program also includes a clean fuels outlet regulation designed to support the commercialization of zero-emission hydrogen fuel cell vehicles planned by vehicle manufacturers by

2015 by requiring increased numbers of hydrogen fueling stations throughout the State. The number of stations will grow as vehicle manufacturers sell more fuel cell vehicles. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 40 percent fewer GHGs and 75 percent fewer smog-forming emissions than 2012 model year vehicles.

Executive Order B-48-18. In January 2018, Governor Brown signed EO B-48-18 requiring all State entities to work with the private sector to have at least 5 million ZEVs on the road by 2030, as well as install 200 hydrogen fueling stations and 250,000 electric vehicle charging stations by 2025. It specifies that 10,000 of the electric vehicle charging stations should be direct current fast chargers. This order also requires all State entities to continue to partner with local and regional governments to streamline the installation of ZEV infrastructure. The Governor's Office of Business and Economic Development is required to publish a Plug-in Charging Station Design Guidebook and update the 2015 Hydrogen Station Permitting Guidebook to aid in these efforts. All State entities are required to participate in updating the 2016 Zero-Emissions Vehicle Action Plan to help expand private investment in ZEV infrastructure with a focus on serving low-income and disadvantaged communities. Additionally, all State entities are to support and recommend policies and actions to expand ZEV infrastructure at residential land uses, through the LCFS Program, and recommend how to ensure affordability and accessibility for all drivers.

4.6.2.3 Regional Regulations

San Joaquin Valley Air Pollution Control District. The City of Fresno is located within the San Joaquin Valley Air Basin (SJVAB), which is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The SJVAPCD has regulatory authority over certain stationary and industrial GHG emission sources and provides voluntary technical guidance on addressing GHGs for other emission sources in a CEQA context. District initiatives related to GHGs are described below.

Climate Change Action Plan. The San Joaquin Valley Air Pollution Control District Climate Change Action Plan (CCAP) was adopted on August 21, 2008. The CCAP includes suggested best performance standards (BPS) for proposed development projects. However, the SJVAPCD's CCAP was adopted in 2009 and was prepared based on the State's 2020 GHG targets, which are now superseded by State policies (i.e., the 2019 California Green Building Code) and the 2030 GHG targets, established in SB 32.

San Joaquin Valley Carbon Exchange and Rule 2301. The SJVAPCD initiated work on the San Joaquin Valley Carbon Exchange in November 2008. The Exchange was implemented with the adoption of Amendments to Rule 2301 Emission Reduction Credit Banking on January 19, 2012. The purpose of the carbon exchange is to quantify, verify, and track voluntary GHG emissions reductions generated within the San Joaquin Valley.

The SJVAPCD incorporated a method to register voluntary GHG emission reductions with amendments to Rule 2301. The purposes of the amendments to the rule include the following:

- Provide an administrative mechanism for sources to bank voluntary GHG emission reductions for later use.

- Provide an administrative mechanism for sources to transfer banked GHG emission reductions to others for any use.

- Define eligibility standards, quantitative procedures, and administrative practices to ensure that banked GHG emission reductions are real, permanent, quantifiable, surplus, and enforceable.

The SJVAPCD is participating in a new program developed by the California Air Pollution Control Officers Association (CAPCOA) to encourage banking and use of GHG reduction credits referred to as the CAPCOA Greenhouse Gas Reduction Exchange (GHGRx). The GHGRx provides information on GHG credit projects within participating air districts. The District is one of the first to have offsets available for trading on the Exchange.

4.6.2.4 Local Regulations

Greenhouse Gas Reduction Plan Update. The City of Fresno's first GHG Reduction Plan was adopted in December 2014 to reduce local community GHG emissions to 1990 levels by the year 2020, consistent with the State objectives set forth in AB 32. In 2020, the City of Fresno updated its 2014 GHG Reduction Plan (GHG Reduction Plan Update) to conform with existing applicable State climate change policies and regulations to reduce local community GHG emissions to 40 percent below 1990 levels by the year 2030, consistent with the State objectives set by SB 32 and the 2017 Scoping Plan. The GHG Plan Update outlines strategies that the City will undertake to achieve its proportional share of GHG emission reductions. The GHG Reduction Plan Update includes a Consistency Checklist to help the City provide a streamlined review process for new development projects that are subject to discretionary review pursuant to CEQA.

City of Fresno General Plan. The City of Fresno's General Plan Resources Conservation and Resilience Element includes objectives and policies that work to achieve and maintain reductions in GHG emissions and all strategies that reduce the causes of climate change. The following policies related to GHG emissions are applicable to the proposed project:

- **Policy RC-5-a: Support State Goal to Reduce Statewide GHG Emissions.** As is consistent with State law, strive to meet AB 32 goal to reduce greenhouse gas emissions to 1990 levels by 2020 and strive to meet a reduction of 80 percent below 1990 levels by 2050 as stated in Executive Order S-03-05. As new statewide GHG reduction targets and dates are set by the State update the City's Greenhouse Gas Reduction Plan to include a comprehensive strategy to achieve consistency with those targets by the dates established.

- **Policy RC-5-b: Greenhouse Gas Reduction Plan.** As is consistent with State law, prepare and adopt a Greenhouse Gas Reduction Plan as part of the Master Environmental Impact Report to be concurrently approved with the Fresno General Plan in order to achieve compliance with State mandates, assist development by streamlining the approval process, and focus on feasible actions the City can take to minimize the adverse impacts of growth and development on global climate change. The Greenhouse Gas Reduction Plan shall include, but not be limited to:

- A baseline inventory of all known or reasonably discoverable sources of GHGs that currently exist in the city and sources that existed in 1990.
- A projected inventory of the GHGs that can reasonably be expected to be emitted from those sources in the year 2035 with implementation of this General Plan and foreseeable communitywide and municipal operations.
- A target for the reduction of emissions from those identified sources.
- A list of feasible GHG reduction measures to meet the reduction target, including energy conservation and "green building" requirements in municipal buildings and private development.
- Periodically update municipal and community wide GHG emissions inventories to determine the efficacy of adopted measures and to guide future policy formulation needed to achieve and maintain GHG emissions reduction targets.

- **Policy RC-5-c: GHG Reduction through Design and Operations.** Increase efforts to incorporate requirements for GHG emission reductions in land use entitlement decisions, facility design, and operational measures subject to City regulation through the following measures and strategies:
  - Promote the expansion of incentive-based programs that involve certification of projects for energy and water efficiency and resiliency. These certification programs and scoring systems may include public agency "Green" and conservation criteria, Energy Star™ certification, CALGreen Tier 1 or Tier 2, Leadership in Energy Efficient Design (LEED™) certification, etc.
  - Promote appropriate energy and water conservation standards and facilitate mixed-use projects, new incentives for infill development, and the incorporation of mass transit, bicycle and pedestrian amenities into public and private projects.
  - Require energy and water audits and upgrades for water conservation, energy efficiency, and mass transit, pedestrian, and bicycle amenities at the time of renovation, change in use, change in occupancy, and change in ownership for major projects meeting review thresholds specified in an implementing ordinance.
  - Incorporate the City's "Guidelines for Ponding Basin/Pond Construction and Management to Control Mosquito Breeding" as conditions of approval for any project using an on-site stormwater basin to prevent possible increases in vector-borne illnesses associated with global climate change.
  - Periodically evaluate the City's facility maintenance practices to determine whether there are additional opportunities to reduce GHGs through facility cleaning and painting, parks maintenance, road maintenance, and utility system maintenance.
  - Periodically evaluate standards and mitigation strategies for highly vehicle-dependent land uses and facilities, such as drive-through facilities and auto-oriented development.

- **Policy RC-5-d: SCS and CAP Conformity Analysis.** Ensure that the City includes analysis of a project's conformity to an adopted regional Sustainable Community Strategy or Alternative Planning Strategy (APS), an adopted Climate Action Plan (CAP), and any other applicable City and regional greenhouse gas reduction strategies in affect at the time of project review.

- **Policy RC-5-e: Ensure Compliance.** Ensure ongoing compliance with GHG emissions reduction plans and programs by requiring that air quality measures are incorporated into projects' design, conditions of approval, and mitigation measures.

- **Policy RC-5-f: Toolkit.** Provide residents and project applicants with a "toolkit" of generally feasible measures that can be used to reduce GHG emissions, including educational materials on energy-efficient and "climate-friendly" products.

- **Policy RC-5-g: Evaluate Impacts with Models.** Continue to use computer models such as those used by SJVAPCD to evaluate greenhouse gas impacts of plans and projects that require such review.

4.6.3 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to greenhouse gas emissions that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures, if required. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less-than-significant level. Cumulative impacts are also addressed.

4.6.3.1 Significance Criteria

The thresholds for impacts related to greenhouse gas emissions used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed project would result in a significant impact related to greenhouse gas emissions if it would:

Threshold 4.6.1 **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or**

Threshold 4.6.2 **Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.**

4.6.3.2 Project Impacts

The following discussion describes the potential impacts related to greenhouse gas emissions that could result from implementation of the proposed project.

Threshold 4.6.1 **Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

An evaluation of the project's impacts related to the release of GHG emissions for both construction and operational phases of the project is described below.

Construction GHG Emissions. Construction activities associated with the proposed project would produce combustion emissions from various sources. During construction, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

The City of Fresno does not have an adopted threshold of significance for construction related GHG emissions. However, emissions that would occur during construction were quantified and are disclosed for informational purposes. Using the California Emissions Estimator Model version 2020.4.0 (CalEEMod), it is estimated that construction of the proposed project would generate approximately 1,961.0 metric tons of CO_2e. Table 4.6.E lists the annual GHG emissions (details are provided in the CalEEMod output in Appendix C).

Even though the City of Fresno does not have any adopted GHG emission thresholds, the emission results shown in Table 4.6.E would be temporary in nature and would only occur for the duration construction.

Table 4.6.E: Construction Greenhouse Gas Emissions

Construction Year	Annual Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	CO_2e
2022	404.7	0.1	<0.1	411.3
2023	1,155.4	0.1	0.1	1,181.4
2024	360.8	<0.1	<0.1	368.2
Total Construction Emissions				**1,961.0**

Source: Compiled by LSA (October 2022).
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
N_2O = nitrous oxide

Operational GHG Emissions. Long-term GHG emissions are typically generated from mobile sources (e.g., cars, trucks, and buses), area sources (e.g., maintenance activities and landscaping), indirect emissions from sources associated with energy consumption, waste sources (land filling and waste disposal), and water sources (water supply and conveyance, treatment, and distribution). Mobile-source GHG emissions would include project-generated vehicle trips to and from the project. Area-source emissions would be associated with activities such as landscaping and maintenance on the project site. Energy source emissions would be generated at off-site utility providers as a result of increased electricity demand generated by the project. Waste source emissions generated by the proposed project include energy generated by land filling and other methods of disposal related to transporting and managing project-generated waste. In addition, water source emissions associated with the proposed project are generated by water supply and conveyance, water treatment, water distribution, and wastewater treatment.

Emissions estimates for operation of the proposed project were calculated using CalEEMod. Table 4.6.F shows the emissions sources by category; mobile source emissions are the largest category, at approximately 50 percent of total CO_2e emissions, followed by energy source emissions at approximately 33 percent of the total, waste source emissions at approximately 9 percent of the total, water source emissions at approximately 8 percent of the total, and area source emissions with less than 1 percent of the total emissions. CalEEMod output sheets are included in Appendix C.

Table 4.6.F: Operational Greenhouse Gas Emissions

Emissions Category	Operational Emissions (Metric Tons per Year)				
	CO_2	CH_4	N_2O	CO_2e	Percent of Total
Area Source	<1.0	<0.1	0.0	<0.1	<1
Energy Source	1,643.2	0.1	0.1	1.656.1	33
Mobile Source	2,435.5	<0.1	0.2	2,495.5	50
Waste Source	172.0	10.1	0.0	426.1	9
Water Source	170.5	6.8	0.2	389.1	8
Total Operational				**4,967.0**	**100.0**

Source: Compiled by LSA (October 2022).
Note = Some values may not appear to add up correctly due to rounding.
CH_4 = methane
CO_2e = carbon dioxide equivalent
CO_2 = carbon dioxide
N_2O = nitrous oxide

As shown in Table 4.6.F, the proposed project would generate approximately 4,967.0 metric tons of CO_2e annually. Section 15064.4 of the *State CEQA Guidelines* states that: "A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." In performing that analysis, the lead agency has discretion to determine whether to use a model or methodology to quantify GHG emissions, or to rely on a qualitative analysis or performance-based standards. In making a determination as to the significance of potential impacts, the lead agency then considers the extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting, whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project, and the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Therefore, consistent with the *State CEQA Guidelines*, Section 15183.5, if a project is consistent with an adopted qualified Greenhouse Gas Reduction Strategy that meets the standards, it can be presumed that the project would not have significant GHG emission impacts.

The City of Fresno's GHG Reduction Plan was adopted in December 2014 to reduce local community GHG emissions to 1990 levels by the year 2020, consistent with the State objectives set forth in AB 32. The City's 2014 GHG Reduction Plan meets the requirements for a Qualified Greenhouse Gas Reduction Strategy and is designed to streamline environmental review of future development projects in the City, consistent with *State CEQA Guidelines* Section 15183.5.

The City of Fresno updated its 2014 GHG Reduction Plan in the year 2021 to conform with existing applicable State climate change policies and regulations to reduce local community GHG emissions

to 40 percent below 1990 levels by the year 2030, consistent with the State objectives set by SB 32. The GHG Plan Update outlines strategies that the City will undertake to achieve its proportional share of GHG emission reductions. As required by CEQA Guidelines Section 15183.5, the Program Environmental Impact Report (PEIR)[27] for the General Plan and GHG Reduction Plan Update and City Council Hearings provide the environmental review and adoption in a public process. The GHG Reduction Plan Update includes a Consistency Checklist to help the City provide a streamlined review process for new development projects that are subject to discretionary review pursuant to CEQA. This analysis evaluates the proposed project's consistency with the City's GHG Reduction Plan Update.

The GHG Reduction Plan Update requires an analysis of GHG emissions to ensure that the change in land use designation would not result in a significant increase in GHG emissions compared to the existing land use designation. The proposed project would not require a change the General Plan land use designation or the current zoning and would be consistent with the City's General Plan and Zoning Ordinance. Therefore, an analysis of the proposed project's estimated GHG emissions compared to maximum buildout of the existing designation would not be required.

As stated above, the GHG Reduction Plan Update includes a Consistency Checklist to help the City provide a streamlined review process for new development projects that are subject to discretionary review pursuant to CEQA. The project's Consistency Checklist is included in Appendix H. As shown in the Consistency Checklist, the proposed project would be consistent with the applicable strategies from the GHG Reduction Plan Update. Therefore, the proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant effect on the environment and impacts would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.6.2 Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

As discussed above, the SJVAPCD has adopted a CCAP, which includes suggested best performance standards (BPS) for proposed development projects. However, the SJVAPCD's CCAP was adopted in 2009 and was prepared based on the State's 2020 GHG targets, which are now superseded by State policies (i.e., the 2019 California Green Building Code) and the 2030 GHG targets, established in SB 32. As discussed above, the proposed project is consistent with the City's GHG Reduction Plan Update.

In addition, the proposed project was analyzed for consistency with the goals of EO B-30-15, SB 32, AB 197, and the 2022 Scoping Plan.

EO B-30-15 added the immediate target of reducing GHG emissions to 40 percent below 1990 levels by 2030. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in EO B-30-15. CARB released the 2017 Scoping Plan to reflect the 2030 target set by EO B-30-15 and

[27] The PEIR can be found online: https://ceqanet.opr.ca.gov/2019050005/3

codified by SB 32. SB 32 keeps the State on the path toward achieving the 2050 objective of reducing emissions to 80 percent below 1990 levels. The companion bill to SB 32, AB 197, provides additional direction to the CARB related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 intended to provide easier public access to air emissions data that are collected by CARB was posted in December 2016.

The 2022 Scoping Plan[28] assesses progress toward the statutory 2030 target, while laying out a path to achieving carbon neutrality no later than 2045. The 2022 Scoping Plan focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

The 2022 Scoping Plan focuses on building clean energy production and distribution infrastructure for a carbon-neutral future, including transitioning existing energy production and transmission infrastructure to produce zero-carbon electricity and hydrogen, and utilizing biogas resulting from wildfire management or landfill and dairy operations, among other substitutes. The 2022 Scoping Plan states that in almost all sectors, electrification will play an important role. The 2022 Scoping Plan evaluates clean energy and technology options and the transition away from fossil fuels, including adding four times the solar and wind capacity by 2045 and about 1,700 times the amount of current hydrogen supply. As discussed in the 2022 Scoping Plan, EO N-79-20 requires that all new passenger vehicles sold in California will be zero-emission by 2035, and all other fleets will have transitioned to zero-emission as fully possible by 2045, which will reduce the percentage of fossil fuel combustion vehicles.

Energy efficient measures are intended to maximize energy efficiency building and appliance standards, pursue additional efficiency efforts including new technologies and new policy and implementation mechanisms, and pursue comparable investment in energy efficiency from all retail providers of electricity in California. In addition, these measures are designed to expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings. The proposed project would be required to comply with the latest Title 24 standards of the CCR, established by the CEC, regarding energy conservation and green building standards. Therefore, the proposed project would comply with applicable energy measures.

Water conservation and efficiency measures are intended to continue efficiency programs and use cleaner energy sources to move and treat water. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions. As noted above, the proposed project would be required to comply with the latest Title 24 standards of the CCR, which includes a variety of different measures, including reduction of wastewater and water use. In addition, the proposed project would be designed to include drought tolerant landscaping. Therefore, the proposed project would not conflict with any of the water conservation and efficiency measures.

The goal of transportation and motor vehicle measures is to develop regional GHG emissions reduction targets for passenger vehicles. The second phase of Pavley standards will reduce GHG

[28] CARB. 2022. op. cit.

emissions from new cars by 34 percent from 2016 levels by 2025, resulting in a 3 percent decrease in average vehicle emissions for all vehicles by 2020. Vehicles traveling to the project site would comply with the Pavley II (LEV III) Advanced Clean Cars Program. Therefore, the proposed project would not conflict with the identified transportation and motor vehicle measures.

In addition, as discussed above, the proposed project is consistent with the City's GHG Reduction Plan Update. The City's GHG Reduction Plan Update was prepared to conform with existing applicable State climate change policies and regulations to reduce local community GHG emissions to 40 percent below 1990 levels by the year 2030, consistent with the State objectives set by SB 32 and the 2017 Scoping Plan.

As such, the proposed project would comply with existing State regulations adopted to achieve the overall GHG emissions reduction goals identified in EO B-30-15, SB 32, AB 197, and would be consistent with applicable plans and programs designed to reduce GHG emissions. In addition, Mitigation Measure AIR-1, as identified in Section 4.2, Air Quality, requires the infrastructure for AC and/or DC chargers for electric heavy-duty trucks, which would be consistent with the State's advanced clean fleets rule, which has a goal of achieving a zero-emission truck and bus California fleet by 2045. Therefore, the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and impacts would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

4.6.3.3 Cumulative Impacts

GHG impacts are by their nature cumulative impacts. Localized impacts of climate change are the result of the cumulative impact of global emissions. The combined benefits of reductions achieved by all levels of government help to slow or reverse the growth in GHG emissions. In the absence of comprehensive international agreements on appropriate levels of reductions achieved by each country, another measure of cumulative contribution is required. This serves to define the State's share of the reductions regardless of the activities or lack of activities of other areas of the U.S. or the world. Therefore, a cumulative threshold based on consistency with State targets and actions to reduce GHGs is an appropriate standard of comparison for significance determinations.

AB 32 required the CARB to reduce Statewide GHG emissions to 1990 level by 2020. As part of this legislation, the CARB was required to prepare a "Scoping Plan" that demonstrates how the State will achieve this goal. The Scoping Plan was first adopted in 2011 and in it local governments were described as "essential partners" in meeting the Statewide goal, recommending a GHG reduction level of 15 percent below 2005 to 2008 levels by 2020. The second update to the Scoping Plan, the 2017 Scoping Plan, was released by CARB to reflect the 2030 GHG emissions reductions target of at least 40 percent below 1990 levels by 2030. The 2022 Scoping Plan will assess progress towards achieving the SB 32 2030 target and lay out a path to achieve carbon neutrality no later than 2045.

As discussed above, the City of Fresno's first GHG Reduction Plan was adopted in December 2014 to reduce local community GHG emissions to 1990 levels by the year 2020, consistent with the State objectives set forth in AB 32. In 2020, the City of Fresno updated its 2014 GHG Reduction Plan (GHG

Reduction Plan Update) to conform with existing applicable State climate change policies and regulations to reduce local community GHG emissions to 40 percent below 1990 levels by the year 2030, consistent with the State objectives set by SB 32 and the 2017 Scoping Plan. The GHG Plan Update outlines strategies that the City will undertake to achieve its proportional share of GHG emission reductions. The GHG Reduction Plan Update includes a Consistency Checklist to help the City provide a streamlined review process for new development projects that are subject to discretionary review pursuant to CEQA. As discussed above, the proposed project would be consistent with the applicable strategies from the GHG Reduction Plan Update; therefore, emissions associated with the project would not hinder the City's ability to meet the reduction targets outlined in SB 32. As such, cumulative impacts would be considered less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

4.7 HAZARDS AND HAZARDOUS MATERIALS

This section describes the environmental setting, including regulatory framework and existing conditions, and potentially significant environmental impacts of the proposed project on hazards and hazardous materials. The analysis in this section is based in part on the Phase I Environmental Site Assessment[1] (ESA) and Phase II ESA[2] prepared for the proposed project (Appendix I and Appendix J, respectively).

4.7.1 Environmental Setting

Hazardous materials refer to substances or waste products that exhibit potential harm to human health, safety, and/or the environment. Hazardous materials can be potentially corrosive, poisonous, flammable, and/or undergo a chemical reaction that may cause harm. These materials can be used in everyday products (e.g., household cleaners, industrial solvents, pesticides, electronics, plastic products, etc.) and can include toxic chemicals. These products are commonly used in agriculture, commercial, industry, hospitals, and households.

"Hazardous materials" described in this section includes all materials defined in the California Health and Safety Code (HSC) Section 25260 as a:

> "Substance or waste that, because of its physical, chemical, or other characteristics, may pose a risk of endangering human health or safety or of degrading the environment. 'Hazardous material' includes but is not limited to…A hazardous substance as defined in Section 25281 or 25316; a hazardous waste as defined in Section 25117; A waste as defined in Section 470 or Section 13050 of the Water Code."[3]

"Hazardous substances" are substances that can adversely affect a person's health, or quality of the environment (e.g., carcinogenic, airborne contaminant, contaminates water, etc.). "Hazardous waste" is any discarded hazardous material and includes hazardous materials purposefully disposed of, or inadvertently released, unless the material has been specifically excluded by regulation. Hazardous wastes are broadly characterized by their ignitability, toxicity, corrosivity, reactivity, radioactivity, or bioactivity. Waste as referenced in HSC Section 470 and Section 13050 of the Water Code is used oil or sewage (radioactive, of human or animal origin, etc.).

Hazardous materials, including certain chemicals are regulated under various State and federal agencies such as the: United States Department of Transportation (USDOT), the United States Environmental Protection Agency (USEPA), the Department of Toxic Substances Control (DTSC), the California Governor's Office of Emergency Services, and other agencies.

---

1 SALEM Engineering Group, Inc. 2021 Phase I Environmental Site Assessment. Former California Compress Facility. 2740 West Nielsen Avenue Fresno, CA. January 29.

2 SALEM Engineering Group, Inc. 2021 Phase II Environmental Site Assessment. Former California Compress Facility. 2740 West Nielsen Avenue Fresno, CA. February 3.

3 Find Law. 2020. California Code, Health and Safety Code Section 25260. Website: codes.findlaw.com/ca/health-and-safety-code/hsc-sect-25260.html (accessed April 23, 2020).

The federal and State levels have defined hazardous waste similarly; however, certain distinctions have separated federal and State agencies. Hazardous waste is addressed at the federal level with the Resource Conservation and Recovery Act of 1976 (RCRA), non-RCRA hazardous wastes is addressed at the State level. Federal, State, and local programs have set various regulations in handling (treating, storing, and transportation) and disposing hazardous waste to prevent mishandling and potential impact to public health and environment. Some materials are designated "acutely" or "extremely" hazardous under relevant statues and regulations.

4.7.1.1 Hazardous Material Release Sites

The California Environmental Protection Agency (CalEPA) is required to compile, maintain, and update lists annually of hazardous material releases under California Government Code Section 65962.5. The DTSC is responsible for maintaining the Hazardous Waste and Substances Site List (Cortese List) along with other state and local government agencies to provide additional hazardous material release information for annual updates.[4] The DTSC online EnviroStor and the State Water Resources Control Board (SWRCB) online Geotracker databases include hazardous material release sites along with other categories of sites or facilities specific to each agency's jurisdiction.[5,6]

A review of the Envirostor and Geotracker databases identified 70 active or open hazardous material sites in the City of Fresno, with the nearest site approximately 0.7 miles southeast of the project site. The project site is not located on a hazardous material site. Table 4.7.A details active or open hazardous materials sites within a 2-mile radius of the proposed project.

Table 4.7.A: Hazardous Material Sites Near the Proposed Project

Site Facility Name	Site/Facility Type	Status	Address Description
Fresno Drum Eastern Parcel (T10000005925)	Cleanup Program Site	Open - Inactive	733 South Hughes Avenue, Fresno, CA 93706
PG&E - Fresno MGP (Shaw Ave Portion) (SLT5FT514526)	Cleanup Program Site	Open - Inactive	211 North Thorne Ave Fresno, CA 93706-1461
PG&E - Fresno MGP (Thorne Ave Portion) (SLT5FT524527)	Cleanup Program Site	Open - Site Assessment	211 North Thorne Ave Fresno, CA 93706-1461
Private Residence (T0601900579)	LUST Cleanup Site	Open - Site Assessment	Private Residence, Fresno, CA 93728
Former Melville E Willson Facility (T10000013929)	Cleanup Program Site	Open - Site Assessment	1805 Lafayette Avenue Fresno, CA 93705
Private Residence (T0601900275)	LUST Cleanup Site	Open - Site Assessment	Private Residence, Fresno, CA 93722

Source: Department of Toxic Substances Control & State Water Resource Control Board. *Envirostor and GeoTracker Databases* (2022).

[4] California Environmental Protection Agency, 2022. Cortese List Data Resources. Website: calepa.ca.gov/sitecleanup/corteselist (accessed September 2, 2022).

[5] California Department of Toxic Substances Control, 2022. EnviroStor. Website: www.envirostor.dtsc.ca.gov/public (accessed September 2, 2022).

[6] California State Water Resources Control Board, 2022. GeoTracker. Website: geotracker.waterboards.ca.gov (accessed September 2, 2022).

4.7.2 Regulatory Setting

Federal, State, and local regulations are briefly summarized below.

4.7.2.1 Federal Regulations

Toxic Substances Control Act. Established in 1976 and amended on December 31, 2002, the Toxic Substances Control Act (TSCA) (15 United States Code [USC] Section 2601-2692) grants the EPA power to require proper reporting, record-keeping, and testing requirements related to chemical substances and/or mixtures. Specifically, the TSCA addresses the production, importation, use, and disposal of specific chemicals, including polychlorinated biphenyls (PCBs), asbestos, radon, and lead-based paints (LBP). The TSCA establishes the EPA's authority to require the notification of the use of chemicals, require testing, maintain a TSCA inventory, and require those importing chemicals under Sections 12(b) and 13 to comply with certification and/or other reporting requirements. This federal legislation also phased out the use of asbestos-containing materials in new building materials and sets requirements for the use, handling, and disposal of asbestos-containing materials. Disposal standards for lead-based paint wastes are also detailed in the TSCA.

The Emergency Planning and Community Right-To-Know Act. The Emergency Planning and Community Right to Know Act (also known as Title III of the Federal Superfund Amendments and Reauthorization Act, or "SARA III") (42 United States Code 11001 et seq.), was established by the EPA to allow for emergency planning at the State and local level regarding chemical emergencies, to provide notification of emergency release of chemicals, and to address community right to know regarding hazardous and toxic chemicals. SARA III was designed to increase community access and knowledge about chemical hazards as well as facilitate the creation and implementation of State/Native American tribe emergency response commissions, responsible for coordinating certain emergency response activities and for appointing local emergency planning committees (LEPCs). Section 1910.1200(c) Title 29 of the CFR defines "chemicals or hazardous materials" for the purposes of SARA III.

Federal Air Regulations, Part 77. The Federal Aviation Administration (FAA) is charged with the review of construction activities that occur in the vicinity of airports. Its role in reviewing these activities is to ensure that new structures do not result in a hazard to navigation. The regulations in the Federal Air Regulations (14 CFR, Part 77) are designed to ensure that no obstructions in navigable air space are allowed to exist that would endanger the public. Proposed structures are also evaluated against Terminal En Route Procedures, which ensure that a structure does not adversely impact flight procedures. Tall structures, including buildings, construction cranes, and cell towers in the vicinity of an airport can be hazardous to the navigation of airplanes. Federal Air Regulations Part 77 identifies the maximum height at which a structure would be considered an obstacle at any given point around an airport. The extent of the off-airport coverage that needs to be evaluated for tall structure impacts can extend miles from an airport facility. In addition, Federal Air Regulations Part 77 establishes standards for determining whether objects constructed near airports will be considered obstructions in navigable airspace, sets forth notice requirements of certain types of proposed construction or alterations, and provides for aeronautical studies to determine the potential impacts of a structure on the flight of aircraft through navigable airspace.

Federal Insecticide, Fungicide, and Rodenticide Act. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (seven United States Code 136 et seq.) was originally passed in 1947. It has been amended several times, most extensively in 1972 and in 1996 by the Food Quality Protection Act of 1996, and in 2012 by the Pesticide Registration Improvement Extension Act. The purpose of FIFRA is to establish federal jurisdiction over the distribution, sale, and use of pesticides. It also gives EPA the authority to study the effects of pesticide use. Other key provisions of FIFRA require pesticide applicators to pass a licensing examination for status as "qualified applicators," create a review and registration process for new pesticide products and ensure thorough and understandable labeling that includes instructions for use.

Hazardous Materials Transportation Act (HMTA) – Safe Transport of Hazardous Materials. The U.S. Department of Transportation regulates hazardous materials transportation between states under Title 49, Chapter 1, Part 100-185 of the Code of Federal Regulations. Within California, Caltrans and the California Highway Patrol enforce federal law. Together, these agencies determine driver training requirements, load labeling procedures, and specifications for container types to be used.

Federal Emergency Management Agency (FEMA). With respect to emergency planning, FEMA is responsible for ensuring the establishment and development of policies and programs for emergency management at the federal, state, and local levels. Enforcement of these laws and regulations is delegated to state and local environmental regulatory agencies.

Resource Conservation and Recovery Act. The 1976 Federal Resource Conservation and Recovery Act (RCRA) and the 1984 RCRA Amendments regulate the treatment, storage, and disposal of hazardous and non-hazardous wastes. The legislation mandated that hazardous wastes be tracked from the point of generation to their ultimate fate in the environment. This includes detailed tracking of hazardous materials during transport and permitting of hazardous material handling facilities.

The 1984 RCRA amendments provide the framework for a regulatory program designed to prevent releases from Underground Storage Tanks (USTs). The program establishes tank and leak detection standards, including spill and overflow protection devices for new tanks. The tanks must also meet performance standards to ensure that the stored material will not corrode the tanks. Owners and operators of USTs had until December 1998 to meet the new tank standards.

Comprehensive Environmental Response, Compensation and Liability Act. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 introduced active federal involvement to emergency response, site remediation, and spill prevention, most notably the Superfund program. The act was intended to be comprehensive in encompassing both the prevention of, and response to uncontrolled hazardous substances releases. The act deals with environmental response, providing mechanisms for reacting to emergencies and chronic hazardous material releases. In addition to establishing procedures to prevent and remedy problems, it establishes a system for compensating appropriate individuals and assigning appropriate liability. It is designed to plan for, and respond to, failure in other regulatory programs and to remedy problems resulting from action taken before the era of comprehensive regulatory protection.

4.7.2.2 State Regulations

California Health and Safety Code and Code of Regulations. Business emergency plans and chemical inventory reporting is mandated under California Health and Safety Code Chapter 6.95 and California Code of Regulations, Title 19, Section 2729. Businesses are required to provide emergency response plans and procedures, training program information, and a hazardous material chemical inventory disclosing hazardous materials stored, used, or handled on-site. If a business uses hazardous materials (standalone or in use with other product) in certain quantities, an emergency plan must be provided.

California Environmental Protection Agency. The California Environmental Protection Agency (CalEPA) is authorized by the USEPA to enforce and implement certain laws and regulations regarding hazardous materials. Under CalEPA, the California DTSC protects the State and people from hazardous waste exposure under RCRA and the California Health and Safety Code. The DTSC requirements include written programs and response plans such as preparation of a Hazardous Materials Business Plan (HMBP). Programs under the DTSC includes aftermath clean-up of improper hazardous waste management, evaluation of samples taken from sites, regulation enforcement regarding use, storage, and disposal of hazardous materials, and encouragement of pollution prevention.

California Division of Occupational Safety and Health. Cal-OSHA is the state-level agency responsible for ensuring workplace safety and is responsible for adoption and enforcement of workplace safety standards and safety practices. If a site is contaminated, a Site Safety Plan must be created and implemented for the safety of workers. A Site Safety Plan establishes policies, practices, and procedures for workers and the public to follow to prevent exposure from hazardous materials originating from a contaminated site or building.

California Building Code. The California Building Code (CBC), contained in Part 2 of Title 24 of the California Code of Regulations (CCR) identifies building design standards, and includes standards for fire safety. The CBC is updated every three years, with the most recent version of the code effective January 1, 2020. The CBC is effective statewide; however, local jurisdictions may adopt more restrictive standards based on locality's conditions. A local city and country building official must check plans for commercial and residential buildings to ensure compliance with the CBC. Fire safety compliance with the CBC include fire sprinkler installation in all new residential, high rise, and hazardous materials buildings; establishment of fire-resistant standards for fire doors, building materials, and certain types of construction; debris and vegetation clearance within a prescribed distance from occupied structures in wildfire hazard areas.

California Emergency Management Agency. The California Emergency Management Agency, established as part of the Governor's Office on January 1, 2009 [Assembly Bill (AB) 38 (Nava)], is responsible for overseeing and coordinating emergency preparedness, response, recovery, and homeland security activities within the State and is supported by local government.

California Department of Forestry and Fire Protection. Public Resources Code 4201-4204 and Government Code 51175-89 requires the California Department of Forestry and Fire Protection (CAL Fire) to evaluate fire threat potential and hazard severity according to areas of responsibility (i.e.,

state, and local). Evaluations are based on topography, fire history, and climate and include fire threat rankings. In 2012, CAL Fire produced the Strategic Plan for California that contains goals, objectives, and policies to prepare and mitigate for the effects of fire on California's natural and built environments. The Strategic Plan was updated in 2019 to reaffirm, with minor adjustments, the Mission, Vision, and Values of the 2012 Strategic Plan.

California Fire Code. The California Fire Code (CFC) is updated every three years with the most current update effective January 1, 2020. The CFC contained in Part 9 of CCR Title 24 incorporates by adoption the International Fire Code of the International Code Council with California amendments. Local jurisdictions can also adopt more restrictive standards based on local conditions, as previously mentioned with the CBC. The CFC regulates building standards, fire department access, fire protection systems and devices, fire and explosion hazard safety, hazardous material storage and use, and building inspection standards.

California Department of Transportation and California Highway Patrol. Caltrans and the CHP are responsible for enforcing federal and State regulations, as well as responding to hazardous material transportation emergencies. Caltrans is the first responder for hazardous material spills and releases on highway and freeway lanes, as well as intercity rail services. The CHP enforces proper labeling and packing regulations of hazardous materials in transit by performing regular vehicle and equipment inspections.

The following are descriptions of provisions included in the California Vehicle Code (CVC) and pertain to the transportation of hazardous-related materials.

- The CHP designates routes in California which are to be used for the transportation of explosives. (CVC Section 31616)

- The CVC applies when explosives are transported as a delivery service for hire or in quantities in excess of 1,000 pounds. The transportation of explosives in quantities of 1,000 pounds or less, or other than on a public highway, is subject to the California Health and Safety Code. (CVC Section 31601(a))

- It is illegal to transport explosives or inhalation hazards on any public highway not designated for that purpose, unless the use of the highway is required to permit delivery of, or the loading of, such materials. (CVC Section 31602(b) and Section 32104(a))

- When transporting explosives through or into a city for which a route has not been designated by the Highway Patrol, drivers must follow routes as may be prescribed or established by local authorities. (CVC Section 31614(a))

- Inhalation hazards and poison gases are subject to additional safeguards. These materials are highly toxic, spread rapidly, and require rapid and widespread evacuation if there is loss of containment or a fire. The CHP designates through routes to be used for the transportation of inhalation hazards. It may also designate separate through routes for the transportation of inhalation hazards composed of any chemical rocket propellant. (CVC Section 32100 and Section 32102(b))

4.7.2.3 Local Regulations

County of Fresno Multi-Jurisdictional Local Hazard Mitigation Plan. The purpose of a Local Hazard Mitigation Plan is to reduce or eliminate long-term risk to human life and property resulting from hazards. A local hazard mitigation plan recognizes risks before they occur, as well as identifies resources, information, and strategies for emergency response. Fresno County, with participation from 17 jurisdictions, is the lead agency on the Multi-Jurisdictional Local Hazard Mitigation Plan (MHMP). In 2018, the Fresno County Board of Supervisors adopted the MHMP, which includes a Fresno Annex listing information that pertains to the City in the areas of health, infrastructure, housing, government, environment, and land use.

Fresno County Environmental Health Department - Hazardous Materials Business Plans. Facilities that store, use or handle hazardous materials above reportable amounts are required to prepare and file a Hazardous Materials Business Plan for the safe storage and use of chemicals. In the event of an emergency, firefighters, health officials, planners, public safety officers, health care providers and others rely on the Business Plan. Implementation of the Business Plan should prevent or reduce damage to the health and safety of people and the environment when a hazardous material is released.[7]

A Business Plan must be submitted by businesses that handle a hazardous material, or a mixture containing a hazardous material, in quantities equal to or greater than:

1. 55 gallons of a liquid.
2. 500 pounds of a solid.
3. 200 cubic feet (at standard temperature and pressure) of a compressed gas.
4. The federal Threshold Planning Quantity (TPQ) for Extremely Hazardous Substances.
5. Radioactive materials in quantities for which an Emergency Plan is required as per Parts 30, 40, or 70, Chapter 1 of Title 10 of Code of Federal Regulations.

The Business Plan must include: 1) the type and quantity of hazardous materials; 2) site map; 3) risks of using these materials; 4) spill prevention; 5) emergency response; 6) employee training; and 7) emergency contacts.

Fresno County Airport Land Use Compatibility Plan. The Fresno County Airport Land Use Compatibility Plan (ALUCP) was prepared by the Fresno County Airport Land Use Commission (ALUC) and adopted in December 2018. The ALUCP provides an update of the State-mandated airport land use compatibility plan for the environs of the nine public use airports in Fresno County, including three public use airports within the City of Fresno: Fresno Chandler Executive Airport; Fresno Yosemite International Airport; and Sierra Sky Park Airport. The Fresno County ALUCP implements

[7] Fresno County Department of Environmental Health. Hazardous Materials Business Plans. Website: www.co.fresno.ca.us/departments/public-health/environmental-health/hazardous-materials-certified-unified-program-agency-cupa/hazardous-materials-business-plans (accessed September 2022).

land use compatibility policies and criteria related to proposed development in the vicinity of public use airports in the City (and throughout Fresno County). The Fresno County ALUCP also establishes the planning boundaries around each of these airport facilities that define safety areas, noise contours, and height/airspace protection for policy implementation and areas within which notification is required as part of real estate transactions.This Airport Land Use Compatibility Plan replaced the following compatibility plans for the Fresno County ALUC:

- Coalinga Airport Land Use Policy Plan, November 1994
- Fresno County Airports Land Use Policy Plan (Firebaugh, William Robert Johnston Municipal, Reedley Municipal, and Selma), January 1983
- Fresno Chandler Downtown Airport Land Use Policy Plan, Revised October 2014
- Fresno Yosemite International Airport Compatibility Land Use Plan, Revised June 2012
- Harris Ranch Airport Land Use Policy Plan, October 1995
- Reedley Municipal Airport Land Use Compatibility Plan, November 2007
- Sierra Sky Park Land Use Policy Plan, Revised October 1995

Similar to the previously listed airport compatibility plans, this ALUCP is intended to protect and promote the safety and welfare of residents, businesses, and airport users near the public use airports and Naval Air Station Lemoore in Fresno County, while supporting the continued operation of these facilities. Specifically, the plan seeks to: ensure that people and facilities are not concentrated in areas susceptible to aircraft accidents; protect the public from the adverse effects of airport noise; and ensure that no structures or activities encroach upon, or adversely affect, the use of navigable airspace. The City of Fresno Development Code Priority of Plans section mentioned above (Section 15-104-B.4) clearly establishes the adopted Fresno County Airport Land Use Compatibility Plan as the plan that takes precedence over all of the City's other land use plans within the Airport Influence Areas defined in the Plan.

City of Fresno Emergency Operation Plan. The California Emergency Services Act requires cities to prepare and maintain an emergency plan for emergencies that are natural or caused by man. The City's adopted Emergency Operations Plan (EOP) plans for emergencies including natural hazards. The EOP does not designate any evacuation routes within the City of Fresno.

City of Fresno General Plan. The City of Fresno's General Plan Noise and Safety Element includes objectives and policies that work to minimize the risk of loss of life, injury, serious illness, and damage to property resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous wastes. The following policies related to hazards and hazardous materials are applicable to the proposed project:

- **Policy NS-4-a: Processing and Storage.** Require safe processing and storage of hazardous materials, consistent with the California Building Code and the Uniform Fire Code, as adopted by the City.

- **Policy NS-4-c: Soil and Groundwater Contamination Reports.** Require an investigation of potential soil or groundwater contamination whenever justified by past site uses. Require appropriate mitigation as a condition of project approval in the event soil or groundwater contamination is identified or could be encountered during site development.

- **Policy NS-4-e: Compliance with County Program.** Require that the production, use, storage, disposal, and transport of hazardous materials conform to the standards and procedures established by the County Division of Environmental Health. Require compliance with the County's Hazardous Waste Generator Program, including the submittal and implementation of a Hazardous Materials Business Plan, when applicable.

- **Policy NS-4-f: Hazardous Materials Facilities.** Require facilities that handle hazardous materials or hazardous wastes to be designed, constructed, and operated in accordance with applicable hazardous materials and waste management laws and regulations.

- **Policy NS-4-g: Hazmat Response.** Include policies and procedures appropriate to hazardous materials in the City's disaster and emergency response preparedness and planning, coordinating with implementation of Fresno County's Hazardous Materials Incident Response Plan.

- **Policy NS-4-h: Household Collection.** Continue to support and assist with Fresno County's special household hazardous waste collection activities, to reduce the amount of this material being improperly discarded.

- **Policy NS-5-a: Land Use and Height.** Incorporate and enforce all applicable Airport Land Use Compatibility Plans (ALUCPs) through land use designations, zoning, and development standards to support the continued viability and flight operations of Fresno's airports and to protect public safety, health, and general welfare.

    - Limit land uses in airport safety zones to those uses listed in the applicable ALUCPs as compatible uses, and regulate compatibility in terms of location, height, and noise.

    - Ensure that development, including public infrastructure projects, within the airport approach and departure zones complies with Part 77 of the Federal Aviation Administration Regulations (Objects Affecting Navigable Airspace), particularly in terms of height.

- **Policy NS-5-b: Airport Safety Hazards.** Ensure that new development, including public infrastructure projects, does not create safety hazards such as glare from direct or reflective sources, smoke, electrical interference, hazardous chemicals, fuel storage, or from wildlife, in violation of adopted safety standards.

- **Policy NS-6-a: County Multi-Jurisdiction Hazard Mitigation Plan.** Adopt and implement the Fresno County Multi-Jurisdiction Hazard Mitigation Plan and City of Fresno Local Hazard Mitigation Plan Annex.

- **Policy NS-6-f: Emergency Vehicle Access.** Require adequate access for emergency vehicles in all new development, including adequate widths, turning radii, hard standing areas, and vertical clearance.

City of Fresno Municipal Code. Chapter 10, Article 14 of the City of Fresno Municipal Code pertains to the recovery of expenses associated with hazardous spills. Specifically, this section states that "Any person causing a release or threatened release which results in an emergency action shall be liable to the City of Fresno for the recoverable costs resulting from the emergency action."

4.7.3 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to hazards and hazardous materials that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures, if required. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less-than-significant level. Cumulative impacts are also addressed.

4.7.3.1 Significance Criteria

The thresholds for impacts related to hazards and hazardous materials used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed project would result in a significant impact related to hazards and hazardous materials if it would:

Threshold 4.7.1 **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;**

Threshold 4.7.2 **Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;**

Threshold 4.7.3 **Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;**

Threshold 4.7.4 **Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;**

Threshold 4.7.5 **For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use**

airport, would the project result in a safety hazard for people residing or working in the project area;

Threshold 4.7.6 **Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or**

Threshold 4.7.7 **Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.**

4.7.3.2 Project Impacts

The following describes the potential impacts related to hazards and hazardous materials that could result from implementation of the proposed project.

Threshold 4.7.1 **Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Applicable laws and regulations ensure that transport, use, and disposal of hazardous materials do not create a significant hazard to the public or the environment. Therefore, a proposed project's routine transport, use, or disposal of hazardous materials is potentially significant if unusual circumstances are present, such as an unusually high frequency of use, use of an unusually large amount of hazardous substances, or use of particularly hazardous materials. Potential hazards during construction and operation of the proposed project are discussed below.

Construction Impacts. Construction activities associated with the proposed project would involve the use of limited amounts of potentially hazardous materials, including but not limited to, solvents, paints, fuels, oils, and transmission fluids. However, only limited quantities of these materials are expected to be used during construction, so they are not considered hazardous to the public at large. In addition, all materials used during construction would be contained, stored, and handled in compliance with applicable standards and regulations established by the DTSC, the USEPA, and Cal-OSHA. Therefore, impacts to the public or the environment through the routine transport, use, or disposal of hazardous materials during project construction would be less than significant.

Operational Impacts. No uses utilizing large amounts of hazardous materials are anticipated to occur within the project site. The proposed project would include the construction of four office/warehouse buildings that would be configured for industrial uses by future tenants that have yet to be identified. Project operation would involve the use of small quantities of commercially-available hazardous materials (e.g., paint, cleaning supplies) that could be potentially hazardous if handled improperly or ingested. However, these products are not considered acutely hazardous and are not generally considered unsafe. All storage, handling, and disposal of hazardous materials during project construction and operation would comply with applicable standards and regulations. In the event that future tenants of the project site introduce uses that require large quantities of hazardous materials or generate large quantities of hazardous waste, those tenants would be required to obtain a conditional use permit and undergo further environmental review, as required by the City. The proposed project would comply with all applicable laws and regulations related to

the transport, use, or disposal of hazardous materials and no unusual circumstances are present. Therefore, the proposed project would have a less-than-significant impact to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Level of Significance Without Mitigation: Less than Significant.

Threshold 4.7.2 Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

A project-specific Phase I ESA and Phase II ESA were prepared in accordance with the American Society for Testing and Materials (ASTM) International Standard E1527-13 for the purposes of identifying recognized environmental conditions (REC), controlled recognized environmental conditions (CREC), and historical recognized environmental conditions (HREC) on the project site.

An REC means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. The term is not intended to include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* are not RECs. A CREC is defined as a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. An HREC means an environmental condition that in the past would have been considered an REC, but which may or may not be considered an REC currently. If a past release of any hazardous substances or petroleum products has occurred in connection with the property, with such remediation accepted by the responsible regulatory agency (for example, as evidenced by the issuance of a case closed letter or equivalent), this condition shall be considered an HREC.

The Phase I ESA included the following tasks: reviewing land-use history and property development by reviewing historical aerial photographs, pertinent building permit records, historic city directories, as well as reviewing recent and historic topographic land-use maps of the project site and surrounding area; reviewing readily available local, state and federal regulatory agency databases; performing a reconnaissance of the project site and surrounding areas; and identifying aboveground storage tanks and/or indications of underground storage tanks on-site. The Phase I ESA identified the following evidence of RECs, HREC, and site development issue as described in Table 4.7.B.

Table 4.7.B: Environmental Issues Related to Hazardous Materials

Environmental Condition	Action
Recognized Environmental Conditions (RECs)	
At least three known septic systems were associated with the former structures on the project site, two of which were visually identified during the site reconnaissance as remaining at the project site. The former septic systems may have acted as a conduit for contaminants to enter on-site soil from potential past unauthorized disposal of hazardous substances and/or petroleum products utilized for vehicle maintenance into drains, sinks and toilets.	The Phase I ESA determined that a limited soil assessment should be conducted in the vicinity of the septic systems to determine if on-site soils have been impacted by unauthorized releases of the constituents of concern into the septic systems.
Historic operations at the project site included the handling and storage of cotton which required an extensive fire suppression system. Two water basins were historically located in the southern portion of the project site. Upwards of 25 features were located across the project site indicative of a fire suppression system including stand pipes, traffic bollards, and fire hydrants. The system reportedly included diesel-powered water pumps supplied from an aboveground storage tank (AST) historically located in the south-central portion of the project site. The former diesel AST location was identifiable by concrete footings and a fire extinguisher. Additional concrete footings indicative of propane ASTs were observed in the north-central portion of the project site. No staining or signs of leakage were observed in the vicinity of the former ASTs.	The Phase I ESA recommended conducting a limited site assessment to assess on-site shallow soils for potential petroleum hydrocarbon impacts in the vicinity of the former diesel AST.
A soil mound was observed in the southern portion of the project site and was reported to have been excavation dirt and asphalt produced when the floor of a warehouse was switched from asphalt to concrete to accommodate heavy machinery. No obvious visual evidence of hazardous substances and/or petroleum products or staining was observed on the surface of the stockpile.	The Phase I ESA recommended collecting samples of the stockpiled soil in order to determine if the soil has been impacted by constituents of concern prior to either transporting the soil off-site for disposal or utilizing the soil on-site as clean-fill if needed during the redevelopment of the project site.
Historical Recognized Environmental Condition (HREC)	
The former California Compress facility operated four USTs consisting of a 10,000-gallon fuel oil UST historically located on what is now the north adjacent property; a 4,000-gallon double-walled steel diesel UST; a 4,000-gallon single-walled steel diesel UST; and a 1,000-gallon single-walled steel regular unleaded gasoline UST historically located in the southwest portion of the project site. Records indicate all UST were properly permitted and removed under the regulatory agency oversight of Fresno County Environmental Health Division (FCEHD). A record of a "Hazardous Material Release" was recorded on June 5, 1995 indicating soil contamination from petroleum products discovered during removal of a UST. RWQCB records indicate that FCEHD issued a "case closed" designation for the California Compress LUST site on July 3, 1996.	No action required as the RWQCB records indicate that FCEHD issued a "case closed" designation for the California Compress LUST site on July 3, 1996.
Site Development Issue	
Two water wells were observed on the project site. No information regarding analytical testing or construction specifications of the on-site wells was found during the course of the assessment.	The Phase I ESA, recommended properly destroying the wells in accordance with all applicable State and local guidelines.

Source: SALEM Engineering Group, Inc. *Phase I Environmental Site Assessment* (2021).

A Phase II ESA was performed to address the RECs and HREC identified in the Phase I ESA, to gather data regarding current site conditions, to establish baseline soil and soil vapor concentrations, and to evaluate if soil vapor conditions pose a potential vapor intrusion risk to future occupants at the project site. The following summary is based on a review of field and laboratory data obtained during the Phase II investigation:

- According to RWQCB records for the Fresno Drum, Eastern Parcel facility, located at 733 South Hughes Avenue, approximately 0.65-mile south of the project site, groundwater in the vicinity of the project site was reported at a depth of approximately 65 to 80 feet below ground surface (bgs) with a general direction of flow toward the northeast. However, local groundwater level and flow direction may vary due to seasonal fluctuations in precipitation, usage demands, geology, and/or surface topography. Groundwater was not encountered during the course of the investigation.

- A geophysical survey was conducted which identified the suspected former UST pit. The pit displayed a different soil density compared to the surrounding areas and the surface area of this location displayed patched/cut concrete and asphalt. Additionally, two of the three suspected septic systems were positively identified. No other anomalies indicative of potential buried fuel USTs and associated appurtenances, additional backfilled UST cavities, or other subgrade structures of environmental concern (hoists, clarifiers, and sumps) were identified during the performance of the geophysical survey.

- Eight soil borings (SV-1 through SV-6, SB-7, and SB-8) to depths ranging from 10 to 15 feet bgs. Borings SV-1 through SV-6 were converted to dual-completion soil vapor sample points with probes at 5 and 10 feet bgs. Borings SV-1, SV-3, and SV-6 were located near the former and suspect septic tank locations; SV-2 and SB-7 were located near the former UST pit in the southwest portion of the project site; SV-4 and SV-5 were located near the former diesel and propane AST locations, respectively; and SB-8 was located adjacent to a ring of traffic bollards historically associated with the fire suppression system in the south portion of the project site.

- Generally, soil types consisted of light brown, well sorted, medium- to fine-grained sand (SP) sand to approximately 10 feet bgs, underlain by brown silt with sparse very fine-grained sand (ML) to the maximum depth drilled of 15 feet bgs. Drilling refusal was met at a depth of 7 feet bgs at location SB-8 near the fire suppression equipment in the south portion of the project site. A subsurface manmade feature is the suspected cause; however, due to the absence of apparent contamination the area was not investigated further.

- Total petroleum hydrocarbons (TPH) were identified above laboratory method detection limits in 16 of the 18 soil samples analyzed. TPH as diesel (TPHd, carbon range C10-C24) was identified at concentrations ranging from 6.6 milligrams per kilogram (mg/kg) to 24 mg/kg. Additional TPH detected was consistent with mostly oil range hydrocarbons (TPHo) at concentrations ranging from 5.8 mg/kg to 360 mg/kg. TPH concentrations were below their respective established San Francisco Regional Water Quality Control Board (RWQCB-SF) Commercial/Industrial Environmental Screening Levels (ESLs) set at 260 mg/kg for TPHd and 1,600 mg/kg for TPHo.

- Volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs) were not identified above laboratory method detection limits in any of the soil samples analyzed. Data suggests that VOCs and PCBs are not constituents of potential concern (COPCs) in soil at the project site.

- Semi-volatile organic compounds (SVOCs) detected in the composite soil samples collected from the soil stockpile located in the south portion of the project site consisted of benzo(a)anthracene (0.41 to 0.49 mg/kg), chrysene (0.38 mg/kg), fluoranthene (0.49 mg/kg), phenanthrene (0.57 mg/kg), and pyrene (1.3 mg/kg). All detected concentrations of SVOCs were below their respective RWQCB-SF Commercial/Industrial ESLs.

- Arsenic was detected in soil samples collected at 5 feet bgs in SV-4 (11 mg/kg), SB-7 (14 mg/kg), and SB-8 (45 mg/kg). These values exceed the RWQCB-SF Commercial/Industrial ESL set at 0.31 mg/kg for cancer risk and appear to be slightly elevated in comparison to arsenic concentrations in Fresno County (1.8 to 6.0 mg/kg) and to regional arsenic concentrations in the San Joaquin Valley that range from 0.8 to 20 mg/kg.

- Additional Title 22 metals detected included barium, cobalt, chromium, copper, nickel, lead, vanadium, and zinc at concentrations below their respective established RWQCB-SF Commercial/Industrial ESLs. No other Title 22/CAM 17 metals were detected above laboratory detection limits.

- VOCs were not identified above laboratory method detection limits in any of the soil vapor samples.

Based on the results of the Phase II ESA, it was determined that no additional assessment activities are required. The Phase II ESA determined that the project site is suitable for unrestricted use and no engineering controls (i.e. VOC vapor barrier) are required. However, the Phase II ESA determined that a Soil Management Plan (SMP) shall be prepared prior to construction to address soil management procedures that may arise based on historical use of the project site and TPH and arsenic. Therefore, implementation of Mitigation Measures HAZ-1, which would require preparation of an SMP would effectively mitigate any impacts related to a significant hazard to the public or the environment to less than significant levels.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measure HAZ-1: Prior to soil disturbance, a consultant qualified under American Society for Testing and Materials (ASTM) International Standard E1527-13 for the purposes of identifying hazardous materials shall be retained to prepare a Soil Management Plan (SMP) that addresses soil management procedures that may arise based on historical use of the project site and the known total petroleum hydrocarbons (TPH) and arsenic impacts. Construction may not proceed until the extent and nature of the TPH and arsenic impacts are determined by qualified personnel and in consultation with appropriate City staff.

The removal and/or disposal of any contaminants shall be in accordance with all applicable local, State, and federal standards to the degree that adequate public health and safety standards are maintained, to the satisfaction of the City.

Level of Significance Without Mitigation: Less than Significant with implementation of Mitigation Measure HAZ-1.

Threshold 4.7.3 Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The closest existing school to the project site is Addams Elementary School, located approximately 1.2 miles from the project site. The proposed project would not result in the use or emission of substantial quantities of hazardous materials that would pose a human or environmental health risk. In addition, all materials would be handled, stored, and disposed of in accordance with applicable standards and regulations. Therefore, since no schools are located within 0.25 mile of the project site and because the proposed project does not involve activities that would result in the emission of hazardous materials or acutely hazardous substances, implementation of the proposed project would result in a less than significant impact related to the potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

Level of Significance Without Mitigation: Less than Significant Impact.

Threshold 4.7.4 Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

According to the DTSC EnviroStor and the SWRCB GeoTracker databases, the project site is not located on a federal superfund site, State response site, voluntary cleanup site, school cleanup site, evaluation site, school investigation site, military evaluation site, tiered permit site, or corrective action site. The project site is not included on the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.[8] As a result, no impacts related to hazardous materials sites pursuant to Government Code Section 65962.5 would occur.

Level of Significance Without Mitigation: No Impact.

Threshold 4.7.5 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use

[8] California Environmental Protection Agency (CalEPA). 2018. Government Code Section 65962.5(a) Hazardous Waste and Substances Site List. Website: https://calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/ (accessed June 2021).

airport, would the project result in a safety hazard for people residing or working in the project area?

Airport-related hazards are generally associated with aircraft accidents, particularly during takeoffs and landings. Operation hazards include incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport.

The nearest airports include the Fresno Chandler Executive Airport, located approximately 0.8 mile from the project site, the Sierra Sky Airport, located approximately 6.7 miles from the project site, and the Fresno International Airport, located approximately 7.1 miles from the project site.

Portions of the project site are in the Traffic Pattern Zone (TPZ) and Outer Approach/Departure Zone (OADZ) for the Fresno Chandler Executive Airport. OADZs have a moderate risk level because approximately 5 percent of crashes occur in this area, while TPZs have a low risk level. Based on this risk level, the Fresno County Airport Land Use Compatibility Plan[9] (ALUCP) proposes certain criteria for projects within TPZs and OADZs.

For TPZs, the ALUCP proposes a maximum non-residential intensity of 300 persons per acre, with 10 percent required open land. Hazards to flight, outdoor stadiums, and similar high intensity uses are prohibited. Airport disclosures are required, as well as project review for objects taller than 100 feet. In addition, new structures cannot penetrate 14 C.F.R. Part 77 surfaces.

OADZs, in turn, have a maximum density of 150 persons per acre and an open land requirement of 20 percent. Certain uses, including hazardous uses (e.g., aboveground bulk fuel storage or gas stations) and hazards to flight are prohibited. Airport disclosure notices are required, as is airspace review for objects over 70 feet in height.

Although the project site is within 2 miles of the Chandler Executive Airport, operations at the local airports are not expected to pose a safety hazard for people working at or visiting the project site nor does any aspect of the project conflict with the requirements in the ALUCP for TPZs and OADZs. The project contemplates densities below those required in TPZs and OADZs and the project would include over 20 percent open land. In addition, the proposed project would not include any structures higher than 70 feet, hazardous uses, hazards to flight, or other land uses prohibited in TPZs or OADZs. In addition, the proposed project would not include any structures that would penetrate 14 C.F.R. Part 77 surfaces.

Therefore, the proposed project would result in a less than significant impact related to a safety hazard for people residing or working in the project area.

Level of Significance Without Mitigation: Less than Significant Impact.

[9] Fresno County Airport Land Use Commission, Fresno County Airport Land Use Compatibility Plan. 2018. Website: https://www.fresnocog.org/wp-content/uploads/2019/01/fresno-draft-ALUCP-12-04-17c.pdf, and https://2ave3l244ex63mgdyc1u2mfp-wpengine.netdna-ssl.com/wp-content/uploads/2019/01/fresno-final-alucp-113018-r_part2.pdf.

Threshold 4.7.6 Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The California Emergency Services Act requires cities to prepare and maintain an Emergency Plan for natural, manmade, or war-caused emergencies that result in conditions of disaster or in extreme peril to life. The City's full-time Emergency Preparedness Officer (EPO) is responsible for ensuring that Fresno's emergency response plans are up-to-date and implemented properly. The EPO also facilitates cooperation between City departments and other local, State and federal agencies that would be involved in emergency response operations. The City of Fresno Emergency Operations Center (EOC) serves as the coordination and communication between the City of Fresno and Fresno County Operational Area EOC. The proposed project would not result in any alterations of existing roadways. Therefore, the proposed project would not interfere with the implementation of or physically interfere with any adopted emergency response plans or emergency evacuation plan, and this impact would be less than significant.

Level of Significance Without Mitigation: Less than Significant Impact.

Threshold 4.7.7 Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Wildland fires occur in geographic areas that contain the types and conditions of vegetation, topography, weather, and structure density susceptible to risks associated with uncontrolled fires that can be started by lightning, improperly managed campfires, cigarettes, sparks from automobiles, and other ignition sources. According to the California Department of Forestry and Fire Protection (CAL FIRE) Very High Fire Hazard Severity Zone (VHFHSZ) Map for Fresno County, the project site is not located within a High or Very High Fire Hazard Severity Zone.[10] Therefore, the proposed project would not expose people or structures to a significant loss, injury, or death involving wildland fires, and impacts would be less than significant.

Level of Significance Without Mitigation: Less than Significant Impact.

4.7.3.3 Cumulative Impacts

The proposed project would have a significant effect on the environment if it – in combination with other projects – would contribute to a significant cumulative impact related to hazards and hazardous materials.

Implementation of the proposed project in combination with other projects in the project area and larger region could increase hazard-related impacts (i.e., hazardous waste/material potential release, interference with emergency plan, wildland fires, etc.) in the project area; however, compliance with applicable federal, State, and local policies and implementation of Mitigation Measure HAZ-1 identified above would reduce potential impacts to a less-than-significant level. In

[10] California Department of Forestry and Fire Protection (CAL FIRE). 2007. *Fresno County Very High Fire Hazard Severity Zones in LRA.* October 2. Website: https://osfm.fire.ca.gov/media/6673/fhszl06_1_map10.pdf (accessed September 2, 2022).

addition, development of the proposed project would involve the transportation and use of hazardous materials, such as chemicals and solvents used for construction activities and routine cleaning and maintenance; however, as demonstrated in the analysis above, this impact is considered less than significant, and would likely not affect public or environmental health.

Although other projects would have potential impacts associated with hazardous materials, the environmental concerns associated with hazardous materials are site specific. Each project is required to address any issues related to hazardous material or wastes. Federal, state, and local regulations require mitigation to protect against site contamination by hazardous materials. Therefore, there would be no cumulative hazardous materials impacts.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measure HAZ-1 above.

Level of Significance With Mitigation: Less than Significant with implementation of Mitigation Measure HAZ-1.

This page intentionally left blank

4.8 HYDROLOGY AND WATER QUALITY

This section evaluates the potential environmental effects related to hydrology and water quality associated with the proposed project. This section also addresses local, State, and federal regulations as they pertain to project impacts on hydrology and water quality. A Water Supply Assessment (WSA)[1] was prepared for the proposed project (Appendix K). The WSA contains information from the City of Fresno 2020 Urban Water Management Plan (UWMP).[2]

4.8.1 Environmental Setting

The following discussion outlines the hydrological conditions of the City of Fresno.

4.8.1.1 Precipitation

Precipitation in the City of Fresno occurs mostly as rain during the months of November through April. Climate data collected from 1948 to 2016 shows that annual rainfall averaged 10.89 inches but is variable. Recorded annual rainfall has ranged from a low of 3.01 inches in 2013 to a high of 21.61 inches in 1983.[3]

4.8.1.2 Hydrologic Setting

The City of Fresno is located in the Kings Subbasin and lies within the larger San Joaquin Valley Groundwater Basin in the Central Valley of California. The Kings Subbasin covers approximately 1,530 square miles. The San Joaquin Valley Groundwater Basin is bounded to the north by the Sacramento-San Joaquin Delta and Sacramento Valley, to the east by the Sierra Nevada, to the south by the San Emigdio and Tehachapi mountains, and to the west by the Coast Ranges. The Kings Subbasin, located within the southern half of the San Joaquin Valley Groundwater Basin, is bounded to the north by the San Joaquin River, to the east by the alluvium-granite rock interface of the Sierra Nevada foothills, to the south by the southern fork of the Kings River, and to the west by the Delta-Mendota and Westside subbasins. The Kings Subbasin is split into seven Groundwater Sustainability Agency (GSA) management areas, with Fresno located in the North Kings GSA.

4.8.1.3 Groundwater

The City of Fresno is underlain by the Kings River Subbasin, which, along with six other subbasins, comprises the San Joaquin Valley Groundwater Basin. In turn, the San Joaquin Basin is located within the Tulare Lake Hydrologic Region. The Tulare Lake Hydrologic Region spans approximately 10.9 million acres (17,000 square miles) and includes most of Fresno County. The Region encompasses the southern one-third of the Central Valley Regional Water Quality Control Board (RWQCB) jurisdiction.

---

1 LSA. 2022. *SB 610 Water Supply Assessment, 2740 West Nielsen Avenue Office/Warehouse Project, Fresno, California*. July.

2 Fresno, City of. 2021. *City of Fresno 2020 Urban Water Management Plan*. June.

3 Western Regional Climate Center. Period of Record Monthly Climate Summary, Fresno Yosemite Intl AP, California (043257). Average Total Precipitation (inches). Website: wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3257 (accessed October 2022).

Groundwater Management. The seven GSAs operate cooperatively across the basin via a coordination agreement that ensures common approaches to sustainability items such as similarity of data usage and methodologies, consistent interpretations of the basin setting, and common assumptions and development of water budgets, monitoring networks, sustainable management criteria, and data management systems.

As required by the Sustainable Groundwater Management Act (SGMA), the North Kings GSA considers six sustainability indicators:

- Chronic lowering of groundwater levels, indicating significant and unreasonable depletion of supply;
- Significant and unreasonable reduction of groundwater storage;
- Significant and unreasonable seawater intrusion;
- Significant and unreasonable degraded water quality;
- Significant and unreasonable land subsidence; and
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

Each indicator has an identified undesirable result, measurable objective, and minimum threshold. The measurable objective and minimum threshold allow the North Kings GSA to evaluate their progress for the subject indicator and determine if conditions are improving, remaining stable or degrading. The sustainability indicators of primary concern within the City are groundwater levels, groundwater storage, and groundwater quality. The methodology for the water quality indicators has been developed and the methodology is still being developed for the groundwater levels and groundwater storage indicators.

Groundwater Quality. Groundwater within the North Kings Subbasin generally meets primary and secondary drinking water standards for municipal water use and is described as being bicarbonate-type water, including calcium, magnesium, and sodium as the dominant ions. Total dissolved solids (TDS) concentrations rarely exceed 600 milligrams per liter (mg/L) and range from 200 to 700 mg/L. However, the groundwater basin has been impacted by multiple chemical contaminants that affect the City's ability to fully utilize the groundwater basin resources without some type of wellhead treatment in certain areas.

The primary contaminants are nitrate, 1,2-dibromo-3-chloropropane (DBCP), 1,2,3-trichloropropane (1,2,3-TCP), and other volatile organic compounds like trichloroethylene (TCE) and perchloroethylene (PCE). The City has received settlements in a number of lawsuits related to these contaminants and has constructed wellhead treatment systems and implemented blending plans for a number of wells. Approximately 40 City wells are being treated for contaminants such as PCE, DBCP, TCE, 1,2,3-TCP, perfluorooctanoic acid, perfluorooctanesulfonic acid, ethylene dibromide, and

nitrate, and an additional 20 wells include treatment for iron, manganese, and hydrogen sulfide removal or corrosion control.

Extensive groundwater contamination nearly covers the City's entire water service area; only areas located in the northwest appear to be relatively unaffected by regional groundwater contamination. Also, many of the City's wells are impacted by one or more of the contaminant plumes.

4.8.1.4 Surface Water

Potential hazards to surface water quality include the following nonpoint pollution problems: high turbidity from sediment resulting from erosion of improperly graded construction projects, concentration of nitrates and dissolved solids from agriculture or surfacing septic tank failures, contaminated street and lawn run-off from urban areas, and warm water drainage discharges into cold water streams.

The most critical period for surface water quality is following a rainstorm which can produce significant amounts of drainage runoff into streams at low flow, resulting in poor dilution of contaminates in the low flowing stream. Such conditions are most frequent during the fall at the beginning of the rainy season when stream flows are near their lowest annual levels. Besides the greases, oils, pesticides, litter, and organic matter associated with such runoff, heavy metals such as copper, zinc, and cadmium can cause considerable harm to aquatic organisms when introduced to streams in low flow conditions.

Urban stormwater runoff was managed as a non-point discharge under the Federal Water Pollution Control Amendments of 1972 until the mid-1980's. However, since then, the United States Environmental Protection Agency has continued to develop implementing rules which categorize urban runoff as a point source (an identifiable source) subject to National Pollution Discharge Elimination System (NPDES) permits. Rules now affect medium and large urban areas, and further rulemaking is expected as programs are developed to meet requirements of federal water pollution control laws.

Surface water pollution is also caused by erosion. Excessive and improperly managed grading, vegetation removal, quarrying, logging, and agricultural practices all lead to increased erosion of exposed earth and sedimentation of watercourses during rainy periods. In slower moving water bodies these same factors often cause a buildup of siltation, which ultimately reduces the capacity of the water system to percolate and recharge groundwater basins, as well as adversely affecting both aquatic resources and flood control efforts.

4.8.1.5 Stormwater Drainage

The Fresno-Clovis Metropolitan Area and surrounding rural vicinities are within the service area boundaries of the Fresno Metropolitan Flood Control District (FMFCD), which has primary responsibility for managing the local stormwater flows. Most stormwater in Fresno drains to urban stormwater basins, where the water is retained to attenuate peak-flow runoff and recharge stormwater, or is pumped to local irrigation canals for conveyance away from the municipal areas.

The storm drainage facilities are documented in the Storm Drainage and Flood Control Master Plan (SDFCMP), which is developed and updated by FMFCD. The master plan drainage system for the City consists of over 170 individual drainage areas or urban watersheds. Drainage area boundaries are determined by geographic and topographic features and the economics of providing storm drainage service to the watershed. The storm drainage facilities within a drainage area consist of storm drain inlets, pipeline, retention basins, urban detention (water quality) basins, and stormwater pump stations. Surface grading improvements such as streets, curbs, gutters, and valley gutters are part of the City of Fresno infrastructure, but the general grading of these features is governed by the SDFCMP to provide a coherent implementation of drainage within the City.

Storm drain inlets are located at low points in the topography as determined by the SDFCMP. Pipeline alignments and sizes are also shown on the SDFCMP. Pipeline alignments are subject to change as development proposals are put forward by development projects. Retention basins and urban detention basins locations and geometry are part of the SDFCMP as well. Basins are sited in the topographic low point of the drainage area. All of the storm drainage pipelines are directed to the retention and urban detention basins. Retention basins store and percolate stormwater from the drainage area if time between storms permits, or is otherwise pumped to designated irrigation canals. Urban detention basins provide quiescent (still) conditions for the removal or settling out of suspended solids prior to discharge of the stormwater to the San Joaquin River.

The Fresno-Clovis Metropolitan area consists of drainage areas that are completed, e.g., all of the master planned facilities are constructed and functional; or in the process of being completed, e.g. portions of the retention basins, pipelines, and inlets are constructed and portions are not. For the drainage areas that are in the planning stage, e.g., the drainage area is planned and documented, the retention basin land may have been purchased, but no construction has occurred. Implementation of the SDFCMP occurs in response to development activity in newly developing areas and through Capital Improvement Project (CIP) planning in previously developed areas. Funding for storm drainage facilities occurs through the collection of drainage fees assessed on parcels as they develop through grant funding from the State of California and the Federal Government, through low interest infrastructure improvement bonds, and in the past, through assessment districts. Drainage fees fund most of the construction of master plan facilities in newly developing areas. Grants, infrastructure loans, and assessment districts fund most of the construction in previously developed drainage areas.

4.8.1.6 Inundation Hazards

Floods. The City of Fresno is in the alluvial fans of numerous foothill streams and creeks that drain the western slope of the Sierra Nevada foothills. These streams include Big Dry Creek, Alluvial Drain, Pup Creek, Dog Creek, Redbank Creek, Mud Creek, and Fancher Creek. Numerous smaller, unnamed drainage courses also drain into the Planning Area from the rural areas east of the Planning Area.

Based on a review of the Federal Emergency Management Agency's Flood Insurance Rate Maps (FIRM) for the Planning Area,[4] there are areas that are subject to the 100-year frequency flood zone.

[4] Federal Emergency Management Agency. FEMA Flood Map Service Center. Website: msc.fema.gov/portal/home (accessed September 6, 2022).

The primary area that is subject to the 100-year flood zone is along the San Joaquin River below the bluffs. There are additional areas in the vicinity of the Fresno International Airport, the Southeast Development Area in the vicinity of the Redbank Creek Dam, adjacent to Highway 180 east of Clovis Avenue, and within an industrial area east of SR-99, south of California Avenue and north of Jensen Avenue. In addition, various detention basins are subject to the 100-year flood zone. The project site is not located within a 100-year flood zone.

Seiches. Seiches are surface waves with longer period of water-level oscillations within a lake, bay, or estuary typically caused by earthquakes, wind, or changes in atmospheric pressure. Once the forces stop, water rebounds to the other side of the enclosed area and oscillates back and forth for a given amount of time (typically hours) based on the size and volume of the water body. The project site is not in the vicinity of a body of water substantial enough to experience seiches.

Tsunamis. A tsunami is an ocean wave caused by sudden large-scale displacement on the ocean floor and is associated with large earthquakes. The project site is located approximately 106 miles inland from the Pacific Ocean. Therefore, the chances of a tsunami impacting the project site are negligible.

Mudflows. A mudflow is type of landslide composed of saturated fine-grained earth materials with a wet cement consistency. The project site is relatively flat, and there are no slopes on or immediately near the project site capable of generating a mudflow.

4.8.2 Regulatory Setting

This section summarizes key federal, State, and local regulations and programs related to hydrology and water quality.

4.8.2.1 Federal Regulations

Clean Water Act. The Clean Water Act (CWA) established a basic structure for regulating discharges of pollutants into Waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. The “Clean Water Act” became the Act’s common name with amendments in 1977.

Under the CWA, the USEPA has implemented pollution control programs and established water quality standards for all contaminants in surface waters. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a NPDES permit was obtained. Point sources are discrete conveyances such as pipes or manmade ditches. While residential structures that are either connected to a municipal system or otherwise do not discharge into surface waters are not required to obtain a NPDES permit, industrial, municipal, and similar facilities must obtain permits to discharge directly into surface waters. In California, the NPDES program is administered through the nine RWQCBs.

Non-point sources are similarly regulated through a General Construction Activity Stormwater NPDES permit. Construction activities subject to this permit include clearing, grading, excavating, and general disturbances to the ground. Stormwater Pollution Prevention Plans (SWPPPs) are

required for the issuance of a General Construction Activity Stormwater NPDES permit and typically include the implementation of structural and non-structural Best Management Practices (BMPs) to reduce impacts related to surface water quality.

National Pollutant Discharge Elimination System (NPDES) Permit. Section 402 of the CWA established the NPDES to control water pollution by regulating point sources that discharge pollutants into Waters of the United States. In the State of California, the USEPA has authorized the State Water Resources Control Board (SWRCB) as the permitting authority to implement the NPDES program. The SWRCB issues two-baseline general permits; one for industrial operations, the other for construction activities (General Construction Permit). Additionally, the NPDES program includes the regulation of stormwater discharges from cities, counties, and other municipalities under Order No. R8-2009-0030 (waste discharge requirements for stormwater) and updated under Order No. 5-01-048 for the Central Valley Region.

Under the General Construction Permit, stormwater discharges from construction sites with a disturbed area of one or more acres are required to obtain either individual NPDES permits for stormwater discharges or be covered by the Construction General Permit. Coverage under the Construction General Permit is accomplished by completing and filing a Notice of Intent with the SWRCB. Each applicant under the Construction General Permit is required to both prepare a SWPPP prior to the commencement of grading activities and to ensure implementation of the SWPPP during construction activities. The primary objective of the SWPPP is to identify, construct, implement, and maintain BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site during construction activities. BMPs may include programs, technologies, processes, practices, and devices that control, prevent, remove, or reduce pollution. The SWPPP would also address BMPs developed specifically to reduce pollutants in stormwater discharges following the completion of construction activities.

The NPDES program also includes regulations for discharging limited threat wastewater to waters of the United States under Order No. R5-2022-0006. “Limited threat” wastewater refers to clean or relatively pollutant-free wastewaters that pose little or no threat to water quality. Limited threat wastewater includes water from the following sources:

- Well Development Water
- Construction Dewatering
- Pump/Well Testing
- Pipeline/Tank Pressure Testing
- Pipeline/Tank Flushing or Dewatering
- Condensate
- Water Supply System
- Aggregate Mine
- Filter Backwash Water

Safe Drinking Water Act (Federal). The Safe Drinking Water Act (SDWA) was established to protect the quality of drinking water in the United States. This SDWA focuses on all waters either designed or potentially designed for drinking water use, whether from surface water or groundwater sources. The SDWA and subsequent amendments authorized the USEPA to establish health-based standards,

or maximum contaminant levels (MCLs), for drinking water to protect public health against both natural and anthropogenic contaminants. All owners or operators of public water systems are required to comply with these primary (health-related) standards. State governments, which can be approved to implement these primary standards for the USEPA, also encourage attainment of secondary (nuisance-related) standards. At the federal level, the USEPA administers the SDWA and establishes MCLs for bacteriological, organic, inorganic, and radiological constituents (United States Code Title 42, and Code of Federal Regulations Title 40). At the state level, California has adopted its own SDWA, which incorporates the federal SDWA standards with some other requirements specific only to California (California Health and Safety Code, Section 116350 et seq.).

The 1996 SDWA amendments established source water assessment programs pertaining to untreated water from rivers, lakes, streams, and groundwater aquifers used for drinking water supply. According to these amendments, the USEPA must consider a detailed risk and cost assessment, as well as best available peer-reviewed science, when developing standards for drinking water. These programs are the foundation of protecting drinking water resources from contamination and avoiding costly treatment to remove pollutants. In California, the Drinking Water Source Assessment and Protection (DWSAP) program fulfills these federal mandates. The Division of Drinking Water of the State Water Resources Control Board is the primary agency for developing and implementing the DWSAP program, and is responsible for performing the assessments of existing groundwater sources.

4.8.2.2 State Regulations

Porter-Cologne Water Quality Control Act. The Porter-Cologne Water Quality Control Act of 1969, which became Division 7 of the California Water Code, authorized the SWRCB to provide comprehensive protection for California's waters through water allocation and water quality protection. The SWRCB implements the requirement of the CWA Section 303, which states that water quality standards must be established for certain waters through the adoption of water quality control plans under the Porter-Cologne Act. The Porter-Cologne Act established the responsibilities and authorities of the nine RWQCBs, which include preparing water quality plans within the regions, identifying water quality objectives, and instituting waste discharge requirements. Water quality objectives are defined as limits or levels of water quality constituents and characteristics established for reasonable protection of beneficial uses or prevention of nuisance. Beneficial uses consist of all the various ways that water can be used for the benefit of people and wildlife. The Porter-Cologne Act was later amended to provide the authority delegated from the USEPA to issue NPDES permits regulating discharges to Waters of the United States.

Sustainable Groundwater Management Act of 2014. On September 16, 2014, a three-bill legislative package was signed into law, composed of AB 1739, SB 1168, and SB 1319, collectively known as the SGMA. The Governor's signing message states "a central feature of these bills is the recognition that groundwater management in California is best accomplished locally".

The SGMA provides a framework for sustainable management of groundwater supplies by local authorities, with the potential for state intervention if necessary to protect the resource.

The act requires the formation of local GSAs that must assess conditions in their local water basins and adopt locally-based management plans. The groundwater basin that serves Fresno has been

designated by the Department of Water Resources as high-priority and subject to a condition of critical overdraft.

Urban Water Management Planning Act. The Urban Water Management Planning Act of 1983, California Water Code Sections 10610 et seq., requires publicly or privately owned water suppliers that provide more than 3,000 acre-feet (AF) of water annually or supply more than 3,000 customers to prepare a plan that:

- Plans for water supply and assesses reliability of each source of water over a 20-year period in 5-year increments.

- Identifies and quantifies adequate water supplies, including recycled water, for existing and future demands, in normal, single-dry, and multiple-dry years.

- Implements conservation and the efficient use of urban water supplies. Significant new requirements for quantified demand reductions have been added by the Water Conservation Act of 2009 (Senate Bill 7 of Special Extended Session 7 [SBX7-7]), which amends the act and adds new water conservation provisions to the Water Code

Senate Bills 610 and 221, Water Supply Planning. To assist water suppliers, cities, and counties in integrated water and land use planning, the state passed Senate Bill (SB) 610 (Chapter 643, Statutes of 2001) and SB 221 (Chapter 642, Statutes of 2001), effective January 1, 2002. SB 610 and SB 221 improve the link between information of water supply availability and certain land use decisions made by cities and counties. SB 610 and SB 221 are companion measures that promote more collaborative planning between local water suppliers and cities and counties. Both statutes require detailed information regarding water availability to be provided to city and county decision makers prior to approval of specified large development projects. This detailed information must be included in the administrative record as the evidentiary basis for an approval action by the city or county on such projects. The statutes recognize local control and decision making regarding the availability of water for projects and the approval of projects. Under SB 610, water supply assessments (WSA) must be furnished to local governments for inclusion in any environmental documentation for certain projects subject to CEQA, as defined in Water Code Section 10912[a].Under SB 221, approval by a city or county of certain residential subdivisions requires an affirmative verification of sufficient water supply. SB 221 is intended as a fail-safe mechanism to ensure that collaboration on finding the needed water supplies to serve a new large subdivision occurs before construction begins.

The Urban Water Management Planning Act states that every urban water supplier that provides water to 3,000 or more customers or provides over 3,000 af of water annually should make every effort to ensure the appropriate level of reliability in its water service to meet the needs of its various categories of customers during normal, dry, and multiple dry years. Both SB 610 and SB 221 identify the Urban Water Management Plan (UWMP) as a planning document that can be used by a water supplier to meet the standards in both statutes. Thorough and complete UWMPs are foundations for water suppliers to fulfill the specific requirements of these two statutes, and they are important source documents for cities and counties as they update their general plans.

Conversely, general plans are source documents as water suppliers update the UWMPs. These planning documents are linked, and their accuracy and usefulness are interdependent.

Additionally, pursuant to the California Water Code Section 10632, urban water suppliers that serve more than 3,000 acre-feet per year or have more than 3,000 connections are required to prepare and adopt a standalone Water Shortage Contingency Plan (WSCP) as part of its Urban Water Management Plan. A WSCP is a detailed plan on how an urban water supplier intends to respond to foreseeable and unforeseeable water shortages. A water shortage occurs when the water supply is reduced to a level that cannot support typical demand at any given time. The WSCP is used to provide guidance by identifying response actions to allow for responsible management of any water shortage with predictability and accountability. Preparation provides the tools to maintain reliable supplies and reduce the impacts of supply interruptions due to extended drought and catastrophic supply interruptions.

AB 3030, California Groundwater Management Act. The Groundwater Management Act of the California Water Code (AB 3030) provides guidance for applicable local agencies to develop a voluntary Groundwater Management Plan in state-designated groundwater basins.Local Regulations

City of Fresno General Plan. The City of Fresno's General Plan Public Utilities and Services Element and Resource Conservation and Resilience Element include objectives and policies that work to manage and develop the City's water facilities and ensure that Fresno has a reliable, long-range source of drinkable water. The following policies related to hydrology and water quality are applicable to the proposed project:

- **Policy PU-5-c: Satellite Facilities.** Work with the Regional Water Quality Control Board to ensure that approval of any satellite treatment and reclamation facility proposal is consistent with governing statutes and regulations.

- **Policy PU-7-b: Reduce Stormwater Leakage.** Reduce storm water infiltration into the sewer collection system, where feasible, through a program of replacing old and deteriorated sewer collection pipeline; eliminating existing stormwater sewer cut-ins to the sanitary sewer system; and avoiding any new sewer cut-ins except when required to protect health and safety.

- **Policy PU-7-e: Infiltration Basins.** Continue to rehabilitate existing infiltration basins, and if determined appropriate, pursue acquiring additional sites for infiltration basins, as needed.

- **Policy PU-8-b: Potable Water Supply and Cost Recovery.** Prepare for provision of increased potable water capacity (including surface water treatment capacity) in a timely manner to facilitate planned urban development consistent with the General Plan. Accommodate increase in water demand from the existing community with the capital costs and benefits allocated equitably and fairly between existing users and new users, as authorized by law, and recognizing the differences in terms of quantity, quality and reliability of the various types of water in the City's portfolio.

- **Policy PU-8-c: Conditions of Approval.** Set appropriate conditions of approval for each new development proposal to ensure that the necessary potable water production and supply facilities and water resources are in place prior to occupancy.

- **Policy PU-8-f: Water Quality.** Continue to evaluate and implement measures determined to be appropriate and consistent with water system policies, including prioritizing the use of groundwater, installing wellhead treatment facilities, constructing above-ground storage and surface water treatment facilities, and enhancing transmission grid mains to promote adequate water quality and quantity.

- **Policy PU-8-g: Review Project Impact on Supply.** Mitigate the effects of development and capital improvement projects on the long-range water budget to ensure an adequate water supply for current and future uses.

- **Policy RC-6-b: Water Plans.** Adopt and implement ordinances, standards, and policies to achieve the intent of the City of Fresno Urban Water Management Plan, Fresno-Area Regional Groundwater Management Plan, and City of Fresno Metropolitan Water Resources Management Plan to ensure a dependable supply of water.

- **Policy RC-6-c: Land Use and Development Compliance.** Ensure that land use and development projects adhere to the objective of the Fresno Metropolitan Water Resources Management Plan to provide sustainable and reliable water supplies to meet the demand of existing and future customers through 2025.

- **Policy RC-6-g: Protect Recharge Areas.** Continue to protect areas of beneficial natural groundwater recharge by preventing uses that can contaminate soil or groundwater.

- **Policy RC-6-h: Conditions of Approval.** Include in the Development Code standards for imposing conditions of approval for development projects to ensure long-term maintenance of adequate clean water resources. Require findings that adequate water supply must exist prior to any discretionary project approval for residential and commercial development requiring annexation, as required by law.

- **Policy RC-7-a: Water Conservation Program Target.** Maintain a comprehensive conservation program to help reduce per capita water usage in the city's water service area to 243 gallons per capita per day (gpcd) by 2020 and 190 gpcd by 2035, by adopting conservation standards and implementing a program of incentives, design and operation standards, and user fees.

    - Support programs that result in decreased water demand, such as landscaping standards that require drought-tolerant plants, rebates for water conserving devices and systems, turf replacement, xeriscape landscape for new homes, irrigation controllers, commercial/industrial/institutional water conserving programs, prioritized leak detection program, complete water system audit, landscape water audit and budget program, and retrofit upon resale ordinance.

    - Implement the U.S. Bureau of Reclamation Best Management Practices for water conservation as necessary to maintain the City's surface water entitlements.

    - Adopt and implement policies in the event that an artificial lake is proposed for development.

- Work cooperatively toward effective uniform water conservation measures that would apply throughout the Planning Area.

- Expand efforts to educate the public about water supply issues and water conservation techniques.

- **Policy RC-7-b: Water Pricing and Metering.** Develop a tiered water cost structure for both residential and commercial users that will properly price water based on its true cost; require all new development to be metered for water use; and charge all customers the true, full cost of their water supply, including costs of acquisition, initial treatment, conveyance, wastewater treatment, operations, maintenance, and remediation.

- **Policy RC-7-c: Best Practices for Conservation.** Require all City facilities and all new private development to follow U.S. Bureau of Reclamation Best Management Practices for water conservation, as warranted and appropriate.

- **Policy RC-7-d: Update Standards for New Development.** Continue to refine water saving and conservation standards for new development.

- **Policy RC-7-h: Landscape Water Conservation Standards.** Refine landscape water conservation standards that will apply to new development installed landscapes, building on the State Model Water Efficient Landscape Ordinance and other State regulations.

  - Evaluate and apply, as appropriate, augmented xeriscape, "water-wise," and "green gardening" practices to be implemented in public and private landscaping design and maintenance.

  - Facilitate implementation of the State's Water Efficient Landscape Ordinance by developing alternative compliance measures that are easy to understand and observe.

City of Fresno Municipal Code. Chapter 6, Municipal Services and Utilities, Article 7, Urban Storm Water Quality Management and Discharge Control, of the Fresno Municipal Code (FMC) establishes provisions regarding stormwater discharges. The purpose of the City's Urban Storm Water Quality Management and Discharge Control Ordinance is to ensure the health, safety, and general welfare of citizens and protect the water quality of watercourses and water bodies in a manner pursuant to and consistent with the CWA (33 U.S.C. Section 1251, et seq.) by reducing pollutants in urban stormwater discharges to the maximum extent practicable and by effectively prohibiting non-stormwater discharges to the storm drain system.

Chapter 11, Building Permits and Regulations, Article 6 Fresno Flood Plain Ordinance establish methods of reducing flood losses by: restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards or flood heights or velocities; requiring that uses vulnerable to floods be protected against flood damage at the time of initial construction; controlling filling, grading, dredging, and other development which may increase flood damage; preventing or regulating the construction of flood barriers which will unnaturally divert flood water or which may increase flood hazards in other areas; and controlling the alteration of natural flood

plains, stream channels, and natural protective barriers, which help accommodate or channel flood waters.

4.8.3 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to hydrology and water quality that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures, if required. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less-than-significant level. Cumulative impacts are also addressed.

4.8.3.1 Significance Criteria

The thresholds for impacts related to hydrology and water quality used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed project would result in a significant impact related to hydrology and water quality if it would:

Threshold 4.8.1 **Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;**

Threshold 4.8.2 **Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;**

Threshold 4.8.3 **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:**

- **Result in substantial erosion or siltation on- or off-site;**
- **Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;**
- **Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or**
- **Impede or redirect flood flows;**

Threshold 4.8.4 **In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or**

Threshold 4.8.5 **Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.**

4.8.3.2 Project Impacts

The following discussion describes the potential impacts related to hydrology and water quality that could result from implementation of the proposed project.

Threshold 4.8.1 Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

The State Water Resources Control Board and nine RWQCBs regulate the water quality of surface water and groundwater bodies throughout California. The proposed project is within the jurisdiction of the Central Valley RWQCB.

Construction. Pollutants of concern during construction of the proposed project include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. During construction activities, excavated soil would be exposed to wind and water erosion, which could result in temporary increases in sediment load in nearby water bodies, including the Houghton Canal, located approximately 140 feet to the west of the project site.

Because the project would disturb greater than 1 acre of soil, it is required to comply with the State Water Resources Control Board's NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, as amended by 2010-0014-DWG and 2012-0006-DWQ, NPDES No. CAS000002) (Construction General Permit). The project is also subject to Article 7, Urban Storm Water Quality Management and Discharge Control, Section 6-714, *Requirement to Prevent, Control, and Reduce Storm Water Pollutants* of the City's Municipal Code.

The Construction General Permit requires the preparation of a Storm Water Pollution Prevention Plan (SWPPP) and implementation of Construction Best Management Practices (BMPs). Construction BMPs would include, but not be limited to, erosion and sediment control, designed to minimize erosion and retain sediment on-site, and good housekeeping practices to prevent spills, leaks, and discharge of construction debris and waste into receiving waters. Section 6-714 of the City's Municipal Code also requires the implementation of BMPs to the maximum extent technologically and economically feasible to prevent and reduce pollutants from entering stormwater during construction. Therefore, adherence to the required SWPPP and the City's Municipal Code and implementation of construction BMPs, would reduce the potential for the discharge of pollutants into Houghton Canal during construction and impacts associated with the violation of water quality standards or waste discharge requirements would be less than significant.

During construction, it is likely that dewatering would be required. If groundwater is encountered during construction, the project would be required to obtain coverage under the California Regional Water Quality Control Board Central Valley Region's NPDES Waste Discharge Requirements for Limited Threat Discharges to Surface Water (Order R5-2022-0006, NPDES No. CAG995002). With adherence to the Waste Discharge Requirements pertaining to Limited Threat Discharges to Surface Water, project construction would not violate groundwater quality standards or waste discharge requirements and impacts would be less than significant.

Operation. Operation of the proposed project could result in surface water pollution associated with chemicals, liquid products, petroleum products (such as paints, solvents, and fuels), and waste that may be spilled or leaked and have the potential to be transported via runoff during periods of heavy precipitation into nearby water bodies.

The City of Fresno operates under the California Regional Water Quality Control Board, Central Valley Regional NPDES Permit and Waste Discharge Requirements General Permit for Discharges from Municipal Separate Storm Sewer Systems (MS4) (Order No. R5-2016-0040-014, NPDES No. CAS0085324). Consistent with the City of Fresno's MS4 Permit, the project would implement storm water quality controls recommended in the Fresno-Clovis Storm Water Quality Management Construction and Post-Construction Guidelines. If applicable, the project would also be subject to the Statewide General Permit for Stormwater Discharges Associated with Industrial Activities (Order 2014-0057-DWQ as amended in 2015 and 2018) (Industrial General Permit) and would be required to develop and implement a storm water pollution prevention plan, eliminate non-stormwater discharges, conduct routine site inspections, train employees in permit compliance, sample storm water runoff and test for pollutant indicators, and submit an annual report to the State Water Resources Control Board.

Adherence to the City of Fresno's MS4 Permit, including implementation of the Stormwater Management Post-Construction Guidelines, as specified in the Industrial General Permit, would reduce the potential for the discharge of pollutants during project operations and impacts associated with the violation of water quality standards or waste discharge requirements would be less than significant.

Infiltration of stormwater could have the potential to affect groundwater quality. The majority of the project site would be impervious surface; and therefore, it is not expected that stormwater would infiltrate during project operations. Because stormwater would be collected and diverted to the storm drain system, there is not a direct path for pollutants to reach groundwater. Therefore, project operations would not violate groundwater quality standards or waste discharge requirements and impacts would be less than significant.

As described above, the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. Therefore, the project's impacts would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.8.2 Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The City of Fresno overlies the Kings Subbasin, which is part of the greater San Joaquin Valley Groundwater Basin. The City is one of many water purveyors that use groundwater from the Kings Subbasin. The City has a network of over 270 municipal wells and currently operates approximately 202 municipal supply wells within the Kings Subbasin. Until late 2004, the City relied solely on groundwater to meet the water demands. The City's desire is to continue to use groundwater within

a larger conjunctive use program that maximizes Its existing water rights and surface water supply sources.

Temporary dewatering from excavations could be necessary during construction of the proposed project. Construction-related dewatering would be temporary and limited to the area of excavations on the project site and would not substantially contribute to depletion of groundwater supplies. Operation of the project would not require groundwater extraction. Following project implementation, there would be a minor increase in impervious surface area. An increase in impervious surface area decreases infiltration, which can decrease the amount of water that is able to recharge the aquifer/groundwater. However, the small increase in impervious area would not substantially decrease any infiltration that currently may occur on the site. Therefore, the project would not impede the Central Valley RWQCB's ability to manage groundwater. Thus, the proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the project would impede sustainable management of the Kings Subbasin. Impacts would be less than significant.

Additionally, as discussed above, the City receives its water supply from groundwater and surface water. The City's 2020 UWMP addresses the City's water service reliability, future challenges, and strategies for managing risks to water reliability through 2045. The City has indicated that groundwater wells, pump stations, recharge facilities, water treatment and distribution systems shall be expanded incrementally to mitigate increased water demands. One of the primary objectives of Fresno's future water supply plans detailed in the City's current UWMP is to balance groundwater operations through a host of strategies. Through careful planning, Fresno has designed a comprehensive plan to accomplish this objective by increasing surface water supplies and surface water treatment facilities, intentional recharge, and conservation, thereby reducing groundwater pumping. The City continually monitors impacts of land use changes and development project proposals on water supply facilities by assigning fixed demand allocations to each parcel by land use as currently zoned or proposed to be rezoned.

General Plan policies require the City to maintain a comprehensive conservation program to help reduce per capita water usage, and includes conservation programs such as landscaping standards for drought tolerance, irrigation control devices, leak detection and retrofits, water audits, public education and implementing U.S. Bureau of Reclamation Best Management Practices for water conservation to maintain surface water entitlements.

As described in the WSA prepared for the proposed project[5], the City has concluded that the City of Fresno's water system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045. Additionally, implementation of the Fresno General Plan policies, the Kings Basin Integrated Regional Water Management Plan (IRWMP)[6], the City of Fresno UWMP, the Fresno-Area Regional Groundwater Management Plan[7],

[5] LSA. 2022. SB 610 Water Supply Assessment, 2740 West Nielsen Avenue Office/Warehouse Project, Fresno, California. July.

[6] Kings Basin Water Authority. 2018. Kings Basin Integrated Regional Water Management Plan. Website: https://www.kingsbasinauthority.org/governance/governing-documents/irwmp/ (accessed September 6, 2022).

and the City of Fresno Metropolitan Water Resource Management Plan would address the continued provision of an adequate, reliable, and sustainable water supply for the proposed project. As such, the impact would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.8.3 Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:

Result in Substantial Erosion or Siltation On- or Off-Site? Erosion is a natural process in which soil is moved from place to place by wind or from flowing water. The effects of erosion within the project area can be accelerated by ground-disturbing activities associated with development. Siltation is the settling of sediment to the bed of a stream or lake which increases the turbidity of water. Turbid water can have harmful effects to aquatic life by clogging fish gills, reducing spawning habitat, and suppress aquatic vegetation growth.

During construction of the proposed project, excavated soil would be exposed and disturbed, drainage patterns would be temporarily altered, and there would be an increased potential for soil erosion and sedimentation compared to existing conditions. Additionally, during a storm event, soil erosion and siltation could occur at an accelerated rate. As discussed previously, the Construction General Permit requires preparation of a SWPPP to identify construction BMPs to be implemented as part of the project to reduce impacts to water quality during construction, including those impacts associated with soil erosion and siltation. With compliance with the requirements in the Construction General Permit and implementation of the construction BMPs, and with compliance with the City's Municipal Code, construction impacts related to on- or off-site erosion or siltation would be less than significant.

The project would increase the amount of impervious surface, which would increase the volume of runoff during a storm, and which can more effectively transport sediments to receiving waters. At project completion, much of the project site would be impervious surface area and not prone to on-site erosion or siltation because no exposed soil would be present in these areas. The remaining portion of the site would consist of pervious surface area, which would contain landscaping that would minimize on-site erosion and siltation by stabilizing the soil. Additionally, the project applicant would be required to establish and maintain existing drainage patterns of the site. Therefore, the proposed project would not alter the existing drainage pattern of the site or increase the rate or amount of surface runoff in a manner that would result in an impact related to substantial erosion or siltation on- or off-site. Compliance with existing regulatory requirements would reduce or eliminate the proposed project's potential to substantially alter the existing drainage pattern of the site. As such, the impact would be less than significant.

[7] Fresno Area Regional Groundwater Management Plan. 2006. December. Website: http://www.fresnofloodcontrol.org/wp-content/uploads/2019/10/Fresno-Area-Regional-GWMP-Final.pdf (accessed September 6, 2022).

Substantially Increase the Rate or Amount of Surface Runoff in a Manner, Which Would Result in Flooding On- or Off-Site? During construction of the proposed project, soil would be disturbed and compacted, and drainage patterns would be temporarily altered, which can increase the volume and velocity of stormwater runoff and increase the potential for localized flooding compared to existing conditions. As discussed above, the Construction General Permit requires the preparation of a SWPPP and implementation of construction BMPs to control and direct surface runoff on-site. With adherence to the Construction General Permit, construction impacts related to altering the existing drainage pattern of the site or area or increase the rate or amount of surface runoff in a manner that would result in flooding on-site or off-site would be less than significant.

While the proposed project would permanently increase the impervious surface area in the project site, the project would maintain the overall on-site drainage patterns and continue to direct surface water to catch basins that flow into the existing storm drains. Prior to the issuance of building permits, the applicant would be required to provide a stormwater improvement plan to the City to ensure that the stormwater system would be capable of handling a 25-year storm and that the drainage facilities conform to City requirements. Additionally, the applicant would be required to pay for all necessary improvement costs if the City determines that the City's storm drain system or storm drain pumping capacity requires expansion or modification as a result of the project. Therefore, the project would not alter the existing drainage pattern of the site or area or increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site and impacts would be less than significant.

Create or Contribute Runoff Water, Which Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff?

Construction. The proposed project would result in an increase in impervious surfaces given that the project site would be mostly built out aside from planting areas located in the parking lot and the perimeter of the project site. However, compliance with pre-existing regulatory requirements, including compliance with the Construction General Permit and implementation of a SWPPP, would reduce or eliminate the potential for project construction to cause substantial additional polluted runoff or runoff in excess of existing or planned stormwater drainage systems. Therefore, construction would not result in additional sources of polluted runoff to be discharged to the storm drain system and impacts would be less than significant.

Operation. As discussed above, the proposed project would result in a minimal increase in impervious surfaces and therefore would not substantially increase runoff from the site. However, compliance with existing regulatory requirements, including compliance with the WPCP and compliance with the MS4, as specified in the Industrial General Permit, would reduce or eliminate the potential for project operations to cause substantial additional polluted runoff or runoff in excess of existing or planned stormwater drainage systems. Therefore, project operations would not result in additional sources of polluted runoff to be discharged to the storm drain system and impacts would be less than significant.

Impede or Redirect Flood Flows? Although implementation of the proposed project would result in impervious surface, because there are no drainages that cross the project site that would be altered, drainage patterns would not be altered. Runoff within the project site would be conveyed to storm

drain inlets and then carried to retention basins to infiltrate into soil. In addition, the proposed project is not located within the 100-year flood hazard area as mapped by the Federal Emergency Management Agency (FEMA). Therefore, the proposed project would not impede or redirect potential flood flows, and impacts would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.8.4 In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

The project site is not located in flood hazard, tsunami, or seiche zones. Additionally, as discussed in Section 4.7, Hazards and Hazardous Materials, the proposed project would comply with applicable federal, State, and local laws and regulations regarding the use of hazardous materials within the project site. As a result, a less than significant impact would occur related to the release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.8.5 Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The City is located within the Kings Subbasin, which is part of the larger San Joaquin Valley Groundwater Basin. The planning documents regarding water resources for the City include Kings IRWMP, the City of Fresno UWMP, the Fresno-Area Regional Groundwater Management Plan, and the City of Fresno Metropolitan Water Resource Management Plan. As noted above, the proposed project would be required to adhere to NPDES drainage control requirements during construction and operation as well as to FMFCD drainage control requirements. As a result, the proposed project would not include any other waste discharges that could conflict with the IRWMP.

In addition, as discussed in the WSA prepared for the proposed project, the potable demand projections in the 2020 UWMP for normal water use utilize land use-based projections. Under this methodology, existing land use and demand was accounted separately from future land use and demand. This allows different demand factors to be applied to current land use areas and future land use areas. Future land use areas represent future customers and developments that are expected to be more water-efficient than existing land uses and buildings due to the California Plumbing Code (CPC) and use of higher-efficiency appliances and landscapes.

The existing and future land use acreage was sourced from the City's Geographic Information System (GIS) database and the City's General Plan. The existing land use shapefile and associated acreage for each land use classification were used to represent 2020 land use data. Areas not served by the City were excluded from the existing land use shapefile. The future land use shapefile corresponds with the planned land use at buildout as described in the City's General Plan representing the year 2056. Although the City does not have any plans to serve areas currently served by others within the City limits, all areas within the City's SOI were assumed to be served by the City by buildout for conservative planning purposes.

The land use acreage between 2020 and 2056 was estimated in 5-year increments based on areas planned to be developed by 2030 from the City's Planning Department, and by linearly interpolating the remainder of the change in acreage for each land use category between 2030 and 2056. Project-specific water demand was calculated using the methodology from the 2020 UWMP, as described above, based on the following assumptions:

- The 2020 UWMP indicates there will be 5,201 acres of industrial uses in Fresno in 2025; and
- The 2020 UWMP indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.

Therefore, it is assumed that industrial land uses, such as the proposed project, will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres. Therefore, based on the assumptions identified above, the proposed project is estimated to demand approximately 68.2 AFY.

The project site is included in the land use area covered by the City's 2020 UWMP and is designated as Heavy Industrial in the City's General Plan. Land use acreages and water demand in the 2020 UWMP were based on the City's General Plan land use designations for 2020 and buildout in 2056. As such, the acreage associated with the proposed project was assumed Industrial in the 2020 UWMP; therefore, it is assumed that demand for water was accounted for in the 2020 UWMP. There is no evidence, in consideration of the calculated project water demand, that such demand exceeds that estimated in the 2020 UWMP. The adequacy of the water supply for the project is thus consistent with the basis of the analysis of the City's water supply in the adopted 2020 UWMP.

The City has concluded that the City of Fresno's water system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045. Therefore, the proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan and impacts would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

4.8.3.3 Cumulative Impacts

Buildout of the proposed project, along with construction and operation of other projects in the vicinity of the project site, would increase the amount of paved impervious surfaces within the City. This increase in impervious surfaces would increase stormwater runoff rates and volumes over those that occur from undeveloped land. This increase in runoff would have the potential to increase the amount of polluted runoff; however, all development projects within the Fresno-Clovis area would be required to comply with the MS4 Permit that requires the implementation of water quality and watershed protection measures. Compliance with the MS4 Permit would reduce potential impacts from cumulative projects to less than cumulatively significant. Since the development under the proposed project would also need to comply with the MS4 Permit, the Construction General Permit, a SWPPP, and specific policies of the General Plan identified above, the project's contribution to potential cumulative impacts would not be cumulatively considerable, and the project would result in a less than significant cumulative impact to stormwater.

The Kings Subbasin is in overdraft condition due to pumping for agricultural and urban uses. Growth in the subbasin will increase demands for groundwater pumping, potentially resulting in continued drawdown of water levels leading to localized cones of depression, changes in groundwater flow direction, concentration of contaminants, and land subsidence. This is a regional problem that is being addressed through several means including the formation of GSA's and the development of GSPs. The proposed project would implement applicable Fresno General Plan policies, the IRWMP, the City of Fresno 2020 UWMP, the Fresno-Area Regional Groundwater Management Plan, and the City of Fresno Metropolitan Water Resource Management Plan, which contain strategies to ensure adequate, reliable, and sustainable water supply for the City of Fresno. Additionally, as described above and in the WSA prepared for the proposed project, the City's water system has sufficient capacity to service the proposed project, as well as meet other projected demands in the City's service area. Therefore, the project's contribution to potential cumulative impacts to the Kings Subbasin would not be cumulatively considerable and the project would result in a less than significant cumulative impact to groundwater management in the Kings Subbasin.

Level of Significance Without Mitigation: Less Than Significant Impact.

4.9 NOISE

This section describes existing noise and vibration conditions, sets forth criteria for determining the significance of noise and vibration impacts, and estimates the likely noise and vibration impacts that would result from construction and operation of the proposed project. Mitigation measures are identified, as necessary, to address significant environmental impacts. The analysis in this section is based on the Noise Impact Analysis Memorandum[1] prepared for the proposed project (Appendix L).

4.9.1 Environmental Setting

The setting section begins with an introduction to several key concepts and terms that are used in evaluating noise. This section also includes a description of current noise sources that affect the project site and the noise conditions that are experienced in the project site vicinity.

4.9.1.1 Characteristics of Sound

Noise is usually defined as unwanted sound and consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep. To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally related to annoyance, while loudness can affect our ability to hear through hearing damage. Pitch is the number of complete vibrations, or cycles per second, of a wave, resulting in the tone's range from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment and is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves, combined with the reception characteristics of the human ear. Sound pressure refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be measured precisely with instruments. The project analysis defines the noise environment of the planning area in terms of sound pressure levels and the project's effect on sensitive land uses.

4.9.1.2 Measurement of Sound

Sound intensity is measured with the A-weighted decibel scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound, similar to the human ear's de-emphasis of these frequencies. Decibels, unlike linear units (e.g., inches or pounds), are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 decibels (dB) is 10 times more intense than 1 dB, 20 dB is 100 times more intense than 1 dB, and 30 dB is 1,000 times more intense than 1 dB. Thirty decibels (30 dB) represents 1,000 times as much acoustic energy as 1 dB. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the sound's loudness. Ambient sounds generally range from 30 dB (very quiet) to 100 dB (very loud).

[1] LSA. 2023. *Noise Impact Analysis Memorandum for the 2740 West Nielsen Avenue Office/Warehouse Project*. February 3.

Sound levels generate from a source, and their decibel level decreases as the distance from that source increases. Sound levels dissipate exponentially with distance from their noise sources. For a single point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source (e.g., highway traffic or railroad operations) the sound decreases 3 dB for each doubling of distance in a hard site environment. Line source sound levels decrease 4.5 dB for each doubling of distance in a relatively flat environment with absorptive vegetation.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. The equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and Community Noise Equivalent Level (CNEL) or the day-night average noise level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noise occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the relaxation and sleeping hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangeable. The City uses the CNEL noise scale for long-term noise impact assessment.

Other noise rating scales of importance when assessing the annoyance factor include the maximum instantaneous noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max}, which reflects peak operating conditions and addresses the annoying aspects of intermittent noise. It is often used together with another noise scale, or noise standards in terms of percentile noise levels, in noise ordinances for enforcement purposes. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half the time the noise level exceeds this level, and half the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first category includes audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 dB or greater because this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1 dB and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category includes changes in noise levels of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Table 4.9.A lists definitions of acoustical terms, and Table 4.9.B shows common sound levels and their sources.

Table 4.9.A: Definitions of Acoustical Terms

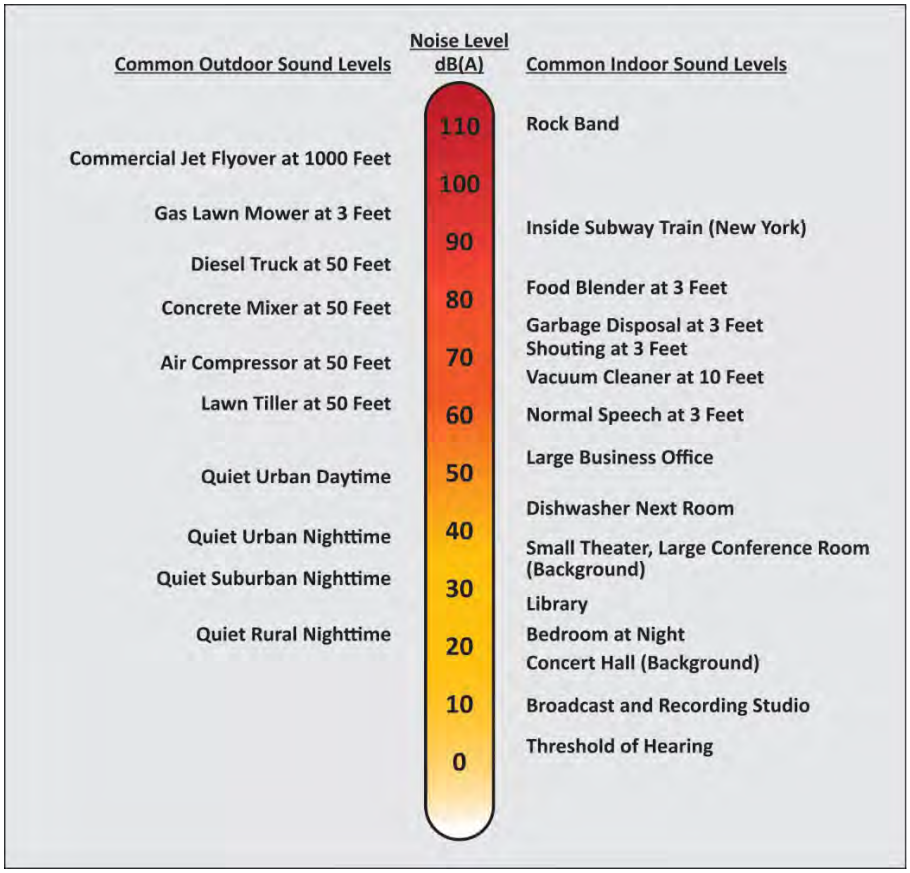
Term	Definitions
Decibel, dB	A unit of sound level that denotes the ratio between two quantities that are proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in 1 second (i.e., the number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. (All sound levels in this report are A-weighted unless reported otherwise.)
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 1%, 10%, 50%, and 90% of a stated time period, respectively.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dBA to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time. It is usually a composite of sound from many sources from many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

Source: *Handbook of Acoustical Measurements and Noise Control* (Harris 1991).

4.9.1.3 Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to sound levels higher than 85 dBA. Exposure to high sound levels affects the entire system, with prolonged sound exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of sound exposure above 90 dBA would result in permanent cell damage. When the sound level reaches 120 dBA, a tickling sensation occurs in the human ear, even with short-term exposure. This level of sound is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by a feeling of pain in the ear (i.e., the threshold of pain). A sound level of 160–165 dBA will result in dizziness or a loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less-developed areas.

Table 4.9.B: Typical A-Weighted Sound Levels



Source: Compiled by LSA (2016).

4.9.1.4 Fundamentals of Vibration

Vibration energy propagates from a source through intervening soil and rock layers to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by occupants as the motion of building surfaces, the rattling of items sitting on shelves or hanging on walls, or a low-frequency rumbling noise. The rumbling noise is caused by the vibration of walls, floors, and ceilings that radiate sound waves. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 10 dB or less. This is an order of magnitude below the damage threshold for normal buildings.

Typical sources of ground-borne vibration are construction activities (e.g., blasting, pile-driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Problems with both ground-borne vibration and noise from these sources are usually localized to areas within approximately 100 feet from the vibration source, although there are examples of ground-borne vibration causing interference out to distances greater than 200 feet. When roadways are smooth, vibration from traffic, even heavy trucks, is rarely perceptible. It is

assumed for most projects that the roadway surface will be smooth enough that ground-borne vibration from street traffic will not exceed the impact criteria; however, both construction of the project and the freight train operations could result in ground-borne vibration that may be perceptible and annoying.

Ground-borne noise is not likely to be a problem because noise arriving via the normal airborne path will usually be greater than ground-borne noise.

Ground-borne vibration has the potential to disturb people and damage buildings. Although it is very rare for train-induced ground-borne vibration to cause even cosmetic building damage, it is not uncommon for construction processes such as blasting and pile-driving to cause vibration of sufficient amplitudes to damage nearby buildings. Ground-borne vibration is usually measured in terms of vibration velocity, either the root-mean-square (RMS) velocity or peak particle velocity (PPV). The RMS is best for characterizing human response to building vibration, and PPV is used to characterize potential for damage. Decibel notation acts to compress the range of numbers required to describe vibration. Vibration velocity level in decibels is defined as:

$$L_v = 20 \log_{10} [V/V_{ref}]$$

where "L_v" is the vibration velocity in decibels (VdB), "V" is the RMS velocity amplitude, and "V_{ref}" is the reference velocity amplitude, or 1 x 10^{-6} inches/second (in/sec) used in the United States. Table 4.9.C illustrates human response to various vibration levels, as described in the *Federal Transit Administration (FTA) Noise and Vibration Impact Assessment Manual* (FTA Manual).[2]

Table 4.9.C: Human Response to Different Levels of Ground-Borne Noise and Vibration

Vibration Velocity Level	Noise Level		Human Response
	Low Frequency[1]	Mid Frequency[2]	
65 VdB	25 dBA	40 dBA	Approximate threshold of perception for many humans. Low-frequency sound is usually inaudible; mid-frequency sound is excessive for quiet sleeping areas.
75 VdB	35 dBA	50 dBA	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level unacceptable. Low-frequency noise is acceptable for sleeping areas; mid-frequency noise is annoying in most quiet occupied areas.
85 VdB	45 dBA	60 dBA	Vibration is acceptable only if there are an infrequent number of events per day. Low-frequency noise is unacceptable for sleeping areas; mid-frequency noise is unacceptable even for infrequent events with institutional land uses, such as schools and churches.

Source: *Transit Noise and Vibration Impact Assessment* (FTA 2018).
[1] Approximate noise level when vibration spectrum peak is near 30 Hz.
[2] Approximate noise level when vibration spectrum peak is near 60 Hz.
dBA = A-weighted decibels
FTA = Federal Transit Administration
Hz = Hertz
VdB = vibration velocity decibels

[2] Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual. Office of Planning and Environment*. Report No. 0123. September.

Factors that influence ground-borne vibration and noise include:

- **Vibration Source:** Vehicle suspension, wheel types and condition, railroad track/roadway surface, railroad track support system, speed, transit structure, and depth of vibration source.
- **Vibration Path:** Soil type, rock layers, soil layering, depth to water table, and frost depth.
- **Vibration Receiver:** Foundation type, building construction, and acoustical absorption.

Among the factors listed above, there are significant differences in the vibration characteristics when the source is underground compared to at the ground surface. In addition, soil conditions are known to have a strong influence on the levels of ground-borne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock.

Experience with ground-borne vibration indicates (1) vibration propagation is more efficient in stiff, clay soils than in loose, sandy soils; and (2) shallow rock seems to concentrate the vibration energy close to the surface and can result in ground-borne vibration problems at large distances from a railroad track. Factors such as layering of the soil and the depth to the water table can have significant effects on the propagation of ground-borne vibration. Soft, loose, sandy soils tend to attenuate more vibration energy than hard, rocky materials. Vibration propagation through groundwater is more efficient than through sandy soils.

4.9.1.5 Overview of the Existing Noise Environment

Existing Noise Level Measurements. To assess existing noise levels, LSA conducted two long-term and four short-term noise measurements at the proposed project site. The long-term noise measurements were recorded on September 28, 2022 and on September 29, 2022. The long-term noise measurements captured data to calculate the hourly L_{eq} and CNEL at each location, which incorporate the nighttime hours. Sources that dominate the existing noise environment include traffic on West Nielsen Avenue and Hughes Avenue, as well as railway activities and nearby aircraft operations. Noise measurement data collected during long-term noise monitoring are summarized in Table 4.9.D.

Existing Traffic Noise. The guidelines included in the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) were used to evaluate traffic-related noise conditions along roadway segments in the project vicinity. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the CNEL values.

Traffic volumes were obtained from the Traffic Impact Study provided in Appendix M. Table 4.9.E provides the existing traffic noise levels in the project vicinity. These traffic noise levels are based on the specific breakdown of the vehicle percentages based on type and time of day and are representative of a worst-case scenario that assumes a flat terrain and no shielding between the traffic and the noise contours.

Table 4.9.D: Long-Term Noise Level Measurements

Location	Daytime Hours Noise Levels[1] (dBA L_{eq})	Evening Hours Noise Levels[2] (dBA L_{eq})	Nighttime Hours Noise Levels[3] (dBA L_{eq})	Average Daily Noise Level (dBA CNEL)	Average Noise Level 7 a.m. to 10 p.m. (dBA L_{eq})	Average Noise Level 10 p.m. to 7 a.m. (dBA L_{eq})
LT-1: West of 2625 W Nielsen Avenue. On a tree, approximately 40 feet away from W Neilson centerline	61.0-68.3	56.2-61.4	52.0-66.2	67.6	62.3	59.1
LT-2: North of site, near rail tracks, approximately 30 feet from track closest to site.	46.6-66.6	55.8-65.3	50.2-56.4	62.0	56.7	53.3
ST-14: Between second and third tree north of cemetery entrance. Approximately 35 feet from N Hughes Avenue centerline	58.8-66.1	54.0-59.2	49.8-64.0	65.4	60.1	56.9
ST-24: North of Belmont Avenue. Approximately 40 feet away from centerline. By 2560 Belmont Avenue entrance (AAA Welding).	61.6-68.9	56.8-62.0	52.6-66.8	68.2	62.9	59.7
ST-34: West of N Marks Avenue, south of overpass entrance, by power pole. Approximately 50 feet away from Marks Ave. centerline	62.8-70.1	58.0-63.2	53.8-68.0	69.4	64.1	60.9
ST-44: South of Nielsen Avenue, approximately 40 feet away from centerline. East of 2307 W Nielsen Ave entrance.	61.5-68.8	56.7-61.9	52.5-66.7	68.1	62.8	59.6

Source: Compiled by LSA. (October 2022).

[1] Daytime Noise Levels = noise levels during the hours of 7:00 a.m. to 7:00 p.m.

[2] Evening Noise Levels = noise levels during the hours of 7:00 p.m. to 10:00 p.m.

[3] Nighttime Noise Levels = noise levels during the hours of 10:00 p.m. to 7:00 a.m.

[4] Hourly and daily noise levels at short-term noise monitoring locations were estimated by the noise profile of nearby long-term measurements

dBA = A-weighted decibels

CNEL = Community Noise Equivalent Level

L_{eq} = equivalent continuous sound level

Table 4.9.E: Existing Traffic Noise Levels Without Project

Roadway Segment	ADT	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane
Marks Avenue between Belmont Avenue and Nielsen Avenue	10,190	158	486	1,532	72.8
Marks Avenue between Nielsen Avenue and Ray Johnson Drive	11,554	178	551	1,737	73.3
Marks Avenue between Ray Johnson Drive and SR-180 Westbound Ramps	12,019	185	573	1,807	73.5
Belmont Avenue between Marks Avenue and Hughes Avenue	7,240	92	280	881	71.0
Nielsen Avenue between Marks Avenue and Hughes Avenue	1,614	< 50	71	199	64.0
Hughes Avenue between Nielsen Avenue and Belmont Avenue	2,604	< 50	105	318	66.3

Source: Compiled by LSA (October 2022).
Notes: Traffic noise within 50 feet of the roadway centerline should be evaluated with site-specific information.
ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
SR- = State Route

Airport Operations. There are currently three airports within the City of Fresno: Fresno Yosemite International Airport, Fresno-Chandler Executive Airport, and Sierra Sky Park Airport. Commercial jet aircraft operations are limited to Fresno Yosemite International Airport. The Air National Guard is also stationed there and operates military jets and other aircraft. Private and commercial operations with smaller aircraft use Fresno Chandler Downtown Airport, while only small private aircraft use Sierra Sky Park Airport.

The nearest airports to the project site include Fresno Chandler Executive Airport, located 0.8 mile from the project site, the Sierra Sky Airport, 6.7 miles from the project site, and Fresno International Airport, 7.1 miles from the project site. Each of these airports is included in the Fresno County Airport Land Use Compatibility Plan (ALUCP), which guides approximate compatible land uses. The City of Fresno General Plan, other City land use plans, and all City land use decisions must be compatible with the adopted ALUCP. The ALUCP includes CNEL noise contours based on projected airport and aircraft operations. The project site is not within an ALUCP.

Railroad Operations. The two major rail lines that traverse the city are the Union Pacific Railroad line, which is generally runs along State Route (SR) 99, and the BNSF Railway, which diverges from SR-99 in the southwest and travels through downtown (behind City Hall) to the northwest. The Union Pacific line is generally within a heavy commercial and industrial corridor, although residential uses occur in the vicinity of the line north of Shaw Avenue. The Union Pacific line limits its use to only freight traffic. South of downtown, BNSF Railway is bounded by industrial uses, while north of downtown, the line is generally within a residential area. The BNSF Railway carries both freight and passenger traffic (Amtrak).

The closest rail line to the project site is 315 feet north of the project site.

Stationary Noise Sources. Stationary noise sources can also have an effect on the population, and unlike mobile, transportation-related noise sources, these sources generally have a more permanent and consistent impact on people. These stationary noise sources involve a wide spectrum of uses and activities, including various industrial uses, commercial operations, agricultural production, school playgrounds, high school football games, on-site heating, ventilation, and air conditioning (HVAC) units, generators, lawn maintenance equipment, and swimming pool pumps.

Even with incorporation of the best available noise control technology, noise emanating from industrial uses can be substantial and exceed local noise standards. These noise sources can be continuous and may contain tonal components that may be annoying to nearby receptors. Although industrial uses in Fresno are typically in industrial districts near freeways and commercial uses and away from residences and other sensitive noise receptors, noise sources associated with commercial uses such as automotive repair facilities, recycling centers, and loading docks may occur in the vicinity of residential uses.

4.9.2 Regulatory Setting

Noise and vibration regulations are addressed through the efforts of various federal, State, and local government agencies. The agencies responsible for regulating noise are discussed below.

4.9.2.1 Federal Regulations

United States Environmental Protection Agency. In 1972, Congress enacted the United States Noise Control Act. This act authorized the United States Environmental Protection Agency (USEPA) to publish descriptive data on the effects of noise and establish levels of sound "requisite to protect the public welfare with an adequate margin of safety." These levels are separated into health (hearing loss levels) and welfare (annoyance levels). For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to 70 dBA during a 24-hour period of time. At 55 dBA L_{dn}, 95 percent sentence clarity (intelligibility) may be expected at 11 ft, with no community reaction. However, 1 percent of the population may complain about noise at this level and 17 percent may indicate annoyance. The USEPA cautions that these identified levels are guidelines, not standards.[3]

Federal Transit Administration. Vibration standards included in the FTA Manual are used in this analysis for ground-borne vibration impacts on human annoyance, as shown in Table 4.9.F. The criteria presented in Table 4.9.F account for the variations in project types, which differ widely among projects.

The criteria for environmental impact from ground-borne vibration and noise are based on the maximum levels for a single event. Table 4.9.G lists the potential vibration building damage criteria associated with construction activities, as suggested in the FTA Manual.

[3] United States Environmental Protection Agency (USEPA). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*.

Table 4.9.F: Interpretation of Vibration Criteria for Detailed Analysis

Land Use	Max L_v (VdB)[1]	Description of Use
Workshop	90	Vibration that is distinctly felt. Appropriate for workshops and similar areas not as sensitive to vibration.
Office	84	Vibration that can be felt. Appropriate for offices and similar areas not as sensitive to vibration.
Residential Day	78	Vibration that is barely felt. Adequate for computer equipment and low-power optical microscopes (up to 20×).
Residential Night and Operating Rooms	72	Vibration is not felt, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power microscopes (100×) and other equipment of low sensitivity.

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] As measured in 1/3-Octave bands of frequency over the frequency range 8 to 80 Hertz.
FTA = Federal Transit Administration
Max = maximum
L_V = velocity in decibels
VdB = vibration velocity decibels

Table 4.9.G: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)	Approximate L_V (VdB)[1]
Reinforced concrete, steel, or timber (no plaster)	0.50	102
Engineered concrete and masonry (no plaster)	0.30	98
Non-engineered timber and masonry buildings	0.20	94
Buildings extremely susceptible to vibration damage	0.12	90

Source: *Transit Noise and Vibration Impact Assessment* (FTA 2018).
[1] RMS vibration velocity in decibels (VdB) re 1 µin/sec.
µin/sec = microinches per second
FTA = Federal Transit Administration
in/sec = inch/inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

FTA Manual guidelines show that for potential annoyance thresholds, a level of up to 78 VdB is acceptable during the daytime hours at residential uses while a level of 87 VdB is appropriate for office uses, and a level of 90 VdB is appropriate for workshop uses. To assess damage potential, a vibration level of up to 102 VdB (equivalent to 0.5 in/sec in PPV) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster) and would not result in any construction vibration damage. For a non-engineered timber and masonry building, the construction building vibration damage criterion is 94 VdB (0.2 in/sec in PPV).

4.9.2.2 State Regulations

The State of California has established regulations that help prevent adverse impacts to occupants of buildings near noise sources. Referred to as the *State Noise Insulation Standard*, it requires buildings to meet performance standards through design and/or building materials that would offset any noise source in the vicinity of the receptor. State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces.

These requirements are found in California Code of Regulations, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code), Appendix Chapters 12 and 12A.

The State has also established land use compatibility guidelines for determining acceptable noise levels for specified land uses.

4.9.2.3 Local Regulations

City of Fresno General Plan. The City of Fresno's General Plan Noise Element includes objectives and policies that work to protect the citizens of the City from the harmful and annoying effects of exposure to excessive noise. The following policies related to noise are applicable to the proposed project. In addition, the Noise Element sets noise standards for transportation and stationary noise sources as shown in Table 4.9.H and Table 4.9.I, below.

Table 4.9.H: Transportation (Non-Aircraft) Noise Sources

Noise-Sensitive Land Use[1]	Outdoor Activity Areas[2]	Interior Spaces	
	L_{dn}/CNEL, dB	L_{dn}/CNEL, dB	L_{eq} dB[2]
Residential	65	45	-
Transient Lodging	65	45	-
Hospitals, Nursing Homes	65	45	-
Theaters, Auditoriums, Music Halls	-	-	35
Churches, Meeting Halls	65	-	45
Office Buildings	-	-	45
Schools, Libraries, Museums	-	-	45

Source: General Plan (City of Fresno, 2014).

[1] Where the location of outdoor activity areas is unknown or is not applicable, the exterior noise level standard shall be applied to the property line of the receiving land use.

[2] As determined for a typical worst-case hour during periods of use.

CNEL = Community Noise Equivalent Level

dB = decibels

L_{dn} = day-night average noise level

Table 4.9.I: Stationary Noise Sources

	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly Equivalent Sound Level (L_{eq}), dBA	50	45
Maximum Sound Level (L_{max}), dBA	70	60

Source: General Plan (City of Fresno, 2014).

[1] The Planning and Development Director, on a case-by-case basis, may designate land uses other than those shown in this table to be noise-sensitive, and may require appropriate noise mitigation measures.

[2] As determined at outdoor activity areas. Where the location of outdoor activity areas is unknown or not applicable, the noise exposure standard shall be applied at the property line of the receiving land use. When ambient noise levels exceed or equal the levels in this table, mitigation shall only be required to limit noise to the ambient plus five dB.

dB = decibels

dBA = A-weighted decibels

- **Policy NS-1-b: Conditionally Acceptable Exterior Noise Exposure Range.** Establish the conditionally acceptable noise exposure level range for residential and other noise sensitive uses to be 65 dB L_{dn} or require appropriate noise reducing mitigation measures as determined by a site-specific acoustical analysis to comply with the desirable and conditionally acceptable exterior noise level and the required interior noise level standards set in Table 4.9.H.

- **Policy NS-1-c: Generally Unacceptable Exterior Noise Exposure Range.** Establish the exterior noise exposure of greater than 65 dB L_{dn} or CNEL to be generally unacceptable for residential and other noise sensitive uses for noise generated by sources in Policy NS-1-a, and study alternative less noise-sensitive uses for these areas if otherwise appropriate. Require appropriate noise reducing mitigation measures as determined by a site-specific acoustical analysis to comply with the generally desirable or generally acceptable exterior noise level and the required 45 dB interior noise level standards set in Table 4.9.H as conditions of permit approval.

- **Policy NS-1-g:** Noise mitigation measures which help achieve the noise level targets of this plan include, but are not limited to, the following:

    - Façades with substantial weight and insulation;
    - Installation of sound-rated windows for primary sleeping and activity areas;
    - Installation of sound-rated doors for all exterior entries at primary sleeping and activity areas;
    - Greater building setbacks and exterior barriers;
    - Acoustic baffling of vents for chimneys, attic and gable ends;
    - Installation of mechanical ventilation systems that provide fresh air under closed window conditions.

  The aforementioned measures are not exhaustive and alternative designs may be approved by the City, provided that a qualified Acoustical Consultant submits information demonstrating that the alternative design(s) will achieve and maintain the specific targets for outdoor activity areas and interior spaces.

- **Policy NS-1-i: Mitigation by New Development.** Require an acoustical analysis where new development of industrial, commercial, or other noise generating land uses (including transportation facilities such as roadways, railroads, and airports) may result in noise levels that exceed the noise level exposure criteria established by Tables 4.9.H and 4.9.I to determine impacts and require developers to mitigate these impacts in conformance with Tables 4.9.H and 4.9.I as a condition of permit approval through appropriate means. Noise mitigation measures may include:

- The screening of noise sources such as parking and loading facilities, outdoor activities, and mechanical equipment;
- Providing increased setbacks for noise sources from adjacent dwellings;
- Installation of walls and landscaping that serve as noise buffers;
- Installation of soundproofing materials and double-glazed windows; and
- Regulating operations, such as hours of operation, including deliveries and trash pickup.

Alternative acoustical designs that achieve the prescribed noise level reduction may be approved by the City, provided a qualified Acoustical Consultant submits information demonstrating that the alternative designs will achieve and maintain the specific targets for outdoor activity areas and interior spaces. As a last resort, developers may propose to construct noise walls along roadways when compatible with aesthetic concerns and neighborhood character. This would be a developer responsibility, with no City funding.

- **Policy NS-1-j: Significance Threshold.** Establish, as a threshold of significance for the City's environmental review process, that a significant increase in ambient noise levels is assumed if the project would increase noise levels in the immediate vicinity by 3 dB L_{dn} or CNEL or more above the ambient noise limits established in this General Plan Update.

- **Policy NS-1-m: Transportation Related Noise Impacts.** For projects subject to City approval, require that the project sponsor mitigate noise created by new transportation and transportation-related stationary noise sources, including roadway improvement projects, so that resulting noise levels do not exceed the City's adopted standards for noise-sensitive land uses.

- **Policy NS-1-o: Sound Wall Guidelines.** Acoustical studies and noise mitigation measures for projects shall specify the heights, materials, and design for sound walls and other noise barriers. Aesthetic considerations shall also be addressed in these studies and mitigation measures such as variable noise barrier heights, a combination of a landscaped berm with wall, and reduced barrier height in combination with increased distance or elevation differences between noise source and noise receptor, with a maximum allowable height of 15 feet. The City will develop guidelines for aesthetic design measures of sound walls, and may commission area wide noise mitigation studies that can serve as templates for acoustical treatment that can be applied to similar situations in the urban area.

City of Fresno Municipal Code. Chapter 10, Article 1 (Noise Regulations), of the Fresno Municipal Code establishes excessive noise guidelines and exemptions. The following portions of the Municipal Code are applicable to the proposed project.

SEC. 10-102. Definitions. (b) Ambient Noise. "Ambient noise" is the all-encompassing noise associated with a given environment, being usually a composite of sounds from many sources near and far. For the purpose of this ordinance, ambient noise level is the level obtained when

the noise level is averaged over a period of 15 minutes, without inclusion of the offending noise, at the location and time of day at which a comparison with the offending noise is to be made. Where the ambient noise level is less than that designated in this section, the noise level specified in Table 4.9.J shall be deemed to be the ambient noise level for that location.

Table 4.9.J: Ambient Noise Levels

District	Time	Sound Level Decibels
Residential	10:00 p.m. to 7:00 a.m.	50
Residential	7:00 p.m. to 10:00 p.m.	55
Residential	7:00 a.m. to 7:00 p.m.	60
Commercial	10:00 p.m. to 7:00 a.m.	60
Commercial	7:00 a.m. to 10:00 p.m.	65
Industrial	anytime	70

Source: Chapter 10, Article 1 (Noise Regulations) (City of Fresno, 2022).

SEC. 10-105. Excessive Noise Prohibited. No person shall make, cause, or suffer or permit to be made or caused upon any premises or upon any public street, alley, or place within the city, any sound or noise which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing or working in the area, unless such noise or sound is specifically authorized by or in accordance with this article. The provisions of this section shall apply to, but shall be limited to, the control, use, and operation of the following noise sources:

a. Radios, musical instruments, phonographs, television sets, or other machines or devices used for the amplification, production, or reproduction of sound or the human voice.

b. Animals or fowl creating, generating, or emitting any cry or behavioral sound.

c. Machinery or equipment, such as fans, pumps, air conditioning units, engines, turbines, compressors, generators, motors or similar devices, equipment, or apparatus.

d. Construction equipment or work, including the operation, use or employment of pile drivers, hammers, saws, drills, derricks, hoists, or similar construction equipment or tools.

SEC. 10-109. Exceptions. The provisions of this article shall not apply to:

a. Construction, repair or remodeling work accomplished pursuant to a building, electrical, plumbing, mechanical, or other construction permit issued by the city or other governmental agency, or to site preparation and grading, provided such work takes place between the hours of 7:00 a.m. and 10:00 p.m. on any day except Sunday.

b. Emergency work.

c. Any act or acts which are prohibited by any law of the State of California or the United States.

4.9.3 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to noise and vibration that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures, if required. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less than significant level. Cumulative impacts are also addressed.

4.9.3.1 Significance Criteria

The thresholds for impacts related to noise used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed project would result in a significant impact related to noise if it would:

Threshold 4.9.1 **Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;**

Threshold 4.9.2 **Generate excessive groundborne vibration or groundborne noise levels; or**

Threshold 4.9.3 **For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.**

4.9.3.2 Project Impacts

The following discussion describes the potential impacts related to noise that could result from implementation of the proposed project.

Threshold 4.9.1 **Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?**

The following sections describe the short-term construction and long-term operational noise impacts associated with the proposed project.

Short-Term Construction Noise Impacts. Project construction would result in short-term noise impacts on the nearby sensitive receptors. Maximum construction noise would be short-term, generally intermittent depending on the construction phase, and variable depending on receiver distance from the active construction zone. The duration of noise impacts generally would be from 1 day to several days, depending on the phase of construction. The level and types of noise impacts that would occur during construction are described below.

Construction is completed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 4.9.K lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor, taken from the FHWA *Roadway Construction Noise Model User's Guide*.[4]

Table 4.9.K: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%)	Maximum Noise Level (L_{max}) at 50 Feet[1]
Backhoes	40	80
Compactor (ground)	20	80
Compressor	40	80
Cranes	16	85
Dozers	40	85
Dump Trucks	40	84
Excavators	40	85
Flat Bed Trucks	40	84
Forklift	20	85
Front-end Loaders	40	80
Graders	40	85
Impact Pile Drivers	20	95
Jackhammers	20	85
Pick-up Truck	40	55
Pneumatic Tools	50	85
Pumps	50	77
Rock Drills	20	85
Rollers	20	85
Scrapers	40	85
Tractors	40	84
Welder	40	73

Source: Roadway Construction Noise Model (Federal Highway Administration 2006).
Note: Noise levels reported in this table are rounded to the nearest whole number.
[1] Maximum noise levels were developed based on Spec 721.560 from the Central Artery/Tunnel (CA/T) program to be consistent with the City of Boston's Noise Code for the "Big Dig" project.
L_{max} = maximum instantaneous sound level

Two types of short-term noise impacts could occur during construction of the proposed project. The first type involves construction crew commutes and the transport of construction equipment and materials to the site, which would incrementally increase noise levels on roads leading to the site. As shown in Table 4.9.K, there would be a relatively high single-event noise exposure potential at a maximum level of 84 dBA L_{max} with trucks passing at 50 feet.

[4] Federal Highway Administration (FHWA). 2006. Roadway Construction Noise Model User's Guide. January. Washington, D.C.

In addition to the reference maximum noise level, the usage factor provided in Table 4.9.K is used to calculate the hourly noise level impact for each piece of equipment based on the following equation:

$$L_{eq}(equip) = E.L. + 10\log(U.F.) - 20\log\left(\frac{D}{50}\right)$$

where: $L_{eq}(equip)$ = L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period

E.L. = noise emission level of the particular piece of equipment at a reference distance of 50 feet

U.F. = usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time

D = distance from the receiver to the piece of equipment

Each piece of construction equipment operates as an individual point source. Using the following equation, a composite noise level can be calculated when multiple sources of noise operate simultaneously:

$$Leq\ (composite) = 10 * \log_{10}\left(\sum_{1}^{n} 10^{\frac{Ln}{10}}\right)$$

Using the equations from the methodology above, the reference information in Table 4.9.K, and the construction equipment list provided, the composite noise level of the two loudest pieces of equipment for each construction phase was calculated. The project construction composite noise levels at a distance of 50 feet for would range from 74 dBA L_{eq} to 84 dBA L_{eq}, with the highest noise levels occurring during the grading phase.

Once composite noise levels are calculated, reference noise levels can then be adjusted for distance using the following equation:

$$Leq\ (at\ distance\ X) = Leq\ (at\ 50\ feet) - 20 * \log_{10}\left(\frac{X}{50}\right)$$

In general, this equation shows that doubling the distance would decrease noise levels by 6 dBA, while halving the distance would increase noise levels by 6 dBA.

To determine the applicable distance, the acoustical average distance is utilized. The acoustical average distance is used to represent noise sources that are mobile or distributed over an area. The average acoustical distance is calculated by multiplying the shortest distance between the receiver and the noise source area by the farthest distance, and then taking the square root of the product.

While construction noise will vary, it is expected that composite noise levels during construction at the nearest off-site sensitive residential use to the south would reach an average noise level of 64 dBA L_{eq} during daytime hours. While construction-related, short-term noise levels have the

potential to be higher than quieter daytime ambient noise levels in the project area under existing conditions, the construction noise impacts would be approximately 1.7 dBA greater than the existing average daytime noise level of 64.7 dBA L_{eq} during the allowable hour of construction. When logarithmically combined with the existing average ambient noise level, the total noise level would be 66.2 dBA L_{eq} resulting in an increase of 3.9 dBA L_{eq}. Because the increase would be less than 5 dBA, construction noise would be considered less than significant.

Consistent with the applicable noise provisions of the Fresno Municipal Code, construction work would only take place between the hours of 7:00 a.m. and 10:00 p.m. Monday through Saturday. No construction work would take place on Sundays.

Although the project's potential construction-related noise level increase would be less than 5 dBA, project construction noise would result in a potentially significant impact at the nearest off-site sensitive residential use. As such, Mitigation Measure NOI-1 would be required to ensure that all construction equipment, fixed or mobile, is equipped with properly operating and maintained mufflers consistent with manufacturers' standards, which would reduce the potential impacts associated with construction equipment. Additionally, Mitigation Measure NOI-1 requires the project to designate a "disturbance coordinator" at the City who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem.

With implementation of Mitigation Measure NOI-1, the proposed project would result in a less than significant impact associated with the generation of a substantial temporary increase in ambient noise levels in the vicinity during construction.

Long-Term Operational Noise Impacts. The following sections address possible noise level increases in the project vicinity resulting from implementation of the proposed project, including mobile and stationary noise sources. Mobile noise sources include traffic noise. Stationary noise sources include heating, ventilation, and air conditioning (HVAC) equipment, parking lot activities, and truck delivery and truck unloading activities.

Traffic Noise Impacts to Off-Site Receivers. The guidelines included in the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) were used to evaluate highway traffic-related noise conditions along roadway segments in the project vicinity. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the CNEL values. Table 4.9.L provides the traffic noise levels for the existing with and without project, and opening year with and without project scenarios. These noise levels represent the worst-case scenario, which assumes no shielding is provided between the traffic and the location where the noise contours are drawn.

The without and with project scenario traffic volumes were obtained from the Traffic Impact Study (Appendix M).

Table 4.9.L: Traffic Noise Levels Without and With Proposed Project

Roadway Segment	Existing		Existing With Project			Opening Year		Opening Year with Project			Year 2035		Year 2035 With Project		
	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	Increase from Existing Conditions	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	Increase from Near-Term Conditions	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	Increase from Near-Term Conditions
Marks Avenue between Belmont Avenue and Nielsen Avenue	10,190	72.8	11,228	73.9	1.1	10,938	73.1	11,976	74.1	1.0	11,651	73.4	12,689	74.4	1.0
Marks Avenue between Nielsen Avenue and Ray Johnson Drive	11,554	73.3	12,146	74.2	0.9	12,408	73.6	13,000	74.5	0.9	13,244	73.9	13,836	74.8	0.9
Marks Avenue between Ray Johnson Drive and SR-180 Westbound Ramps	12,019	73.5	12,611	74.4	0.9	12,933	73.8	13,525	74.7	0.9	13,706	74.1	14,298	74.9	0.8
Belmont Avenue between Marks Avenue and Hughes Avenue	7,240	71.0	7,550	71.8	0.8	7,905	71.3	8,215	72.1	0.8	8,846	71.8	9,156	72.6	0.8
Nielsen Avenue between Marks Avenue and Hughes Avenue	1,614	64.0	2,230	66.1	2.1	1,767	64.4	2,383	66.4	2.0	1,772	64.4	2,388	66.4	2.0
Hughes Avenue between Nielsen Avenue and Belmont Avenue	2,604	66.3	3,060	67.6	1.3	2,796	66.6	3,252	67.9	1.3	3,531	67.6	3,987	68.8	1.2

Source: Compiled by LSA (October 2022).
Note: Traffic noise within 50 feet of the roadway centerline should be evaluated with site-specific information.
Shaded cells indicate roadway segments adjacent to the project site.
ADT = average daily traffic
CNEL= Community Noise Equivalent Level
dBA = A-weighted decibels
SR = State Route

This page intentionally left blank

Table 4.9.L shows that the increase in project-related traffic noise would be no greater than 2.1 dBA. Noise level increases less than 3.0 dBA are not considered perceptible to most people in an outdoor environment. In addition, as shown in Table 4.9.D above, existing daily noise levels along West Nielsen Avenue near the existing sensitive receptors range from 67.6 dBA CNEL to 68.1 dBA CNEL. Because noise levels would increase less than 3.0 dBA, this is consistent with General Plan Policy NS-1-j: Significance Threshold which states that an increase of 3 dBA CNEL or more is considered significant. As such, traffic noise impacts from project-related traffic on off-site sensitive receptors would be less than significant.

Stationary Operational Noise Impacts to Off-Site Receivers. Noise impacts associated with the long-term operation of the project must comply with the noise standards specified in the City's General Plan and the Municipal Code, as described above. Adjacent off-site land uses would be potentially exposed to stationary-source noise impacts from the proposed HVAC equipment, truck deliveries, and loading and unloading activities. The potential noise impacts to off-site sensitive land uses from the proposed operations are discussed below. To provide a conservative analysis, it is assumed that operations would occur equally during all hours of the day and that half the 192 loading docks would be active at all times. Additionally, the analysis assumed that within any given hour, 48 heavy trucks would maneuver to park near or back into one of the proposed trailer parking stalls. HVAC equipment is expected to run continuously for the duration of a 24-hour period. To determine the future noise impacts from project operations to the noise sensitive uses, the 3D noise model, SoundPLAN, was used for the evaluation. The model incorporates the site topography as well as the shielding from the proposed building on-site. The model output, which includes a graphic representation of the operational noise impacts is presented in the attachment of the Noise Impact Analysis. Results from the model analysis for each of the anticipated stationary sources are summarized below.

Heating, Ventilation, and Air Conditioning Equipment. it is estimated that the project would have four rooftop HVAC units on each of the proposed buildings to provide ventilation to the proposed office and warehouse spaces. The analysis assumes that the HVAC equipment would operate 24 hours per day and would generate sound power levels (SPL) of up to 87 dBA SPL or 72 dBA L_{eq} at 5 feet, based on manufacturer data.[5]

Truck Deliveries and Truck Loading and Unloading Activities. Noise levels generated by delivery trucks would be similar to noise readings from truck loading and unloading activities, which generate a noise level of 75 dBA L_{eq} at 20 feet based on measurements taken by LSA.[6] Delivery trucks would arrive on site and maneuver their trailers so that trailers would be parked within the loading docks. During this process, noise would be associated with the truck engine, air brakes, and back-up alarms while the truck is backing into the dock. These noise sources would occur for a short period of time (less than 5 minutes). After a truck enters the loading dock, the doors would be closed, and the remainder of the truck loading activities would be enclosed and therefore much less perceptible. To present a conservative assessment, the model analysis assumes that

5 Trane. Fan Performance - Product Specifications RT-PRC023AU-EN.

6 LSA Associates, Inc. (LSA). 2016. *Operational Noise Impact Analysis for Richmond Wholesale Meat Distribution Center*.

unloading activities would occur at half of the 192 docks simultaneously for a period of more than 30 minutes in a given hour. Maximum noise levels that occur during the docking process were measured to be 86 dBA L_{max} at a distance of 20 feet.[7]

Table 4.9.M shows the modeled combined hourly noise levels generated by the proposed project at the closest off-site land uses. The project-related hourly noise level impacts would be 58.2 dBA L_{eq} at the outdoor activity area of the residence south of Building 1. When propagated to the outdoor activity area of the residential property south of Building 1, the average daytime noise level is 56.8 dBA L_{eq} and the average nighttime noise level is 53.6 dBA L_{eq}. As specified in the City's Noise Element, if existing ambient noise level exceed the City's noise standards, a project impact would occur when project related noise levels cause a 5 dBA or more increase. When compared to existing noise levels, project operations would not create an impact during daytime hours, but would generate an increase of greater than 5 dBA during nighttime hours, resulting in a significant impact.

Table 4.9.M: Hourly Exterior Noise Level Impacts

Receptor	Direction	Existing Daytime Noise Level (dBA L_{eq})	Existing Nighttime Noise Level (dBA L_{eq})	Project Noise Level (dBA L_{eq})	Daytime Noise Level Increase (dBA L_{eq})	Nighttime Noise Level Increase (dBA L_{eq})	Potential Operational Noise Impact? (Daytime / Nighttime)[1]
Residential	South	56.8	53.6	58.2	3.8	5.9	No / Yes

Source: Compiled by LSA (2022).

[1] Because ambient noise levels exceed the City of Fresno's stationary noise criteria, a potential operational noise impact would occur if operational noise would increase ambient noise by 5 dBA or more.

dBA = A-weighted decibels

L_{eq} = equivalent noise level

Table 4.9.N shows the modeled maximum exterior noise levels. The maximum noise levels generated would approach 66.5 dBA L_{max} at the surrounding sensitive receptors. This noise level would be below the City's exterior maximum daytime noise standard of 70 dBA L_{max} but would exceed the 60 dBA L_{max} for nighttime hours. Similar to the hourly noise impacts, project operations would not generate a significant impact related to maximum noise levels during daytime hours but would generate a significant impact during nighttime hours.

Implementation of Mitigation Measure NOI-2 would reduce potential impacts related to loading dock and delivery noise by prohibiting loading dock activities at the loading dock doors and trailer parking activities south of Building 1 during nighttime hours. Loading dock and parking activities at all other locations would be shielded by the proposed buildings and would not exceed the City's nighttime noise standards.

[7] LSA Associates, Inc. (LSA). 2016. *Operational Noise Impact Analysis for Richmond Wholesale Meat Distribution Center*.

Table 4.9.N: Maximum Exterior Noise Level Impacts

Receptor	Direction	Project Maximum Noise Level (dBA L_{max})	Daytime Maximum Noise Level Standard (dBA L_{max})	Nighttime Maximum Noise Level Standard (dBA L_{max})	Potential Operational Noise Impact? (Daytime / Nighttime)[1]
Residential	South	66.5	70	60	No / Yes

Source: Compiled by LSA (2022).
dBA = A-weighted decibels
L_{max} = maximum noise level

With implementation of Mitigation Measure NOI-2, the proposed project would result in a less than significant impact associated with the generation of a substantial permanent increase in ambient stationary source noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, State, or federal standards.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measure NOI-1 The project contractor shall implement the following measures during construction of the project:

- Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.
- Designate a "disturbance coordinator" at the City who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem.

Mitigation Measure NOI-2 All loading dock activities shall be prohibited at the loading dock doors on the south end of Building 1 during the nighttime hours (10:00 p.m. to 7:00 a.m.) or once operational, the project proponent shall provide documentation to the City of Fresno Planning and Development Department that demonstrates that nighttime loading dock activities would comply with the noise level specifications of the City's Municipal Code.

Level of Significance With Mitigation: Less than Significant with Mitigation Measures NOI-1 and NOI-2.

Threshold 4.9.2 Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Ground vibration generated by construction equipment and transportation sources spreads through the ground and diminishes in strength with distance. The effects of ground vibration can vary from no perceptible effects at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and slight damage to nearby structures at the highest levels. At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in structural damage.

The following sections describe the potential short-term construction and long-term operational groundborne vibration impacts associated with the proposed project.

Short-Term Vibration Impacts. This construction vibration impact analysis assesses the potential for building damages using vibration levels in PPV (in/sec). This is because vibration levels calculated in RMS are best for characterizing human response to building vibration, while vibration level in PPV is best for characterizing potential for damage.

Table 4.9.O shows the PPV and VdB values at 25 feet from the construction vibration source. As shown in Table 4.9.O, bulldozers and other heavy-tracked construction equipment (expected to be used for this project) generate 0.089 PPV in/sec or 87 VdB of ground-borne vibration when measured at 25 feet, based on the FTA Manual. The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project construction boundary (assuming the construction equipment would be used at or near the project setback line).

The formulae for vibration transmission are provided below, and Table 4.9.P, provides a summary of off-site construction vibration levels.

$$L_v dB\ (D) = L_v dB\ (25\ feet) - 30\ Log\ (D/25)$$

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

Based on the information provided in Table 4.9.O, vibration levels are expected to approach 0.068 PPV in/sec at the surrounding structures and would be below the 0.2 PPV in/sec damage threshold.

Based on the information provided in Table 4.9.Q, vibration levels are expected to approach 85 VdB at the closest industrial uses north of the project site and 68 VdB at the closest residential use to the south, which are below the 90 VdB and 78 VdB annoyance threshold for workshop or industrial types uses and for daytime residential uses, respectively.

Because construction activities are regulated by the City's Code of Ordinance that states temporary construction, maintenance, or demolition activities are not allowed between the 7:00 p.m. on one day and 7:00 a.m. of the following day, vibration impacts would not occur during the more sensitive nighttime hours.

Table 4.9.O: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 ft	
	PPV (in/sec)	L_V (VdB)[1]
Pile Driver (Impact), Typical	0.644	104
Pile Driver (Sonic), Typical	0.170	93
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer[2]	**0.089**	**87**
Caisson Drilling	0.089	87
Loaded Trucks[2]	**0.076**	**86**
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: Transit Noise and Vibration Impact Assessment Manual (FTA 2018).
[1] RMS vibration velocity in decibels (VdB) is 1 µin/sec.
[2] Equipment shown in **bold** is expected to be used on site.
µin/sec = microinches per second
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inch/inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

Table 4.9.P: Potential Construction Vibration Damage Impacts at Nearest Receptor

Receptor (Location)	Reference Vibration Level (PPV) at 25 feet[1]	Distance (feet)[2]	Vibration Level (PPV)
Residential Uses (South)	0.089	110	0.010
Industrial Uses (North)		30	0.068
Industrial Uses / Cemetery (East)		120	0.009
Industrial Uses (West)		300	0.002

Source: Compiled by LSA (2022).
[1] The reference vibration level is associated with a large bulldozer, which is expected to be representative of the heavy equipment used during construction.
[2] The reference distance is associated with the peak condition, identified by the distance from the perimeter of construction activities to surrounding structures
ft = foot/feet
in/sec = inch/inches per second
PPV = peak particle velocity

Table 4.9.Q: Potential Construction Vibration Annoyance Impacts at Nearest Receptor

Receptor (Location)	Reference Vibration Level (VdB) at 25 feet[1]	Distance (feet) [2]	Vibration Level (VdB)
Residential Uses (South)	87	110	68
Industrial Uses (North)		30	85
Industrial Uses / Cemetery (East)		120	67
Industrial Uses (West)		300	55

Source: Compiled by LSA (2022).
[1] The reference vibration level is associated with a large bulldozer, which is expected to be representative of the heavy equipment used during construction.
[2] The reference distance is associated with the average condition, identified by the distance from the center of construction activities to surrounding uses
ft = foot/feet
VdB = vibration velocity decibels

Other building structures surrounding the project site are farther away and would experience further reduced vibration. Therefore, no construction vibration impacts would occur.

Long-Term Vibration Impacts. Once operational, the proposed project would not generate vibration levels related to on-site operations. In addition, vibration levels generated from project-related traffic on the adjacent roadways are unusual for on-road vehicles because the rubber tires and suspension systems of on-road vehicles provide vibration isolation. Vibration levels generated from project-related traffic on the adjacent roadways would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.9.3 **For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

The nearest airports include the Fresno Chandler Executive Airport, located approximately 0.8 mile from the project site, the Sierra Sky Airport, located approximately 6.7 miles from the project site, and the Fresno International Airport, located approximately 7.1 miles from the project site. Each of these airports is included in the Fresno County ALUCP, which guides approximate compatible land uses. The City of Fresno General Plan, other City land use plans, and all City land use decisions must be compatible with the adopted ALUCP. The ALUCP includes CNEL noise contours based on projected airport and aircraft operations. The project site is not located in the ALUCP; therefore, project implementation would not expose people residing or working in the project area to excessive noise levels, and impacts would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

4.9.3.3 Cumulative Impacts

For the topic of noise, the scope for assessing cumulative impacts encompasses past, current, or probable future projects under review by the City and within proximity to the project site, as well as applicable planning level documents that affect the transportation network (i.e., land use assumptions from the General Plan that would increase trips on area roadways, thereby increasing traffic noise). Based on the traffic forecasts shown in Table 4.9.L above, in future year 2035, cumulative project trips would represent a small increase in noise levels, up to approximately 2.0 dBA CNEL, which would not exceed the 3 dBA increase considered to be perceptible by the human ear in an outdoor environment. Given the small increase in noise levels generated by the proposed project and future cumulative projects that would be implemented in the project vicinity on the transportation network and the anticipated increase in traffic noise anticipated in the vicinity, the proposed project would not result in a cumulatively considerable increase in transportation-related noise.

A significant cumulative impact would also occur if implementation of the proposed project would combine with other cumulative development projects to result in any permanent increase of 3 dBA or more in ambient noise levels at the existing sensitive receptors in the project site vicinity that are currently exposed to noise levels above the City's normally acceptable threshold for that type of land use. As discussed above, long-term operation of the proposed project would not create a significant increase in stationary source noise, including noise associated with HVAC equipment and truck deliveries and truck loading and unloading activities with implementation of Mitigation Measure NOI-2. Because cumulative development projects are not located immediately adjacent to the project site, permanent increases in noise generated by these projects would not combine with the noise levels generated by the proposed project to create a cumulatively considerable increase in ambient noise levels, and this impact would be less than significant with mitigation.

With implementation of Mitigation Measure NOI-1, the proposed project would not result in adverse noise impacts from construction activities. Although the proposed project may be under construction at the same time as one or more cumulative development projects, each project would be required to implement similar measures as those identified in Mitigation Measure NOI-1 in order to ensure that construction noise levels are reduced to the extent feasible and to ensure that construction activities comply with the City's Noise Ordinance. In addition, construction-related noise impacts would be temporary and would no longer occur once construction of each project is completed. Therefore, construction activities would not be considered a cumulatively considerable contribution to the total noise environment in the project site vicinity, and this impact would be less than significant.

Level of Significance Without Mitigation: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measures NOI-1 and NOI-2.

Level of Significance With Mitigation: Less than Significant with Mitigation Measures NOI-1 and NOI-2.

This page intentionally left blank

4.10 TRANSPORTATION

This section describes the existing transportation network of the project site and evaluates the potential impacts associated with the proposed project, both at the individual and cumulative levels. The analysis in this section is based on the Traffic Impact Study (TIS)[1] prepared by LSA, which is included in Appendix M.

4.10.1 Environmental Setting

4.10.1.1 Roadway Network

Within the City of Fresno, all major roadways are classified based on the Major Street Circulation Diagram provided in the Mobility and Transportation Element of the City of Fresno General Plan. Following is a brief description of major roadways within the study area for the proposed project:

- **Marks Avenue:** Marks Avenue is designated as an arterial in the City's General Plan. Within the study area, Marks Avenue is a 4-lane divided roadway. The City's General Plan requires bike lanes and sidewalks for arterials. Class II bike lanes are present on both sides of Marks Avenue within the study area, and paved sidewalks are present intermittently on both sides of Marks Avenue. There is no provision for on-street parking within the study area.

- **Belmont Avenue:** Belmont Avenue is designated as a collector street in the City's General Plan. Between Marks Avenue and Hughes Avenue, Belmont Avenue is a 4-lane undivided roadway. The City's General Plan requires bike lanes and sidewalks for collector streets. There are no bike facilities along either direction of this segment, and paved sidewalks are present intermittently on both sides of Belmont Avenue. There is no provision for on-street parking within the study area.

- **Nielsen Avenue:** Nielsen Avenue is designated as a collector street in the City's General Plan. Between Marks Avenue and Hughes Avenue, Nielsen Avenue is a 2-lane undivided roadway with a two-way left-turn lane (TWLTL). The City's General Plan requires bike lanes and sidewalks for collector streets. Class II bike lanes are present on both sides of Nielsen Avenue within the study area, and no sidewalks are currently present on either side of Nielsen Avenue. There is no provision for on-street parking within the study area.

- **Hughes Avenue:** Hughes Avenue is designated as a collector street in the City's General Plan. Between Belmont Avenue and Nielsen Avenue, Hughes Avenue is a 2-lane undivided roadway. The City's General Plan requires bike lanes and sidewalks for collector streets. There are no bike facilities along either direction of this segment, and paved sidewalks are present intermittently on the west side of Hughes Avenue. There is no provision for on-street parking within the study area.

[1] LSA, 2021. *Traffic Impact Study 2740 West Nielsen Avenue Warehouse Project, City of Fresno, Fresno County, California*. November.

4.10.1.2 Bicycle Facilities

According to the City of Fresno Active Transportation Plan, the bikeway network within the City is classified into four categories:

- **Class I – Bike Paths:** Class I bikeways provide bicycle travel on a paved right-of-way completely separated from any street or highway.
- **Class II – Bike Lanes:** Class II bikeways provide a striped and stenciled lane for one-way travel on a street or highway.
- **Class III – Bike Routes:** Class III bikeways provide for shared use with motor vehicle traffic and are identified only by signing.
- **Class IV – Separated Bikeways:** Class IV bikeways are physically separated bikeway facilities distinct from the sidewalks and designated for exclusive use of the bikers.

Currently, Class II bike lanes exists along Marks Avenue and Nielsen Avenue within the study area. Proposed future Class II bike lanes will be added along the Belmont Avenue and Hughes Avenue within the study area.

4.10.1.3 Pedestrian Facilities

The implementation of enhanced pedestrian linkage with a comprehensive trails system links residential areas, schools, parks, and commercial centers so that residents can travel within the community without driving. Safe and attractive sidewalks and walkways improve the walkability of the City. Sidewalks are generally provided on both sides of the streets throughout the City. Additionally, standard paved trails and non-standard unpaved trails are frequently used by cyclists and pedestrians in the City. The existence of trails and sidewalks provides accessible facilities, provides safety features and improves walkability in the City.

Paved sidewalks are present intermittently on both sides of Belmont Avenue and Marks Avenue. Sidewalks are proposed on Marks Avenue, Nielsen Avenue, Belmont Avenue, and Hughes Avenue within the study area. Additionally, as previously mentioned, the project will be constructing sidewalks along the project frontage on Marks Avenue, Nielsen Avenue, and Hughes Avenue.

4.10.1.4 Transit Facilities

Fresno Area Express (FAX) is the Transportation Service Agency within the City and is responsible for coordinating transit services within its service area. FAX provides services via Route 1/Q (Bus Rapid Transit) as well as 17 other routes throughout the City and four routes for Clovis Transit. There are currently no transit routes present within the study area.

4.10.2 Regulatory Setting

The following federal, State, regional, and local transportation plans, policies, and regulations guide transportation planning in Fresno.

4.10.2.1 Federal Regulations

Federal Highway Administration. The Federal Highway Administration (FHWA) is a major agency of the United States Department of Transportation. In partnership with State and local agencies, the FHWA carries out federal highway programs to meet the nation's transportation needs. The FHWA administers and oversees federal highway programs to ensure that federal funds are used efficiently.

Americans with Disabilities Act of 1990. Titles I, II, III, IV, and V of the ADA have been codified in Title 42 of the United States Code, beginning at Section 12101. Title III prohibits discrimination on the basis of disability in "places of public accommodation" (businesses and nonprofit agencies that serve the public) and "commercial facilities" (other businesses). The regulation includes Standards for Accessible Design, which establish minimum standards for ensuring accessibility when designing and constructing a new facility or altering an existing facility.

Federal Transit Administration. The Federal Transit Administration (FTA) is an authority that provides financial and technical assistance to local public transit systems, including buses, subways, light rail, commuter rail, trolleys, and ferries. The FTA is funded by Title 49 of the United States Code, which states the FTA's interest in fostering the development and revitalization of public transportation systems. The FTA invests approximately $12 billion annually to support and expand public transit.

4.10.2.2 State Regulations

Assembly Bill 32 (Global Warming Act of 2006) and Senate Bill 375. Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, requires California to reduce its greenhouse gas (GHG) emissions to levels presented in the year 1990 by 2020. In response, the California Air Resources Board (CARB) is responsible for creating guidelines for this act. In 2008, CARB adopted its proposed Scoping Plan, which included the approval of Senate Bill (SB) 375 as a means of achieving regional transportation-related GHG targets. SB 375 provides guidance on how curbing emissions from cars and light trucks helps the State comply with AB 32.

Established through CARB, SB 375 lists four major components and requirements: (1) it requires regional GHG emissions targets; (2) it requires creating a Sustainable Communities Strategy (SCS) that provides a plan for meeting the regional targets; (3) it requires that regional housing elements and transportation plans be synchronized on 8-year schedules; and (4) it requires transportation and air pollutant emissions modeling techniques consistent with guidelines prepared by the California Transportation Commission (CTC).

Assembly Bill 1358 (Complete Streets). The California Complete Streets Act requires general plans updated after January 30, 2011, to include Complete Streets policies so that roadways are designed to safely accommodate all users, including bicyclists, pedestrians, transit riders, children, the elderly, and persons with disabilities, as well as motorists. The goal of this act is to encourage cities to rethink policies that emphasize automobile circulation and prioritize motor vehicle improvements and come up with creative solutions that emphasize all modes of transportation. Complete Streets roadways allow for more transportation options, more non-single-occupancy vehicles, and less

traffic congestion. Additionally, increased transit ridership, walking, and biking can reduce air pollution while improving the overall travel experience for road users.

While there is no standard for a Complete Streets design, it generally includes one or more of the following features: bicycle lanes, wide shoulders, well-designed and well-placed crosswalks, crossing islands in appropriate mid-block locations, bus pullouts or special bus lanes, audible and accessible pedestrian signals, sidewalk bulb-outs, center medians, street trees, planter strips, and groundcover.

Senate Bill (SB) 743. On September 27, 2013, Governor Jerry Brown signed SB 743 into law and codified a process that changed transportation impact analysis as part of California Environmental Quality Act (CEQA) compliance. SB 743 directs the California Office of Planning and Research (OPR) to administer new CEQA guidance for jurisdictions that removes automobile vehicle delay and level of service (LOS) or other similar measures of vehicular capacity or traffic congestions from CEQA transportation analysis. Rather, it requires the analysis of vehicle miles traveled (VMT) or other measures that "promote the reduction of greenhouse gas emissions, the development of multi-modal transportation networks, and a diversity of land uses," to be used as a basis for determining significant impacts to circulation in California. The goal of SB 743 is to appropriately balance the needs of congestion management with statewide goals related to reducing GHG emissions, encourage infill development, and promote public health through active transportation.

Guide for the Preparation of Traffic Impact Studies. Caltrans' "Guide for the Preparation of Traffic Impact Studies"[2] provides general guidance regarding the preparation of traffic impact studies for projects that may have an impact on the State Highway System. The guidance includes when a traffic study should be prepared and the methodology to use when evaluating operating conditions on the State highway system.

The "Guide for the Preparation of Traffic Impact Studies" states, "Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on state highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS." In accordance with this recommendation, consultation with Caltrans staff indicated that Caltrans would be willing to consider LOS D at the LOS D/E threshold when improvements become infeasible for State facilities. The Guide for the Preparation of Traffic Impact Studies also states that where "an existing State highway facility is operating at less than the appropriate target LOS, the existing [measure of effectiveness (MOE)] should be maintained."

4.10.2.3 Regional Regulations

Fresno County Council of Governments. The Fresno Council of Governments (COG) is a voluntary association of local governments and a regional planning agency comprising 16 member jurisdictions, including the City of Fresno. The members are represented by a Policy Board consisting of mayors of each incorporated city and the Chairman of the County Board of Supervisors, or their designated elected official. The Policy Advisory Committee (PAC), composed of the Chief

[2] California Department of Transportation. 2002. Guide for the Preparation of Traffic Impact Studies. December.

Administrative Officer of each member agency, assists the Board in its decision-making process. Others involved in the decision process include expert staff from member agencies, citizen and interest groups, and other stakeholders. The Fresno COG's purpose is to establish a consensus on the needs of the Fresno County area and further action plans for issues related to the Fresno County region. The current regional transportation plan, known as the Fresno County Regional Transportation Plan (RTP) (2042), was adopted in 2018. The RTP addresses GHG emissions reductions and other air emissions related to transportation, with the goal of preparing for future growth in a sustainable way. The plan specifies how funding will be sourced and financed for the region's planned transportation investments, ongoing operations, and maintenance. The goals, objectives, and policies of the RTP are established to direct the courses of action that will provide efficient, integrated multi-modal transportation systems to serve the mobility needs of people, including accessible pedestrian and bicycle facilities, and freight, while fostering economic prosperity and development, and minimizing mobile sources of air pollution. They are organized into six broad transportation mode-based categories: general transportation; highways, streets, and roads; mass transportation; aviation; active transportation; and rail.

4.10.2.4 Local Regulations

City of Fresno CEQA Guidelines for Vehicle Miles Traveled Thresholds (VMT Guidelines). In June 2020, the City adopted VMT thresholds and guidelines to address VMT to be effective on July 1, 2021, as required by SB 743. The City's document serves as a detailed guideline for preparing VMT analyses consistent with SB 743 requirements for development projects, transportation projects, and plans. Project applicants are required to follow the guidance provided in the City's document for preparation of CEQA VMT analysis. The document includes the following:

- Definition of region for VMT analysis;
- Standardized screening methods for VMT threshold compliance data;
- Recommendations for appropriate VMT significance thresholds for development projects, transportation projects, and plans; and
- Feasible mitigation strategies applicable for development projects, transportation projects, and plans.

City of Fresno Traffic Impact Study Report Guidelines. The City of Fresno adopted Traffic Impact Study Report Guidelines in October 2006, which were updated in February 2009. The Traffic Impact Study Report Guidelines establish general procedures and requirements for the preparation of traffic impact studies associated with development within the City of Fresno. The guidelines are intended as a checklist for study preparers to be sure they have not missed any regular study items.

City of Fresno Active Transportation Plan. The City's Active Transportation Plan (ATP), adopted in March 2017, provides a comprehensive guide outlining the vision for active transportation in Fresno. The ATP supersedes the Bicycle, Pedestrian, and Trails Master Plan that was adopted in 2010. The ATP envisions a complete, safe, and comfortable network of trails, sidewalks, and bikeways that

serves all residents of Fresno. This plan lays out specific goals to improve bicycle and pedestrian access and connectivity in Fresno. These goals include the following:

- Equitably improve the safety and perceived safety of walking and bicycling in Fresno;
- Increase walking and bicycling trips in Fresno by creating user-friendly facilities;
- Improve the geographical equity of access to walking and bicycling facilities in Fresno; and
- Fill key gaps in Fresno's walking and bicycling networks.

City of Fresno General Plan. The City of Fresno's General Plan Mobility and Transportation Element includes objectives and policies that work to create and maintain a transportation system that is safe, efficient, provides access in an equitable manner, and optimizes travel by all modes. The following policies related to transportation are applicable to the proposed project:

- **Policy MT-1-d: Integrate Land Use and Transportation Planning.** Plan for and maintain a coordinated and well integrated land use pattern, local circulation network and transportation system that accommodates planned growth, reduces impacts on adjacent land uses, and preserves the integrity of established neighborhoods.

- **Policy MT-2-b: Reduce Vehicle Miles Traveled and Trips.** Partner with major employers and other responsible agencies, such the San Joaquin Valley Air Pollution Control District and the Fresno Council of Governments, to implement trip reduction strategies, such as eTRIP, to reduce total vehicle miles traveled and the total number of daily and peak hour vehicle trips, thereby making better use of the existing transportation system.

- **Policy MT-2-g: Transportation Demand Management and Transportation System Management.** Pursue implementation of Transportation Demand Management and Transportation System Management strategies to reduce peak hour vehicle traffic and supplement the capacity of the transportation system.

- **Policy MT-2-i: Transportation Impact Studies.** Require a Transportation Impact Study (currently named Traffic Impact Study) to assess the impacts of new development projects on existing and planned streets for projects meeting one or more of the following criteria, unless it is determined by the City Traffic Engineer that the project site and surrounding area already has appropriate multi-modal infrastructure improvements.

- **Policy MT-2-m: Use VMT analysis for CEQA.** Use Vehicle Miles Traveled (VMT) as the criteria for evaluating transportation impacts under the California Environmental Quality Act (CEQA), pursuant to Senate Bill 743. Level of Service (LOS) may still be used for planning purposes and implementation of Capital Improvement Projects; however, VMT shall be used for determining mitigation under CEQA beginning in July of 2020.

- **Policy MT-5-d Pedestrian Safety:** Minimize vehicular and pedestrian conflicts on both major and non-roadways through implementation of traffic access design and control standards addressing street intersections, median island openings and access driveways to facilitate accessibility while reducing congestion and increasing safety. Increase safety and accessibility for pedestrians with

vision disabilities through the installation of Accessible Pedestrian Signals at signalized intersections.

- **Policy MT-8-d: Coordination of Transportation Modes.** Plan, design, and implement transportation system improvements promoting coordination and continuity of transportation modes and facilities, such as shared parking or park and ride facilities at Activity Centers.

4.10.3 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to transportation that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures, if required. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less than significant level. Cumulative impacts are also addressed.

4.10.3.1 Significance Criteria

The thresholds for impacts related to transportation used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed project would result in a significant impact related to transportation if it would:

Threshold 4.10.1 **Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities;**

Threshold 4.10.2 **Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b);**

Threshold 4.10.3 **Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or**

Threshold 4.10.4 **Result in inadequate emergency access**.

4.10.3.2 Project Impacts

The following discussion describes the potential impacts related to transportation that could result from implementation of the proposed project.

Threshold 4.10.1 **Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?**

While LOS analysis is no longer a criterion of significance for traffic impacts under CEQA, the City of Fresno General Plan includes policies that utilize LOS to determine project conditions of approval. As such, this analysis includes LOS impacts while VMT impacts are discussed in Response b) below.

Based on the City of Fresno General Plan Circulation Element, the City uses Traffic Impact Zone (TIZ) boundaries within the City to identify acceptable LOS for each TIZ. The majority of the study area is within TIZ III, or along the border of TIZ II and TIZ III. TIZ II has a LOS standard of E, while TIZ III has an LOS standard of D. Therefore, as a conservative estimate, LOS D was considered as the minimum LOS criterion for all intersections. As such, an operational deficiency occurs when the project causes an unsatisfactory condition (deterioration from LOS A through D to LOS E or F) for intersections or when the project contributes to an existing or forecasted deficiency. The project needs to identify improvements to improve the intersection LOS to an acceptable level.

For intersections under the jurisdiction of Caltrans, Caltrans considers an acceptable LOS to be between LOS C and D at all intersections (delay of 45 seconds at signalized intersections and delay of 30 seconds at unsignalized intersections).

Caltrans does not have any operational deficiency criteria for study intersections. Therefore, an operational deficiency occurs when the project causes an unsatisfactory condition (deterioration from LOS A through D to LOS E or F) for intersections or when the project contributes to an existing or forecasted deficiency. The project needs to identify improvements to improve the intersection LOS to an acceptable level.

The TIS examined traffic operations in the vicinity of the proposed project under the following five scenarios:

- Existing Conditions;
- Existing plus Project Conditions;
- Existing plus Project and Near-term Approved and Pending Projects Conditions;
- Cumulative Year (2035) No Project Conditions; and
- Cumulative Year (2035) Plus Project Conditions.

Traffic conditions were examined for the weekday daily, AM, and PM peak-hour conditions. The AM peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 a.m. and 9:00 a.m. The PM peak hour is the one hour of highest traffic volumes occurring between 4:00 p.m. and 6:00 p.m. Roadway segments were analyzed using daily volume counts, and comparisons were made to the daily service volume standards provided in the City Guidelines. The study area for the TIS included the following study intersections and roadway segments.

Intersections.

1. Marks Avenue/Belmont Avenue (City of Fresno, County of Fresno);
2. Marks Avenue/Nielsen Avenue (City of Fresno);
3. Marks Avenue/Ray Johnson Drive (City of Fresno);
4. Marks Avenue/SR-180 Westbound Ramps (Caltrans);
5. Marks Avenue/SR-180 Eastbound Ramps (Caltrans);
6. Hughes Avenue/Belmont Avenue (City of Fresno, County of Fresno); and
7. Hughes Avenue/Nielsen Avenue (City of Fresno).

Roadway Segments.

1. Marks Avenue, between Belmont Avenue and Nielsen Avenue;
2. Marks Avenue, between Nielsen Avenue and Ray Johnson Drive;
3. Marks Avenue, between Ray Johnson Drive and SR-180 Westbound Ramps;
4. Marks Avenue, between SR-180 Westbound Ramps and SR-180 Eastbound Ramps;
5. Belmont Avenue, between Marks Avenue and Hughes Avenue;
6. Nielsen Avenue, between Marks Avenue and Hughes Avenue; and
7. Hughes Avenue, between Belmont Avenue and Nielsen Avenue.

In addition, Caltrans recommended evaluating the project under a worst-case scenario with 60 percent of project traffic using Caltrans' facilities (ramps and freeway segments). This evaluation included intersections 3, 4, and 5 as listed above, as well as the following freeway basic and merge/diverge areas for the SR-180 and Marks Avenue interchange:

SR-180 Eastbound.

1. West of Marks Avenue Off-Ramp (Basic);
2. Marks Avenue Off-Ramp (Diverge);
3. Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp (Basic);
4. Marks Avenue Loop-On Ramp (Merge);
5. Between Marks Avenue Loop-On Ramp and Marks Avenue Slip-On Ramp (Basic);
6. Marks Avenue Slip-On Ramp (Merge); and
7. East of Marks Avenue (Basic).

SR-180 Westbound.

1. East of Marks Avenue (Basic);
2. Marks Avenue Off-Ramp (Diverge);
3. Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp (Basic);
4. Marks Avenue Loop-On Ramp (Merge);
5. Between Marks Avenue Loop-On Ramp and Marks Avenue Slip-On Ramp (Basic);
6. Marks Avenue Slip-On Ramp (Merge); and
7. West of Marks Avenue (Basic).

Project Trip Generation. To assess potential impacts that the project may have on the surrounding roadway network, the first step was to determine project trip generation. Project trip generation is identified in Table 4.10.A based on the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) High-Cube Warehouse Trip Generation Study. The study provides separate trip generation rates for passenger vehicles, 2–4 axle trucks, and 5+ axle trucks. The truck trips were converted to Passenger Car Equivalent (PCE) trips using a PCE factor of 2.0 for 2–4 axle trucks. To be conservative, a PCE factor of 3.0 was used for 5+ axle trucks.

Table 4.10.A: Project Trip Generation

Trip Generation[1]	Average Daily Trips	Weekday AM Peak Hour[2]			Weekday PM Peak Hour[2]		
		In	Out	Total	In	Out	Total
Trip Generation							
Trip Generation (Cars)	1,578	75	18	93	105	24	129
Trip Generation (2–4 Axle Trucks)	146	5	2	7	8	2	10
Trip Generation (5+ Axle Trucks)	196	8	2	10	7	2	9
Trip Generation (Total Trucks)	342	13	4	17	15	4	19
Trip Generation (Total)	**1,920**	**88**	**22**	**110**	**120**	**28**	**148**
PCE Trip Generation							
Trip Generation (Cars)	1,578	75	18	93	105	24	129
PCE Trip Generation (2–4 Axle Trucks)[3]	292	10	4	14	16	4	20
PCE Trip Generation (5+ Axle Trucks)[3]	588	24	6	30	21	6	27
PCE Trip Generation (Total Trucks)	880	34	10	44	37	10	47
PCE Trip Generation (Total)	**2,458**	**109**	**28**	**137**	**142**	**34**	**176**

Source: LSA (2021).

[1] Rates from the Western Riverside Council of Governments (WRCOG) *TUMF High-Cube Warehouse Trip Generation Study*, January 2019, prepared by WSP.

[2] The WRCOG study does not provide in/out splits for the peak hour trip generation. Therefore, in/out splits from Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition) supplement Land Use 155 - "High-Cube Fulfilment Center Warehouse" have been used for obtaining in/out traffic.

[3] A Passenger Car Equivalent (PCE) factor 2.0 has been taken for 2-4 axle trucks based on Highway Capacity Manual (HCM) recommendations. Further, as a conservative approach, a PCE factor of 3.0 is taken, for 5+ axle trucks, consistent with latest practices in numerous California jurisdictions.

Intersection Capacity Analysis. For all study area intersections, the Highway Capacity Manual, 6th Edition (HCM 6) analysis methodologies were used to determine intersection LOS. Intersection LOS was calculated using the Synchro 10 software, which uses the HCM 6 methodologies. LOS can be determined for both signalized and unsignalized intersections.

Based on the results of the LOS analysis, an operational deficiency currently exists at the intersection of Marks Avenue/Belmont Avenue. This intersection meets several signal warrants under the Existing, Existing with Project, Near-Term Approved and Pending with Project, Cumulative Year (2035) without Project, and Cumulative Year (2035) with Project scenarios. The City of Fresno Traffic Signal Mitigation Impact (TSMI) fees are charged to all new developments throughout the City to mitigate the traffic operational deficiencies through the funding of traffic signal improvements to serve new developments. Based on the City of Fresno *Draft City-Wide Traffic Signal Mitigation Impact Fee Nexus Analysis for Proposed Fee Update,* dated June 2022, signalization of the intersection of Marks Avenue/Belmont Avenue is included in the Traffic Signal Capital Improvements, where the entire funding is expected to be generated from the TSMI fees. Therefore, since the improvement is covered under the TSMI fee program, the project would be paying into the fee program for this improvement. Therefore, the intersection is forecast to operate at a satisfactory LOS with the implementation of the proposed improvement, and impacts to intersection LOS would be less than significant.

Roadway Segment Analysis. According to the HCM, LOS is categorized by two parameters of traffic: uninterrupted and interrupted flow. Uninterrupted-flow facilities do not have fixed elements such as

traffic signals that cause interruptions in traffic flow. Interrupted-flow facilities do have fixed elements that cause an interruption in the flow of traffic, such as stop signs and signalized intersections along arterial roads. A roadway segment is defined as a stretch of roadway generally located between signalized or controlled intersections.

Roadway segment LOS was calculated based on the Florida LOS tables, consistent with the City Guidelines. As shown in the appendix of the TIS, the seven existing roadway segments analyzed have an LOS of C without the proposed project and an LOS of C with the proposed project. Thus, the proposed project would not cause any deterioration of LOS at the roadway segments analyzed. Therefore, impacts to roadway segment LOS would be less than significant.

Transit. There are no existing dedicated transit facilities within the study area for the proposed project. The proposed project is not located in an important transit corridor in the City, and therefore it is not anticipated that the construction of additional transit facilities would be required in the study area as a result of the proposed project. Therefore, the proposed project would not substantially conflict with plans or policies supporting public transit or transit facilities, and a less than significant impact would occur.

Bicycles. Currently, there are existing Class II bike lanes along Marks Avenue and Nielsen Avenue within the study area for the proposed project, in the vicinity of the project site. Pursuant to the City's Active Transportation Plan, future Class II bike lanes will be added along Belmont Avenue and Hughes Avenue within the project study area to improve bicycle and pedestrian accessibility and connectivity in the vicinity of the project site. The proposed project would not conflict with the planning and construction of bicycle facilities pursuant to the City's Active Transportation Plan or other plans or policies supporting bicycles or bicycle facilities in Fresno. Therefore, a less than significant impact would occur.

Pedestrian Facilities. Currently, paved sidewalks are present intermittently on both sides of Belmont Avenue and Marks Avenue. Pursuant to the City's Active Transportation Plan, the City recommends pedestrian sidewalks to be constructed on Marks Avenue, Nielsen Avenue, Belmont Avenue, and Hughes Avenue within the study area. The proposed project would construct sidewalks along the project frontage on Marks Avenue, Nielsen Avenue, and Hughes Avenue. Sidewalks would be constructed pursuant to City standards and would increase pedestrian access and safety in the study area. As such, the proposed project would not conflict with plans and policies for pedestrian facilities in the City, and a less than significant impact would occur.

Conclusion. As described above, the addition of project traffic is not anticipated to exceed the City's level of significance threshold of LOS (LOS D or better). In addition, the project-related traffic would not result in a deficiency to existing transit, roadway, bicycle, and pedestrian facilities. Therefore, the proposed project would not conflict with any plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system or congestion management program. Impacts would be less than significant.

Level of Significance Without Mitigation**:** Less Than Significant Impact.

Threshold 4.10.2 Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

As discussed above, SB 743 requires that relevant CEQA analysis of transportation impacts be conducted using a metric known as VMT instead of LOS. VMT measures how much actual auto travel (additional miles driven) a proposed project would create on California roads. If the project adds excessive car travel onto our roads, the project may cause a significant transportation impact. Heavy-duty trucks are addressed in other CEQA sections (e.g., air quality, GHGs, noise, and health risk assessment analysis) and are subject to regulation in a separate collection of rules under CARB jurisdiction.

The State CEQA Guidelines were amended to implement SB 743, by adding Section 15064.3. Among its provisions, Section 15064.3 confirms that, except with respect to transportation projects, a project's effect on automobile delay shall not constitute a significant environmental impact. Therefore, LOS measures of impacts on traffic facilities is no longer a relevant CEQA criterion for transportation impacts.

CEQA Guidelines Section 15064.3(b)(4) states that "[a] lead agency has discretion to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revision to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section."

On June 25, 2020, the City of Fresno adopted CEQA Guidelines for Vehicle Miles Traveled Thresholds, pursuant to SB 743, to be effective as of July 1, 2020. The thresholds described therein are referred to herein as the City of Fresno VMT Thresholds. The City of Fresno VMT Thresholds document was prepared and adopted consistent with the requirements of CEQA Guidelines Sections 15064.3 and 15064.7. The December 2018 Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory), published by the Governor's Office of Planning and Research (OPR), was utilized as a reference and guidance document in the preparation of the Fresno VMT Thresholds.

The VMT Guidelines provides multiple screening criteria for land use projects. The project was compared with the screening criteria established in the "Project Screening" section of the VMT Guidelines to check if the project can be screened out. Following is a brief description about the project in relation with the project screening criteria:

- **Transit Priority Area (TPA) Screening:** In accordance with SB 743, "Transit priority areas" are defined as "an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Transportation Improvement Program." A Major Transit Stop is defined as "a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service of 15 minutes or less

during the morning and afternoon peak commute periods." A High-Quality Transit Area or Corridor is a corridor with fixed-route bus service with service intervals no longer than 15 minutes during peak commute hours. The project is not located within a TPA. Therefore, this screening criteria does not apply to the project.

- **Low Trip Generator:** The VMT Guidelines identifies that projects generating less than 500 daily trips could also be screened out. As discussed in the project trip generation section, the project is estimated to generate 2,458 daily trips. Therefore, the project does not satisfy this screening criterion.

- **Other Screening Criteria:** The project is not a residential or office project; therefore, it could not be screened out using low-VMT-area maps. Additionally, it is neither an affordable housing project nor it could be classified as retail, institutional/government uses, or public service uses. Therefore, these criteria do not apply for the project.

As shown above, the project could not be screened out from detailed VMT analysis. For projects that are not screened out, a quantitative analysis of VMT impacts must be prepared and compared against the adopted VMT thresholds of significance. The Fresno VMT Thresholds document includes thresholds of significance for development projects, transportation projects, and land use plans. These thresholds of significance were developed using the County of Fresno as the applicable region, and the required reduction of VMT (as adopted in the Fresno VMT Thresholds) corresponds to Fresno County's contribution to the statewide GHG emission reduction target. In order to reach the statewide GHG reduction target of 15 percent, Fresno County must reduce its GHG emissions by 13 percent. The method of reducing GHG by 13 percent is to reduce VMT by 13 percent as well. As such, pursuant to the VMT Guidelines, a detailed VMT analysis was conducted to assess the project's VMT impact.

Thresholds of Significance. The City's adopted thresholds for development projects correspond to the regional thresholds set by the Fresno COG. For residential and office development projects, the adopted threshold of significance is 13 percent less than the regional average. Therefore, the project would have a less than significant environmental impact if the project-generated VMT per capita or per employee is less than 13 percent of the regional average VMT per capita or per employee. For retail projects, the adopted threshold is any net increase in total VMT compared to existing total VMT for the region. For all other non-residential projects that are consistent with City's General Plan, the adopted threshold is that a project would not have a significant environmental impact if the project's VMT per employee is less than the existing regional average VMT per employee. If the project requires a General Plan Amendment, the project would have a less than significant environmental impact if the project-generated VMT per employee is less than 13 percent of the existing regional average VMT per employee.

VMT Analysis. A detailed VMT analysis discussion is included in Chapter 13 of the TIS (see Appendix M). As recommended in the City of Fresno CEQA Guidelines for Vehicle Miles Traveled Thresholds, projects that could not be screened out from a quantitative VMT assessment, the VMT analysis should be conducted using the Fresno COG Activity Based Model (ABM), which is a tour-based model. Therefore, the Fresno COG ABM was used for the project VMT analysis. The model database was updated with the project land uses to calculate project VMT.

The project is non-residential in nature but would not be classified as an office or retail project. Additionally, the project does not require a General Plan Amendment. Therefore, the project's VMT per employee was compared to the existing regional average VMT per employee. The existing regional average is 25.6 VMT per employee, as established in the City of Fresno CEQA Guidelines for Vehicle Miles Traveled Thresholds. Based on the Fresno COG ABM model output, the project's VMT was calculated to be 19.8 VMT per employee. As such, the project's VMT per employee rate is 22.66 percent lower than the existing regional average VMT per employee, or the City's threshold. In conclusion, the project would result in a less than significant VMT impact concerning consistency with CEQA Guidelines Section 15064.3(b). In addition, consistent with the City's General Plan policies, the project would be implementing multi-modal improvements along the project frontage, including the addition of sidewalks all along the project frontage.

Level of Significance Without Mitigation**:** Less Than Significant Impact.

Threshold 4.10.3 Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The proposed project is located within the City's Heavy Industrial zoning district, and nearby parcels to the project site consist mostly of low residential, light and heavy industrial, cemetery, and vacant, undeveloped uses. The proposed project would develop four office/warehouse buildings that would be configured for heavy industrial uses into the project site. As such, the proposed use of the project site would not be incompatible with site zoning or with uses adjacent to the project site. Therefore, the proposed project would not introduce incompatible uses that would substantially increase hazards.

Based on recommendations from the ATP, the proposed project would construct sidewalks along the project frontage on Marks Avenue, Nielsen Avenue, and Hughes Avenue. The proposed sidewalks would be constructed pursuant to City standards and would increase pedestrian access and safety in the study area. The proposed project would also include the installation of a traffic signal in the intersection of Marks Avenue/Belmont Avenue to meet the City's LOS standards. This improvement would improve safety and reduce traffic conflicts in this intersection thus reducing hazards for pedestrians in the study area.

Vehicular access to the project site would be provided via seven driveways located on Marks Avenue, Nielsen Avenue, and Hughes Avenue. All project driveways would be stop controlled at the driveway approach. Therefore, vehicles exiting the project site from project driveways must stop before they continue to merge on the neighboring circulation network, which would reduce potential hazards associated with exiting the project site.

The majority of the observed traffic flow within the study area utilizes Marks Avenue. Of the three driveways on Marks Avenue, two are right-in-right-out only. For the other driveway, left-turn egress movement will be restricted. Additionally, a TWLTL is present at this location on Marks Avenue. Therefore, project trips using a left-turn ingress movement can also wait in the TWLTL for the clearance of northbound traffic on Marks Avenue. Since there is a traffic signal at the intersection of Marks Avenue/Nielsen Avenue, these project trips would have the opportunity to utilize gaps in

northbound traffic created by the signal to complete the turn into the project driveway. Additionally, there are no major obstructions to vision present along Marks Avenue. Therefore, sight distance is not expected to be an issue for these driveways.

For project driveways located along Nielsen Avenue and Hughes Avenue, there needs to be adequate corner sight distance for vehicles to make an egress movement. There is no provision for on-street parking along the project frontage on Nielsen Avenue or Hughes Avenue. Additionally, there are no trees or large stationary objects that might obstruct the sight triangle for drivers. As such, adequate sight distance will be provided at the project driveways along Nielsen Avenue or Hughes Avenue. Therefore, it can be concluded that a clear sight triangle would be available for drivers exiting the driveway to safely make turns onto Nielsen Avenue or Hughes Avenue.

In addition, the proposed project would not include any sharp curves or other roadway design elements that would create dangerous conditions. The project design features would be required to comply with standards set by the City's General Plan and City Engineer. The proposed project would also be required to submit plans to the Fresno Fire Department (FFD) for review and approval prior to the issuance of building permits to ensure there are no substantial hazards associated with the project design.

Therefore, the proposed project would not increase hazards due to design features or incompatible uses, and a less than significant impact would occur.

Level of Significance Without Mitigation**:** Less Than Significant Impact.

Threshold 4.10.4 Would the project result in inadequate emergency access?

Emergency vehicles would have access to the project site via seven driveways located on Marks Avenue, Nielsen Avenue, and Hughes Avenue. Additionally, the proposed project's site plan would be subject to review and approval by the FFD to ensure the project includes adequate emergency access. Improvements identified in the TSMI fee program would provide for an enhanced roadway network that accommodates forecasted travel demand and would provide adequate emergency access in the project vicinity. As such, the proposed project would not physically interfere with emergency evacuation or FFD access to and from the project site, and a less than significant impact would occur.

Level of Significance Without Mitigation**:** Less Than Significant Impact.

4.10.3.3 Cumulative Impacts

A proposed project would have a significant effect on the environment if, in combination with other projects, it would contribute to a significant cumulative impact related to transportation. The cumulative impact analysis for transportation considers the larger context of future development of the City of Fresno as envisioned by the General Plan and relied upon the projections of the General Plan and General Plan EIR, as well as development in Fresno County.

As described above under Threshold 4.10.1, the proposed project would be consistent with the plans and policies of the City as they relate to transit, bicycles, and pedestrian facilities. The TIS

identified that all but one study intersection (Marks Avenue/Belmont Avenue) and all roadway segments examined in the TIS are forecast to operate at a satisfactory LOS under the Existing, Near-Term Approved and Pending, and Cumulative Year (2035) scenarios. The implementation of the recommended improvement for the affected intersection would address existing traffic deficiencies. As such, the proposed project would not conflict with policies related to LOS standards and would not contribute to cumulative impacts related to LOS deficiencies in the roadway system, and a less than significant cumulative impact would occur.

VMT analysis for the proposed project identified that project VMT per employee is 22.66 percent lower than the existing regional VMT per employee. As described above, the proposed project would result in a less than significant project-level VMT impact. As such, the proposed project would also not contribute to cumulative VMT impacts in the City or County of Fresno, and a less than significant cumulative impact would occur. Although other projects would have potential to result in VMT impacts, other projects would be required to evaluate potential VMT impacts on a project-by-project basis. As the proposed project would result in a less than significant project-level VMT impact, a less than significant cumulative impact would occur.

The proposed project would not include design features or incompatible uses that would create hazardous conditions in the roadway system. Additionally, the project's design features, and emergency access would be reviewed and approved by the FFD prior to issuance of building permits. As such, the proposed project would not contribute to cumulative impacts related to inadequate emergency access or incompatible or hazardous design features in the City. Other projects would also be evaluated to determine whether design features or incompatible uses would create hazardous conditions in the roadway system on a project-by-project basis; therefore, a less than significant cumulative impact would occur.

Level of Significance Without Mitigation**:** Less Than Significant Impact.

4.11 UTILITIES AND SERVICE SYSTEMS

This section addresses potential impacts to utilities and service systems including water supply, wastewater, stormwater, and solid waste resulting from implementation of the proposed project. The analysis in this section related to water supply is based on findings of the Water Supply Assessment[1] prepared for the proposed project (Appendix K). The Water Supply Assessment (WSA) was prepared pursuant to the requirements of Senate Bill (SB) 610, which requires public water agencies, parties, or purveyors that may supply water to certain proposed development projects to prepare a WSA for use in environmental documentation for such projects, pursuant to CEQA. The WSA contains information from the City of Fresno 2020 Urban Water Management Plan (UWMP).[2]

4.11.1 Environmental Setting

The following outlines the utilities and service systems in the Fresno area and in the vicinity of the project site.

4.11.1.1 Water Purveyor and System

The City's water system consists of about 1,860 miles of distribution and transmission mains, 260 municipal groundwater wells, three surface water treatment facilities (SWTFs) with current rated capacities ranging from 4 to 54 million gallons per day (MGD), five water storage facilities with pump stations, including one at each of the SWTFs plus two in the distribution system, and three booster pump facilities. As of the close of the 2020 calendar year, the City has over 139,500 residential, commercial, industrial, and institutional water service connections and produced nearly 122,000 acre-feet (AF) of water.

In addition to the City's water system, there are four independent water systems located within the City limits, including Bakman Water Company, Pinedale County Water District, California State University Fresno, and Park Van Ness Mutual Water Company. These independent water systems have their own water supplies, and do not receive water from the City, with the exception of a portion of the Pinedale County Water District east of Highway 41 and south of Herndon Avenue.

The City has emergency agreements with the City of Clovis and California State University, Fresno, that provides additional water supply flexibility.

4.11.1.2 Water Demand

The City's 2020 UWMP estimated future water demands based on land use demand factors using 2018 metered consumption data. These demand factors were applied to the 2020 land use acreage by category to develop the demand projection beginning in 2020. Demand factors for land uses that grow over time and represent new developments were assigned a lower demand factor than the demand factors for existing development. Additionally, demand factors were assumed to slowly reduce over time due to passive conservation, which includes the replacement of older water fixtures and appliances with more efficient types. Table 4.11.A shows the projected annual water use by land use type for 2025, 2030, 2035, 2040, and 2045.

1 LSA. 2022. *SB 610 Water Supply Assessment, 2740 West Nielsen Avenue Office/Warehouse Project, Fresno, California*. July.

2 Fresno, City of. 2021. *City of Fresno 2020 Urban Water Management Plan*. June.

Table 4.11.A: Citywide Demands for Potable and Non-Potable Water (acre-feet per year)

Use Type	2025	2030	2035	2040	2045
Single-Family	76,255	80,429	82,934	85,437	87,936
Multi-Family	19,000	20,654	21,737	22,831	23,935
Commercial[1]	19,052	21,135	22,587	24,041	25,496
Industrial	7,410	9,003	9,922	10,841	11,758
Landscape	4,490	5,035	5,422	5,809	6,196
Groundwater Recharge[2]	62,700	65,400	68,100	70,800	73,500
Other[3]	200	200	200	200	200
Losses	10,097	10,900	11,408	11,917	12,426
Total	**199,204**	**212,756**	**222,310**	**231,876**	**241,447**

Source: 2020 Urban Water Management Plan, Tables 4-6 and 4-7 (City of Fresno 2021).
Notes:
[1] Includes industrial/governmental uses.
[2] Raw water.
[3] Travel meters.

As shown in Table 4.11.A, overall water demands are projected to increase from 199,204 acre-feet per year (AFY) in 2025 to 241,447 AFY in 2045, an increase of approximately 21 percent. The increase in water use for industrial uses is projected to increase at a faster rate of approximately 59 percent over the same period, from 7,410 AFY in 2025 to 11,758 AFY in 2045. Based on Table 4-3 of the 2020 UWMP, industrial acreage is expected to increase from 4,500 acres in 2020 to 9,300 acres in 2056, an increase of approximately 107 percent. Demand factors for land uses that grow over time and represent new developments were assigned a lower demand factor than the demand factors for existing development.

4.11.1.3 Water Supply

The City of Fresno Department of Public Utilities (DPU) provides potable water to the majority of the City, and some users within the portion of the Planning Area outside of the City limits. Fresno's primary source of potable water comes from groundwater. However, in 2004 the City's first surface water treatment facility (Northeast Surface Water Treatment Facility [NESWTF]) came online and began delivering approximately 4,060 acre-feet (AF) in 2004 to residents in northeast Fresno. By 2015, the NESWTF in combination with the T-3 Surface Water Treatment Facility (T-3 SWTF) delivered approximately 28,347 AF of treated surface water to the residents of Fresno. In 2018, the City completed construction of its new 54 millions of gallons per day (mgd) surface water treatment facility in southeast Fresno (SESWTF) and large diameter water mains that serve nearly one-half of the City. With the SESWTF operational, along with the NESWTF and T-3 SWTF, the City provided greater than 50 percent of its potable supply through using surface water.

The 2020 UWMP was adopted by the City Council in July 2021. It describes the current and planned water conservation programs, provides a water shortage contingency plan should it need to be implemented in the event of a severe water shortage or water supply emergency and a future water supply plan for a variety of water sources including treated surface water, groundwater and recycled water. Also included in the 2020 UWMP is an aggressive water conservation plan to reduce demand throughout the City's service area. The 2020 UWMP is in accordance with the Urban Water

Management Planning Act that stipulates that every urban water supplier in California supplying water directly or indirectly to 3,000 or more customers or supplying more than 3,000 AF of water annually shall adopt and submit an Urban Water Management Plan to the California Department of Water Resources every five years. Failure to submit a plan, as required, could result in ineligibility to receive certain grants or receive drought assistance from the State.

Groundwater Supply. The City lies within the Kings Subbasin, which is part of the larger San Joaquin Valley Groundwater Basin. Historically, water demand within the City has been met by extracting groundwater from the Kings Subbasin. Like much of the Kings Subbasin, groundwater levels beneath Fresno were relatively shallow at 25 feet below ground surface in 1940, prior to the start of World War II. After the war, the State, including the City, began growing at a rapid rate. For the period from 1959 to 1968, it was reported groundwater levels declined at a rate of 2.8 feet per year. Groundwater levels since 1990 have declined at a lower rate than previously, from less than 0.5 feet per year in the southwest portion of the downtown area, to a rate of 1.5 feet per year for northern and southern areas of town, to a maximum of 3 feet per year in the northeastern area.

Groundwater used by the City to meet its demands is replenished by three different methods:

- Natural recharge
- Subsurface inflow
- Intentional recharge

Based on the natural groundwater recharge (24,970 AF), subsurface inflow (47,510 AF), and intentional normal precipitation year recharge (60,000 AF), the total groundwater yield anticipated for 2020 for a normal year supply is approximately 132,480 AF. By 2045, the City anticipates that the natural groundwater recharge will increase to 26,760 AF/year, subsurface inflow will be 59,530 AF/year, and intentional groundwater recharge will increase to 73,500 AF/year due to an increase in the capacity of surface water treatment. The total groundwater yield in 2045 is expected to be approximately 159,820 AF/year.

The City currently has approximately 260 active pump stations, which pump an average of 74 mgd. Groundwater pumping data provided by the City indicates that approximately 55,000 AF was pumped in 2020. Groundwater pumping has significantly dropped since 2003, the City's peak year for groundwater production (i.e., 165,200 AF).

Groundwater will continue to be an important part of the City's supply but will not be relied upon as heavily as has historically been the case. With the recent investments in surface water infrastructure, the City has been able to drastically reduce its groundwater pumping. The City will continue expanding their delivery and treatment of surface water supplies and groundwater recharge activities to maximize water usage.

4.11.1.4 Wastewater

Wastewater Collection System. The City of Fresno owns and maintains the majority of the wastewater collection systems that convey wastewater to the Fresno/Clovis Regional Wastewater Reclamation Facility (RWRF), and all of the wastewater collection system that conveys wastewater to the North Fresno Water Reclamation Facility (NFWRF). The City's wastewater collection system

consists of about 1,630 miles of pipes ranging in size from 4 inches in diameter to 84 inches in diameter. This collection system also utilizes 15 lift stations throughout Fresno, ranging in pumping capacity from 0.25 mgd to 2.2 mgd.

The City of Fresno commissioned a team of engineering consultants to prepare the 2006 Wastewater Collection System Master Plan. The master plan effort included hydraulic modeling of the wastewater collection system to evaluate system capacity for both then-existing conditions and full build-out conditions under the City's General Plan. A number of capacity-deficient sewers were identified, and recommendations for capacity relief projects were developed.

The Wastewater Collection System Master Plan also incorporated the results of a number of prior sewer inspection and evaluation efforts, including recommendations for prioritized sewer rehabilitation projects, most or all of which were necessary as a result of microbiologically influenced corrosion (MIC) activity. The master plan also included a number of trunk sewer projects and infill projects identified by the City of Fresno. The master plan incorporated all of the various types of recommended sewer projects in a Capital Improvement Program for implementation during the period from 2006 through 2025. The City of Fresno has been regularly implementing various elements of the Capital Improvement Program since the adoption of the Wastewater Collection System Master Plan.

As required by the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, the City of Fresno prepared the 2009 Sewer System Management Plan (SSMP) for the Wastewater Collection System. The SSMP was revised and updated in 2014 and 2019 to reflect changes and revisions from former versions of the document.

The SSMP provides a framework for the proper management, operation, and maintenance of all elements of the wastewater collection system, with the objectives of reducing and preventing sanitary sewer overflows (SSOs) and mitigating any SSOs that may occur. An SSO is a release of untreated or partially treated wastewater resulting in public exposure, regardless of whether the wastewater reaches waters of the United States. SSOs also include wastewater backups into buildings and onto private property that are caused by blockages in the City's portion of the sanitary sewer system.

All of the mandatory elements of the SSMP were already in place and in use by the City of Fresno through other programs and ordinances, such as the Fresno Municipal Code, the Wastewater Collection System Master Plan, the Fats, Oils and Grease (FOG) Control Program, the Sanitary System Overflow Prevention and Response Plan, Performance Measures and Public Information/Education opportunities. The City of Fresno operates the wastewater collection system under the SSMP and related programs and ordinances to accomplish the SSMP objectives.

Wastewater Treatment and Disposal. The City Fresno/Clovis Regional Wastewater Reclamation Facility (RWRF) is located southwest of the City in the area generally bounded by Jensen, Cornelia, Central and Chateau Fresno Avenues. It provides wastewater treatment for a service area that includes most of the Cities of Fresno and Clovis, and some unincorporated areas of Fresno County. Flows received at this facility peaked at 81,100 AFY in 2006 and have been steadily decreasing since, with the average influent flow about 63,000 AFY over the last 5 years. The RWRF includes

preliminary, primary, secondary, and tertiary treatment units with disinfection. Secondary treatment consists of three treatment trains with an annual average capacity of 87 mgd, consisting of 30 mgd for Train A and 57 mgd for Trains B and C combined. In 2017, a 5 mgd tertiary treatment system—the Tertiary Treatment and Disinfection Facility (TTDF)—was completed. The system can be expanded to 15 mgd and ultimately to 30 mgd.

The City's RWRF diverts a portion of the undisinfected secondary effluent to irrigate non-food crops grown adjacent to this facility. The practice of using the secondary effluent to irrigate non-food crops has been carried out for decades and is expected to continue for the foreseeable future. The City owns nearly 3,300 acres of land for and around the RWRF, consisting of percolation ponds (1,750 acres) and other land available to farm non-food crops.

Additionally, the RWRF produces Title 22 disinfected tertiary-treated effluent through the TTDF completed in 2017 and through tertiary-equivalent soil aquifer-treated recycled water recovered from the percolated secondary effluent. A series of 15 groundwater wells located at the RWRF are used to extract previously percolated effluent groundwater from beneath the facility. The tertiary-equivalent soil aquifer-treated recycled water (recovered groundwater) is used for on-site irrigation and transport to FID canals for delivery to customers during the irrigation season, as facilitated through an exchange agreement with FID.

Since the completion of the 2010 Recycled Water Master Plan (RWMP), the City has constructed most of the southwest recycled water system. The southwest recycled water system consists of a 3.2-million-gallon recycled water reservoir located at the RWRF, a 6,000 gallons per minute (gpm) (8.64 mgd) recycled water pump station located at the RWRF, a 640 gpm booster pump station (Roeding Park Booster), and 15.7 miles of 10-inch to 54-inch recycled water pipeline. Roughly 7.5 miles of pipeline remain to be constructed. The City also updated the demand and distribution system from the 2010 RWMP with the 2019 Citywide Recycled Water Demand and Southwest Recycled Water System Analysis to identify potential recycled water customers.

4.11.1.5 Stormwater

Stormwater collection and disposal, and flood control for the City of Fresno, City of Clovis, and the unincorporated areas within the City of Fresno's sphere of influence are provided by the Fresno Metropolitan Flood Control District (FMFCD). The FMFCD is a special district created by the State of California Legislature and ratified by the voters of the district in 1956. FMFCD has more than 170 urban watersheds that collect stormwater runoff and dispose of the runoff in retention basins, local canals, or the San Joaquin River. Each urban watershed, called a drainage area by FMFCD, consists of a collection system and, in most cases, a retention basin to store and dispose of the runoff. Pipeline collection systems have diameters that range from 15 inches to 18 inches. Retention basins range in size from 5 acres to 25 acres, with most being 8 to 10 acres in size. The FMFCD drainage area for stormwater from the project site is basin "AS", located southwest from the site.[3]

[3] Fresno Metropolitan Flood Control District. Storm Drainage and Flood Control Master Plan. Exhibit A. Website: http://www.fresnofloodcontrol.org/wp-content/uploads/2022/09/District-Wall-Map.png (accessed January 2023).

Stormwater Collection and Disposal. FMFCD provides drainage service to the Fresno metropolitan area. In order to provide this service, the FMFCD has organized the metropolitan area into over 170 urban drainage areas or watersheds. Watersheds are delineated along topographic boundaries and are limited in size to between 200 acres to 600 acres. The area limitation reduces the size of the required collection facilities and disposal facilities. Service is provided through the combination of surface drainage improvements, chiefly curbs and gutters, that direct runoff to storm drainage inlets which collect the runoff and convey the runoff to underground pipeline collection systems. The collection systems convey the stormwater to disposal facilities, which in the majority of cases are excavated, unlined basins. In three cases, the collection systems discharge to pump wet wells from which the stormwater is lifted into an adjacent canal, and in six cases, the stormwater is discharged into the San Joaquin River. Two of these systems discharge directly to the San Joaquin River and four discharge to a water quality basin before discharge to the river occurs.

The collection systems are designed to provide one foot of freeboard in the pipeline collection system designed to convey runoff rates generated by rainfall intensity up to and including a 50 percent probability of occurrence (a 2-year return frequency). There are exceptions to this design standard in areas of the City where older drainage systems were installed prior to the formation of the FMFCD, or constructed in the very early years of the FMFCD, and shifts in land use densities have eroded the level of service. FMFCD documents the deficiencies and develops master planned solutions to these deficiencies as they are identified. The proposed project would include construction of a new curb and gutter along North Marks Avenue, West Nielsen Avenue, and North Hughes Avenue to connect to the City's existing stormwater system.

Retention basins are designed to provide storage for up to 6 inches of rainfall on the drainage area watershed given typical runoff to rainfall ratios used for urban drainage design. There are exceptions to this design standard, notably in those retention basins constructed prior to 1969 when the design criteria were changed to increase the storage volume. The change resulted from the extreme rainfall events of the spring of 1969 and the resulting flooding at the then-existing basins. Water quality basins are designed in accordance with the US Environmental Protection Agency's design standards to remove sediments and trash prior to discharge of stormwater to the San Joaquin River. They provide quiescent conditions for settling of suspended solids within a holding basin prior to discharge from the basin via an overflow weir. The water quality basins alternate between wet and dry, depending on the season and amount of rainfall that has occurred within the drainage area.

FMFCD has utilized three means to implement drainage systems for the metropolitan area. One method has been to use Community Block Grants and low interest infrastructure loans from the State of California to construct drainage facilities in the older, previously developed areas of the City. A second method has been to form assessment districts under the provisions of the 1915 Bond Act. Assessment districts were formed based on drainage area boundaries, the parcels within the assessment districts were assessed a proportional share of the cost of the collection and disposal system, and the drainage system for the drainage area was constructed. The third and currently employed method is to collect drainage fees from parcels as they develop based on their prorated share of the cost of the drainage area collection and disposal systems. The implementing ordinance for the drainage fee structure is adopted by the City of Fresno, and the drainage fees are collected by the City when entitlements are granted or building permits are issued.

FMFCD is a primary participant in groundwater recharge for the City of Fresno. Unlined retention basins provide recharge of both stormwater runoff and imported water from the San Joaquin River and Kings River. It is estimated that 80-percent of the stormwater that falls within the metropolitan area is recharged via FMFCD's retention basins. FMFCD has identified retention basins within the metropolitan area that have significant recharge capability. The City of Fresno, through a cooperative agreement, utilizes the Fresno Irrigation District (FID) canal system to deliver allocated water from the San Joaquin River and the Kings River to these basins where the water infiltrates through the underlying soil strata and into the groundwater beneath the basins. FMFCD retention basins, largely in part through a cooperative agreement with the City, provide groundwater recharge for an estimated annual average of 30,000 AF of water.

Flood Control. The City of Fresno is located in the alluvial fans of numerous foothill streams and creeks that drain the western slope of the Sierra Nevada foothills. These streams include Big Dry Creek, Alluvial Drain, Pup Creek, Dog Creek, Redbank Creek, Mud Creek, and Fancher Creek. Numerous smaller, unnamed drainage courses also drain into the City from the rural areas east of the City. FMFCD provides flood control measures on the major creeks for the 0.5-percent exceedance interval (200-year return frequency) flood flow event with a series of dams and detention basins located east of the City. These dams include Big Dry Creek Dam, Fancher Creek Dam, and Redbank Dam. The detention basins include the Alluvial Drain Detention Basin, Pup Creek Detention Basin, Redbank Creek Detention Basin, Fancher Creek Detention Basin, and Big Dry Creek Detention Basin.

The Big Dry Creek Dam was originally constructed in 1948 by the U.S. Army Corps of Engineers. It was subsequently raised and enlarged by the U.S. Army Corps of Engineers as part of the Redbank and Fancher Creek Flood Control Project in 1993 to provide a flood pool with 30,200 AF of storage. Redbank Creek Dam was constructed by FMFCD in 1961. It provides a gross pool storage of 1,030 AF. The U.S. Army Corps of Engineers also constructed the Alluvial Drain Detention Basin in 1993, the Pup Creek Detention Basin in 1993, the Redbank Detention Basin in 1990 and the Fancher Creek Dam in 1991. The Redbank and Fancher Creek Flood Control Project was a jointly funded Federal, State, and local project. FMFCD constructed the Fancher Creek Detention Basin in 2003 and recently completed the Big Dry Creek Detention Basin.

FMFCD has master planned the Dog Creek, Pup Creek, and a portion of Redbank Creek channels to convey the 0.5-percent exceedance level flood flows within bank. The improvement of these channels will occur as funding and legal authority to proceed with the improvements are provided either through grants and purchase of right of way or through the entitlement process. Each of these channels are ephemeral streams that flow only during the latter parts of the wet season.

4.11.1.6 Solid Waste

Fresno diverts a majority of its solid waste away from landfills and into recycling and composting programs. Diversion conserves limited landfill space, keeps toxic chemicals and materials from contaminating landfills, and enhances the reuse of materials. A Council resolution commits the City to the goal of Zero Waste by the year 2025. Recycling of construction & demolition is required for

any City-issued building, relocation or demolition permitted project that generates at least 8 cubic yards of material by volume and all waste must be hauled to a City-approved facility.[4]

The Solid Waste Division of the City of Fresno provides curbside collection of residential bulky goods through operation cleanup. The solid waste division also collects through a three-cart system solid waste, recycling, green waste, as well as waste oil and waste oil filters weekly.

In 2011 the City of Fresno granted franchises for non-exclusive roll off services to 16 roll off companies for bins which were 10 cubic yards or greater. The City also granted exclusive franchise agreements for the collection of commercial solid waste, recyclables and green waste to two franchises. Allied Waste Services (formally Republic) is responsible for all commercial services north of Ashlan Avenue. Mid Valley Disposal has all commercial locations south of Ashlan. Both city and (non-exclusive) / exclusive franchise haulers provide and maintain containers; respond to customer complaints/concerns and provide roll-off and compactor services to residential, multi-family and commercial customers respective to their agreements. The proposed project would be serviced by Mid Valley Disposal.

Garbage disposed of in the City of Fresno is taken to Cedar Avenue Recycling and Transfer Station (CARTS). Once trash has been off-loaded at the transfer station, it is sorted and non-recyclable solid waste is loaded onto large trucks and taken to the American Avenue Landfill (i.e., American Avenue Disposal Site, Site Solid Waste Information System [SWIS] Number 10-AA-0009) located approximately six miles southwest of Kerman. American Avenue Landfill is owned and operated by Fresno County and began operations in 1992 for both public and commercial solid waste haulers. The American Avenue Landfill is a sanitary landfill, meaning that it is a disposal site for non-hazardous solid waste spread in layers, compacted to the smallest practical volume, and covered by material applied at the end of each operating day.[5]

The American Avenue Landfill has a maximum permitted capacity of 32,700,000 cubic yards and a remaining capacity of 29,358,535 cubic yards, with an estimated closure date of August 31, 2031. The maximum permitted throughput is 2,200 tons per day.[6]

One other active disposal site is located in Fresno County. The City of Clovis Landfill (SWIS Number 10-AA-0004) has a maximum permitted capacity of 7,800,000 cubic yards and a remaining capacity of 7,740,000 cubic yards, with an estimated closure date of April 30, 2047. The maximum permitted throughput is 2,000 tons per day.[7]

---

4 Fresno, City of. Department of Public Utilities, Trash Disposal & Recycling, Multi-Family & Commercial Services, Construction & Demolition Waste. Website: www.fresno.gov/publicutilities/trash-disposal-recycling/multi-family-commercial-services/#tab-3 (accessed September 6, 2022).

5 Fresno, City of. Department of Public Utilities, Facilities & Infrastructure, American Avenue Landfill. Website: www.fresno.gov/publicutilities/facilities-infrastructure/american-avenue-landfill (accessed September 6, 2022).

6 CalRecycle. SWIS Facility/Site Summary. American Avenue Disposal Site (10-AA-0009). Website: https://www2.calrecycle.ca.gov/SolidWaste/Site/Summary/352, (accessed September 6, 2022).

7 CalRecycle. SWIS Facility/Site Summary. City Of Clovis Landfill (10-AA-0004). Website: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4529?siteID=347 (accessed September 6, 2022).

Commercial green waste and organics delivered to Elm Avenue Recycling by Mid Valley are then transferred to the Kerman facility and composted with organic compost, which is then used by organic farms in the region. Commercial green waste and organics being delivered by Allied Waste are taken to Rice Road Transfer Station, which are then trans-loaded into trucks, which are delivered to Kochergen Farms for composting and land application.

4.11.1.7 Electric Power, Natural Gas and Telecommunications

Electricity. The City of Fresno receives its electricity from Pacific Gas and Electric (PG&E). PG&E provides electrical service to business and residents throughout the City via underground and above-ground service lines. PG&E owns and maintains all service and transmission lines in the City and operates several electrical substations throughout the City. According to the California Energy Commission (CEC), total electricity consumption in the PG&E service area in 2020 was 78,518 gigawatt hours (GWh) (78,518,835,142 kilowatt-hours [kWh]).[8] Total electricity consumption in Fresno County in 2020 was 8,017.8 GWh (8,017,830,742 KWh).[9]

Natural Gas. PG&E is the natural gas service provider in the City of Fresno. PG&E owns and maintain several natural gas transmission lines in the City that feed local distribution lines that connect to individual service lines. PG&E is the natural gas service provider for the City of Fresno. According to the CEC, total natural gas consumption in the PG&E service area in 2020 was 4,508.5 million therms (4,508,542,540 therms).[10] Total natural gas consumption in Fresno County in 2020 was 325.9 million therms (325,915,257 therms).[11]

Telecommunications. Several providers provide telecommunication services to the City of Fresno. AT&T is the largest provider of cellular and fixed telephone services. Telephone lines are located throughout the City.

4.11.2 Regulatory Setting

4.11.2.1 Federal Regulations

Clean Water Act. The Federal Clean Water Act (CWA) establishes regulatory requirements for potable water supplies including raw and treated water quality criteria. The County would be required to monitor water quality and conform to the regulatory requirements of the CWA.

Safe Drinking Water Act. The Federal Safe Drinking Water Act (SDWA) is enforced by the EPA and sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. SDWA requires many actions to protect drinking water and its sources including rivers, lakes, and groundwater.

---

8 CEC. 2019b. Electricity Consumption by Entity. Website: ecdms.energy.ca.gov/elecbyutil.aspx (accessed September 2022).

9 CEC. 2019c. Electricity Consumption by County. Website: ecdms.energy.ca.gov/elecbycounty.aspx (accessed September 2022).

10 CEC. 2019e. Gas Consumption by Entity. Website: ecdms.energy.ca.gov/gasbyutil.aspx (accessed September 2022).

11 CEC. 2019f Gas Consumption by County. Website: ecdms.energy.ca.gov/gasbycounty.aspx (accessed September 2022).

4.11.2.2 State Regulations

Urban Water Management Planning Act. The Urban Water Management Planning Act of 1983, California Water Code Sections 10610 et seq., requires publicly or privately owned water suppliers that provide more than 3,000 acre-feet (AF) of water annually or supply more than 3,000 customers to prepare a plan that:

- Plans for water supply and assesses reliability of each source of water over a 20-year period in 5-year increments.
- Identifies and quantifies adequate water supplies, including recycled water, for existing and future demands, in normal, single-dry, and multiple-dry years.
- Implements conservation and the efficient use of urban water supplies. Significant new requirements for quantified demand reductions have been added by the Water Conservation Act of 2009 (Senate Bill 7 of Special Extended Session 7 [SBX7-7]), which amends the act and adds new water conservation provisions to the Water Code

Senate Bills 610 and 221, Water Supply Planning. To assist water suppliers, cities, and counties in integrated water and land use planning, the state passed Senate Bill (SB) 610 (Chapter 643, Statutes of 2001) and SB 221 (Chapter 642, Statutes of 2001), effective January 1, 2002. SB 610 and SB 221 improve the link between information of water supply availability and certain land use decisions made by cities and counties. SB 610 and SB 221 are companion measures that promote more collaborative planning between local water suppliers and cities and counties. Both statutes require detailed information regarding water availability to be provided to city and county decision makers prior to approval of specified large development projects. This detailed information must be included in the administrative record as the evidentiary basis for an approval action by the city or county on such projects. The statutes recognize local control and decision making regarding the availability of water for projects and the approval of projects. Under SB 610, water supply assessments (WSA) must be furnished to local governments for inclusion in any environmental documentation for certain projects subject to CEQA, as defined in Water Code Section 10912[a].

Under SB 221, approval by a city or county of certain residential subdivisions requires an affirmative verification of sufficient water supply. SB 221 is intended as a fail-safe mechanism to ensure that collaboration on finding the needed water supplies to serve a new large subdivision occurs before construction begins.

The Urban Water Management Planning Act states that every urban water supplier that provides water to 3,000 or more customers or provides over 3,000 af of water annually should make every effort to ensure the appropriate level of reliability in its water service to meet the needs of its various categories of customers during normal, dry, and multiple dry years. Both SB 610 and SB 221 identify the Urban Water Management Plan (UWMP) as a planning document that can be used by a water supplier to meet the standards in both statutes. Thorough and complete UWMPs are foundations for water suppliers to fulfill the specific requirements of these two statutes, and they are important source documents for cities and counties as they update their general plans. Conversely, general plans are source documents as water suppliers update the UWMPs. These planning documents are linked, and their accuracy and usefulness are interdependent.

Additionally, pursuant to the California Water Code Section 10632, urban water suppliers that serve more than 3,000 acre-feet per year or have more than 3,000 connections are required to prepare and adopt a standalone Water Shortage Contingency Plan (WSCP) as part of its Urban Water Management Plan. A WSCP is a detailed plan on how an urban water supplier intends to respond to foreseeable and unforeseeable water shortages. A water shortage occurs when the water supply is reduced to a level that cannot support typical demand at any given time. The WSCP is used to provide guidance by identifying response actions to allow for responsible management of any water shortage with predictability and accountability. Preparation provides the tools to maintain reliable supplies and reduce the impacts of supply interruptions due to extended drought and catastrophic supply interruptions.

AB 3030, California Groundwater Management Act. The Groundwater Management Act of the California Water Code (AB 3030) provides guidance for applicable local agencies to develop a voluntary Groundwater Management Plan in state-designated groundwater basins.

Senate Bill 1383, Short-lived Climate Pollutants. In September 2016, Governor Edmund Brown Jr. set methane emissions reduction targets for California (SB 1383 Lara, Chapter 395, Statutes of 2016) in a statewide effort to reduce emissions of short-lived climate pollutants (SLCP). The targets must:

- Reduce organic waste disposal 50% by 2020 and 75% by 2025.
- Rescue for people to eat at least 20% of currently disposed surplus food by 2025.

SB 1383 requires counties to take the lead collaborating with the jurisdictions located within the county in planning for the necessary organic waste recycling and food recovery capacity needed to divert organic waste from landfills into recycling activities and food recovery organizations.

California Green Building Standards Code—Part 11, Title 24 (CALGreen). CALGreen requires covered projects to recycle and/or salvage for reuse a minimum 65 percent of the nonhazardous construction and demolition waste or meet a local construction and demolition waste management ordinance, whichever is more stringent.

Assembly Bill (AB) 939, California Integrated Waste Management Act. California's Integrated Waste Management Act of 1989 requires cities and counties to reduce the amount of waste disposed of in landfills. The Local Government Construction and Demolition (C&D) Guide of 2002 (SB 1374) amended this act to include construction and demolition material. Fresno County created the County of Fresno's Construction and Demolition (C&D) Debris Recycling Program to fulfill requirements under these bills.

Beginning January 1, 2014, the County of Fresno required permit applicants to submit a Waste Management Plan for approval prior to issuance of permit for projects. The Waste Management Plan required as part of Fresno County's C&D Debris Recycling Program is designed to assist County compliance with State mandates, and to provide builders with a means of documenting the waste reduction requirements included in the California Green Building Standards Code (CALGreen).

Water Discharge Requirements. The Central Valley Regional Water Quality Control Board (RWQCB) typically requires a Waste Discharge Requirements (WDR) permit for any facility or person

discharging or proposing to discharge waste that could affect the quality of the waters of the state, other than into a community sewer system. Those discharging pollutants (or proposing to discharge pollutants) into surface waters must obtain an National Pollutant Discharge Elimination System (NPDES) permit from the Central Valley RWQCB.

The NPDES serves as the WDR. For other types of discharges, such as those affecting groundwater or in a diffused manner (e.g., erosion from soil disturbance or waste discharges to land), a Report of Waste Discharge must be filed with the Central Valley RWQCB in order to obtain a WDR. For specific situations, the Central Valley RWQCB may waive the requirement to obtain a WDR for discharges to land or may determine that a proposed discharge can be permitted more effectively through enrollment in a general NPDES permit or general WDR.

4.11.2.3 Local Regulations

City of Fresno General Plan. The City of Fresno's General Plan Public Utilities and Services Element includes objectives and policies that relate to public services. The following policies are applicable to the proposed project:

- **Policy PU-8-b: Potable Water Supply and Cost Recovery.** Prepare for provision of increased potable water capacity (including surface water treatment capacity) in a timely manner to facilitate planned urban development consistent with the General Plan. Accommodate increase in water demand from the existing community with the capital costs and benefits allocated equitably and fairly between existing users and new users, as authorized by law, and recognizing the differences in terms of quantity, quality and reliability of the various types of water in the City's portfolio.

- **Policy PU-8-c: Conditions of Approval.** Set appropriate conditions of approval for each new development proposal to ensure that the necessary potable water production and supply facilities and water resources are in place prior to occupancy.

- **Policy PU-8-g: Review Project Impact on Supply.** Mitigate the effects of development and capital improvement projects on the long-range water budget to ensure an adequate water supply for current and future uses.

- **Policy PU-7-a: Reduce Wastewater.** Identify and consider implementing water conservation standards and other programs and policies, as determined appropriate, to reduce wastewater flows.

- **Policy PU-7-b: Reduce Stormwater Leakage.** Reduce storm water infiltration into the sewer collection system, where feasible, through a program of replacing old and deteriorated sewer collection pipeline; eliminating existing stormwater sewer cut-ins to the sanitary sewer system; and avoiding any new sewer cut-ins except when required to protect health and safety.

- **Policy PU-9-a: New Techniques.** Continue to collaborate with affected stakeholders and partners to identify and support programs and new techniques of solid waste disposal, such as recycling, composting, waste to energy technology, and waste separation, to reduce the volume and toxicity of solid wastes that must be sent to landfill facilities.

- **Policy PU-9-b: Compliance with State Law.** Continue to pursue programs to maintain conformance with the Solid Waste Management Act of 1989 or as otherwise required by law and mandated diversion goals.

4.11.3 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to utilities and service systems that could result from implementation of the proposed project. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed project and the recommended mitigation measures, if required. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less-than-significant level. Cumulative impacts are also addressed.

4.11.3.1 Significance Criteria

The thresholds for impacts related to utilities and service systems used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed project would result in a significant impact related to utilities and service systems if it would:

Threshold 4.11.1 **Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effect;**

Threshold 4.11.2 **Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years;**

Threshold 4.11.3 **Result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;**

Threshold 4.11.4 **Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; or**

Threshold 4.11.5 **Comply with federal, state, and local management and reduction statutes and regulations related to solid waste**.

4.11.3.2 Project Impacts

The following discussion describes the potential impacts related to utilities and service systems that could result from implementation of the proposed project.

Threshold 4.11.1 **Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the**

construction or relocation of which could cause significant environmental effects?

As identified in Section 3.0, Project Description, utilities required to serve the proposed project would include water, wastewater, stormwater drainage, electricity, natural gas, and telecommunications infrastructure.

Water. Short term demand for water may occur during excavation, grading, and construction activities on-site. Construction activities would require water primarily for dust mitigation purposes. Water from the existing potable water lines in the vicinity of the project site would be used. Overall, short-term construction activities would require minimal water use and are not expected to have any adverse impacts on the existing water system or available water supplies. The proposed project would not require the construction of new or expanded water conveyance, treatment, or collection facilities with respect to construction activities. Therefore, the impacts on water facilities during construction would be less than significant.

Once operational, water service to the project site would be provided by the City. New water within the project site would connect to the existing 14-inch main located on North Marks Avenue and the 16-inch main on North Hughes Avenue. The project would also include an on-site 12-inch main. Extension of the water infrastructure from the adjacent streets into the project site would be a routine part of the construction process analyzed in this EIR and would not have a material environmental impact. The water facility improvements would be limited to the project site and connection points to the adjacent, existing facilities. In addition, as described further in Threshold 4.11.2 below, the City has concluded that the City of Fresno's water system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045. Therefore, the proposed project would not require or result in the construction of new water facilities, or the expansion of existing facilities, which could cause a significant environmental impact, and the impact would be less than significant.

Wastewater. No significant increase in wastewater flows is anticipated as a result of construction activities on the project site. Sanitary services during construction would be provided by portable toilet facilities, which transport waste off-site for treatment and disposal. Therefore, during construction, potential impacts to wastewater treatment and wastewater conveyance infrastructure would be less than significant.

Once operational, the City would provide wastewater collection and treatment for the proposed project, and maintains an existing 12- to 18-inch line located in West Nielsen Avenue. The proposed project includes the installation of a new on-site 8-inch wastewater line that would connect to the City's existing line. Any sewer improvements associated with the proposed project would be designed and constructed to City standards. In addition,

the City of Fresno Department of Public Utilities has determined that adequate sanitary sewer and wastewater services would be available to serve the proposed project subject to the payment of any applicable connection charges and/or fees and extension of services in a manner that is compliant with the Department of Public Utilities standards, specifications, and policies. In addition, as described further in Threshold 4.11.2 below, the City has concluded that the City of Fresno's wastewater system has sufficient capacity to supply the proposed project and other projected

demands within the City's service area through the year 2045. As such, the proposed project would result in less than significant impacts related to the construction or expansion of wastewater treatment facilities. Therefore, the proposed project would not require or result in the construction of new wastewater treatment or collection facilities, or the expansion of existing facilities, which could cause a significant environmental impact. Therefore, the impact would be less than significant.

Stormwater and Drainage Facilities. During construction activities, soil would be exposed and disturbed, drainage patterns would be temporarily altered during grading and other construction activities, and there would be an increased potential for soil erosion and siltation compared to existing conditions. Additionally, during a storm event, soil erosion and siltation could occur at an accelerated rate. As discussed in Section 4.8, Hydrology and Water Quality, the proposed project would be required to comply with applicable permits and preparation of a Stormwater Pollution Prevention Plan (SWPPP) to identify construction Best Management Practices (BMPs) to be implemented as part of the proposed project to reduce impacts to water quality during construction, including those impacts associated with soil erosion and siltation. Compliance with applicable permit requirements and implementation of the construction BMPs would ensure that the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts, and the impact would be less than significant.

Refer to Section 4.8, Hydrology and Water Quality, for additional information regarding the proposed project's impacts related to hydrology during operation. The proposed project includes the construction of a new curb and gutter along North Marks Avenue, West Nielsen Avenue, and North Hughes Avenue that would connect to the existing FMFCD stormwater system. While the proposed project would permanently increase the impervious surface area in the project site, the project would maintain the overall on-site drainage patterns and continue to direct surface water to catch basins that flow into the existing storm drains. Prior to the issuance of building permits, the applicant would be required to provide a stormwater improvement plan to the City to ensure that the stormwater system would be capable of handling a 25-year storm and that the drainage facilities conform to City requirements. Additionally, the applicant would be required to pay for all necessary improvement costs if the City determines that the City's storm drain system or storm drain pumping capacity requires expansion or modification as a result of the project. In addition, compliance with existing regulatory requirements, including compliance with the WPCP and compliance with the MS4, as specified in the Industrial General Permit, would reduce or eliminate the potential for project operations to cause substantial additional polluted runoff or runoff in excess of existing or planned stormwater drainage systems. As such, the proposed project would result in less than significant impacts related to the construction or expansion of stormwater drainage facilities.

Electricity. Electrical power would be supplied to the proposed project site by PG&E. PG&E provides electrical service to business and residents throughout the City via underground and above-ground service lines. PG&E owns and maintains all service and transmission lines in the City and operates several electrical substations throughout the City. According to the California Energy Commission (CEC), total electricity consumption in the PG&E service area in 2020 was 78,518 gigawatt hours

(GWh) (78,518,835,142 kilowatt-hours [kWh]).[12] Total electricity consumption in Fresno County in 2020 was 8,017.8 GWh (8,017,830,742 KWh).[13]

Short-term construction activities would be limited to providing power to the staging area and portable construction equipment and would not substantially increase demand for electricity. The heavy equipment used for construction is primarily powered by diesel fuel. Given the limited nature of potential demand for electricity during construction and the availability of existing power lines on the site, there would not be a need to construct new or alter existing electric transmission facilities. Impacts to local regional supplies of electricity would be less than significant.

The proposed project includes connections to the surrounding electrical system on-site. Existing underground utility connections provide electricity to the project site. New underground electrical lines would be installed. As discussed in Section 4.5, Energy, the estimated potential increased electricity demand associated with the proposed project is 8,448,500 kWh per year. Therefore, operation of the proposed project would increase the annual electricity consumption in Fresno County by approximately 0.11 percent. Because the proposed project would only represent a small fraction of electricity demand in Fresno County, the project would meet Title 24 requirements and there would be sufficient electricity supplies available, energy demand for the proposed project would be less than significant. Therefore, although the proposed project would require the construction of new improvements related to the provision of electricity service, the proposed project would not result in significant environmental impacts and the proposed project's impacts would be less than significant.

Natural Gas. PG&E is the natural gas service provider in the City of Fresno. PG&E owns and maintain several natural gas transmission lines in the City that feed local distribution lines that connect to individual service lines. PG&E is the natural gas service provider for the City of Fresno. According to the CEC, total natural gas consumption in the PG&E service area in 2020 was 4,508.5 million therms (4,508,542,540 therms).[14] Total natural gas consumption in Fresno County in 2020 was 325.9 million therms (325,915,257 therms).[15]

Short-term construction activities would not result in demand for natural gas since construction activities/equipment would not require accessing existing adjacent natural gas facilities. Therefore, construction activities would not impact natural gas services, and the proposed project would not require new or physically altered gas transmission facilities.

Operation of the proposed project would increase on-site natural gas demand. As discussed in Section 4.5, Energy, the estimated potential increase in natural gas demand associated with the proposed project is 161,487 therms per year. Total natural gas consumption in Fresno County in

[12] CEC. 2019b. Electricity Consumption by Entity. Website: ecdms.energy.ca.gov/elecbyutil.aspx (accessed September 2022).
[13] CEC. 2019c. Electricity Consumption by County. Website: ecdms.energy.ca.gov/elecbycounty.aspx (accessed September 2022).
[14] CEC. 2019e. Gas Consumption by Entity. Website: ecdms.energy.ca.gov/gasbyutil.aspx (accessed September 2022).
[15] CEC. 2019f Gas Consumption by County. Website: ecdms.energy.ca.gov/gasbycounty.aspx (accessed September 2022).

2020 was 325,915,257 therms. Therefore, operation of the proposed project would negligibly increase the annual natural gas consumption in Fresno County by approximately 0.05 percent. Because the proposed project would only represent a small fraction of electricity demand in Fresno County, the project would meet Title 24 requirements and there would be sufficient natural gas supplies available, energy demand for the proposed project would be less than significant. Therefore, although the proposed project would require the construction of new improvements related to the provision of natural gas service, the proposed project would not result in significant environmental impacts and the proposed project's impacts would be less than significant.

Telecommunication Facilities. Existing telephone, cable, and internet service lines in the vicinity would serve the project site. Internal to the project site, the project applicant would be responsible for constructing adequate telecommunication facility extensions for the proposed project. The reconfiguration of these facilities would occur on-site during the site preparation and earthwork phase and are not expected to impact any telephone, cable, or internet services off-site that serve the surrounding areas. Additionally, telecommunication facilities are generally installed concurrently with utility expansions and impacts associated with the expansion of telecommunications facilities are already considered in the air quality, noise, and construction traffic analysis. Therefore, the project impacts associated with the relocation or construction of new or expanded telecommunication facilities and impacts would be less than significant.

Summary. The proposed project would not require or result in the relocation or construction of new or expanded facilities for water, wastewater treatment, storm drainage, electric power, natural gas, or telecommunications. Therefore, impacts to these utility facilities would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.11.2 Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

As discussed in the WSA prepared for the proposed project, the potable demand projections in the 2020 UWMP for normal water use utilize land use-based projections. Under this methodology, existing land use and demand was accounted separately from future land use and demand. This allows different demand factors to be applied to current land use areas and future land use areas. Future land use areas represent future customers and developments that are expected to be more water-efficient than existing land uses and buildings due to the California Plumbing Code (CPC) and use of higher-efficiency appliances and landscapes.

The existing and future land use acreage was sourced from the City's Geographic Information System (GIS) database and the City's General Plan. The existing land use shapefile and associated acreage for each land use classification were used to represent 2020 land use data. Areas not served by the City were excluded from the existing land use shapefile. The future land use shapefile corresponds with the planned land use at buildout as described in the City's General Plan representing the year 2056. Although the City does not have any plans to serve areas currently served by others within the City limits, all areas within the City's Sphere of Influence (SOI) were assumed to be served by the City by buildout for conservative planning purposes.

The land use acreage between 2020 and 2056 was estimated in 5-year increments based on areas planned to be developed by 2030 from the City's Planning Department, and by linearly interpolating the remainder of the change in acreage for each land use category between 2030 and 2056. Project-specific water demand was calculated using the methodology from the 2020 UWMP, as described above, based on the following assumptions:

- The 2020 UWMP indicates there will be 5,201 acres of industrial uses in Fresno in 2025; and
- The 2020 UWMP indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.

Therefore, it is assumed that industrial land uses, such as the proposed project, will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres. Therefore, based on the assumptions identified above, the proposed project is estimated to demand approximately 68.2 AFY.

The project site is included in the land use area covered by the City's 2020 UWMP and is designated as Heavy Industrial in the City's General Plan. Land use acreages and water demand in the 2020 UWMP were based on the City's General Plan land use designations for 2020 and buildout in 2056. As such, the acreage associated with the proposed project was assumed Industrial in the 2020 UWMP; therefore, it is assumed that demand for water was accounted for in the 2020 UWMP. There is no evidence, in consideration of the calculated project water demand, that such demand exceeds that estimated in the 2020 UWMP. The adequacy of the water supply for the project is thus consistent with the basis of the analysis of the City's water supply in the adopted 2020 UWMP.

The City has concluded that the City of Fresno's water system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045. As such, the proposed project would not necessitate new or expanded water entitlements, and the City would be able to accommodate the increased demand for potable water.

The WSA also discusses projected supplies and demands for a normal year, single dry year, and 5-year consecutive drought in the City. The City is projected to have greater than 100,000 AF of available supply after meeting demands in normal years. During single dry years, the City's surface water supplies and groundwater recharge of raw surface water are reduced, but all projected potable demands would be met. During a 5-year drought, the City is projected to meet all demands with existing supplies, although non-potable water used for groundwater recharge is reduced in years 3 and 4 of a 5-year drought.

The City currently balances its surface water supplies and groundwater based on minimum production for operation of the City's water treatment facilities and minimum groundwater pumping to manage and control contamination plumes and prevent their spread. The minimum operation conditions typically occur in the low-demand winter months, and the City can increase surface water production during peak-demand months when surface water is available. In normal and wet years, the City intends to rely on more surface water supply and recharge raw surface water to replenish the groundwater basin and build storage for dry years. In dry years, when surface water

is less available, the City will ramp up well production to meet demands. The City is expected to continue this supply management strategy in the future.

Additionally, the City's WSCP is used to provide guidance to the City's governing body and staff and the public by identifying response actions to allow for efficient management of any water shortage with predictability and accountability. Preparation provides the tools to maintain reliable supplies and reduce the impacts of supply interruptions due to extended drought and catastrophic supply interruptions. The WSCP, applicable to the entire City of Fresno municipal water service area, is fully applicable to the project and protective of the adequacy of the project's water supply.

As a result, the project would result in a less-than-significant impact related to water supply and there would be sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.11.3 Would the project result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Wastewater collection and treatment services in Fresno are provided by the City of Fresno Department of Public Utilities. The City's wastewater collection system consists of about 1,630 miles of pipes ranging in size from 4 inches in diameter to 84 inches in diameter. This collection system also utilizes 15 lift stations throughout Fresno, ranging in pumping capacity from 0.25 million gallons per day (mgd) to 2.2 mgd. The City is served by two wastewater treatment plants: Fresno-Clovis Regional Wastewater Reclamation Facility and North Fresno Wastewater Reclamation Facility.

The Department of Public Utilities has determined that adequate sanitary sewer and wastewater services would be available to serve the proposed project subject to the payment of any applicable connection charges and/or fees and extension of services in a manner that is compliant with the Department of Public Utilities standards, specifications, and policies. As such, the City's wastewater provider would be able to provide service to the proposed project, and impacts would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.11.4 Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Garbage disposed in the City of Fresno is taken to the Cedar Avenue Recycling and Transfer Station. Once trash has been off-loaded at the transfer station, it is sorted, and non-recyclable solid waste is loaded onto large trucks and taken to the American Avenue Landfill located approximately 6 miles southwest of Kerman.

The American Avenue Landfill (i.e., American Avenue Disposal Site 10-AA-0009) has a maximum permitted capacity of 32,700,000 cubic yards and a remaining capacity of 29,358,535 cubic yards, with an estimated closure date of August 31, 2031. The maximum permitted throughput is 2,200 tons per day.[16]

Other landfills within the County of Fresno include the Clovis Landfill (City of Clovis Landfill 10-AA-0004) with a maximum remaining permitted capacity of 7,740,000 cubic yards, a maximum permitted throughput of 2,000 tons per day, and an estimated closure date of 2047.[17]

Based on the California Emissions Estimator Model (CalEEMod, Appendix C), operation of the proposed project would generate approximately 847 tons of solid waste per year or approximately 2 tons of solid waste per day. Given the available capacity at the landfills, the additional solid waste generated by the proposed project is not anticipated to cause the facility to exceed its daily permitted capacity. As such, the project would be served by a landfill with sufficient capacity to accommodate the project's waste disposal needs. The proposed project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals and impacts would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.11.5 Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The proposed project would be required to comply with the CALGreen Code, the Fresno County C&D Debris Recycling Program, which is intended to assist the County in achieving AB 939 solid waste reduction goals, and other applicable federal, State and local solid waste statutes and/or regulations related to solid waste. In addition, as described above, the proposed project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. Therefore, the proposed project would have a less-than-significant impact related to solid waste.

Level of Significance Without Mitigation: Less Than Significant Impact.

4.11.3.3 Cumulative Impacts

As defined in the *State CEQA Guidelines*, cumulative impacts are the incremental effects of an individual project when viewed in connection with the effects of past, current, and probable future projects within the cumulative impact area for utilities and service systems. The project site consists of a vacant urban lot located in a primarily urban area with existing services provided by utility providers in the vicinity. The cumulative area for utilities is listed below for each individual utility provider.

[16] Ibid.
[17] Ibid.

Water Supply. As discussed above and in Section 4.8, Hydrology and Water Quality, water supply is a regional issue. The Kings Subbasin is in overdraft condition due to pumping for agricultural and urban uses. Growth in the subbasin will increase demands for groundwater pumping, potentially resulting in continued drawdown of water levels leading to localized cones of depression, changes in groundwater flow direction, concentration of contaminants, and land subsidence. However, the WSA prepared for the proposed project identified that projected water supplies available for the City would be adequate to accommodate future development in the City of Fresno, including development of the proposed project, for normal, single-year dry, and multiple-year dry conditions. Additionally, implementation of water supply management strategies from the City's 2020 UWMP and the City's WSCP would secure the efficient management of water supplies in the City during regular and dry years. Therefore, the City would have sufficient water supplies available to serve the proposed project and future projects consistent with the General Plan and the City's water management plans. Therefore, the proposed project would not have a cumulatively significant impact on water supply or facilities.

Wastewater. Public utility districts and other municipalities exist near or adjacent to the planning area and include the City of Clovis, the Pinedale Public Utility District, Pinedale County Water District, and Malaga Utility District. The City of Fresno Department of Public Utilities has determined that adequate sanitary sewer and water services would be available to serve the proposed project subject to the payment of any applicable connection charges and/or fees and extension of services in a manner that is compliant with the Department of Public Utilities standards, specifications, and policies. Other past, current, and probable future projects within the cumulative impact area would also be subject to Department of Public Utilities standards, specifications, and policies. For these reasons, the proposed project and related projects would not result in a cumulatively significant impact to wastewater generation.

Solid Waste. The geographic area for the cumulative analysis of solid waste infrastructure is the City of Fresno. Development associated with the proposed project would contribute to an increased demand for landfill capacity for solid waste. As stated previously, the American Avenue Landfill (i.e., American Avenue Disposal Site 10-AA-0009) has a maximum permitted capacity of 32,700,000 cubic yards and a remaining capacity of 29,358,535 cubic yards, with an estimated closure date of August 31, 2031. The maximum permitted throughput is 2,200 tons per day. In addition, the Clovis Landfill with a maximum remaining permitted capacity of 7,740,000 cubic yards, a maximum permitted throughput of 2,000 tons per day, and an estimated closure date of 2047. As discussed above, given the available capacity at the landfills, the additional solid waste generated by the proposed project is not anticipated to cause the facility to exceed its daily permitted capacity. Furthermore, based on their current daily maximum permitted disposal capacities and current average daily tonnage, there is currently sufficient permitted capacity provide adequate future capacity for the City's solid waste needs.

In addition, all development projects would be required to comply with federal, State, and local statutes and regulations related to solid waste. Pursuant to the California Integrated Waste Management Act of 1989 (AB 939), every city and county in the State is required to divert 50 percent of solid waste generated in its jurisdiction away from landfills. Implementation of source reduction measures, such as recycling, would serve to divert solid waste away from landfills. Cumulative development would be required to comply with existing statutes and regulations, and

therefore, cumulative impacts related to compliance with solid waste regulations would be less than significant and would not be cumulatively considerable.

Electricity and Natural Gas. Development of cumulative projects within the PG&E service area which encompasses 70,000 square miles would result in a substantial increase in electricity and natural gas demand as well as an increase in the consumption of fuel for vehicles. Although the proposed project would result in a net increase in demand for electricity, implementation of the proposed project would not result in the construction of new electric or natural gas infrastructure beyond what has already been assumed and will be included in PG&E's regional forecasts.

As discussed previously, the total annual electricity consumption in the PG&E service area in 2020 was 78,518 GWh (78,518,835,142 kWh). As shown in Table 4.5.B, the estimated potential increase in electricity demand associated with the operation of the proposed project is 8,448,500 kWh per year. Therefore, operation of the proposed project would increase the annual electricity consumption in the PG&E service area by approximately 0.01 percent. As such, the proposed project's share of cumulative electricity consumption would negligible.

Total natural gas consumption in the PG&E service area in 2020 was 4,508.5 million therms (4,508,542,540 therms). As shown in Table 4.5.B, the estimated potential increase in natural gas demand associated with the proposed project is 161,487 therms per year. Therefore, operation of the proposed project would increase the annual natural gas consumption in the PG&E service area by less than 0.01 percent. The proposed project's share of cumulative consumption of natural gas in the PG&E service area would be negligible.

In addition, as identified above, in 2021, a total of 50 percent of PG&E's delivered electricity came from renewable sources, including solar, wind, geothermal, small hydroelectric and various forms of bioenergy.[18] PG&E reached California's 2020 renewable energy goal in 2017, and is positioned to meet the State's 60 percent by 2030 renewable energy mandate set forth in Senate Bill (SB) 100. In addition, PG&E plans to continue to provide reliable service to their customers and upgrade their distribution systems as necessary to meet future demand.

Telecommunications. The geographic area for the cumulative analysis of impacts to the provision of telecommunication facilities is the City. Telephone, cable, and internet services are provided to residents through private providers of these services. The construction and expansion of telecommunication facilities for the proposed project would occur on-site and is not expected to impact any telephone, cable, or internet services off-site that serve the surrounding areas. Likewise, construction and expansion of telecommunication facilities would generally occur on-site to extend through proposed related developments. Therefore, cumulative impacts associated with the relocation or construction of new or expanded telecommunication facilities would be less than significant.

Level of Significance Without Mitigation: Less Than Significant Impact.

[18] PG&E, 2022. *Exploring Clean Energy Solutions*. https://www.pge.com/en_US/about-pge/environment/what-we-are-doing/clean-energy-solutions/clean-energy-solutions.page?WT.mc_id=Vanity_cleanenergy (accessed October 2022).

5.0 ALTERNATIVES

In accordance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines (Section 15126.6), an Environmental Impact Report (EIR) must describe a range of reasonable alternatives to the project, or to the location of the project, that would "feasibly attain most of the project's basic objectives, while avoiding or substantially lessening any of the significantly adverse environmental effects of the project." An EIR does not need to consider every conceivable alternative to a project; rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. The range of alternatives required in an EIR is governed by a "rule of reason."

The proposed project would include the construction of four office/warehouse buildings in the City of Fresno, which would be developed over a period of 24 months. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The proposed project has been described and analyzed in Chapter 4.0 with an emphasis on determining and evaluating potential significant impacts resulting from the project and identifying mitigation measures to avoid or reduce these impacts to a less-than-significant level. The following identifies and discusses two feasible alternatives to the proposed project, compares the impacts of each alternative to the impacts of the project, and determines whether the alternatives meet the basic project objectives and avoid or reduce project-related significant impacts.

5.1 SELECTION OF ALTERNATIVES

Section 21100 of the Public Resources Code and Section 15126.6 of the CEQA Guidelines require an EIR to identify and discuss a No Project Alternative and a reasonable range of alternatives to the proposed project that would feasibly attain most of the basic objectives of the proposed project and that would avoid or substantially lessen any of the significant environmental impacts. When selecting a set of alternatives to analyze, Section 15126.6(f) of the CEQA Guidelines also discusses the consideration of alternative locations and determining whether any of the significant effects of a proposed project would be avoided or substantially lessened by putting the project in another location.

Based on the criteria listed above, two alternatives have been selected to avoid or substantially lessen the significant impacts of the proposed project. Therefore, the alternatives considered in this Draft EIR include the following:

- **No Project Alternative.** Under the No Project Alternative, the project site would continue to be vacant. No modifications to existing site access or infrastructure would occur.

- **Reduced Project Alternative.** The Reduced Project Alternative would reduce the size of Building 1 to 250,956 square feet and the project total square footage would be reduced to 683,582 square feet. The building would have similar site access and infrastructure improvements as those identified for the proposed project.

5.2 PROPOSED PROJECT

5.2.1 Project Characteristics

The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors.

5.2.2 Project Objectives

Each alternative is analyzed to determine whether it achieves the basic objectives of the proposed project. As stated in Chapter 3.0, Project Description, the objectives of the proposed project are to:

- Provide industrial warehousing consistent with the General Plan land use and zoning designation and that helps fulfil the unmet demands of industrial businesses located in the City;
- Support new employment opportunities for the residents of Fresno and surrounding communities;
- Develop new industrial businesses in proximity to major transportation infrastructure and similar type of businesses to minimize land use conflicts with surrounding existing uses; and
- Promote sustainable development and operations, to the extent practicable.

5.2.3 Significant Impacts of the Proposed Project

As described in Chapter 4.0, Evaluation of Environmental Impacts, impacts in the following areas would be potentially significant without the implementation of mitigation measures but would be reduced to a less than significant level if the mitigation measures recommended in this report are implemented: Section 4.1 Aesthetics; Section 4.2 Air Quality; Section 4.3 Biological Resources; Section 4.4 Cultural and Tribal Cultural Resources; Section 4.7 Hazards and Hazardous Materials; and Section 4.9 Noise. The project would not result in any significant and unavoidable impacts.

The project's environmental impacts under all of the remaining resource topics (Aesthetics; Agricultural and Forest Resources; Energy; Greenhouse Gas Emissions; Hydrology and Water Quality; Land Use and Planning; Mineral Resources; Population and Housing; Public Services; Recreation; Transportation; Utilities and Service Systems; and Wildfire) would be less than significant and would not require mitigation or an alternative that would reduce these impacts. Therefore, these resource topics are not discussed further in this chapter unless an alternative has the potential to result in a significant impact on a resource that would not be significantly affected by the proposed project. The project's significant impacts, which have been used to evaluate alternatives, are summarized below.

5.3 ALTERNATIVES CONSIDERED BUT NOT SELECTED FOR DETAILED EVALUATION

State CEQA Guidelines Section 15126.6(c) requires an EIR to identify and briefly discuss any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process. The City considered certain alternatives during the preparation of this EIR and found them to be infeasible.

The following provides a description of potential alternatives that were identified and considered by the City, and the reasons why they were ultimately not selected for further evaluation in this EIR. In dismissing these alternatives from detailed evaluation in this EIR, primary considerations were whether the alternatives would meet *most* of the project objectives, or whether the alternatives were *feasible*, or whether they would *reduce the significant impacts* of the proposed project.

5.3.1 Develop Residential Uses on the Project Site

An alternative that would develop residential uses on the project site was considered but dismissed from detailed evaluation because such an alternative would not achieve three of the four objectives of the proposed project. A residential development on the project site would potentially satisfy one objective, as it could promote sustainable development and operations. However, it would not satisfy the project's other three objectives which are to (1) provide industrial warehousing consistent with the General Plan land use and zoning designation and that helps fulfil the unmet demands of businesses located in the City; (2) provide a variety of new employment opportunities for the residents of Fresno and surrounding communities; and (3) provide new industrial development that is attractive and minimizes conflicts with the surrounding existing uses. As this alternative would not satisfy most of the objectives of the project, it was deemed infeasible and was not carried forth for detailed evaluation.

5.3.2 Develop the Proposed Project at an Alternative Location

As noted above, the project's four objectives are to: provide industrial warehousing consistent with the General Plan land use and zoning designation and that helps fulfil the unmet demands of businesses located in the City; provide a variety of new employment opportunities for the residents of Fresno and surrounding communities; provide new industrial development that is attractive and minimizes conflicts with the surrounding existing uses; and promote sustainable development and operations. Based on these objectives, other parcels in the Fresno area could be suitable for the development of industrial warehouse uses comparable to the proposed project. However, similar to the proposed project, the development on other sites would still have the potential to result in significant impacts on air quality, biological, cultural, and hazards and would require the same or comparable mitigation measures. Further, there would be similarly significant aesthetics, and noise impacts. As this alternative would not reduce or avoid the project's significant impacts, and because the applicant does not own the site or can reasonably acquire it, this alternative was not carried forth for detailed evaluation.

5.4 NO PROJECT ALTERNATIVE

The following provides a description of the No Project Alternative and its anticipated environmental impacts. The emphasis of the analysis is on comparing the anticipated environmental impacts of the No Project Alternative to the environmental impacts associated with the proposed project. The discussion includes a determination of whether or not the No Project Alternative would reduce, eliminate, or create new significant environmental impacts and would or would not meet the objectives of the proposed project.

5.4.1 No Project Alternative Description

The No Project Alternative assumes that the proposed project would not be developed and that the project site would generally remain in its current condition. The project site would continue to be consist of a vacant urban lot. No modifications to existing site access or infrastructure would occur.

5.4.2 Analysis of the No Project Alternative

The potential impacts associated with the No Project Alternative are described below.

5.4.2.1 Aesthetics

Implementation of the No Project Alternative would not result in new development that would have a substantial adverse effect on a scenic vista or substantially damage scenic resource. Similarly, the No Project Alternative would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. The No Project Alternative would also not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area; therefore, implementation of Mitigation Measures AES-1 through AES-4 would not be required. With implementation of the No Project Alternative, there would be no impact on aesthetics.

5.4.2.2 Air Quality

Under the No Project Alternative, no construction activities would occur and the site would remain vacant. Therefore, the proposed project's construction and operational less than significant criteria pollutant impacts would be avoided under this alternative; therefore, implementation of Mitigation Measure AIR-1 would not be required. In addition, this alternative would not result in exposure of surrounding residents to toxic air contaminants during project construction or operation; therefore, implementation of Mitigation Measures AIR-2 and AIR-3 would not be required. With implementation of the No Project Alternative, there would be no impact on air quality.

5.4.2.3 Biological Resources

Under the No Project Alternative, no construction or grading activities would occur on the project site. As a result, the proposed project's potentially significant impacts to nesting birds would be avoided under this alternative and implementation of Mitigation Measure BIO-1 would not be required. In addition, under the No Project Alternative, no construction activities would occur that would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. With implementation of the No Project Alternative, there would be no impact on biological resources.

5.4.2.4 Cultural and Tribal Resources

No construction or grading activities would occur on the project site under the No Project Alternative. Therefore, the proposed project's potential impacts that would result from construction at the project site, including potentially significant impacts related to disturbance of previously unknown archaeological resources, human remains, and tribal cultural resources, would be avoided under this alternative and implementation of Mitigation Measures CUL-1 and CUL-2 would not be required. With implementation of the No Project Alternative, there would be no impact on cultural and tribal resources.

5.4.2.5 Hazards and Hazardous Materials

Under the No Project Alternative, no construction or operational activities would occur on the project site; therefore, the No Project Alternative would not have the potential to expose the public or environment to hazardous building materials or emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. In addition, the No Project Alternative would not conflict with an airport land use plan, impair or interfere with emergency response or evaluation, and would not expose people or structures to wildfires. In addition, under the No Project Alternative, the project site would not include any soil disturbance activities; therefore, implementation of Mitigation Measure HAZ-1 would not be required. With implementation of the No Project Alternative, there would be no impact related to hazards and hazardous materials.

5.4.2.6 Noise

Under the No Project Alternative, no construction activities would occur and the site would remain vacant. There would be no noise associated with the construction and operation of the proposed project. The proposed project's potentially significant construction and operational noise impacts would be avoided under this alternative and implementation of Mitigation Measures NOI-1 and NOI-2 would not be required. In addition, the proposed project's construction and operational less than significant vibration impacts would be avoided under this alternative. With implementation of the No Project Alternative, there would be no impact related to noise.

5.4.3 Comparison to Project Objectives

As discussed above, the No Project Alternative would avoid all of the less than significant impacts of the proposed project. However, the No Project Alternative would also not achieve any of the objectives of the proposed project. The No Project Alternative would not provide industrial warehousing consistent with the General Plan land use and zoning designation and that helps fulfil the unmet demands of businesses located in the City; provide a variety of new employment opportunities for the residents of Fresno and surrounding communities; develop new industrial businesses in proximity to major transportation infrastructure and similar type of businesses to minimize land use conflicts with surrounding existing uses; or promote sustainable development and operations.

5.5 REDUCED PROJECT ALTERNATIVE

5.5.1 Reduced Project Alternative Description

The Reduced Project Alternative is being considered by the Project Applicant and would involve reducing the size of the proposed project by reducing Building 1 by 217,856 square feet to 250,956 square feet, as shown in Figure 5-1. The Reduced Project Alternative would reduce the total project square footage from 901,438 square feet to 683,582 square feet. All of the other improvements would be the same as the proposed project, including site access and infrastructure improvements.

5.5.2 Analysis of the Reduced Project Alternative

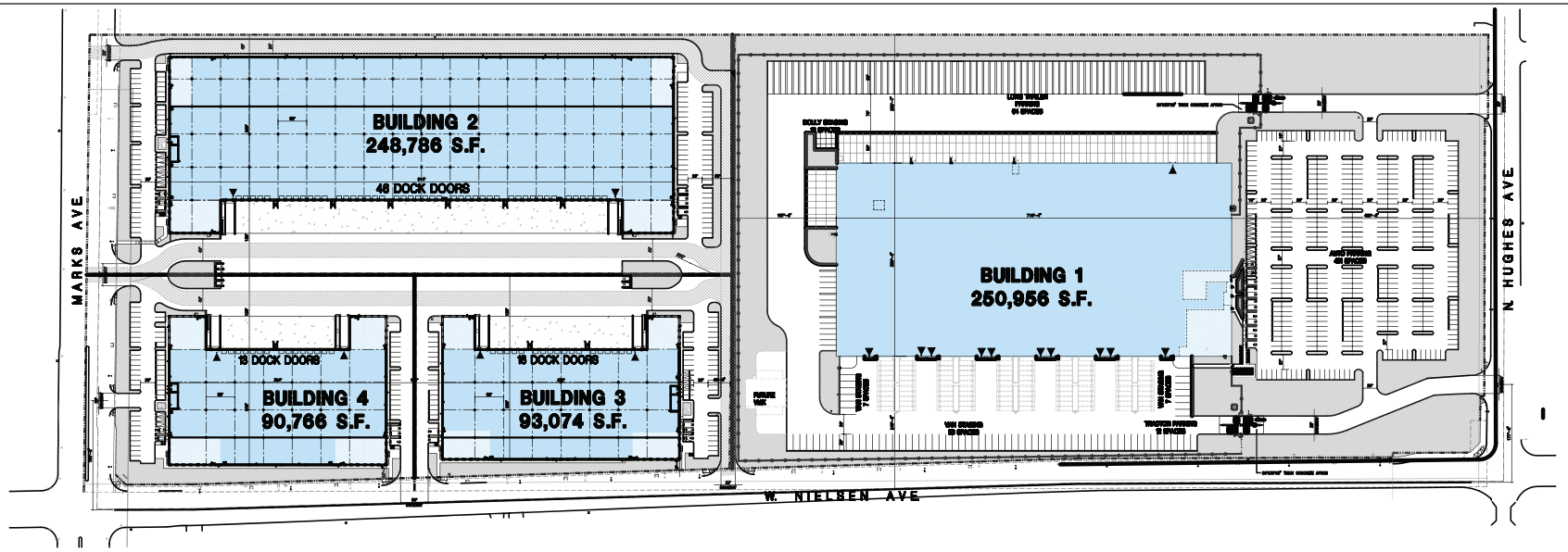
The potential impacts associated with the Reduced Project Alternative are described below.

5.5.2.1 Aesthetics

Similar to the proposed project, the Reduced Project Alternative would change the visual characteristics of the project site by developing the site with four heavy industrial buildings, consistent with the General Plan and zoning designation on the project site, and would result in less-than-significant impact related to a substantial adverse effect on a scenic vista and would not conflict with any applicable zoning or other regulations governing scenic quality. In addition, the project site is not located near a designated State Scenic Highway and there would be no impact with the Reduced Project Alternative. The Reduced Project Alternative would also have the potential to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area; therefore, implementation of Mitigation Measures AES-1 through AES-4 would be required. All other aesthetic impacts would be reduced compared to those of the proposed project and would be less than significant.

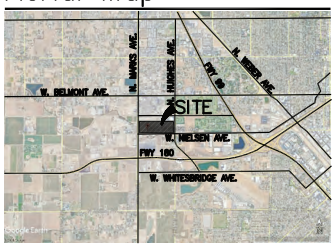
5.5.2.2 Air Quality

Similar to the proposed project, the Reduced Project Alternative would involve construction and operational activities on the project site. However, due to the smaller building size under this alternative, this alternative would result in reduced construction and operational emissions, including those due to vehicle and truck trips, compared to those under the proposed project. Therefore, this alternative would further reduce the project's less than significant operational air quality impact. In addition, the Reduced Project Alternative would still result in exposure of surrounding residents to toxic air contaminants during project construction and operation. As the building space to be constructed under this alternative would be less than the proposed project, this alternative would result in reduced toxic air contaminant emissions. However, the reduction in toxic air contaminant emissions would not be enough to avoid a significant impact and, similar to the proposed project, construction and operational activity associated with this alternative would still result in a health risk impact to off-site receptors. Thus, this alternative would still require the implementation of the same mitigation measures, Mitigation Measures AIR-2 and AIR-3 to reduce the impact to less than significant. All other air quality impacts would be reduced compared to those of the proposed project and would be less than significant.



Note: This is a conceptual plan. It is based on preliminary information which is not fully verified and may be incomplete. It is meant as a comparative aid in examining alternate development strategies and any quantities indicated are subject to revision as more reliable information becomes available.

Aerial Map



Tabulation

	BLDG. 1	BLDG. 2	BLDG. 3	BLDG. 4	TOTAL
SITE AREA					
Gross Site					
In sq. ft					2,091,968
In acres					48.03
Net Site					
In sq. ft	1,059,188	484,580	206,430	204,969	1,957,127
In acres	24.32	11.12	4.78	4.71	44.93
BUILDING AREA					
Office	10,675	15,000	10,000	10,000	45,675 sq. ft
Warehouse	240,081	233,786	83,066	80,766	637,699 sq. ft
TOTAL	250,956	248,786	93,066	90,766	683,374 sq. ft
MAXIMUM FLOOR AREA RATIO					
Allowed	1.5	1.5	1.5	1.5	1.5
Provided	0.24	0.51	0.45	0.44	0.35
AUTO PARKING REQUIRED					
Office: 1/300 s.f.	37	50	34	34	155 stalls
Whse: 1st 10K @ 1/2,000s.f.	5	5	5	5	20 stalls
over 10K @ 1/5,000 s.f.	47	45	15	15	122 stalls
TOTAL	89	100	54	54	297 stalls
AUTO PARKING PROVIDED					
Standard (9' x 18')	375	78	43	50	660 stalls
Accessible standard (9' x 18')	8	4	1	1	6 stalls
Accessible Van (12' x 18')	2	1	2	2	5 stalls
Accessible standard EV (9' x 18')	1	1	1	1	3 stalls
Accessible Van EV (12' x 18')	1	1	1	1	3 stalls
Clean Air / Vanpool (12% min parking)	55	13	8	9	30 stalls
EV Charging (10% min parking)	9	8	4	4	16 stalls
TOTAL	451	106	60	68	726 stalls
TRAILER PARKING PROVIDED					
Trailer	69	0	0	0	69 stalls
DOLLIES PARKING PROVIDED					
Dollies	12	0	0	0	12 stalls
TRACTORS PARKING PROVIDED					
Tractors	12	0	0	0	12 stalls
VANS PARKING PROVIDED					
Vans	64	0	0	0	64 stalls
BICYCLE RACK REQUIRED					
Short Term (4 + 5% of tota stalls)	27	10	7	8	
Long Term (1 + 5% of total stalls)	24	7	4	5	
BICYCLE RACK PROVIDED					
Short Term (4 + 5% of tota stalls)	28	10	8	8	
Long Term (1 + 5% of total stalls)	24	12	8	8	
MAXIMUM BUILDING HEIGHT ALLOWED					
Allowed	60'-0"	60'-0"	60'-0"	60'-0"	
Provided	48'-0"	43'-0"	41'-0"	41'-0"	
ZONING ORDINANCE FOR CEY					
Zoning Designation - Heavy Industrial (IH)					
SETBACKS					
Front - 15'					
Side / Rear - none					

Legend

- POTENTIAL OFFICE
- WAREHOUSE
- DRIVE THRU DOOR

LSA

FIGURE 5-1

N

0 120 240

FEET

SOURCE: HPA Architecture, July 2022

I:\SNN2102\G\Reduced Project Alternative.ai (1/27/2023)

2740 West Nielsen Office/Warehouse Project

Reduced Project Alternative

This page intentionally left blank

5.5.2.3 Biological Resources

Similar to the proposed project, the Reduced Project Alternative would require construction and grading activities on the project site that would have the potential to result in potentially significant impacts to nesting birds. Reduced development from this alternative could potentially reduce the development footprint on-site and allow for avoidance of trees that could be occupied by nesting birds. However, implementation of Mitigation Measure BIO-1 would still be required. In addition, construction activities associated with the Reduced Project Alternative would have a similar less-than-significant impact related to the movement of any native resident or migratory fish or wildlife species. Like the proposed project, this alternative would not affect a riparian habitat, federally protected wetlands, or conflict with an adopted habitat conservation plan.

5.5.2.4 Cultural and Tribal Resources

Similar to the proposed project, the Reduced Project Alternative would also have the potential to disturb previously unknown archaeological resources, human remains, and tribal cultural resources and result in significant impacts. As such, Mitigation Measures CUL-1 and CUL-2 identified for the proposed project would also be required for this alternative to reduce the impacts to less than significant. The same less than significant impacts associated with historic resources would also occur under this alternative.

5.5.2.5 Hazards and Hazardous Materials

Under the Reduced Project Alternative, construction or operational activities would occur on the project site; therefore, the Reduced Project Alternative would have similar less than significant impacts related to the potential to expose the public or environment to hazardous building materials or emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. In addition, the Reduced Project Alternative would have a similar less-than-significant impact related to the potential to conflict with an airport land use plan, impair or interfere with emergency response or evaluation, and would not expose people or structures to wildfires. In addition, under the Reduced Project Alternative, soil disturbance activities would occur; therefore, implementation of Mitigation Measure HAZ-1 would be required. Thus, impacts related to hazards and hazardous materials would be comparable to the proposed project and would be less than significant.

5.5.2.6 Noise

Construction activities under this alternative would involve the use of generally the same types of construction equipment and vehicles as the proposed project, and construction activities would occur at the same distances from the nearest receptors as under the proposed project. As a result, the daily construction noise levels generated under this alternative would be comparable to that generated by the construction of the proposed project, and this alternative would also result in a potentially significant construction noise impact at the nearby sensitive receptors. As such, Mitigation Measure NOI-1 would be required. However, because the total project size would be smaller, the duration of construction would be reduced by a small number of months, and the duration of exposure to noise impacts would be slightly shorter. Due to the reduced building size under this alternative, this alternative would result in fewer vehicle trips than the proposed project and reduced traffic related noise impacts. As with the proposed project, the operational noise

impact from vehicle trips under this alternative would be less than significant and no mitigation would be required. However, loading dock activities would still occur with this alternative; therefore, Mitigation Measure NOI-2 would be required. In addition, as with the proposed project, construction and operational vibration impacts would be less than significant under this alternative.

5.5.3 Comparison to Project Objectives

As discussed above, the Reduced Project Alternative would reduce the overall size of the project by reducing the square footage of project components. The Reduced Project Alternative would provide industrial warehousing consistent with the General Plan land use and zoning designation and that helps fulfil the unmet demands of businesses located in the City; provide a variety of new employment opportunities for the residents of Fresno and surrounding communities; provide new industrial development that is attractive and minimizes conflicts with the surrounding existing uses; or promote sustainable development and operations. However, due to the reduced nature of the project under this alternative, demands for industrial businesses in the City might not be completely fulfilled. Additionally, this alternative would result in reduced employment opportunities compared to the proposed project.

5.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Based on the alternatives analysis, of the alternatives analyzed, the No Project Alternative would have the fewest impacts and would be the environmentally superior alternative. Under CEQA, if the No Project Alternative is the environmentally superior alternative, the EIR must identify an environmentally superior alternative from among the other alternatives (*CEQA Guidelines* Section 15126.6(e)(2)). Table 5.A provides, in summary format, a comparison of the level of impacts for each alternative to the proposed project.

The Reduced Project Alternative would have less than significant impacts in most resource topics that would be comparable to the proposed project. The alternative would have potentially reduced construction-phase air quality and noise impacts, and reduced operational-phase air quality and noise impacts due its smaller size, and lesser aesthetic impacts due to reduced development in the site. Therefore, the Reduced Project Alternative is considered the environmentally superior alternative.

Table 5.A: Comparison of the Environmental Impacts of the Proposed Project to the Project Alternatives

Environmental Topic	Proposed Project Level of Impact After Mitigation	Alternative 1: No Project Alternative	Alternative 2: Reduced Project Alternative
Aesthetics	Less than Significant with Mitigation	Fewer	Similar
Air Quality	Less than Significant with Mitigation	Fewer	Fewer
Biological Resources	Less than Significant with Mitigation	Fewer	Similar
Cultural Resources and Tribal Cultural Resources	Less than Significant with Mitigation	Fewer	Similar

Table 5.A: Comparison of the Environmental Impacts of the Proposed Project to the Project Alternatives

Environmental Topic	Proposed Project Level of Impact After Mitigation	Alternative 1: No Project Alternative	Alternative 2: Reduced Project Alternative
Energy	Less than Significant	Fewer	Fewer
Greenhouse Gas Emissions	Less than Significant	Fewer	Fewer
Hazards and Hazardous Materials	Less than Significant with Mitigation	Fewer	Similar
Hydrology and Water Quality	Less than Significant	Fewer	Fewer
Noise	Less than Significant with Mitigation	Fewer	Fewer
Transportation	Less than Significant	Fewer	Fewer
Utilities and Service Systems	Less than Significant	Fewer	Fewer
Attainment of Project Objectives	Meets all of the Project Objectives	Meets none of the Project Objectives	Meets the Project Objectives but not to the same degree as the proposed project

Source: LSA (January 2023).
Legend:
Greater = Greater impacts than the proposed project
Fewer = Fewer impacts than the proposed project
Similar = Similar impacts as the proposed project

This page intentionally left blank

PUBLIC REVIEW DRAFT

ENVIRONMENTAL IMPACT REPORT

TECHNICAL APPENDICES – VOLUME I – APPENDICES A – I

2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

FRESNO, CALIFORNIA

LSA

February 2023

This page intentionally left blank

TECHNICAL APPENDICES
TABLE OF CONTENTS

VOLUME I:

A: NOP COMMENTS

B: INITIAL STUDY

C: CALEEMOD OUTPUT SHEETS

D: HEALTH RISK ASSESSMENT

E: BIOLOGICAL EVALUATION

F: PHASE I CULTURAL RESOURCES SURVEY

G: ENERGY CALCULATIONS

H: GREENHOUSE GAS REDUCTION PLAN UPDATE CONSISTENCY CHECKLIST

I: PHASE I ENVIRONMENTAL SITE ASSESSMENT

This page intentionally left blank

APPENDIX A

NOP COMMENTS

This page intentionally left blank

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE 2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

Date: September 9, 2022

To: State Clearinghouse, Responsible Agencies, Interested Parties and Organizations

Subject: Notice of Preparation of an Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project in Fresno, CA

Lead Agency:
City of Fresno
Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8277
Planning@fresno.gov

Contact:
Steven Martinez
Planner
City of Fresno – Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8047
Steven.Martinez@fresno.go

Comment Period: September 9, 2022 to October 10, 2022

Si necesita información en Español, comuníquese con Juan Lara al teléfono (559) 621-8075 o por correo electrónico a Juan.Lara@fresno.gov.

Notice is Hereby Given: The City of Fresno (City) is the Lead Agency on the below-described 2740 West Nielsen Avenue Office/Warehouse Project (proposed project) and has prepared a Notice of Preparation (NOP) of an Environmental Impact Report (EIR), pursuant to the California Environmental Quality Act (CEQA). The NOP is intended to solicit the views of the public, interested parties, and/or agencies as to the scope and content of the environmental information which is relevant to you or your agency's statutory responsibilities in connection with the proposed project. Specifically, the City is requesting that commenters identify environmental topics (and/or special studies) that they believe need to be explored in the forthcoming EIR, and to identify other relevant environmental issues related to the scope and content of the forthcoming EIR.

Project Title: 2740 West Nielsen Avenue Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map No. P21-05930) (State Clearinghouse No. 2022050265)

Project Location: The proposed project is located on approximately 48.03 acres at 2740 West Nielsen Avenue: Northeast of intersection of North Marks Avenue and West Nielsen Avenue in

Fresno, California (Assessor's Parcel Numbers [APNs]: 458-020-71 and 458-020-72). The project site is bounded to the north by vacant, undeveloped land, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue. The attached Figure 1 shows the regional and local context of the project location.

Project Description: The proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. Figure 2 shows the project site plan.

A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining 188 spaces would be dedicated for trailers and would be located along the eastern and western edges of the project site and would be located behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.

Areas of Potential Environmental Effects: The EIR will evaluate the potential environmental impacts related to the proposed project, after having first established the environmental setting, or baseline, for the environmental analysis. The significance of potential impacts, cumulative impacts, and appropriate mitigation measures associated with the proposed project will be thoroughly discussed in the EIR. The EIR will be comprehensive and will evaluate each of the environmental issue topics required by CEQA. The individual environmental topics include:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems

In addition, in accordance with Section 15126.6 of the CEQA Guidelines, the EIR will assess a range of reasonable alternatives to the project. The range of alternatives to be addressed will include alternatives that are specifically required by CEQA (e.g., the No Project Alternative), as well as other alternatives (intended to reduce or eliminate potentially significant impacts) as identified through the coordinated consultation and planning process.

Document Availability and Public Review Timeline: Due to the time limits mandated by State law, your response to the NOP must be sent no later than 30 days after publication of this notice. The review period for the NOP will be from September 9, 2022, to October 10, 2022. All documents related to this project are available for public review during normal business

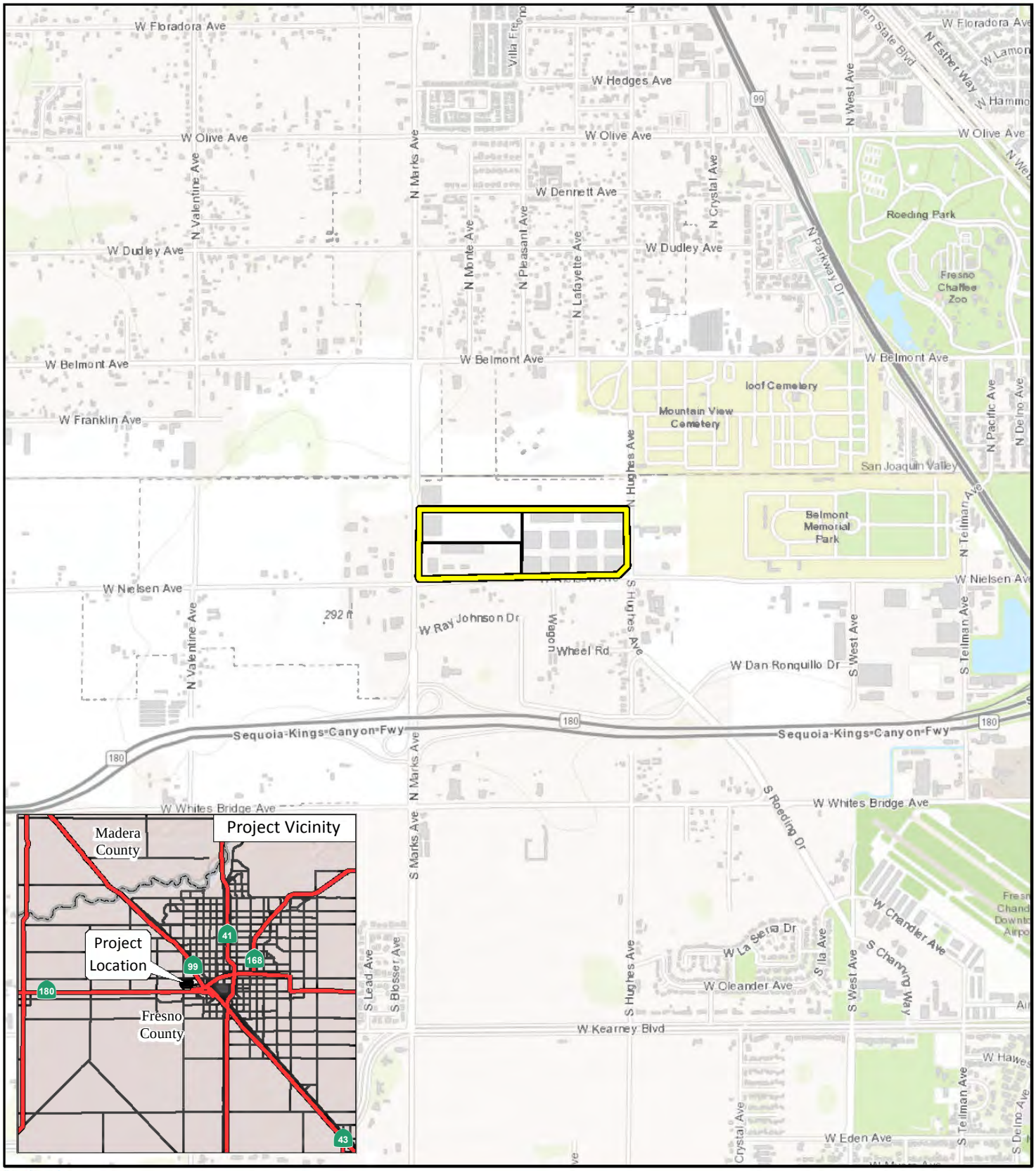
hours (Monday - Friday, 8:00 A.M. – 5:00 P.M.) by appointment only, at the Planning and Development Department at 2600 Fresno Street, Room 3043, Fresno, CA 93721. Electronic copies may also be requested for review. Please contact Steven Martinez via e-mail or by phone to request electronic copies or to schedule an appointment to view documents. Documents related to this project can also be accessed on the City's website at: https://www.fresno.gov/darm/planning-development/plans-projects-under-review/.

Public Scoping Meeting: The CEQA process encourages comments and questions from the public throughout the planning process. Pursuant to Section 15083 of the CEQA Guidelines, a Public Scoping Meeting will be held to solicit public comments on the scope and content of the EIR**.** A public scoping meeting for this project will be conducted virtually at 6:00 PM on Thursday, September 22, 2022. The webinar information is provided below:

Via Zoom online meeting at: https://bit.ly/2740WestNielsen
Or by Phone at: +1 669 444 9171 US
Webinar ID: 868 6600 9238
Passcode: 154493

Submitting Comments: Comments and suggestions as to the appropriate scope of analysis of the EIR are encouraged from all interested parties. If you wish to provide comments or ask questions about the EIR, you may do so by written letter sent via post mail to the address below or via written email to PublicCommentsPlanning@fresno.gov (CC Steven.Martinez@fresno.gov). Comments must include the commenter's full name, address, phone number, and/or email so you may be contacted for clarification, if necessary. Please submit comments to Steven Martinez no later than 5:00 PM on October 10, 2022.

Steven Martinez
Planner
City of Fresno – Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8047
Steven.Martinez@fresno.gov



LSA

LEGEND

Project Location

Proposed Parcels

0 1000 2000

FEET

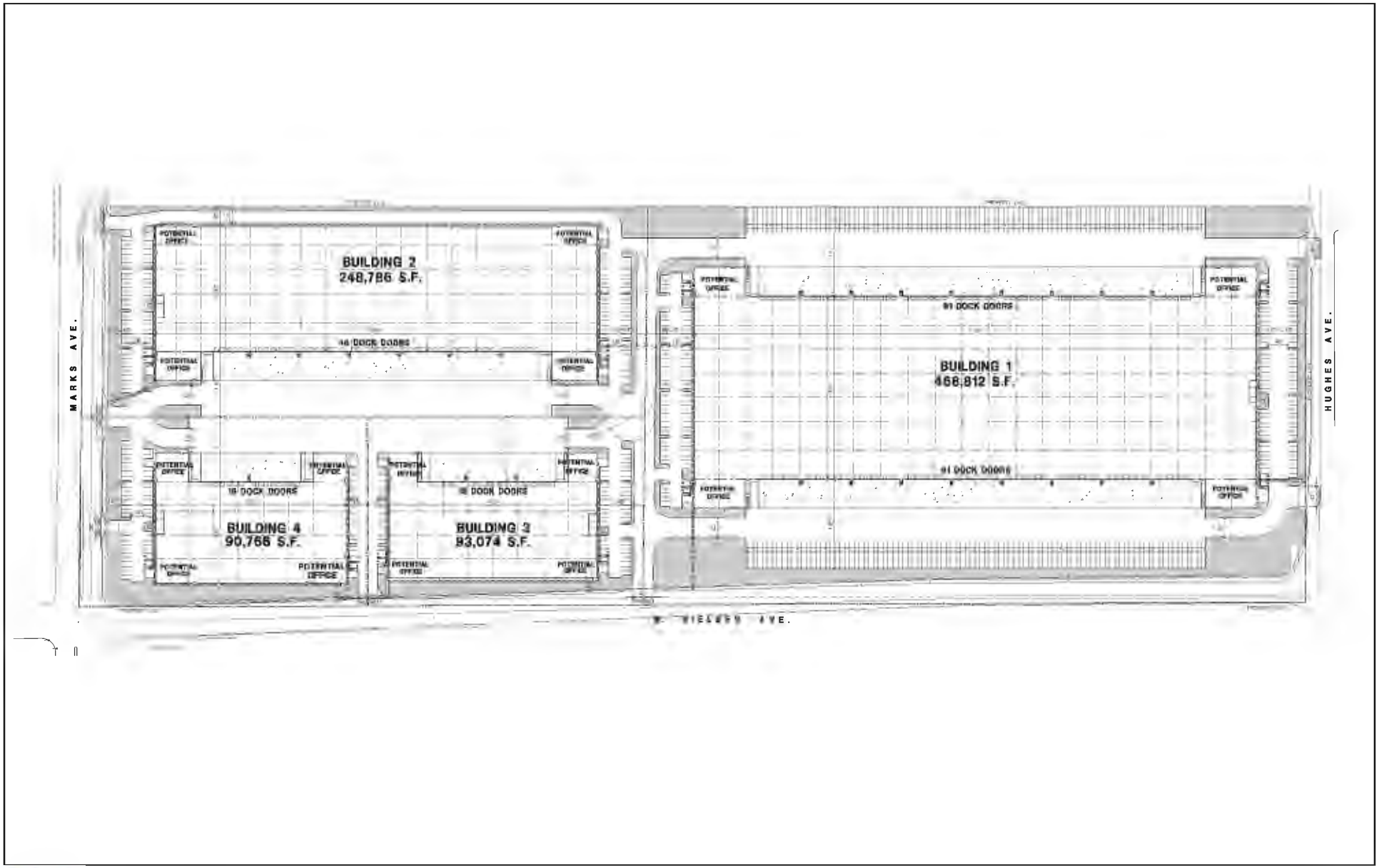
FIGURE 1

2740 West Nielsen Avenue Office/Warehouse Project

Regional Project Location

SOURCE: Esri Topographic Map (2021)

I:\SNN2102\GIS\MXD\Project_Location.mxd (6/7/2021)



LSA

0 120 240

FEET

N

FIGURE 2

2740 West Nielsen Office/Warehouse Project
Site Plan

SOURCE: HPA Architecture, Inc., 2021

FreP:\SNN2102 2740 W. Nielsen\PRODUCTS\Graphics\Figure 3.ai (10/5/2021)

From: Brenda Veenendaal
To: Steven Martinez
Cc: Ralph Kachadourian
Subject: RE: Scannell Office / Warehouse Project NOP
Date: Friday, September 9, 2022 4:17:14 PM

External Email: Use caution with links and attachments

Steven and Ralph,

I have briefly reviewed the 2740 West Nielsen Avenue Office/Warehouse Project NOP, against concerns with the project's Airport Land Use Plan's consistency. This is just a head's up on what could be at issue, but hopefully is not. Part of the project appears to sit within Airport Land Use Zone 4- Outer approach, and the rest sits in Zone 6 – Traffic Pattern Zone. Zone 4 allows one non-residential dwelling until per 2 acres, and a maximum of 150 persons per acre. With a project area of 48.03 acres I don't suppose that should be an issue, but it should not include any hazardous user such as aboveground bulk fuel storage or gas stations within this zone. Zone 4 also requires a 20% open space requirement to accommodate emergency aircraft landings. Zone 6 prohibits very high intensity uses. Please keep that in mind as well.

New structures are prohibited on existing terrain that penetrates 14 CFR Part 77 surfaces. Developers proposing structures that could penetrate 14 CFR Part 77 surfaces must file Form 7460 with the FAA to determine if 7460 review is required, consult FAA's Notice Criteria Tool: https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm
Again, just a head's up on what the ALUC would be looking at should the project need a finding of consistency.

Brenda Veenendaal
Administrative Services Manager
Public Information and Ridesharing Programs
Fresno Council of Governments
2035 Tulare Street, Suite 201
Fresno, CA 93721
559.233.4148, ext. 219
brendav@fresnocog.org

Fresno Council of Governments

From: Steven Martinez <Steven.Martinez@fresno.gov>
Sent: Friday, September 9, 2022 2:10 PM

To: Steven Martinez <Steven.Martinez@fresno.gov>
Cc: Ralph Kachadourian <Ralph.Kachadourian@fresno.gov>
Subject: Scannell Office / Warehouse Project NOP

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Greetings All,

Please see attached the Notice of Preparation of an Environmental Impact Report (with Scoping Meeting information) for the 2740 West Nielsen Avenue Scannell Office/Warehouse Project.

Thank you.
Steven Martinez - Planner
City of Fresno
Planning and Development Department
559 - 621 - 8047
Steven.Martinez@fresno.gov

STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

PARLIAMENTARIAN
Russell Attebery
Karuk

SECRETARY
Sara Dutschke
Miwok

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Buffy McQuillen
Yokayo Pomo, Yuki, Nomlaki

COMMISSIONER
Wayne Nelson
Luiseño

COMMISSIONER
Stanley Rodriguez
Kumeyaay

EXECUTIVE SECRETARY
Raymond C. Hitchcock
Miwok/Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

September 9, 2022

Steven Martinez
City of Fresno
2600 Fresno Street, Room 3043
Fresno, CA 93721

Re: 2022050265, Development Permit Application No. P21-02699 & Tentative Parcel Map No. P21-05930 Project, Fresno County

Dear Mr. Martinez:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (https://ohp.parks.ca.gov/?page_id=30331) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Cameron.Vela@nahc.ca.gov.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

cc: State Clearinghouse

2907 S. Maple Avenue
Fresno, California 93725-2208
Telephone: (559) 233-7161
Fax: (559) 233-8227

CONVEYANCE. COMMITMENT. CUSTOMER SERVICE.

September 28, 2022

Steven Martinez, Planner
Development and Resource Management Department
City of Fresno
2600 Fresno Street, Room 3065
Fresno, CA 93721

RE: Notice of Preparation of a Program Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project

Dear Mr. Martinez:

The Fresno Irrigation District (FID) has reviewed the Notice of Preparation of a Program Environmental Impact Report, an Update to the Master Environmental Impact Report for the City of Fresno General Plan (Project), APNs: 458-020-71, 72. We appreciate the opportunity to review and comment on the subject documents for the proposed project. FID's comments are as follows:

1. FID previously reviewed and commented on the subject property on November 22, 2021, as Planning Application No. P21-02699 and on March 3, 2022, as Tentative Parcel Map Application No. P21-05930. Those comments and conditions still apply copies have been attached for your reference.

Thank you for making available to us the Notice of Preparation of a Program Environmental Impact Report for our review and allowing us the opportunity to provide comments. We appreciate the opportunity to review and comment on the subject documents for this project. If you have any questions, please feel free to contact me Chris Lundeen at (559) 233-7161 extension 7410 or clundeen@fresnoirrigation.com.

Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachments

G:\Agencies\FresnoCity\EIR\Scannell Office - Warehouse Project NOP\Scannell Office _ Warehouse Project NOP FID Comments.doc

BOARD OF DIRECTORS
President RYAN JACOBSEN Vice-President JERRY PRIETO, JR. CHRISTOPHER WOOLF
GEORGE PORTER GREGORY BEBERIAN General Manager BILL STRETCH

2907 S. Maple Avenue
Fresno, California 93725-2208
Telephone: (559) 233-7161
Fax: (559) 233-8227

CONVEYANCE. COMMITMENT. CUSTOMER SERVICE.

November 22, 2021

Erik Young
Department and Resource Management
City of Fresno
2600 Fresno Street, Third Floor
Fresno, CA 93721

RE: Planning Application No. P21-02699
N/E Marks and Nielsen avenues

Dear Mr. Young:

The Fresno Irrigation District (FID) has reviewed the Planning Application No. P21-02699 for which the applicant proposes the construction of four (4) Industrial Warehouse Buildings, APN's: 458-020-71 and 72. FID has the following comments:

1. FID does not own, operate, or maintain any facilities located on the subject property, as shown on the attached FID exhibit map.

2. For informational purposes, FID's active Houghton No. 78 runs westerly along the north side of Nielsen Avenue, crosses Nielsen Avenue approximately 2,470 feet east of the subject property, continues west along the south side of Nielsen Avenue, crosses Hughes Avenue approximately 1,280 feet east of the subject property, crossing Marks Avenue approximately 300 feet south of the subject property, crossing Nielsen Avenue approximately 190 feet west of subject property and continues northwest along the west side of Marks Avenue as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Nielsen Avenue, Hughes Avenue, Marks Avenue, or in the vicinity of this facility, FID requires it review and approve all plans.

3. For informational purposes, FID's active Cole – S. Br. No. 40 runs southwesterly, crosses Marks Avenue approximately 300 feet north of the subject property and continues south along the west side of Marks Avenue, as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Marks Avenue or in the vicinity of this facility, FID requires it review and approve all plans.

BOARD OF DIRECTORS President RYAN JACOBSEN Vice-President JERRY PRIETO, JR. CHRISTOPHER WOOLF
GEORGE PORTER GREGORY BEBERIAN General Manager BILL STRETCH

4. For informational purposes, FID's active Teilman No. 79 runs southerly along the west side of Marks Avenue and crosses Whitesbridge Avenue approximately 2,560 feet south of the subject property, as shown on the attached FID exhibit map.

Thank you for submitting this for our review. We appreciate the opportunity to review and comment on the subject documents for the proposed project. If you have any questions, please feel free to contact Jeremy Landrith at (559) 233-7161 extension 7407 or jlandrith@fresnoirrigation.com.

Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachment

BELMONT
FID's Cole S. Br. No. 40
Cole - S. Br. No. 40
HUGHES
Subject Property
APN's: 458-020-71 & 72
MARKS
NIELSEN
Houghton No. 78
Ball No. 540 (Pvt.)
FID's Houghton No. 78
Mortensen No. 80
Teilman No. 79
FID's Teilman No. 79
ROEDING
HUGHES
HUGHES
FRESNO IRRIGATION DISTRICT
Legend
FID Canal
Private Canal
Abandoned Canal
FID Pipeline
Private Pipeline
Abandoned Pipeline
Stream Group
Other-Creek\River
Other-Pipeline
FID Boundary
Railroad
Streets & Hwys
Parcel
FMFCD Acquired Basins
FMFCD Proposed Basins
This map was produced by the Fresno Irrigation District and is provided for reference and informational purposes only and is not intended to show map scale accuracy or all inclusive map features, nor for legal purposes. FID makes no statements regarding the accuracy of this map as the features shown are in their approximate location. Please contact the FID Engineering Dept. at (559) 233-7161 for further information on FID facilities.
Spatial Reference
Name: NAD 1983 StatePlane California IV FIPS 0404
Path: G:\Fidgis\20211115 FID Master.mxd
0
340
680
Feet
1 inch = 566.97 feet

Jeremy Landrith

From: do_not_reply@fresno.gov
Sent: Friday, November 12, 2021 4:00 AM
To: Engineering Review
Cc: Steven.Martinez@fresno.gov
Subject: Review Due Soon - P21-02699

A Review Task assigned to you and associated to Planning Application P21-02699 is due soon.
Please complete your review and update your response. You can view details of the record online.

Comment:
Address: 2740 W NIELSEN AVE, FRESNO, CA 93706
Description: Development Permit Application No. P21-02699 was filed by Dan Zoldak of Lars Anderson & Associates, on behalf of Scannell Properties, and pertains to the 22.24 acres identified by APN 458-020-71 located at 2740 W. Nielsen Ave. and the 26.15 acres identified by APN 458-020-72. The applicant proposes to construct a Class A Industrial Warehouse and Business Park consisting of (4) buildings. Building 1 - 468,760 sq. ft., Building 2 - 248,820 sq. ft., Building 3 - 96,250 sq. ft., and Building 4 - 93,950 sq. ft. The parcels are zoned IH. Related Application: DRC P20-04688.

Due 11/17

A notice was added to this record on 2021-05-14.
Condition: Severity: Notice
Total conditions: 1 (Notice: 1)

View notice

Menu Help

()

P21-02699

()

File Date: 05/14/2021

Application Status: On Hold

Application Type: Development Permit

Application Detail: Detail

Description of Work: Development Permit Application No. P21-02699 was filed by Dan Zoldak of Lars Anderson & A 020-72. The applicant proposes to construct a Class A Industrial Warehouse and Business Pa Application: DRC P20-04688.

Application Name: Scannell Warehouse & Distribution Park

Address: 2740 W NIELSEN AVE, FRESNO, CA 93706

Owner Name: DI NIELSEN MARKS LLC

Owner Address: 4790 N CORNELIA, FRESNO, CA 93722

Parcel No: 45802071

Contact Info: Name	Organization Name	Contact Type	Status
Daniel J Zoldak	Lars Andersen &...	Applicant	Active
Jake Kurth	Scannell Proper...	Developer	Active

Licensed Professionals Info: Primary	License Number	License Type	Name

Workflow Status: Task	Assigned To	Status	Status D:
Application	Erik Young	Accept	10/26/20:
Pre-review- TIS	Jill Gormley	Application ...	05/25/20:
Pre-review- Traffic	Louise Gilio	Application ...	05/25/20:
Plan Distribution		Assign Revie...	10/28/20:
Public Utilities Commi...			
County PW and Planning	County Planning		
Caltrans			
Traffic Planning	Louise Gilio	Add'l Info R...	11/10/20:
Public Works Engineering	Hilary Kimber	Reviewed wit...	11/05/20:
DPU Water Division	Robert Diaz	Review Complete	11/15/20:
DPU Planning and Engin...	Kevin Gray		
DPU Solid Waste Manage...	Kevin Gray		
Fire Review	Scott T Recchio	Revisions Re...	11/15/20:
Police Review		No Comment	10/28/20:
Fresno County Environm...	Public Health	Reviewed wit...	11/16/20:
Building and Safety Se...	Christian Mendez		
Airports	Airports	Review Complete	11/15/20:
Fresno Area Express	FAX		
Irrigation District	FID		

2907 S. Maple Avenue
Fresno, California 93725-2208
Telephone: (559) 233-7161
Fax: (559) 233-8227

CONVEYANCE. COMMITMENT. CUSTOMER SERVICE.

March 3, 2022

Juan Lara
Department and Resource Management
City of Fresno
2600 Fresno Street, Third Floor
Fresno, CA 93721

RE: Tentative Parcel Map Application No. P21-05930
N/E Nielsen and Marks avenues

Dear Mr. Lara:

The Fresno Irrigation District (FID) has reviewed the Tentative Parcel Map No. 2022-01, Planning Application P22-00102 for which the applicant proposes to subdivide a residential property into two lots, APN: 443-214-10. FID has the following comments:

1. FID previously reviewed and commented on the subject property on December 16, 2020, as Development Review Committee Application P20-04688 and on November 22, 2021, as Development Permit Application No. P21-02699. Those comments and conditions still apply and a copy has been attached for your review.

Thank you for submitting this for our review. We appreciate the opportunity to review and comment on the subject documents for the proposed project. If you have any questions, please feel free to contact Jeremy Landrith at (559) 233-7161 extension 7407 or jlandrith@fresnoirrigation.com.

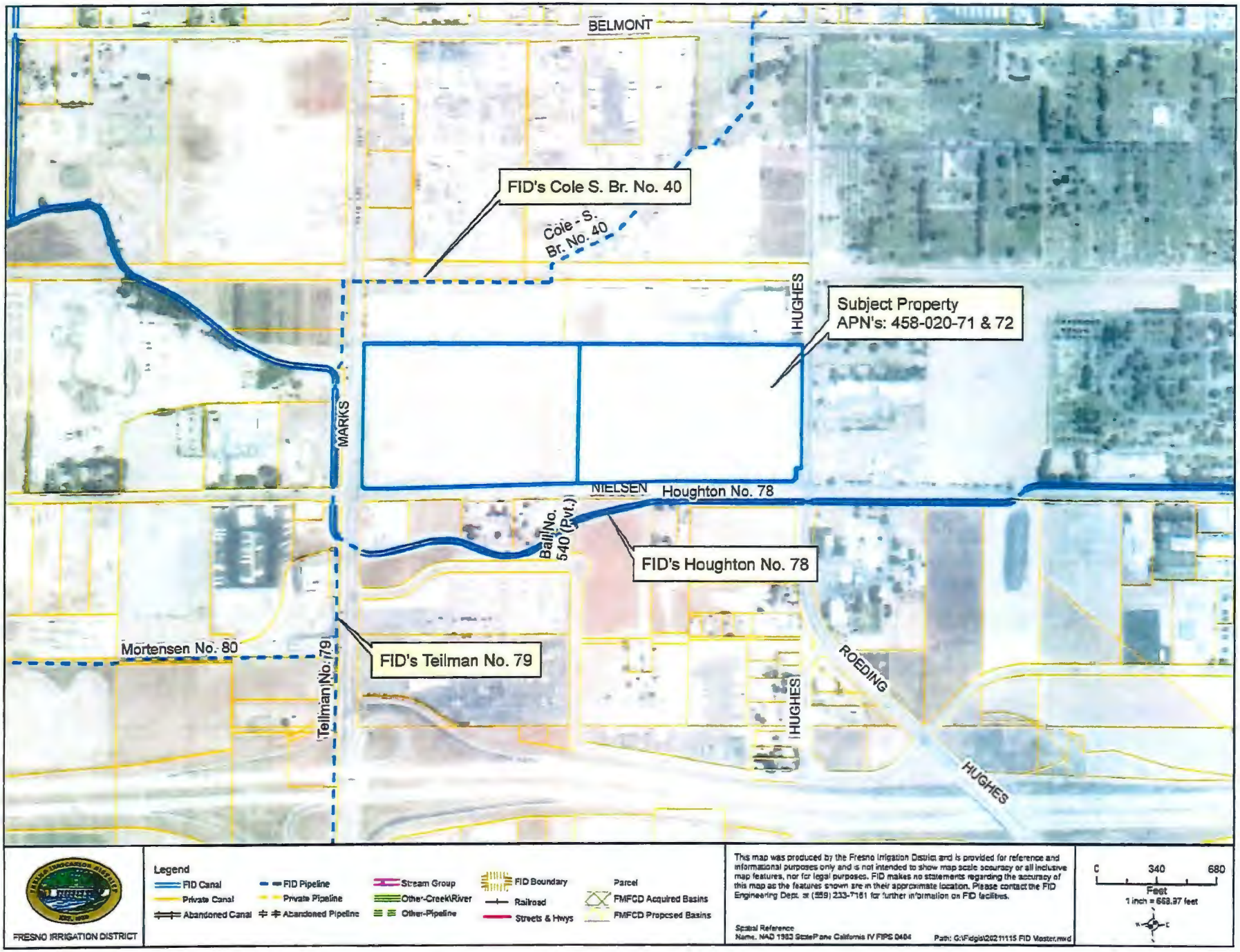
Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachment

G:\Agencies\FresnoCity\Parcel Map\P21-05930\P21-05930 FID Comment.doc

BOARD OF DIRECTORS President RYAN JACOBSEN Vice-President JERRY PRIETO, JR. CHRISTOPHER WOOLF
GEORGE PORTER GREGORY BEBERIAN General Manager BILL STRETCH


BELMONT
FID's Cole S. Br. No. 40
Cole - S. Br. No. 40
HUGHES
Subject Property
APN's: 458-020-71 & 72
MARKS
NIELSEN
Houghton No. 78
Bail No. 540 (Pvt.)
FID's Houghton No. 78
Mortensen No. 80
Teilman No. 79
FID's Teilman No. 79
ROEDING
HUGHES
HUGHES
FRESNO IRRIGATION DISTRICT
Legend
FID Canal
Private Canal
Abandoned Canal
FID Pipeline
Private Pipeline
Abandoned Pipeline
Stream Group
Other-Creek\River
Other-Pipeline
FID Boundary
Railroad
Streets & Hwys
Parcel
FMFCD Acquired Basins
FMFCD Proposed Basins
This map was produced by the Fresno Irrigation District and is provided for reference and informational purposes only and is not intended to show map scale accuracy or all inclusive map features, nor for legal purposes. FID makes no statements regarding the accuracy of this map as the features shown are in their approximate location. Please contact the FID Engineering Dept. at (559) 233-7161 for further information on FID facilities.
Spatial Reference
Name: NAD 1983 StatePlane California IV FIPS 0404
Path: G:\Fidgis\20211115 FID Master.mxd
0
340
680
Feet
1 inch = 668.97 feet

Jeremy Landrith

From:	do_not_reply@fresno.gov
Sent:	Thursday, February 10, 2022 1:10 PM
To:	Engineering Review
Subject:	Planning Application P21-05930 - Task Assigned
Follow Up Flag:	Follow up
Flag Status:	Flagged

A task associated with Planning Application P21-05930 has been assigned for your review. You can review details online.

Application Description: Tentative Parcel Map No. P21-05930 was filed by Dan Zoldak of Lars Anderson & Associates, on behalf of Scannell Properties, and pertains to the 22.24 acres identified by APN 458-020-71 located at 2740 W. Nielsen Ave. and the 26.15 acres identified by APN 458-020-72. The applicant proposes to split the existing two parcels into four parcels. The parcels are zoned IH. Related Applications: DRC P20-04688 Development Permit P21-02699
Task Information: Irrigation District

Due 3/4

Accela Civic Platform > FRESNO

P21-05930	STATUS	LOCATION	CONTACT	WORKFLOW
Scannell TMAP Tentative Parce...	> In Review 03/01/2022 ...	> 2740 NIELS... FRESNO, CA...	> Daniel Zoldak	> 44 total Task ● 9 complete..

P21-05930 - Scannell TMAP

A notice was added to this record on 2021-11-08.
Condition: Severity: Notice
Total conditions: 1 (Notice: 1)

View notice

Menu Help

File Date: 11/08/2021

Application Status: In Review

Application Type: Tentative Map Parcel

Application Detail: Detail

Description of Work: Tentative Parcel Map No. P21-05930 was filed by Dan Zoldak of Lars Anderson & Associates, on behalf of Scannell Propertie: identified by APN 458-020-71 located at 2740 W. Nielsen Ave. and the 26.15 acres identified by APN 458-020-72. The applica parcels into four parcels. The parcels are zoned IH. Related Applications: DRC P20-04688 Development Permit P21-02699

Application Name: Scannell TMAP

Address: 2740 W NIELSEN AVE, FRESNO, CA 93706

Owner Name: DI NIELSEN MARKS LLC

Owner Address: 4790 N CORNELIA, FRESNO, CA 93722

Parcel No: 45802071

Contact Info:

Name	Organization Name	Contact Type	Status
Daniel J Zoldak	Lars Andersen &...	Applicant	Active
Daniel J Zoldak	Lars Andersen &...	Subdividor	Active
Paul Starn	Scannell Proper...	Business Owner	Active

Licensed Professionals Info:

Primary	License Number	License Type	Name	Business Name	Business License #

Workflow Status:

Task	Assigned To	Status	Status Date	Action By
Application		Accept	02/10/2022	Steven Martinez
Plan Distribution		Assign Revie...	02/10/2022	Steven Martinez
Public Utilities				

VESTING TENTATIVE PARCEL MAP NO. 2021-09

LEGAL DESCRIPTION:

The Land referred to herein below is situated in the City of Fresno, County of Fresno, State of California, and is described as follows:

PARCEL 1:

PARCEL C AS SHOWN ON LOT LINE ADJUSTMENT NO. 2013-06, AS EVIDENCED BY DOCUMENT RECORDED JUNE 11, 2013 AS INSTRUMENT NO. 2013-0082690 OF OFFICIAL RECORDS OF FRESNO COUNTY, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THAT PORTION OF VOLUNTARY PARCEL MERGER NO. 2013-03, AS DOCUMENT NO. 2013-0082689, OF OFFICIAL RECORDS OF FRESNO COUNTY, DESCRIBED AS FOLLOWS:

THAT PORTION OF LOTS 20 TO 29, INCLUSIVE, OF WEST FRESNO, IN THE CITY OF FRESNO, COUNTY OF FRESNO, STATE OF CALIFORNIA, ACCORDING TO THE MAP THEREOF RECORDED IN VOLUME 2 OF PLATS, PAGE 50, LYING
SOUTH OF A LINE THAT IS PARALLEL WITH AND 358.71 FEET SOUTH OF THE SOUTH LINE OF THAT CERTAIN STRIP OF LAND 100 FEET WIDE GRANTED TO THE SOUTHERN PACIFIC RAILROAD COMPANY BY DEED DATED MAY 13, 1982 RECORDED IN BOOK 145, PAGE 390 OF DEEDS, AND WEST OF A LINE THAT IS PARALLEL WITH AND 1169.00 FEET EAST OF THE WEST LINE OF SAID LOTS 24 AND 25.

EXCEPTING THEREFROM THAT PORTION THEREOF GRANTED TO FRESNO IRRIGATION DISTRICT BY AGREEMENT DATED OCTOBER 1, 1946 RECORDED FEBRUARY 14, 1947 IN BOOK 2494 PAGE 185 OF OFFICIAL RECORDS.

PARCEL 2:

PARCEL D AS SHOWN ON LOT LINE ADJUSTMENT NO. 2013-06, AS EVIDENCED BY DOCUMENT RECORDED JUNE 11, 2013 AS INSTRUMENT NO. 2013-0082690 OF OFFICIAL RECORDS OF FRESNO COUNTY, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THAT PORTION OF VOLUNTARY PARCEL MERGER NO. 2013-03, AS DOCUMENT NO. 2013-0082689 OF OFFICIAL RECORDS OF FRESNO COUNTY, AND LOTS 17 TO 19 OF WEST FRESNO, IN THE CITY OF FRESNO, COUNTY OF FRESNO, STATE OF CALIFORNIA, ACCORDING TO THE MAP THEREOF RECORDED IN VOLUME 2 OF PLATS, PAGE 50, FRESNO COUNTY RECORDS, DESCRIBED AS FOLLOWS:

THAT PORTION OF LOTS 17 TO 32, INCLUSIVE, OF SAID WEST FRESNO LYING SOUTH OF A LINE THAT IS PARALLEL WITH AND 358.71 FEET SOUTH OF THE SOUTH LINE OF THAT CERTAIN STRIP OF LAND 100 FEET WIDE GRANTED TO THE SOUTHERN PACIFIC RAILROAD COMPANY BY DEED DATED MAY 13, 1982 RECORDED IN BOOK 145 PAGE 390 OF DEEDS, AND EAST OF A LINE THAT IS PARALLEL WITH AND 1169.00 FEET EAST OF THE WEST LINE OF SAID LOTS 24
AND 25.

For conveyancing purposes only: APN 458-020-71 (Affects Parcel 1) 458-020-72 (Affects Parcel 2)

FLOOD ZONE INFORMATION:

This property lies in Zone "X" as shown on Federal Emergency Management Agency (FEMA) City of Fresno and Incorporated Areas, California, Map No. 06019C2135H Map Revised: February 18, 2009.

Flood Zone "X" is described as "Area with Minimal Flood Risk" and further described as "0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile."

APPLICANT/SUBDIVIDER:

Scannell Properties
294 Grove Lane East, Suite 140
Wayzata, MN 55391
(612) 280-4088

OWNER:

DI Nielsen Marks LLC
4790 N Cornelia Ave.
Fresno, CA 93706

LOCATION MAP (NTS)

VICINITY MAP
NOT TO SCALE

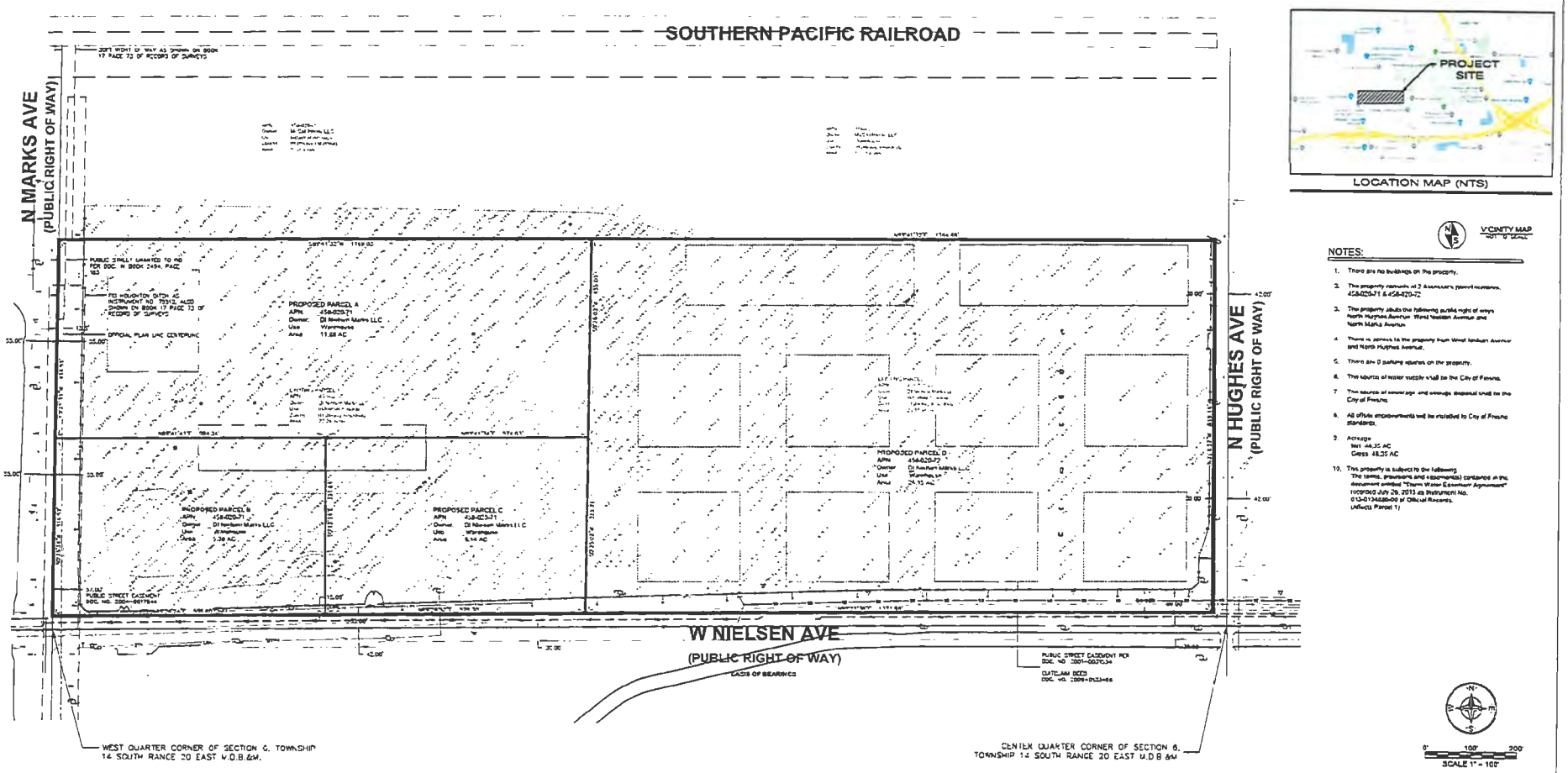
LEGEND

NOTES:

1. There are no buildings on the property.
2. The property consists of 2 Assessor's parcel numbers, 458-020-71 & 458-020-72
3. The property abuts the following public right of ways: North Hughes Avenue, West Nielson Avenue and North Marks Avenue
4. There is access to the property from West Neilson Avenue and North Hughes Avenue.
5. There are 0 parking spaces on the property.

LARS ANDERSEN & ASSOCIATES, INC.
CIVIL ENGINEERS - LAND SURVEYORS - PLANNERS
4094 WEST JACQUELYN AVENUE FRESNO CALIFORNIA 93722
TEL 559 276-2790 FAX 559 276-0850 WWW.LARSANDERSEN.COM
JOB NO. 20097.00 DATE NOVEMBER 4, 2021 SHEET 1 OF 2

VESTING TENTATIVE PARCEL MAP NO. 2021-__



LOCATION MAP (NTS)

VICINITY MAP

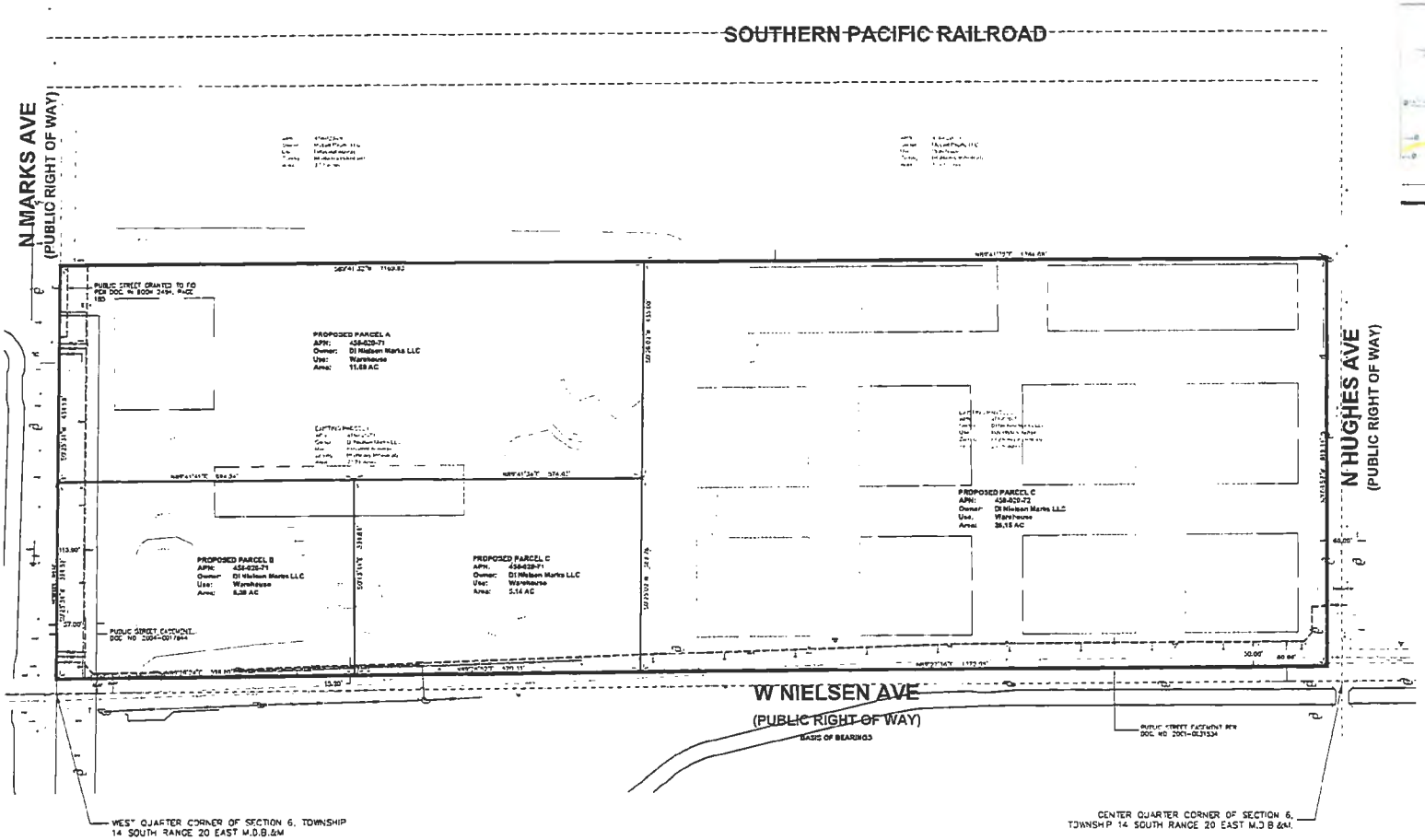
NOTES:

1. There are no buildings on the property.
2. The property consists of 2 Assessor's parcel numbers: 458-020-71 & 458-020-72
3. The property abuts the following public right of ways: North Hughes Avenue, West Nielsen Avenue and North Marks Avenue.
4. There is access to the property from West Nielsen Avenue and North Hughes Avenue.
5. There are 0 parking spaces on the property.
6. The source of water supply shall be the City of Fresno.
7. The source of sewerage and sewage disposal shall be the City of Fresno.
8. All offsite improvements will be installed to City of Fresno standards.
9. Acreage
   Net 44.35 AC
   Gross 48.35 AC
10. This property is subject to the following:
    The terms, provisions and easement(s) contained in the document entitled "Storm Water Easement Agreement" recorded July 26, 2013 as Instrument No. 0130134680-00 of Official Records.
    (Affects Parcel 1)

SCALE 1" = 100'

LARS ANDERSEN & ASSOCIATES, INC.
CIVIL ENGINEERS - LAND SURVEYORS - PLANNERS
4604 WEST JACQUELYN AVENUE FRESNO CALIFORNIA 93722
TEL. 559.276-2790 FAX. 559.276-0850 WWW.LARSANDERSEN.COM
JOB NO. 20007.00 DATE NOVEMBER 4, 2021 SHEET 2 OF 2

VESTING TENTATIVE PARCEL MAP NO. 2021-09



LOCATION MAP (NTS)

VICINITY MAP
NOT TO SCALE

NOTES:

1. There are no buildings on the property.
2. The property consists of 2 Assessor's parcel numbers, 458-020-71 & 458-020-72
3. The property abuts the following public right of ways: North Hughes Avenue, West Nielsen Avenue and North Marks Avenue
4. There is access to the property from West Nielsen Avenue and North Hughes Avenue.
5. There are 0 parking spaces on the property.

LARS ANDERSEN & ASSOCIATES, INC.
CIVIL ENGINEERS - LAND SURVEYORS - PLANNERS
4604 WEST JACQUELYN AVENUE FRESNO CALIFORNIA 93722
TEL. 559 276-2790 FAX 559 276-2850 WWW.LARSANDERSEN.COM
JOB NO. 20097.00 DATE NOVEMBER 4, 2021 SHEET 2 OF 2

G:\Users\Villeroy\Projects\Land Survey\Job\458A_21\SHT\Tentative Parcel Map.dwg 11-05-21 11:32:39 AM Dbrock

2907 S. Maple Avenue
Fresno, California 93725-2208
Telephone: (559) 233-7161
Fax: (559) 233-8227

CONVEYANCE. COMMITMENT. CUSTOMER SERVICE.

November 22, 2021

Erik Young
Department and Resource Management
City of Fresno
2600 Fresno Street, Third Floor
Fresno, CA 93721

RE: Planning Application No. P21-02699
N/E Marks and Nielsen avenues

Dear Mr. Young:

The Fresno Irrigation District (FID) has reviewed the Planning Application No. P21-02699 for which the applicant proposes the construction of four (4) Industrial Warehouse Buildings, APN's: 458-020-71 and 72. FID has the following comments:

1. FID does not own, operate, or maintain any facilities located on the subject property, as shown on the attached FID exhibit map.

2. For informational purposes, FID's active Houghton No. 78 runs westerly along the north side of Nielsen Avenue, crosses Nielsen Avenue approximately 2,470 feet east of the subject property, continues west along the south side of Nielsen Avenue, crosses Hughes Avenue approximately 1,280 feet east of the subject property, crossing Marks Avenue approximately 300 feet south of the subject property, crossing Nielsen Avenue approximately 190 feet west of subject property and continues northwest along the west side of Marks Avenue as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Nielsen Avenue, Hughes Avenue, Marks Avenue, or in the vicinity of this facility, FID requires it review and approve all plans.

3. For informational purposes, FID's active Cole – S. Br. No. 40 runs southwesterly, crosses Marks Avenue approximately 300 feet north of the subject property and continues south along the west side of Marks Avenue, as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Marks Avenue or in the vicinity of this facility, FID requires it review and approve all plans.

BOARD OF DIRECTORS President RYAN JACOBSEN Vice-President JERRY PRIETO, JR. CHRISTOPHER WOOLF
GEORGE PORTER GREGORY BEBERIAN General Manager BILL STRETCH

4. For informational purposes, FID's active Teilman No. 79 runs southerly along the west side of Marks Avenue and crosses Whitesbridge Avenue approximately 2,560 feet south of the subject property, as shown on the attached FID exhibit map.

Thank you for submitting this for our review. We appreciate the opportunity to review and comment on the subject documents for the proposed project. If you have any questions, please feel free to contact Jeremy Landrith at (559) 233-7161 extension 7407 or jlandrith@fresnoirrigation.com.

Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachment

Jeremy Landrith

From: do_not_reply@fresno.gov
Sent: Friday, November 12, 2021 4:00 AM
To: Engineering Review
Cc: Steven.Martinez@fresno.gov
Subject: Review Due Soon - P21-02699

A Review Task assigned to you and associated to Planning Application P21-02699 is due soon.
Please complete your review and update your response. You can view details of the record online.

Comment:
Address: 2740 W NIELSEN AVE, FRESNO, CA 93706
Description: Development Permit Application No. P21-02699 was filed by Dan Zoldak of Lars Anderson & Associates, on behalf of Scannell Properties, and pertains to the 22.24 acres identified by APN 458-020-71 located at 2740 W. Nielsen Ave. and the 26.15 acres identified by APN 458-020-72. The applicant proposes to construct a Class A Industrial Warehouse and Business Park consisting of (4) buildings. Building 1 - 468,760 sq. ft., Building 2 - 248,820 sq. ft., Building 3 - 96,250 sq. ft., and Building 4 - 93,950 sq. ft. The parcels are zoned IH. Related Application: DRC P20-04688.

Due 11/17

A notice was added to this record on 2021-05-14.
Condition: Severity: Notice
Total conditions: 1 (Notice: 1)

View notice

Menu Help

()

File Date: 05/14/2021

Application Status: On Hold

Application Type: Development Permit

P21-02699

Application Detail: Detail

()

Description of Work: Development Permit Application No. P21-02699 was filed by Dan Zoldak of Lars Anderson & A
020-72. The applicant proposes to construct a Class A Industrial Warehouse and Business Pa
Application: DRC P20-04688.

Application Name: Scannell Warehouse & Distribution Park

Address: 2740 W NIELSEN AVE, FRESNO, CA 93706

Owner Name: DI NIELSEN MARKS LLC

Owner Address: 4790 N CORNELIA, FRESNO, CA 93722

Parcel No: 45802071

Contact Info: Name	Organization Name	Contact Type	Status
Daniel J Zoldak	Lars Andersen &...	Applicant	Active
Jake Kurth	Scannell Proper...	Developer	Active

Licensed Professionals Info: Primary	License Number	License Type	Name

Workflow Status: Task	Assigned To	Status	Status D
Application	Erik Young	Accept	10/26/20
Pre-review- TIS	Jill Gormley	Application ...	05/25/20
Pre-review- Traffic	Louise Gillo	Application ...	05/25/20
Plan Distribution		Assign Revie...	10/28/20
Public Utilities Commi...			
County PW and Planning	County Planning		
Caltrans			
Traffic Planning	Louise Gillo	Add'l Info R...	11/10/20
Public Works Engineering	Hilary Kimber	Reviewed wit...	11/05/20
DPU Water Division	Robert Diaz	Review Complete	11/16/20
DPU Planning and Engin...	Kevin Gray		
DPU Solid Waste Manage...	Kevin Gray		
Fire Review	Scott T Recchio	Revisions Re...	11/15/20
Police Review		No Comment	10/28/20
Fresno County Environm...	Public Health	Reviewed wit...	11/16/20
Building and Safety Se...	Christian Mendez		
Airports	Airports	Review Complete	11/15/20
Fresno Area Express	FAX		
Irrigation District	FID		

2907 S. MAPLE AVENUE
FRESNO, CALIFORNIA 93725-2208
TELEPHONE: (559) 233-7161
FAX: (559) 233-8227

A Century of Commitment, Conveyance & Customer Service

December 16, 2020

Mindi Mariboho
Department and Resource Management
City of Fresno
2600 Fresno Street, Third Floor
Fresno, CA 93721

RE: Planning Application No. P20-04688
N/E Marks and Nielsen avenues

Dear Ms. Mariboho:

The Fresno Irrigation District (FID) has reviewed the Planning Application No. P20-04688 for which the applicant proposes the construction of three (3) office/warehouse buildings, APN: 458-020-71. FID has the following comments:

1. FID does not own, operate, or maintain any facilities located on the subject property, as shown on the attached FID exhibit map.

2. For informational purposes, FID's active Houghton No. 78 runs westerly along the north side of Nielsen Avenue, crosses Nielsen Avenue approximately 2,470 feet east of the subject property, continues west along the south side of Nielsen Avenue, crossing Hughes Avenue approximately 1,280 feet east of the subject property, crossing Marks Avenue approximately 300 feet south of the subject property, crossing Nielsen Avenue approximately 190 feet west of subject property and continues northwest along the west side of Marks Avenue as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Nielsen Avenue, Hughes Avenue, Marks Avenue, or in the vicinity of this facility, FID requires it review and approve all plans.

3. For informational purposes, FID's active Cole – S. Br. No. 40 runs southwesterly, crosses Marks Avenue approximately 380 feet north of the subject property and continues south along the west side of Marks Avenue, as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Marks Avenue or in the vicinity of this facility, FID requires it review and approve all plans.

BOARD OF DIRECTORS President RYAN JACOBSEN, Vice-President JERRY PRIETO, JR.
CHRISTOPHER WOOLF, GEORGE PORTER, GREGORY BEBERIAN, General Manager BILL STRETCH

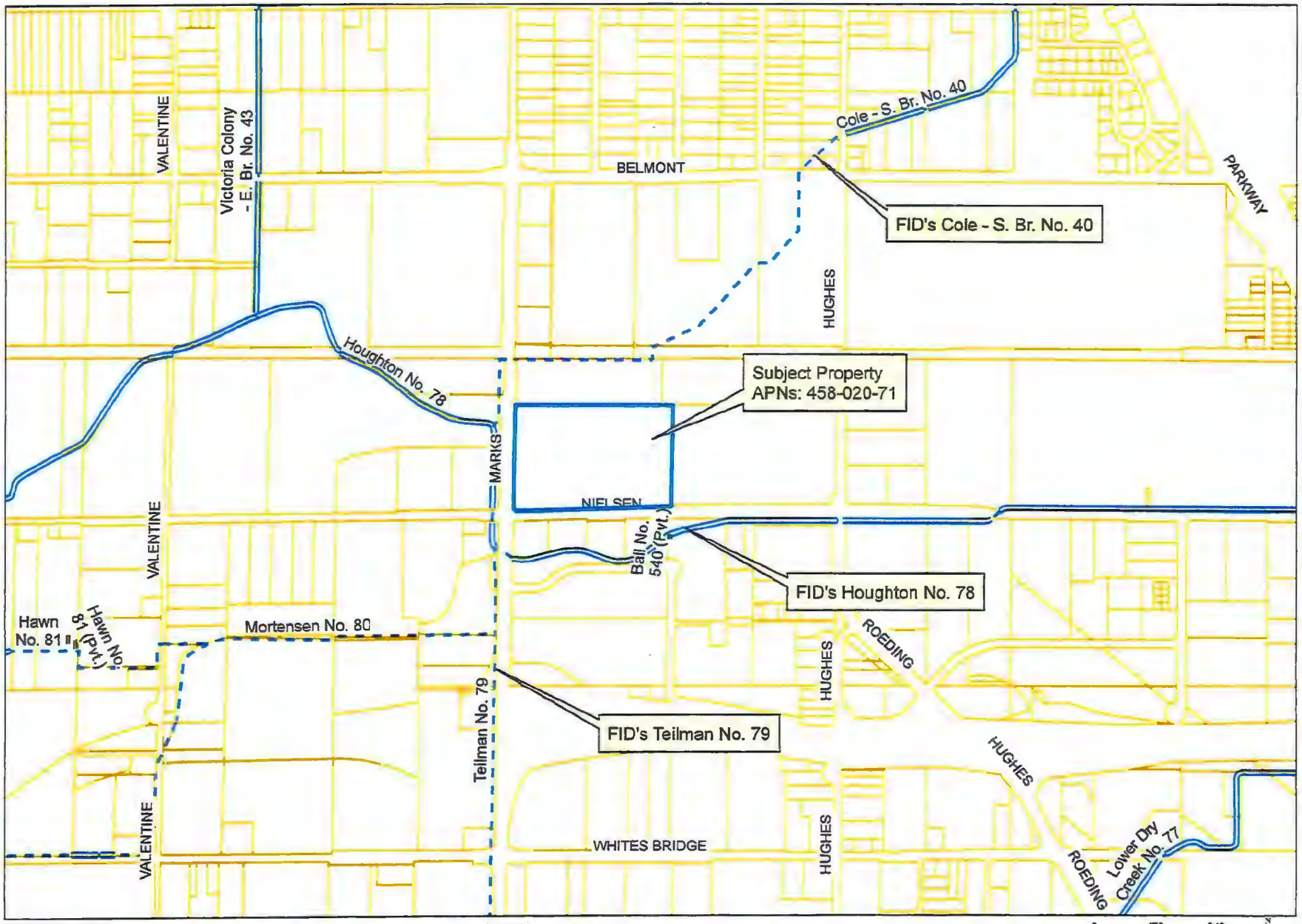
4. For informational purposes, FID's active Teilman No. 79 runs southerly along the west side of Marks Avenue and crosses Whitesbridge Avenue approximately 2,560 feet south of the subject property, as shown on the attached FID exhibit map.

Thank you for submitting this for our review. We appreciate the opportunity to review and comment on the subject documents for the proposed project. If you have any questions, please feel free to contact Chris Lundeen at (559) 233-7161 extension 7410 or clundeen@fresnoirrigation.com.

Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachment



This map was produced by the Fresno Irrigation District and is provided for reference and informational purposes only and is not intended to show map scale accuracy or all inclusive map features, nor for legal purposes. FID makes no statements regarding the accuracy of this map as the features shown are in their approximate location. Please contact the FID Engineering Dept. at (559) 233-7161 for further information on FID facilities.

FRESNO IRRIGATION DISTRICT

Legend

- FID Canal
- Private Canal
- Abandoned Canal
- FID Pipeline
- Private Pipeline
- Abandoned Pipeline
- Stream Group
- Other-Creek\River
- Other-Pipeline
- FID Boundary
- Railroad
- Streets & Hwys
- Parcel
- FMFCD Acquired Basins
- FMFCD Proposed Basins

0 470 940 Feet

1 inch = 976.2 feet

Date Saved: 12/8/2020 7:35:24 AM
Path: G:\Pidge\20200811 Master.mxd

Chris Lundeen

From: do_not_reply@fresno.gov
Sent: Friday, December 11, 2020 4:42 PM
To: Engineering Review
Subject: Planning Application P20-04688 - Task Assigned

A task associated with Planning Application P20-04688 has been assigned for your review. You can review details online.

Application Description: Proposed Office/Warehouse Buildings, the first building will have approximately 407,680 SF building and buildings 2 and 3 will be 225,576 SF each.
Task Information: Irrigation District

DW 12/28

PROPOSED:
PROJECT SITE
OCTOBER 16, 2020

Office / Warehouse

FRESNO, CA

SCANNELL
PROPERTIES

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE 2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

Date: September 9, 2022

To: State Clearinghouse, Responsible Agencies, Interested Parties and Organizations

Subject: Notice of Preparation of an Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project in Fresno, CA

Lead Agency:
City of Fresno
Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8277
Planning@fresno.gov

Contact:
Steven Martinez
Planner
City of Fresno – Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8047
Steven.Martinez@fresno.go

Comment Period: September 9, 2022 to October 10, 2022

Si necesita información en Español, comuníquese con Juan Lara al teléfono (559) 621-8075 o por correo electrónico a Juan.Lara@fresno.gov.

Notice is Hereby Given: The City of Fresno (City) is the Lead Agency on the below-described 2740 West Nielsen Avenue Office/Warehouse Project (proposed project) and has prepared a Notice of Preparation (NOP) of an Environmental Impact Report (EIR), pursuant to the California Environmental Quality Act (CEQA). The NOP is intended to solicit the views of the public, interested parties, and/or agencies as to the scope and content of the environmental information which is relevant to you or your agency's statutory responsibilities in connection with the proposed project. Specifically, the City is requesting that commenters identify environmental topics (and/or special studies) that they believe need to be explored in the forthcoming EIR, and to identify other relevant environmental issues related to the scope and content of the forthcoming EIR.

Project Title: 2740 West Nielsen Avenue Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map No. P21-05930) (State Clearinghouse No. 2022050265)

Project Location: The proposed project is located on approximately 48.03 acres at 2740 West Nielsen Avenue: Northeast of intersection of North Marks Avenue and West Nielsen Avenue in

Fresno, California (Assessor's Parcel Numbers [APNs]: 458-020-71 and 458-020-72). The project site is bounded to the north by vacant, undeveloped land, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue. The attached Figure 1 shows the regional and local context of the project location.

Project Description: The proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. Figure 2 shows the project site plan.

A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining 188 spaces would be dedicated for trailers and would be located along the eastern and western edges of the project site and would be located behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.

Areas of Potential Environmental Effects: The EIR will evaluate the potential environmental impacts related to the proposed project, after having first established the environmental setting, or baseline, for the environmental analysis. The significance of potential impacts, cumulative impacts, and appropriate mitigation measures associated with the proposed project will be thoroughly discussed in the EIR. The EIR will be comprehensive and will evaluate each of the environmental issue topics required by CEQA. The individual environmental topics include:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems

In addition, in accordance with Section 15126.6 of the CEQA Guidelines, the EIR will assess a range of reasonable alternatives to the project. The range of alternatives to be addressed will include alternatives that are specifically required by CEQA (e.g., the No Project Alternative), as well as other alternatives (intended to reduce or eliminate potentially significant impacts) as identified through the coordinated consultation and planning process.

Document Availability and Public Review Timeline: Due to the time limits mandated by State law, your response to the NOP must be sent no later than 30 days after publication of this notice. The review period for the NOP will be from September 9, 2022, to October 10, 2022. All documents related to this project are available for public review during normal business

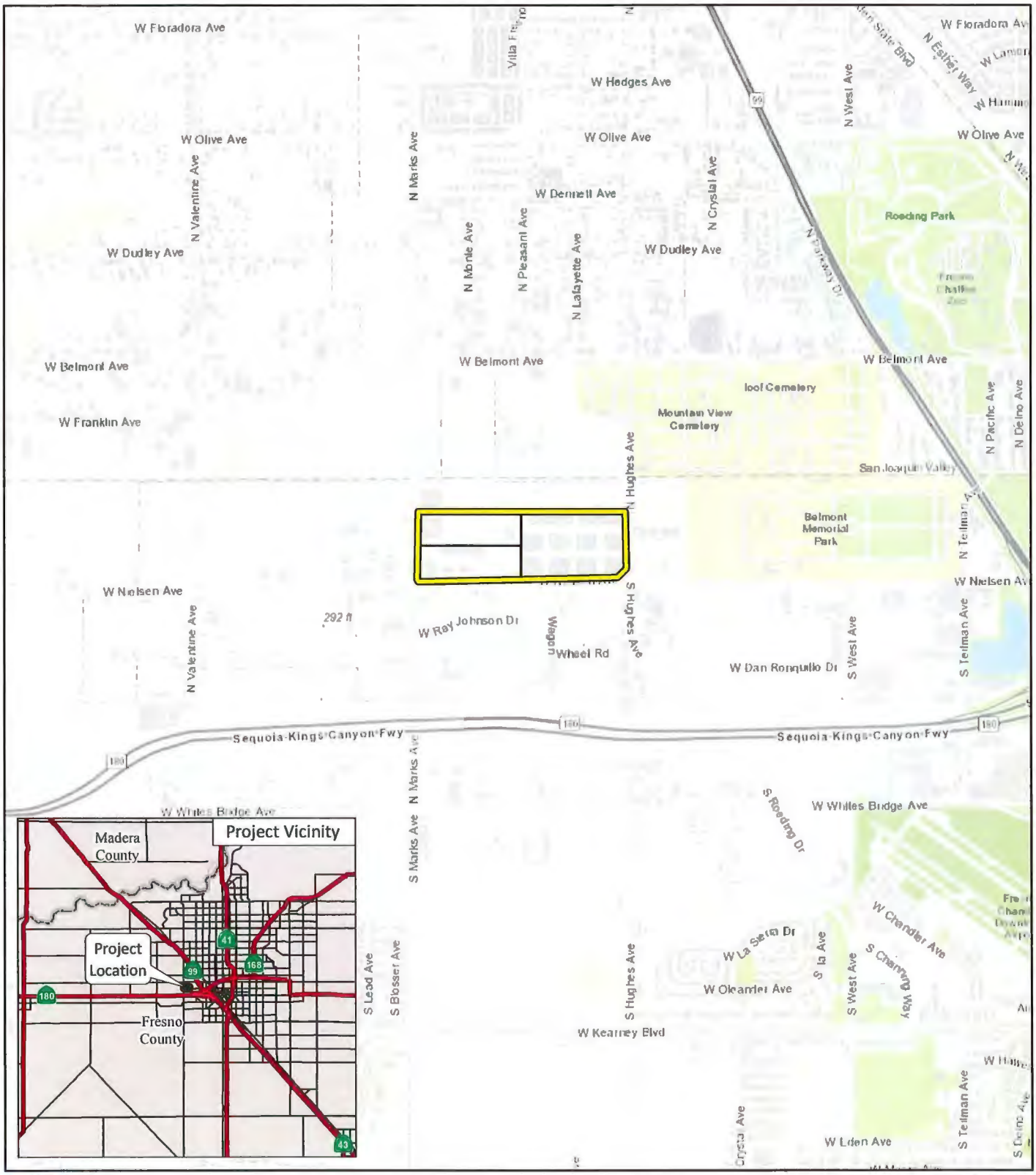
hours (Monday - Friday, 8:00 A.M. – 5:00 P.M.) by appointment only, at the Planning and Development Department at 2600 Fresno Street, Room 3043, Fresno, CA 93721. Electronic copies may also be requested for review. Please contact Steven Martinez via e-mail or by phone to request electronic copies or to schedule an appointment to view documents. Documents related to this project can also be accessed on the City's website at: https://www.fresno.gov/darm/planning-development/plans-projects-under-review/.

Public Scoping Meeting: The CEQA process encourages comments and questions from the public throughout the planning process. Pursuant to Section 15083 of the CEQA Guidelines, a Public Scoping Meeting will be held to solicit public comments on the scope and content of the EIR. A public scoping meeting for this project will be conducted virtually at 6:00 PM on Thursday, September 22, 2022. The webinar information is provided below:

Via Zoom online meeting at: https://bit.ly/2740WestNielsen
Or by Phone at: +1 669 444 9171 US
Webinar ID: 868 6600 9238
Passcode: 154493

Submitting Comments: Comments and suggestions as to the appropriate scope of analysis of the EIR are encouraged from all interested parties. If you wish to provide comments or ask questions about the EIR, you may do so by written letter sent via post mail to the address below or via written email to PublicCommentsPlanning@fresno.gov (CC Steven.Martinez@fresno.gov). Comments must include the commenter's full name, address, phone number, and/or email so you may be contacted for clarification, if necessary. Please submit comments to Steven Martinez no later than 5:00 PM on October 10, 2022.

Steven Martinez
Planner
City of Fresno – Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8047
Steven.Martinez@fresno.gov



LSA

LEGEND

Project Location

Proposed Parcels

N

0 1000 2000

FEET

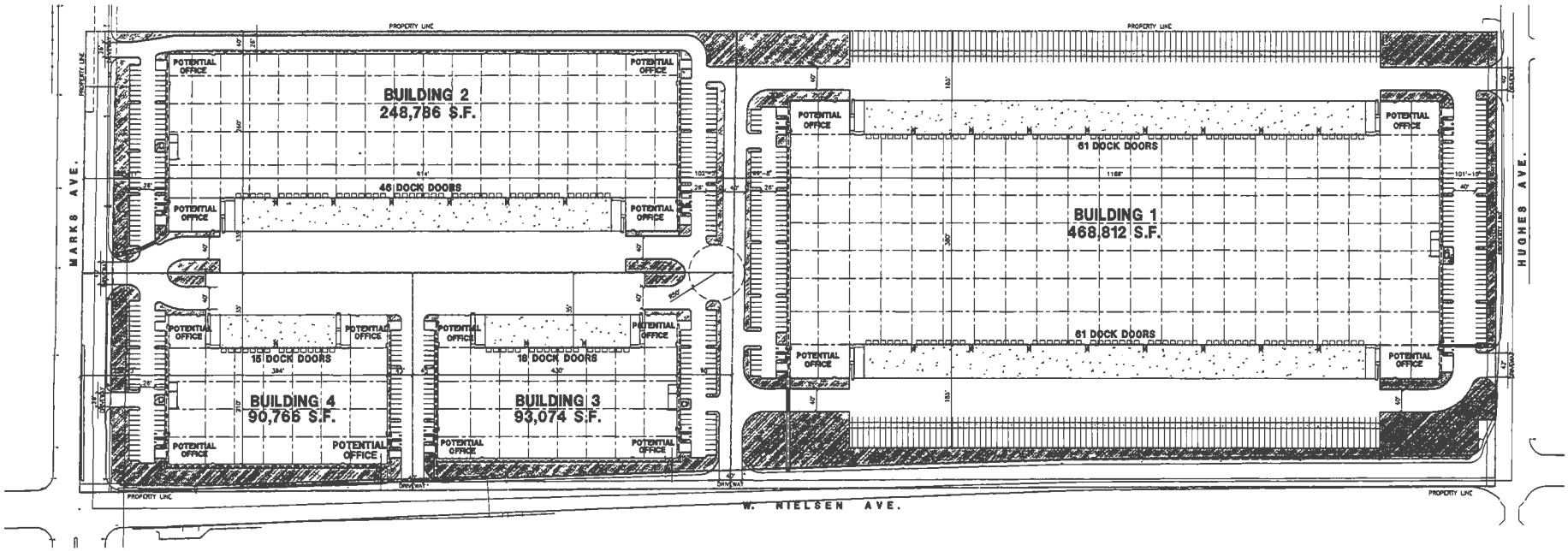
FIGURE 1

2740 West Nielsen Avenue Office/Warehouse Project

Regional Project Location

SOURCE: Esri Topographic Map (2021)

I:\SNN2102\GIS\MXD\Project_Location.mxd (6/7/2021)



LSA

FIGURE 2

0 120 240
FEET

N

2740 West Nielsen Office/Warehouse Project
Site Plan

SOURCE: HPA Architecture, Inc., 2021

FreP:\SNN2102 2740 W. Nielsen\PRODUCTS\Graphics\Figure 3.ai (10/5/2021)

Fresno Metropolitan Flood Control District
Capturing Stormwater since 1956

File 170.251
210.412 "2021-02699"
310. "AS", "ZZ"
550.30

September 28, 2022

Mr. Steven Martinez, Planner
City of Fresno, Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721

Dear Mr. Martinez,

Fresno Metropolitan Flood Control District Comments for
Notice of Preparation of a Draft Environmental Impact Report
2740 West Nielsen Avenue Office/Warehouse Project
Drainage Areas "AS" and "ZZ"

The District has reviewed the subject Notice of Preparation and finds that the District comments provided in the Notice of Requirements for DPA 2021-02699 dated November 17, 2021 are still applicable to this Notice of Preparation. A copy of the Notice of Requirements for DPA 2021-02699 has been attached for your reference.

The District will need to review and approve the final improvement plans for all development (i.e. grading, street improvement and storm drain) within the proposed project to insure consistency with the approved Storm Drainage Master Plan.

The drainage fee included on the attached Notice of Requirements was calculated in November of 2021. The District's drainage fee schedule was revised on March 1, 2022 and due to this revision, the current drainage fee for the proposed site is $660,643.

Thank you for the opportunity to comment. Please keep our office informed on the development of this project. If you should have any questions or comments, please contact the District at (559) 456-3292.

Sincerely,

Gary Chapman
Engineering Technician III

GC/lrl

Attachment

k:\letters\environmental impact report letters\deir 2740 w nielsen(dpa 21-02699)(as-zz)(gc).docx

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
NOTICE OF REQUIREMENTS

File No. 210.412

PUBLIC AGENCY

STEVEN MARTINEZ
DEVELOPMENT SERVICES/PLANNING
CITY OF FRESNO
2600 FRESNO STREET, THIRD FLOOR
FRESNO, CA 93721

DEVELOPER

DANIEL ZOLDAK, LARS ANDERSEN & ASSOCIATES
4694 W. JACQUELYN AVE.
FRESNO, CA 93722

PROJECT NO: **2021-02699**

ADDRESS: **2740 W. NIELSEN AVE.**

APN: **458-020-72, 458-020-71**

SENT: **November 17, 2021**

Drainage Area(s)	Preliminary Fee(s)	Development Review Service Charge(s)	Fee(s)	
AS	$360,882.00	NOR Review	$1,675.00	To be paid prior to release of District comments to Public Agency and Developer.
ZZ	$191,951.00	Grading Plan Review	$8,519.00	Amount to be submitted with first grading plan submittal.
	Total Drainage Fee: $552,833.00	**Total Service Charge:**	**$10,194.00**	

The proposed development will generate storm runoff which produces potentially significant environmental impacts and which must be properly discharged and mitigated pursuant to the California Environmental Quality Act and the National Environmental Policy Act. The District in cooperation with the City and County has developed and adopted the Storm Drainage and Flood Control Master Plan. Compliance with and implementation of this Master Plan by this development project will satisfy the drainage related CEQA/NEPA impact of the project mitigation requirements.

Pursuant to the District's Development Review Fee Policy, the subject project shall pay review fees for issuance of this Notice of Requirements (NOR) and any plan submittals requiring the District's reviews. The NOR fee shall be paid to the District by Developer before the Notice of Requirement will be submitted to the City. The Grading Plan fee shall be paid upon first submittal. The Storm Drain Plan fee shall be paid prior to return/pick up of first submittal.

The proposed development shall pay drainage fees pursuant to the Drainage Fee Ordinance prior to issuance of a building permit at the rates in effect at the time of such issuance. The fee indicated above is valid through 2/28/22 based on the site plan submitted to the District on 10/28/21 Contact FMFCD for a revised fee in cases where changes are made in the proposed site plan which materially alter the proposed impervious area.

Considerations which may affect the fee obligation(s) or the timing or form of fee payment:

a.) Fees related to undeveloped or phased portions of the project may be deferrable.

b.) Fees may be calculated based on the actual percentage of runoff if different than that typical for the zone district under which the development is being undertaken and if permanent provisions are made to assure that the site remains in that configuration.

c.) Master Plan storm drainage facilities may be constructed, or required to be constructed in lieu of paying fees.

d.) The actual cost incurred in constructing Master Plan drainage system facilities is credited against the drainage fee obligation.

e.) When the actual costs incurred in constructing Master Plan facilities exceeds the drainage fee obligation, reimbursement will be made for the excess costs from future fees collected by the District from other development.

f.) Any request for a drainage fee refund requires the entitlement cancellation and a written request addressed to the General Manager of the District within 60 days from payment of the fee. A non refundable $300 Administration fee or 5% of the refund whichever is less will be retained without fee credit.

FR DPA No. 2021-02699

Approval of this development shall be conditioned upon compliance with these District Requirements.

1.

___ **a.** Drainage from the site shall

__X__ **b.** Grading and drainage patterns shall be as identified on Exhibit No. 1

___ **c.** The grading and drainage patterns shown on the site plan conform to the adopted Storm Drainage and Flood Control Master Plan.

2. The proposed development shall construct and/or dedicate Storm Drainage and Private On-Site facilities located within the development or necessitated by any off-site improvements required by the approving agency:

__X__ Developer shall construct facilities as shown on Exhibit No. 1 as PRIVATE ON-SITE SYSTEM TO BE CONSTRUCTED BY DEVELOPER.

___ None required.

3. The following final improvement plans and information shall be submitted to the District for review prior to final development approval:

__X__ Grading Plan

___ Street Plan

___ Storm Drain Plan

___ Water & Sewer Plan

___ Final Map

___ Drainage Report (to be submitted with tentative map)

___ Other

___ None Required

4. Availability of drainage facilities:

___ **a.** Permanent drainage service is available provided the developer can verify to the satisfaction of the City that runoff can be safely conveyed to the Master Plan inlet(s).

___ **b.** The construction of facilities required by Paragraph No. 2 hereof will provide permanent drainage service.

___ **c.** Permanent drainage service will not be available. The District recommends temporary facilities until permanent service is available.

__X__ **d.** See Exhibit No. 2.

5. The proposed development:

___ Appears to be located within a 100 year flood prone area as designated on the latest Flood Insurance Rate Maps available to the District, necessitating appropriate floodplain management action. (See attached Floodplain Policy.)

__X__ Does not appear to be located within a flood prone area.

6. ___ The subject site contains a portion of a canal or pipeline that is used to manage recharge, storm water, and/or flood flows. The existing capacity must be preserved as part of site development. Additionally, site development may not interfere with the ability to operate and maintain the canal or pipeline.

FR DPA No. 2021-02699

7. The Federal Clean Water Act and the State General Permits for Storm Water Discharges Associated with Construction and Industrial Activities (State General Permits) require developers of construction projects disturbing one or more acres, and discharges associated with industrial activity not otherwise exempt from National Pollutant Discharge Elimination System (NPDES) permitting, to implement controls to reduce pollutants, prohibit the discharge of waters other than storm water to the municipal storm drain system, and meet water quality standards. These requirements apply both to pollutants generated during construction, and to those which may be generated by operations at the development after construction.

a. State General Permit for Storm Water Discharges Associated with Construction Activities, effective July 1, 2010, as amended. A State General Construction Permit is required for all clearing, grading, and disturbances to the ground that result in soil disturbance of at least one acre (or less than one acre) if part of a larger common plan of development or sale). Permittees are required to: submit a Notice of Intent and Permit Registration Documents to be covered and must pay a permit fee to the State Water Resources Control Board (State Board), develop and implement a storm water pollution prevention plan, eliminate non-storm water discharges, conduct routine site inspections, train employees in permit compliance, and complete an annual certification of compliance.

b. State General Permit for Storm Water Discharges Associated with Industrial Activities, April, 2014 (available at the District Office). A State General Industrial Permit is required for specific types of industries described in the NPDES regulations or by Standard Industrial Classification (SIC) code. The following categories of industries are generally required to secure an industrial permit: manufacturing; trucking; recycling; and waste and hazardous waste management. Specific exemptions exist for manufacturing activities which occur entirely indoors. Permittees are required to: submit a Notice of Intent to be covered and must pay a permit fee to the State Water Resources Control Board, develop and implement a storm water pollution prevention plan, eliminate non-storm water discharges, conduct routine site inspections, train employees in permit compliance, sample storm water runoff and test it for pollutant indicators, and annually submit a report to the State Board.

c. The proposed development is encouraged to select and implement storm water quality controls recommended in the Fresno-Clovis Storm Water Quality Management Construction and Post-Construction Guidelines (available at the District Office) to meet the requirements of the State General Permits, eliminate the potential for non-storm water to enter the municipal storm drain system, and where possible minimize contact with materials which may contaminate storm water runoff.

8. A requirement of the District may be appealed by filing a written notice of appeal with the Secretary of the District within ten days of the date of this Notice of Requirements.

9. The District reserves the right to modify, reduce or add to these requirements, or revise fees, as necessary to accommodate changes made in the proposed development by the developer or requirements made by other agencies.

10. **X** See Exhibit No. 2 for additional comments, recommendations and requirements.

Brent Sunamoto
Digitally signed by Brent Sunamoto Date: 11/17/2021 1:58:18 PM
District Engineer, RCE

Gary W. Chapman
Digitally signed by Gary W. Chapman Date: 11/16/2021 4:56:30 PM
Engineering Tech III

FR DPA No. 2021-02699

CC:

DI NIELSEN MARKS LLC

4790 N. CORNELIA

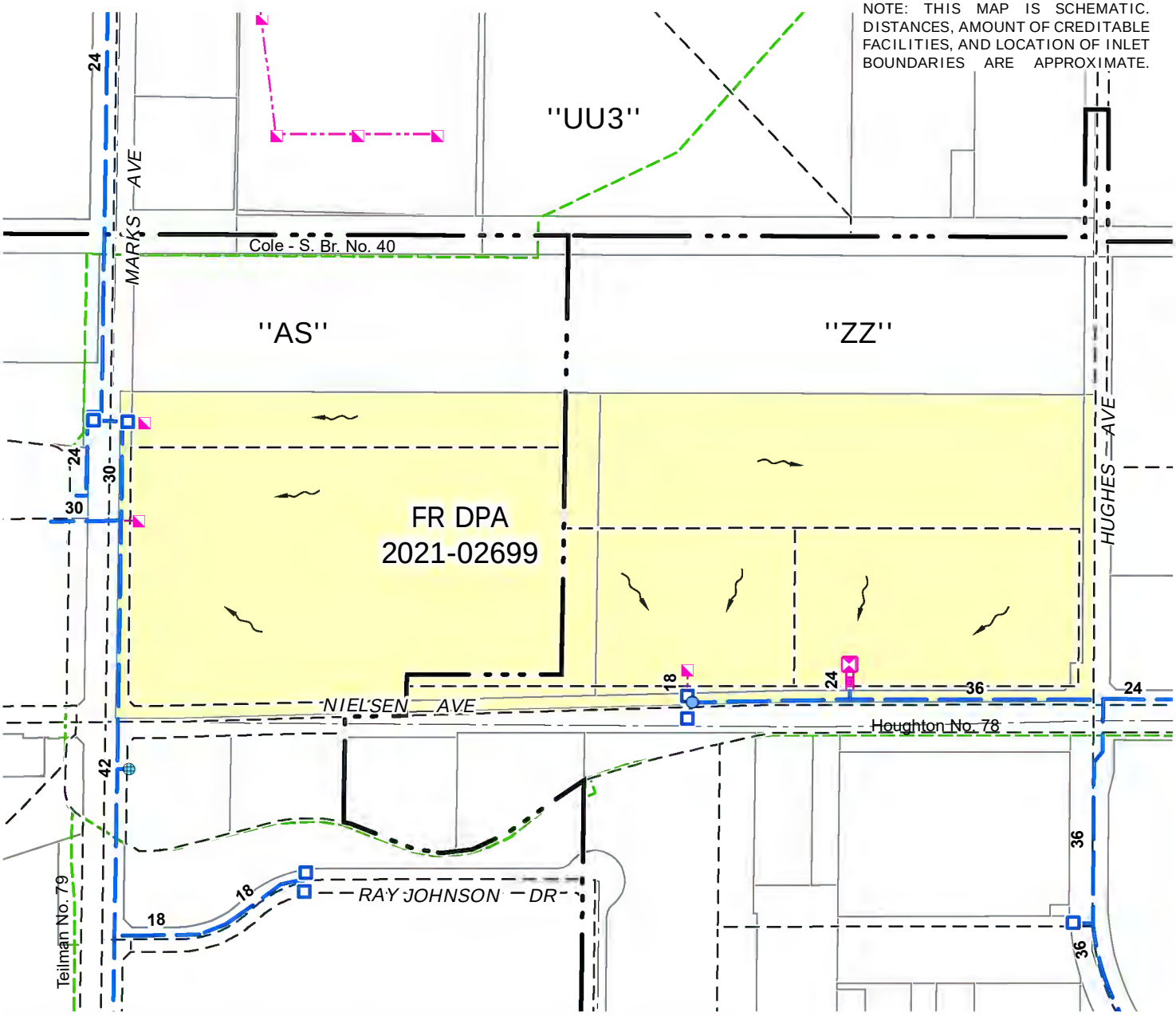
FRESNO, CA 93722

JAKE KURTH, SCANNELL PROPERTIES

294 GROVE LANE EAST, SUITE 140

WAYZATA, MN 55391

FR DPA No. 2021-02699



LEGEND

- Private On-Site System To Be Constructed By Developer
- Existing Private Facilities
- Existing Master Plan Facilities
- Existing Temporary Inlet
- Inlet Boundary
- Drainage Area Boundary
- Existing FID Facilities
- Direction Of Drainage

1 " = 400 '

FR DPA 2021-02699

DRAINAGE AREAS "AS" & "ZZ"

EXHIBIT NO. 1

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

Prepared by: keithr
Date: 11/16/2021
Path: K:\Autocad\DWGS\0EXHIBIT\CITYDPA\2021-02699.mxd

OTHER REQUIREMENTS

EXHIBIT NO. 2

DPA 2021-02699 is located in two drainage areas, Drainage Area "AS" and Drainage Area "ZZ". Development of the site shall maintain the Master Plan area to each drainage area as shown on Exhibit No. 1.

The minimum finish floor elevation of the development shall be one foot higher than the controlling flood safety overflow point. The controlling flood safety overflow point for the portion of the project located in Drainage Area "ZZ" is the bridge on Hughes Avenue over the Houghton Canal. The controlling flood safety overflow point for the portion of the project located in Drainage Area "AS" is the breakover to the Houghton Canal on the west side of Marks Avenue between Nielsen Avenue and the Union Pacific Railroad. The elevations at the mentioned breakover locations will need to be provided on the grading plans for review and verification of proposed building finish floor elevations for the development.

The construction of the "Private On-Site System" shown on Exhibit No. 1 will provide permanent drainage service to the portion of the project located in Drainage Area "ZZ". Permanent drainage service will not be available for the portion of the project located in Drainage Area "AS". The District recommends temporary facilities until permanent service is available.

In an effort to improve storm runoff quality, outdoor storage areas shall be constructed and maintained such that material that may generate contaminants will be prevented from contact with rainfall and runoff and thereby prevent the conveyance of contaminants in runoff into the storm drain system.

The District encourages, but does not require that roof drains from non-residential development be constructed such that they are directed onto and through a landscaped grassy swale area to filter out pollutants from roof runoff.

Runoff from areas where industrial activities, product, or merchandise come into contact with and may contaminate storm water must be treated before discharging it off-site or into a storm drain. Roofs covering such areas are recommended. Cleaning of such areas by sweeping instead of washing is to be required unless such wash water can be directed to the sanitary sewer system. Storm drains receiving untreated runoff from such areas shall not be connected to the District's system. Loading docks, depressed areas, and areas servicing or fueling vehicles are specifically subject to these requirements. The District's policy governing said industrial site NPDES program requirements is available on the District's website at: www.fresnofloodcontrol.org or contact the District's Environmental Department for further information regarding these policies related to industrial site requirements.

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING

October 6, 2022

Steven Martinez
City of Fresno
Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721

Project: Notice of Preparation of an Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project

District CEQA Reference No: 20221260

Dear Mr. Martinez:

The San Joaquin Valley Air Pollution Control District (District) has reviewed the Notice of Preparation (NOP) from the City of Fresno (City), for the above mentioned project. Per the NOP, the project consists of the development of four office/warehouse buildings totaling approximately 901,438 square feet (Project). The Project is located at 2740 West Nielsen Avenue in Fresno, CA (APN: 458-020-71 and 458-020-72).

The District offers the following comments regarding the Project:

1) **Project Related Emissions**

At the federal level under the National Ambient Air Quality Standards (NAAQS), the District is designated as extreme nonattainment for the 8-hour ozone standards and serious nonattainment for the particulate matter less than 2.5 microns in size (PM2.5) standards. At the state level under California Ambient Air Quality Standards (CAAQS), the District is designated as nonattainment for the 8-hour ozone, PM10, PM2.5 standards.

The District's initial review of the Project concludes that emissions resulting from construction and/or operation of the Project may exceed any of the following significance thresholds as identified in the District's Guidance for Assessing and Mitigating Air Quality Impacts: https://www.valleyair.org/transportation/GAMAQI.pdf. The District recommends that a more detailed preliminary review of the Project be conducted for the Project's construction and operational emissions.

Samir Sheikh
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: (661) 392-5500 FAX: (661) 392-5585

www.valleyair.org www.healthyairliving.com

Printed on recycled paper.

1a) Construction Emissions

The District recommends, to reduce impacts from construction-related diesel exhaust emissions, the Project should utilize the cleanest available off-road construction equipment, including the latest tier equipment.

1b) Operational Emissions

Operational (ongoing) air emissions from mobile sources and stationary sources should be analyzed separately. For reference, the District's significance thresholds are identified in the District's Guidance for Assessing and Mitigating Air Quality Impacts: https://www.valleyair.org/transportation/GAMAQI.pdf.

Recommended Mitigation Measure: At a minimum, project related impacts on air quality should be reduced to levels of significance through incorporation of design elements such as the use of cleaner Heavy Heavy-Duty (HHD) trucks and vehicles, measures that reduce Vehicle Miles Traveled (VMTs), and measures that increase energy efficiency. More information on transportation mitigation measures can be found at: http://www.valleyair.org/transportation/Mitigation-Measures.pdf.

1c) Recommended Model for Quantifying Air Emissions

Project-related criteria pollutant emissions from construction and operational sources should be identified and quantified. Emissions analysis should be performed using the California Emission Estimator Model (CalEEMod), which uses the most recent CARB-approved version of relevant emissions models and emission factors. CalEEMod is available to the public and can be downloaded from the CalEEMod website at: www.caleemod.com.

2) Health Risk Screening/Assessment

The City should evaluate the risk associated with the Project for sensitive receptors (residences, businesses, hospitals, day-care facilities, health care facilities, etc.) in the area and mitigate any potentially significant risk to help limit exposure of sensitive receptors to emissions.

To determine potential health impacts on surrounding receptors (residences, businesses, hospitals, day-care facilities, health care facilities, etc.) a Prioritization and/or a Health Risk Assessment (HRA) should be performed for the Project. These health risk determinations should quantify and characterize potential Toxic Air Contaminants (TACs) identified by the Office of Environmental Health Hazard Assessment/California Air Resources Board (OEHHA/CARB) that pose a present or potential hazard to human health.

Health risk analyses should include all potential air emissions from the project, which include emissions from construction of the project, including multi-year construction, as well as ongoing operational activities of the project. Note, two common sources of TACs can be attributed to diesel exhaust emitted from heavy-duty off-road earth moving equipment during construction, and from ongoing operation of heavy-duty on-road trucks.

Prioritization (Screening Health Risk Assessment):
A "Prioritization" is the recommended method for a conservative screening-level health risk assessment. The Prioritization should be performed using the California Air Pollution Control Officers Association's (CAPCOA) methodology.

The District recommends that a more refined analysis, in the form of an HRA, be performed for any project resulting in a Prioritization score of 10 or greater. This is because the prioritization results are a conservative health risk representation, while the detailed HRA provides a more accurate health risk evaluation.

To assist land use agencies and project proponents with Prioritization analyses, the District has created a prioritization calculator based on the aforementioned CAPCOA guidelines, which can be found here:
http://www.valleyair.org/busind/pto/emission_factors/Criteria/Toxics/Utilities/PRIORITIZATION-CALCULATOR.xls

Health Risk Assessment:
Prior to performing an HRA, it is strongly recommended that land use agencies/ project proponents develop and submit for District review a health risk modeling protocol that outlines the sources and methodologies that will be used to perform the HRA. This step will ensure all components are addressed when performing the HRA.

A development project would be considered to have a potentially significant health risk if the HRA demonstrates that the project-related health impacts would exceed the District's significance threshold of 20 in a million for carcinogenic risk, or 1.0 for either the Acute or Chronic Hazard Indices.

A project with a significant health risk would trigger all feasible mitigation measures. The District strongly recommends that development projects that result in a significant health risk not be approved by the land use agency.

The District is available to review HRA protocols and analyses. For HRA submittals please provide the following information electronically to the District for review:

- HRA (AERMOD) modeling files
- HARP2 files

- Summary of emissions source locations, emissions rates, and emission factor calculations and methodologies.

For assistance, please contact the District's Technical Services Department by:

- E-Mailing inquiries to: hramodeler@valleyair.org
- Calling (559) 230-5900

Recommended Measure: Development projects resulting in TAC emissions should be located an adequate distance from residential areas and other sensitive receptors in accordance to CARB's Air Quality and Land Use Handbook: A Community Health Perspective located at https://ww3.arb.ca.gov/ch/handbook.pdf.

3) Ambient Air Quality Analysis

An Ambient Air Quality Analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of State or National Ambient Air Quality Standards. The District recommends an AAQA be performed for the Project if emissions exceed 100 pounds per day of any pollutant.

An acceptable analysis would include emissions from both project-specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis.

Specific information for assessing significance, including screening tools and **modeling guidance, is available online at the District's website:** www.valleyair.org/ceqa.

4) Voluntary Emission Reduction Agreement

Criteria **pollutant emissions may result in emissions exceeding the District's** significance thresholds, potentially resulting in a significant impact on air quality. When a project is expected to have a significant impact, the District recommends the Environmental Impact Report (EIR) also include a discussion on the feasibility of implementing a Voluntary Emission Reduction Agreement (VERA) for this Project.

A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of emissions increases through a process that develops, funds, and implements emission reduction projects, with the District serving a role of administrator of the emissions reduction projects and verifier of the successful mitigation effort. To implement a VERA, the project proponent and the District enter into a contractual agreement in which the project proponent agrees to mitigate **project specific emissions by providing funds for the District's incentives programs.** The funds are disbursed by the District in the form of grants for projects that achieve

emission reductions. Thus, project-related impacts on air quality can be mitigated. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors.

In implementing a VERA, the District verifies the actual emission reductions that have been achieved as a result of completed grant contracts, monitors the emission reduction projects, and ensures the enforceability of achieved reductions. After the project is mitigated, the District certifies to the Lead Agency that the mitigation is completed, providing the Lead Agency with an enforceable mitigation measure demonstrating that project-related emissions have been mitigated. To assist the Lead Agency and project proponent in ensuring that the environmental document is compliant with CEQA, the District recommends the environmental document includes an assessment of the feasibility of implementing a VERA.

5) Industrial/Warehouse Emission Reduction Strategies

The District recommends the City consider the feasibility of incorporating emission reduction strategies that can reduce potential harmful health impacts, such as those listed below:

- Ensure solid screen buffering trees, solid decorative walls, and/or other natural ground landscaping techniques are implemented along the property line of adjacent sensitive receptors
- Ensure all landscaping be drought tolerant
- Orient loading docks away from sensitive receptors unless physically impossible
- Locate loading docks a minimum of 300 feet away from the property line of sensitive receptor unless dock is exclusively used for electric trucks
- Incorporate signage and "pavement markings" to clearly identify on-site circulation patterns to minimize unnecessary on-site vehicle travel
- Locate truck entries on streets of a higher commercial classification
- Ensure all building roofs are solar-ready
- Ensure all portions of roof tops that are not covered with solar panels are constructed to have light colored roofing material with a solar reflective index of greater than 78
- Ensure rooftop solar panels are installed and operated to supply 100% of the power needed to operate all non-refrigerated portions of the development project
- Ensure power sources at loading docks for all refrigerated trucks have "plugin" capacity, which will eliminate prolonged idling while loading and unloading goods
- Incorporate bicycle racks and electric bike plug-ins

- Require the use of low volatile organic compounds (VOC) architectural and industrial maintenance coatings
- Designate an area during construction to charge electric powered construction vehicles and equipment, if temporary power is available
- Prohibit the use of non-emergency diesel-powered generators during construction
- Inform the project proponent of the incentive programs (e.g., Carl Moyer Program and Voucher Incentive Program) offered to reduce air emissions from the Project

6) Truck Routing

Truck routing involves the assessment of which roads Heavy Heavy-Duty (HHD) trucks take to and from their destination, and the emissions impact that the HHD trucks may have on residential communities and sensitive receptors. Since the Project consists of the development of office/warehouse buildings, the Project has the potential to generate HHD truck trips.

The District recommends the City evaluate HHD truck routing patterns for the Project, with the aim of limiting exposure of residential communities and sensitive receptors to emissions. This evaluation would consider the current truck routes, the quantity and type of each truck (e.g., Medium Heavy-Duty, HHD, etc.), the destination and origin of each trip, traffic volume correlation with the time of day or the day of the week, overall Vehicle Miles Traveled (VMT), and associated exhaust emissions. The truck routing evaluation would also identify alternative truck routes and their impacts on VMT and air quality.

7) Cleanest Available Heavy-Duty Trucks

The San Joaquin Valley will not be able to attain stringent health-based federal air quality standards without significant reductions in emissions from HHD trucks, the single largest source of NOx emissions in the San Joaquin Valley. The District's CARB-approved 2018 PM2.5 Plan includes significant new reductions from HHD trucks, including emissions reductions by 2023 through the implementation of CARB's Statewide Truck and Bus Regulation, which requires truck fleets operating in California to meet the 2010 standard of 0.2 g-NOx/bhp-hr by 2023. Additionally, to meet federal air quality attainment standards, the District's Plan relies on a significant and immediate transition of HHD fleets to zero or near-zero emissions technologies, including the near-zero truck standard of 0.02 g/bhp-hr NOx established by CARB.

The Project consists of the development of office/warehouse buildings, the Project has the potential to generate HHD truck trips, which travel to-and-from the Project location at longer distribution trip length distances. Since the Project may exceed the District significance thresholds, the District recommends that the following

measures be considered by the City to reduce Project-related operational emissions:

- *Recommended Measure*: Fleets associated with operational activities utilize the cleanest available HHD trucks, including zero and near-zero (0.02 g/bhp-hr NOx) technologies.

- *Recommended Measure*: All on-site service equipment (cargo handling, yard hostlers, forklifts, pallet jacks, etc.) utilize zero-emissions technologies.

8) Reduce Idling of Heavy-Duty Trucks

The goal of this strategy is to limit the potential for localized PM2.5 and toxic air contaminant impacts associated with the idling of Heavy-Duty trucks. The diesel exhaust from idling has the potential to impose significant adverse health and environmental impacts.

Since the Project is expected to result in HHD truck trips, the District recommends the EIR include measures to ensure compliance of the state anti-idling regulation (13 CCR § 2485 and 13 CCR § 2480) and discuss the importance of limiting the amount of idling, especially near sensitive receptors. In addition, the District recommends the City consider the feasibility of implementing a more stringent 3-minute idling restriction and requiring appropriate signage and enforcement of idling restrictions.

9) Electric On-Site Off-Road and On-Road Equipment

Since the development project may include Heavy Industrial and Light Industrial uses, the Project may have the potential to result in increased use of off-road equipment (e.g., forklifts) and on-road equipment (e.g., mobile yard trucks with the ability to move materials). The District recommends that the EIR include requirements for project proponents to utilize electric or zero emission off-road and on-road equipment.

10) Vegetative Barriers and Urban Greening

There are single family residential units located south east and north east of the Project. The District suggests the City consider the feasibility of incorporating vegetative barriers and urban greening as a measure to further reduce air pollution exposure on sensitive receptors (e.g., residential units).

While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, vegetative barriers have been shown to be an additional measure to potentially reduce a population's exposure to air pollution through the interception of airborne particles and the update of gaseous pollutants. Examples of vegetative barriers include, but are not limited to the following: trees, bushes, shrubs, or a mix of these. Generally, a higher and thicker

vegetative barrier with full coverage will result in greater reductions in downwind pollutant concentrations. In the same manner, urban greening is also a way to help improve air quality and public health in addition to enhancing the overall beautification of a community with drought tolerant, low-maintenance greenery.

11) On-Site Solar Deployment

It is the policy of the State of California that renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers by December 31, 2045. While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, the production of solar energy is contributing to improving air quality and public health. The District suggests that the City consider incorporating solar power systems as an emission reduction strategy for the Project.

12) Electric Vehicle Chargers

To support and accelerate the installation of electric vehicle charging equipment and development of required infrastructure, the District offers incentives to public agencies, businesses, and property owners of multi-unit dwellings to install electric charging infrastructure (Level 2 and 3 chargers). The purpose of the District's Charge Up! Incentive program is to promote clean air alternative-fuel technologies and the use of low or zero-emission vehicles. The District recommends that the City and project proponents install electric vehicle chargers at project sites, and at strategic locations.

Please visit www.valleyair.org/grants/chargeup.htm for more information.

13) Nuisance Odors

While offensive odors rarely cause any physical harm, they can be unpleasant, leading to considerable distress among the public and often resulting in citizen complaints.

The City should consider all available pertinent information to determine if the Project could have a significant impact related to nuisance odors. Nuisance odors may be assessed qualitatively taking into consideration the proposed business or industry type and its potential to create odors, as well as proximity to off-site receptors that potentially would be exposed to objectionable odors. The intensity of an odor source's operations and its proximity to receptors influences the potential significance of malodorous emissions. Any project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact.

According to the District Guidance for Assessing and Mitigating air Quality Impacts (GAMAQI), a significant odor impact is defined as more than one confirmed complaint per year averaged over a three-year period, or three unconfirmed complaints per year averaged over a three-year period. An unconfirmed complaint means that either the odor or air contaminant release could not be detected, or the source of the odor could not be determined.

The District is available to assist the City with information regarding specific facilities and categories of facilities, and associated odor complaint records.

14) District Rules and Regulations

The District issues permits for many types of air pollution sources, and regulates some activities that do not require permits. A project subject to District rules and regulations would reduce its impacts on air quality through compliance with the District's regulatory framework. In general, a regulation is a collection of individual rules, each of which deals with a specific topic. As an example, Regulation II (Permits) includes District Rule 2010 (Permits Required), Rule 2201 (New and Modified Stationary Source Review), Rule 2520 (Federally Mandated Operating Permits), and several other rules pertaining to District permitting requirements and processes.

The list of rules below is neither exhaustive nor exclusive. Current District rules can be found online at: www.valleyair.org/rules/1ruleslist.htm. To identify other District rules or regulations that apply to future projects, or to obtain information about District permit requirements, the project proponents are strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (559) 230-5888.

14a) District Rules 2010 and 2201 - Air Quality Permitting for Stationary Sources

Stationary Source emissions include any building, structure, facility, or installation which emits or may emit any affected pollutant directly or as a fugitive emission. District Rule 2010 (Permits Required) requires operators of emission sources to obtain an Authority to Construct (ATC) and Permit to Operate (PTO) from the District. District Rule 2201 (New and Modified Stationary Source Review) requires that new and modified stationary sources of emissions mitigate their emissions using Best Available Control Technology (BACT).

This Project may be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and may require District permits. Prior to construction, the Project proponent should submit to the District an application for an ATC. For further information or assistance, the project proponent may contact the District's SBA Office at (559) 230-5888.

14b) District Rule 9510 - Indirect Source Review (ISR)

The purpose of District Rule 9510 is to reduce the growth in both NOx and PM emissions associated with development and transportation projects from mobile and area sources; specifically, the emissions associated with the construction and subsequent operation of development projects. The ISR Rule requires developers to mitigate their NOx and PM emissions by incorporating clean air design elements into their projects. Should the proposed development project clean air design elements be insufficient to meet the required emission reductions, developers must pay a fee that ultimately funds incentive projects to achieve off-site emissions reductions.

Per Section 5.0 of the ISR Rule, an Air Impact Assessment (AIA) application is required to be submitted no later than applying for project-level approval from a public agency. Tor this Project, the District already received an AIA application (ISR project #20220195).

14c) District Rule 9410 (Employer Based Trip Reduction)

The Project may be subject to District Rule 9410 (Employer Based Trip Reduction) if the project would result in employment of 100 or more "eligible" employees. District Rule 9410 requires employers with 100 or more "eligible" employees at a worksite to establish an Employer Trip Reduction Implementation Plan (eTRIP) that encourages employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes. Under an eTRIP plan, employers have the flexibility to select the options that work best for their worksites and their employees.

Information about District Rule 9410 can be found online at: www.valleyair.org/tripreduction.htm.

For additional information, you can contact the District by phone at 559-230-6000 or by e-mail at etrip@valleyair.org

14d) District Rule 4601 (Architectural Coatings)

The Project may be subject to District Rule 4601 since it may utilize architectural coatings. Architectural coatings are paints, varnishes, sealers, or stains that are applied to structures, portable buildings, pavements or curbs. The purpose of this rule is to limit VOC emissions from architectural coatings. In addition, this rule specifies architectural coatings storage, cleanup and labeling requirements. Additional information on how to comply with District Rule 4601 requirements can be found online at: http://www.valleyair.org/rules/currntrules/r4601.pdf

(K) District Regulation VIII (Fugitive PM10 Prohibitions)

The project proponent may be required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities as described in Regulation VIII, specifically Rule 8021 – *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities.*

Should the project result in at least 1-acre in size, the project proponent shall provide written notification to the District at least 48 hours prior to the project proponents intent to commence any earthmoving activities pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). Also, should the project result in the disturbance of 5-acres or more, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials, the project proponent shall submit to the District a Dust Control Plan pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). For additional information regarding the written notification or Dust Control Plan requirements, please contact District Compliance staff at (559) 230-5950.

The application for both the Construction Notification and Dust Control Plan can be found online at:
https://www.valleyair.org/busind/comply/PM10/forms/DCP-Form.docx

Information about District Regulation VIII can be found online at:
http://www.valleyair.org/busind/comply/pm10/compliance_pm10.htm

(L) Other District Rules and Regulations

The Project may also be subject to the following District rules: Rule 4102 (Nuisance) and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations).

15) District Comment Letter

The District recommends that a copy of the District's comments be provided to the Project proponent.

If you have any questions or require further information, please contact Harout Sagherian by e-mail at Harout.Sagherian@valleyair.org or by phone at (559) 230-5860.

Sincerely,

Brian Clements
Director of Permit Services

For: Mark Montelongo
Program Manager

From:	Byron Beagles
To:	PublicCommentsPlanning
Cc:	Steven Martinez; Darla Scott
Subject:	Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for 2740 W. Nielsen Office/WarehouseProject
Date:	Friday, September 16, 2022 3:28:11 PM
Attachments:	2740 West Nielsen NOP for EIR.pdf

The Fresno Fire Department has the following comments regarding this project:

1. Offsite public water main infrastructure is existing and is of adequate size to supply an industrial project of this size. See Public Utilities comments regarding any need for increases in water well pumping capacity in this area.
2. The site is within the current city limits of the City of Fresno.
3. The project is within 2.0 miles of permanent Fire Station (FS) #19 at 3187 W. Belmont (west of N. Marks) and is within the required maximum closest initial fire station response distance of 2.0 miles for industrial/commercial development. A full first alarm to an active fire incident consisting of 5 fire engines, 2 fire trucks, a battalion chief, and a safety officer are available within 20 minutes of the project location in accordance with National Fire Protection Association (NFPA) Standard 1710 for providing an Effective Response Force. These additional apparatus and associated staffing are located at FS #16 (Polk and Clinton), FS #9 (Fruit and Clinton), FS# 4 (Cherry and Jensen) and FS #3 (Fresno and E Street). Fresno fire provided a full range of emergency response services including fire suppression, emergency medical service (EMS), heavy rescue, and hazardous materials incident capabilities.
4. A site plan entitlement has been submitted to the City of Fresno Planning and Development and circulated for comments from effected public agencies. With multiple public street frontages and the availability of 14 and 16 inch public water mains along those frontages, adequate fire access and water service connections for private fire hydrants and fire sprinkler systems are available. Based on the proposed buildings sizes, all buildings are required to install automatic fire sprinkler systems connected to an approved fire alarm monitoring service for rapid initiation of a fire department response. Warehouse developments of this size will typically have high demand fire sprinkler systems for high rack storage and fire sprinkler systems will be supplemented with private fire pumps as needed.
5. The project will be subject to the city wide fire service delivery impact fee that is based on the square footage of each building as listed in the City of Fresno Master Fee Schedule. This fee, among other impact fees, must be paid before occupancy under each individual building permit.

Note; the NOP is attached solely for future FFD reference as this request is not being processed through Accela.

October 12, 2022

Steven Martinez, Planner
Department of Planning and Resource Management
City of Fresno
2600 Fresno Street, Room 3043
Fresno, CA 93721

Sent Via Email

Re: Notice of Preparation of an EIR for the 2740 West Nielsen Avenue Office/Warehouse Project

Mr. Martinez,

We are writing to comment on the Notice of Preparation for the 2740 West Nielsen Avenue Office/Warehouse Project.[1] Leadership Counsel for Justice and Accountability works alongside residents of disadvantaged communities in the San Joaquin Valley to advocate for sound policy and secure equal access to opportunity regardless of wealth, race, income, or place. We work closely with residents of West Fresno and the Jane Addams neighborhood, near the location of the proposed Project, to ensure they are included in decision-making processes, prevent environmental harms to the community, and promote investment and policies that advance community priorities.

If approved, the proposed Project would continue a long-standing pattern by the City of Fresno to locate industrial facilities, warehouse distribution centers, waste facilities, and other land uses with adverse environmental and public health impacts in and near West Fresno and the Jane Addams neighborhood. Distribution centers have been recognized for their significant impacts on surrounding neighborhoods due to their construction and operational impacts, including in particular impacts associated with the influx of truck and car traffic near sensitive receptors and vulnerable populations. Distribution centers also significantly contribute to air quality degradation at the regional level. Given poor existing conditions in the vicinity of the Project site, the City's history of inequitable land use siting practices impacting West Fresno, and the approval of numerous warehouses in the Fresno-Madera Metropolitan region in recent years, it is of the utmost importance that the City full analyzes the Project's environmental impacts and fully considers and adopts mitigation measures and alternatives to reduce those impacts.

Therefore, this letter provides information about the poor existing environmental conditions and disproportionate environmental hazards in the vicinity of the Project site which this project is likely to exacerbate, identifies potentially significant environmental impacts which

[1] Hereinafter, The Project

the Project is likely to create, proposes mitigation measures and alternatives which would reduce those impacts, and discusses steps the City must take to engage the surrounding community prior to any final decision on the project.

The Project Must Consider Existing Environmental Conditions

The EIR must consider the extremely poor environmental conditions residents currently face, and how the project would exacerbate existing conditions. The census tracts near the proposed project face environmental, health, and socioeconomic challenges. As courts and CEQA guidelines have pointed out "[t]he significance of an activity depends on the setting."[2] Existing environmental conditions provide little room for polluting industries to open or expand without having a significant impact on the proposed location's environmental conditions.

The project site is located within a census tract with a CalEnviroScreen score of 100 while abutting three census tracts with scores of 95, 91, and 99[3]. Additionally, the American Lung Association ranked the Fresno-Madera-Hanford region as 4th for high ozone days, 1st for 24 hour particle pollution, and 2nd for annual particle pollution among metropolitan areas in the country. The project site census tract exposes residents to particularly high Diesel Particulate Matter, particulate matter 2.5, and ozone. Exposure to these pollutants is associated with increased rates of asthma, low birth weights, and cardiovascular disease. The census tract currently has scores of 98, 100, and 95 for asthma, low birth weights, and cardiovascular disease, respectively.

The proposed site is near sensitive receptors. Sensitive receptors would be especially burdened by reduced air quality. The site is within 2 miles of residential neighborhoods, Madison elementary, and the Veterans Home of California. Poor air quality is especially damaging to children and the elderly. Children's lungs are not fully formed, making them more susceptible to respiratory infections. Further, poor air quality impacts neurodevelopment, cognitive abilities, and triggers asthma, resulting in long term effects even after the child has left the poor air quality area.[4]

The surrounding communities to the project site are overwhelmingly low-income people of color. The proposed project site census tract has CalEnviroScreen socioeconomic scores above 90 in education, poverty, unemployment, and housing burden. The poor scores reflect low access to quality schools, job opportunities, and affordable housing. Instead, the area is dotted with trucking focused facilities and heavy industrial uses.

---

[2] Kings County Farm Bureau v. City of Hanford (1999) 221 Cal.App.3d 692, 718; CEQA Guidelines Sec. 15064(d); 15300.2(a)
[3] The scores place the tract in a percentile when compared to the rest of California; a score of 100 ranks the tract as one of the worst CalEnviroScreen tracts surveyed in the state.
[4] World Health Organization, More than 90% of the world's children breathe toxic air every day, October 2018.

The EIR Must Thoroughly Analyze the Project's Various Potentially Significant Environmental Impacts

The Notice of Preparation ("NOP") identifies several potentially significant environmental impacts which the Project may result in. The impacts listed in the NOP leave out some essential elements that must be studied to determine their effects on the neighboring communities and sensitive receptors. The following impacts listed are essential but an unexhaustive list of impacts that must be addressed in the EIR to comply with CEQA.

Cumulative Impacts

The EIR must analyze the impact of the project considering the existing environmental conditions of the area. The project site would exacerbate existing pollution burdens facing nearby communities. The project proposes to build four office/warehouse buildings that would be configured for heavy industrial uses. The project would add 901,438 square feet of heavy industrial buildings and 201 loading dock doors. In addition, the project would create 594 on-site parking spaces with 188 spaces set aside for trailers. The primary sources of diesel particulate matter, particulate matter, and ozone are trucks and standard vehicles. The hundreds of parking spaces are likely to result in significant hours of vehicle idling, creating high concentrations of particulate matter and ozone. Those high concentrations would worsen some of the worst air quality in the state.

Additionally, the project would further entrench land use practices that place industrial development near lower-income minority populations that already have high pollution indices and a lower standard of living when compared to wealthier, less diverse communities in Fresno. The land practices demonstrate a history of targeted pollution with little regard to cumulative impacts. Therefore, the EIR must consider past, present, and foreseeable impacts polluting projects like this one will have on nearby residents.

VMT Impacts

The EIR must analyze the direct and indirect environmental impacts of VMT associated with the Project, including impacts to air quality, pedestrian, cyclist, and public transit user safety, ambient noise levels, aesthetics, and road quality. The EIR must accurately calculate VMT, by providing accurate estimates of truck trips which travel to and from the project site based on reasonably foreseeable truck origin and destination locations or regions as well as commuter traffic generated by employees at the project site. The EIR must thoroughly analyze regional and localized air quality and associated public health impacts, considering air emissions associated with VMT generated by vehicle type and truck routes the Project site, and loading areas in relation to the location of sensitive receptors. In addition, increased traffic will increase noise levels. Prolonged exposure to truck and car traffic generated by project construction and

operation and loading activities on the Project site will increase noise levels and negatively impact the health of nearby residents and students, including but not limited to through potential hearing damage and interference with residents' sleep patterns.[5] The EIR must thoroughly analyze these and other impacts associated with the proposed Project's VMT impacts.

Heat Impacts

The proposed project will contribute to the heat island effect. The proposed project site is currently a vacant parcel of dirt. If the project is approved as proposed, it would convert the current vacant dirt parcel into a concrete rectangle that will absorb heat throughout the day and continue to release residual heat throughout the night. The surrounding areas would increase in temperature because of the land conversion. The EIR must analyze and identify increases in ambient temperature during construction and use of the facilities. The EIR must indicate a baseline with current temperatures and consider increasingly hotter temperatures to identify accurate heat island temperatures. The EIR must also assess heat island impacts including increased energy consumption required to cool surrounding homes, greenhouse gas emissions and air pollutants, health impacts on nearby residents associated with increasing temperatures, and potential water quality impacts. The EIR must discuss and identify the most effective mitigation strategies to reduce heat and address impacts during all phases of this project. The EIR should consider cooling infrastructure in nearby residential neighborhoods and sensitive receptors.

Additional Impacts

The EIR must fully analyze the following impacts and identify the most appropriate mitigation measures to reduce their effects on residents.

- Trucks and the warehouses often use bright lights that disrupt residents' ability to sleep at night.
- The proposed project will likely increase the amount of water used, wastewater generated, and pollutants emitted near residents. Some residents rely on domestic wells. Therefore, potential water impacts should be examined.
- A new industrial facility will remove a vacant lot and increase the truck traffic through the area, therefore the aesthetic impacts to the area should be considered.

Mitigation

[5] Noise Sources and Their Effects, https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm (a diesel truck moving 40 miles per hour, 50 feet away, produces 84 decibels of sound).

We request that the City consider and incorporate the following feasible mitigation measures into the EIR and include them as permit conditions in applicable entitlements. The mitigation measures must ensure there is a nexus and rough proportionality between the measure and the significant impacts of the project.[6] The measures must also be feasible and fully enforceable, to be imposed by leaf agencies.[7] The measures are focused on lowering initial and long-term effects of the proposed project on nearby communities as well as the region as a whole. The mitigation measures below are intended to be only a partial, and not a comprehensive list, of measures necessary to avoid and reduce the Project's potentially significant impact. Again, the City must analyze *all* feasible mitigation measures to avoid and reduce the Project's impacts to less than significant levels.

Zero Emission Vehicles and Equipment

The EIR must consider the long-term viability of the project site. Therefore, the EIR must consider the necessary infrastructure to prepare for zero emission requirements. The City should require that all equipment be electric, such as forklifts and yard trucks. Additionally, as no tenants are currently identified for the project, any light to medium duty vehicles the tenant expects to use should be zero emission vehicles. The City should require that beginning in 2030, all heavy-duty vehicles entering the project site should be zero emission vehicles. In the interim, the City should require trucks using the facility be low emission vehicles

Construction

Any off-road construction equipment used at the site should be zero emission where available, while all diesel fueled construction equipment should be equipped with Tier IV-compliant engines or better. The City must require that the Project use effective dust suppression measures during construction that go beyond mere compliance with the Air District's Fugitive Dust Rule, which has not effectively reduced dust impacts for other projects approved by the City. Further, the City should meet with impacted residents to determine if construction should be carried out during the day to reduce noise impacts at night, or during nighttime to reduce traffic impacts.

Additional Mitigation Measures

The City should implement the following mitigation measures to reduce the significant impact of the proposed project.

- The City should require lights be directed towards the interior of the facility. Light shields and anti-glare lighting should be used to prevent unnecessary light pollution.
- The City should prioritize hiring from the surrounding neighborhood to directly benefit employment in the area while reducing VMT from commuting.

[6] CEQA Guidelines § 15126.4, subd. (a)(4)(A)–(B), citing Nollan v. Ca. Coastal Commission (1987) 483 U.S. 825, Dolan v. City of Tigard (1994) 512 U.S. 374
[7] CEQA Guidelines, § 15041

- The proposed site should avoid using asphalt. Or instead, paint surfaces white to deflect heat and avoid further heat island absorption from sark surfaces.
- The City must implement a truck routing study to the impact truck emission routes would have on residential neighborhoods and sensitive receptors. The City must then require the least impactful routes be adopted by future tenants.
- The City must create vegetative buffers to reduce pollutant dispersal between the project site and nearby residents/sensitive receptors. Vegetative buffers could surround the proposed project while being offered to be installed onto impacted residents' properties.

Project Alternatives

The EIR must seriously consider other locations for the proposed Project. The Project as proposed would disproportionately degrade air quality in an already overburdened community. Given the proposed project's location in an area with extremely poor existing environmental conditions, the project is more likely to result in significant negative impacts to public health, air quality, energy use, aesthetics, noise, and more. The City must consider alternative project locations in areas with better environmental conditions and/or fewer sensitive receptors in order to minimize the project's impacts to the environment and human beings.[8] The location also has sensitive receptors and has a long history of unequal land zoning that has placed environmentally damaging industries near low-income residents of color. The EIR must include a discussion of alternative locations that minimizes the project's environmental and health impacts on nearby communities.

The Project Would Likely Violate AFFH and FEHA if Approved

The project likely violates The Fair Housing and Employment Act as well as City's duty to Affirmatively Further Fair Housing. The project's proposed location in a community of color, risks to adverse impacts on housing opportunities to protected classes, and a deficient CEQA analysis/mitigation would likely result in FEHA and AFFH violations.

AFFH requires public agencies take meaningful actions to address significant disparities in housing needs and in access to opportunity, replacing segregated living patterns with integrated balanced living patterns, transforming racially and ethnically concentrated areas of poverty into areas of opportunity.[9] Further, "[a] public agency shall administer its programs and activities relating to housing and community development in a manner to affirmatively further fair housing, and take no action that is materially inconsistent with its obligation to affirmatively further fair housing."[10] Here, if the City approved the project, it would further concentrate

[8] California Department of Justice, Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act, September 2022.
[9] Cal. Gov't Code § 8899.50(a)(1)
[10] Cal. Gov't Code § 8899.50(b)

industrial development in a segregated portion of west Fresno. The approval would actively harm affordable housing from being placed in the area and depreciate housing values so that current residents would lose money if they were to sell their land. The approval would perpetuate segregation and harm future housing in the area. As a result, approval of the project would likely be a violation of the City's duty to further fair housing.

The Fair Employment and Housing Act (FEHA) prohibits any public or private land use practices that intentionally discriminates or has an unlawful discriminatory effect on housing opportunities based on race, ethnicity, national origins and other protected classes, which includes.[11] Here, the project is located within a census tract that is made up of 67% Hispanic and 19.3% Black, while those that identify as White only make up 2.6% of the tract. Therefore, we could argue that the project's location would have a discriminatory effect on Black and Hispanic residents.

The proposed project could be in violation of several FEHA regulations. For example, "results in the location of toxic, polluting, and/or hazardous land uses in a manner that denies, restricts, conditions, adversely impacts, or renders infeasible the enjoyment of residence, land ownership, tenancy, or any other land use benefit related to residential use, or in connection with housing opportunities or existing or proposed dwellings."[12] Here, the proposed project would disproportionately increase diesel particulate matter, particulate matter ("PM") of 2.5 microns or smaller ("$PM_{2.5}$"), PM_{10}, and ozone near the Project site. Increases of those pollutants would further worsen the health outcomes for the residents nearby which would ingest the pollutants from their homes, thereby interfering residents' enjoyment of their residences. Dust, noise, light glare, and negative aesthetic impacts would also interfere with residents' use and enjoyment of their residents, potentially in violation of FEHA.

Further, if the City Project approves, the City could be in violation of 2 CCR § 12161(b)(12). The Regulation states that a public agency may not engage in a land use practice that "creates, increases, reinforces, or perpetuates segregated housing patterns, independently, of the extent to which it produces a disparate effect on protected classes." Low-income residents in the area tend to be low-income people of color. Therefore, by placing further industrial development near residential homes, the land use practice is likely to continue to segregate the community from more affluent white residents.

The City Must Commit to Greater Community Engagement

The proposed Project's potential impacts on an overburdened community make it all-the-more important that the City provide meaningful and accessible community engagement opportunities for residents to learn about the project and provide feedback throughout the

[11] 2 CCR § 12161
[12] 2 CCR § 12161(b)(10)

project's development and consideration. All community engagement should be provided in languages spoken by community residents, which include Thai, Hmong, Spanish, and other languages. Timely notice should be provided to community members so that they have the opportunity to plan and prepare adequate comments for the City and that leaves the City ample opportunity to incorporate residents' comments into the Project's design and all aspects of the EIR, including the impacts and alternatives analysis and mitigation.

Due to the proximity to Madison Elementary School, a sensitive receptor, the City must also engage with the school's teachers and the families of children that attend that school. During this, the City must provide information on the proposed project while allowing families to provide input and voice concerns about the Project. The City must not proceed with the Project at the proposed site if community members reject its location within their community.

Thank you for your attention to our comments. Please contact me if you would like to find a time to discuss them.

Sincerely,

Isaac Serratos
Legal Advocate
Leadership Counsel for Justice and Accountability

Laura Moreno
Executive Director
Friends of Calwa

Kevin Hamilton
Executive Director
Central California Asthma Collaborative

APPENDIX B

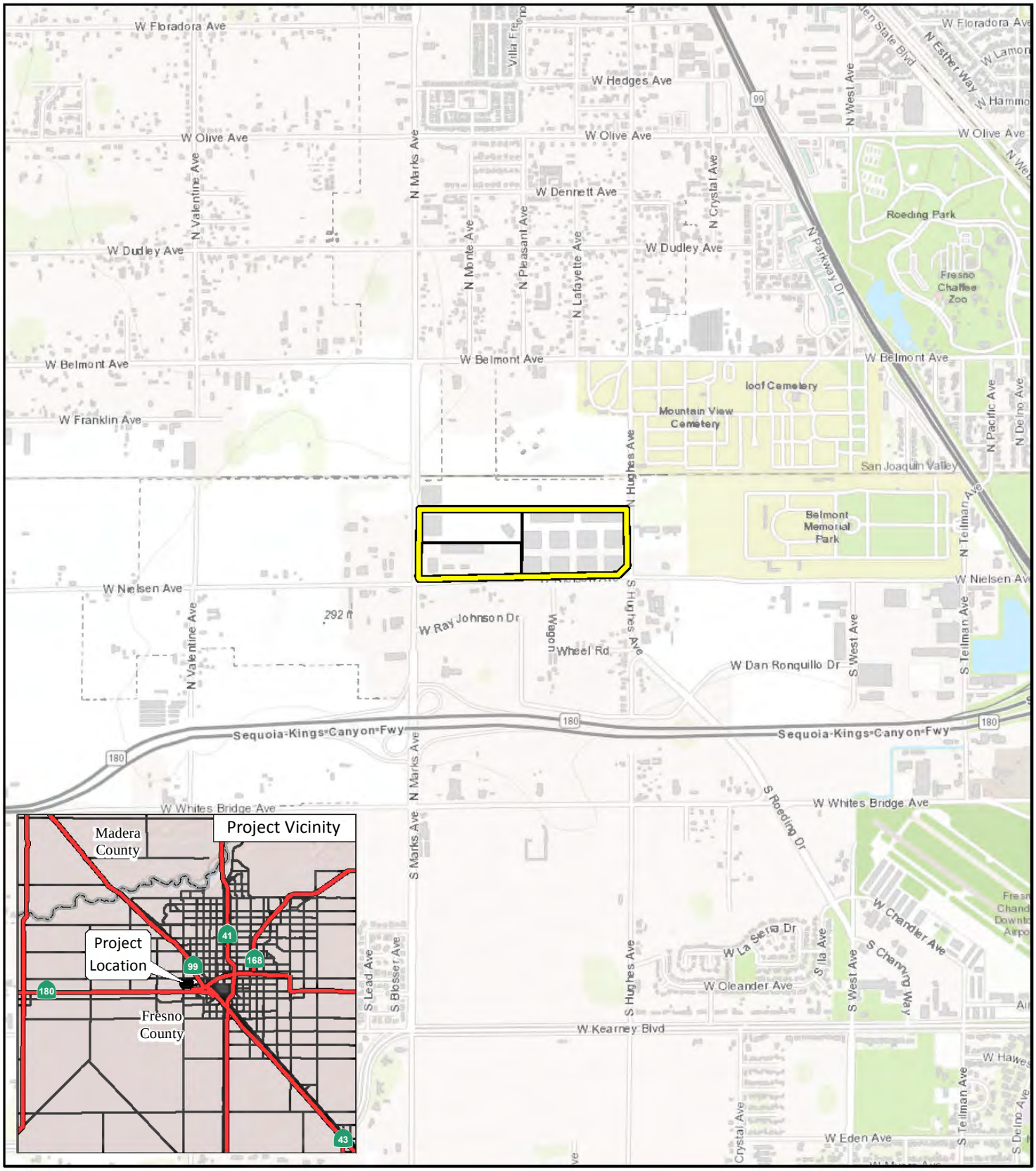
INITIAL STUDY

This page intentionally left blank

INITIAL STUDY

Environmental Checklist Form for:
Development Permit Application No. P21-02699 and
Tentative Parcel Map Application No. P21-05930

1.	**Project title:** Development Permit Application No. P21-02699 and Tentative Parcel Map No. P21-05930
2.	**Lead agency name and address:** City of Fresno Planning and Development Department 2600 Fresno Street Fresno, CA 93721
3.	**Contact person and phone number:** Steven Martinez, Planner City of Fresno Planning and Development Department (559) 621-8047
4.	**Project location:** 2740 West Nielsen Avenue: Northeast of intersection of North Marks Avenue and West Nielsen Avenue (Assessor's Parcel Numbers [APNs]: 458-020-71 and 458-020-72) Figure 1 shows the site's regional and local context. Figure 2 depicts an aerial photograph of the project site and surrounding land uses.
5.	**Project sponsor's name and address:** Jake Kurth Scannell Properties 8801 River Crossing Boulevard, Suite 300 Indianapolis, IN 46240
6.	**General & Community plan land use designation:** Heavy Industrial
7.	**Zoning:** Heavy Industrial (IH)
8.	**Description of project:** Development Permit Application No. P21-02699 and Tentative Parcel Map Application No. P21-05930 was filed by Scannell Properties. The applicant proposes to construct four office/warehouse buildings with a total area of 901,438 square feet, as well as associated circulation, parking, and infrastructure improvements.



LSA

LEGEND

Project Location

Proposed Parcels

0 1000 2000

FEET

FIGURE 1

2740 West Nielsen Avenue Office/Warehouse Project

Regional Project Location

SOURCE: Esri Topographic Map (2021)

I:\SNN2102\GIS\MXD\Project_Location.mxd (6/7/2021)

LSA

FIGURE 2

Project Site

Proposed Parcels

N

0 500 1000

FEET

2740 West Nielsen Office/Warehouse Project

Aerial Photograph of Project Site and Surrounding Land Uses

SOURCES: Google Earth, 9/9/2019; LSA 2021

FreP:\SNN2102 2740 W. Nielsen\PRODUCTS\Graphics\Figure 2.ai (1/20/2022)

Project Site

The 48.03-acre project site is currently vacant but formerly consisted of a former industrial warehouse that has previously been demolished. The project site is bounded to the north by vacant, undeveloped land, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue. Regional access to the site is provided by State Route 180 (SR-180), which is located approximately 0.3 mile south of the project site, and State Route 99 (SR-99), which is located approximately 0.8 miles east of the project site.

Project Characteristics

The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. The proposed project would also subdivide the project site into four separate parcels and would consist of each proposed building on a separate parcel. Figure 3 shows the project site plan.

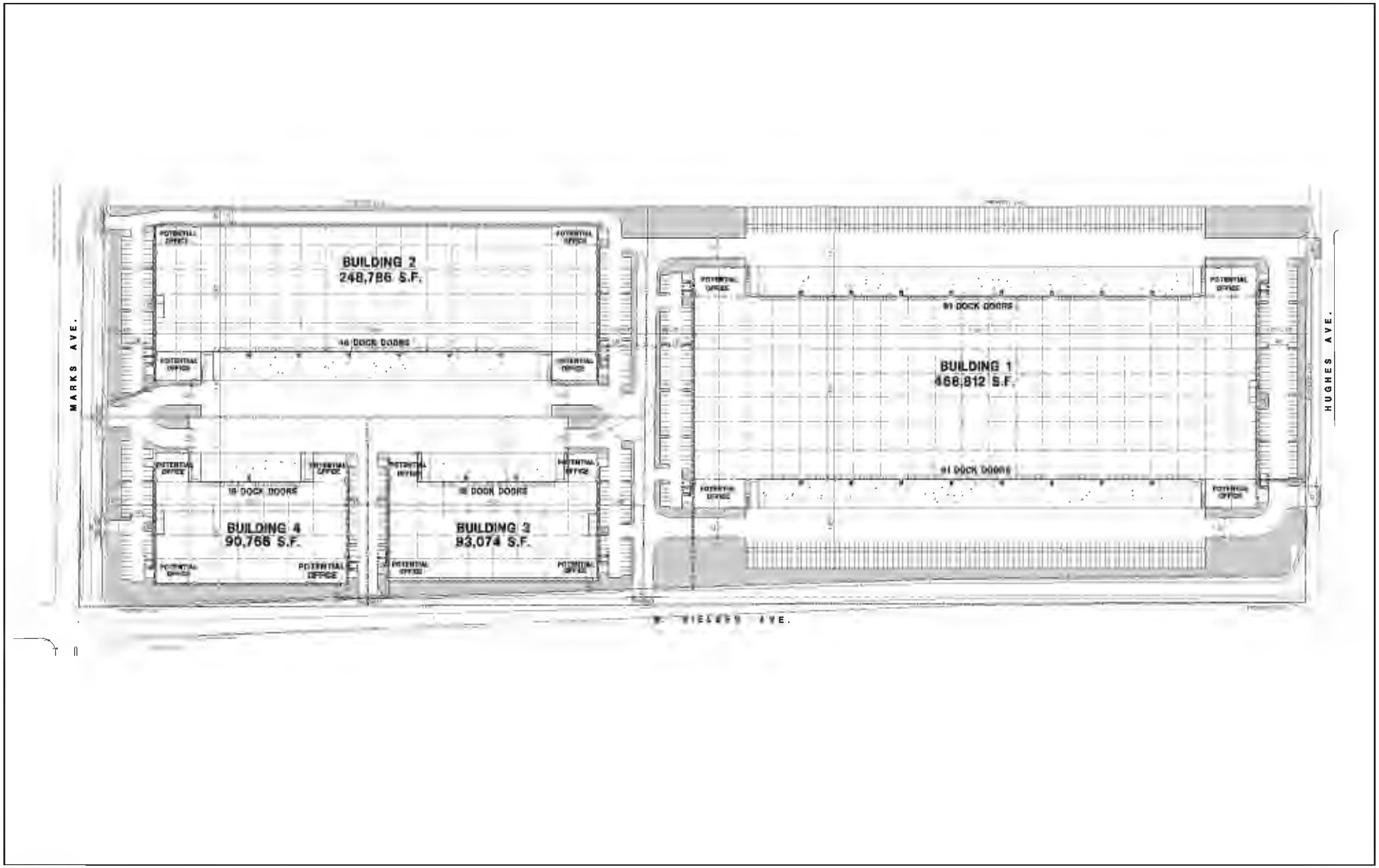
As identified above, future tenants have not been identified. Therefore, it is conservatively assumed that the proposed project would be operational 24 hours per day, 7 days per week; however, it is possible that future tenants may operate fewer hours.

The proposed project would comply with the latest California Green Building Standards Code (CALGreen) building measures and Title 24 standards.

Access, Circulation, and Parking

As shown in Figure 3, vehicular access to the site would be provided by North Hughes Avenue, West Nielsen Avenue, and North Marks Avenue.

A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining 188 spaces would be dedicated for trailers and would be located along the eastern and western edges of the project site and would be located behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.



LSA

0 120 240

FEET

N

FIGURE 3

2740 West Nielsen Office/Warehouse Project
Site Plan

SOURCE: HPA Architecture, Inc., 2021

FreP:\SNN2102 2740 W. Nielsen\PRODUCTS\Graphics\Figure 3.ai (10/5/2021)

Open Space and Landscaping
Consistent with City requirements, landscaping would be provided throughout the project site. The project would also include a vegetative plan that includes the planning of trees and other landscaping materials throughout the perimeter of the project site.

Utilities and Infrastructure
The project site is located in an urban area and is currently served by existing utilities, including: water, sanitary sewer, storm drainage, electricity, and natural gas infrastructure. Proposed utility connections are discussed below.

Water
Water service to the project site would be provided by the City. New water within the project site would connect to the existing 14-inch main located on North Marks Avenue, the 14-inch main on West Nielsen Avenue, and/or the 16-inch main on North Hughes Avenue. The project would also include an on-site private 12-inch main.

Wastewater
The City would provide wastewater collection and treatment for the proposed project, and maintains an existing 12- to 18-inch line located in West Nielsen Avenue, a 36-inch main on North Marks Avenue, and an 8-inch main located on North Hughes Avenue. The proposed project includes the installation of a new on-site private 8-inch wastewater line that would connect to the City's existing lines.

Stormwater
The proposed project would include construction of a new curb and gutter along North Marks Avenue, West Nielsen Avenue, and North Hughes Avenue that would connect to the existing Fresno Metropolitan Flood Control District (FMFCD) stormwater system.

Electricity and Natural Gas
Electricity and natural gas services to the site are provided by Pacific Gas and Electric Company (PG&E). Existing underground utility connections and gas mains provide electricity and gas to the project site. New underground electrical lines would be installed.

Grading and Construction
Construction of the proposed project is anticipated to occur in two phases occurring over a total 24-month period starting in the third quarter of 2023 and ending in 2025. The first phase would include the construction of Buildings 2, 3, and 4 and would occur for 12 months. The second phase would include the construction of Building 1 and would occur for 12 months. The proposed project would comply with City standards, including the City's current building code, landscape standards, and lighting standards. In addition, the proposed project would be graded similar to other developments throughout the City.

APPROVALS/PERMITS
The following approvals are required by the City of Fresno:

- City of Fresno, Certification of an Environmental Impact Report (EIR)

- City of Fresno, Design Review
- City of Fresno, Tentative Parcel Map
- City of Fresno, water connection(s)
- City of Fresno, sanitary sewer connection(s)
- Pacific Gas & Electric (PG&E), electrical and natural gas connection
- Central Valley Regional Water Quality Control Board (RWQCB) Storm Water Pollution Prevention Plan
- San Joaquin Valley Air Pollution Control District (SJVAPCD) (e.g., Dust Control Plan Approval letter and compliance with Rule 9510 – Indirect Source Review)

9. **Surrounding Land Uses and Setting:**

	Planned Land Use	Existing Zoning	Existing Land Use
North	Heavy Industrial/ Cemetery	Heavy Industrial (IH)	Heavy Industrial/ Cemetery
East	Light Industrial/ Cemetery	Light Industrial (IH)/ Public and Institutional (PI)	Light Industrial/ Cemetery
South	Highway & Auto/ Business Park	Commercial Highway & Auto (CH)/ Business Park (BP)	Highway & Auto/ Business Park
West	Light Industrial	Light Industrial (IH)	Light Industrial

10. **Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):**

- Pacific Gas & Electric (PG&E), electrical and natural gas connection
- Central Valley Regional Water Quality Control Board (RWQCB) Storm Water Pollution Prevention Plan
- San Joaquin Valley Air Pollution Control District (SJVAPCD) (e.g., Dust Control Plan Approval letter and compliance with Rule 9510 – Indirect Source Review)

11. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code (PRC) Section 21080.3.1? If so, has consultation begun?**

The State requires lead agencies to consider the potential effects of proposed projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Register of Historical Resources (California Register) or local historic register, or, the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a)(1-2)). According to the most recent census data, California is home to 109 currently recognized Indian tribes. Tribes in California currently have nearly 100 separate reservations or Rancherias. Fresno County has a number of

	Rancherias such as Table Mountain Rancheria, Millerton Rancheria, Big Sandy Rancheria, Cold Springs Rancheria, and Squaw Valley Rancheria. These Rancherias are not located within the city limits. Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's (NAHC) Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality. Currently, the Table Mountain Rancheria Tribe and the Dumna Wo Wah Tribe have requested to be notified pursuant to Assembly Bill (AB) 52. A certified letter was mailed to the above-mentioned tribes on December 17, 2021. The 30-day comment period ended on January 17, 2022. Neither tribe requested consultation.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☒	Aesthetics	☐	Agriculture and Forestry Resources
☒	Air Quality	☒	Biological Resources
☒	Cultural Resources	☒	Energy
☐	Geology/Soils	☒	Greenhouse Gas Emissions
☒	Hazards and Hazardous Materials	☒	Hydrology/Water Quality
☐	Land Use/Planning	☐	Mineral Resources
☒	Noise	☐	Population/Housing
☐	Public Services	☐	Recreation
☒	Transportation	☒	Tribal Cultural Resources
☒	Utilities/Service Systems	☐	Wildfire
☒	Mandatory Findings of Significance		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

___	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
___	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
_X_	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT (EIR) is required.
___	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An EIR is required, but it must analyze only the effects that remain to be addressed.
___	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____

Planner Name, Title Date

EVALUATION OF ADDITIONAL ENVIRONMENTAL IMPACTS:

1. For purposes of this Initial Study, the following answers have the corresponding meanings:

   a. "No Impact" means the subsequent project will not cause any additional significant effect related to the threshold under consideration.

   b. "Less Than Significant Impact" means there is an impact related to the threshold under consideration, but that impact is less than significant;

   c. "Less Than Significant with Mitigation Incorporation" means there is a potentially significant impact related to the threshold under consideration, however, with the mitigation incorporated into the project, the impact is less than significant.

   d. "Potentially Significant Impact" means there is an additional potentially significant effect related to the threshold under consideration.

2. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

3. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

4. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

5. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from, "Earlier Analyses," as described in (6) below, may be cross-referenced).

6. Earlier analyses may be used where, pursuant to the tiering, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a. Earlier Analysis Used. Identify and state where they are available for review.

    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

7. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

8. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

9. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

10. The explanation of each issue should identify:

    a. The significance criteria or threshold, if any, used to evaluate each question; and
    b. The mitigation measure identified, if any, to reduce the impact to less than significant.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS – Except as provided in PRC Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	X			
b) Substantially damage scenic resources, including, but not limited to, trees, rock out-croppings, and historic buildings within a state scenic highway?	X			
c) In non-urbanized areas, substantially degrade the existing visual character or quality public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	X			
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	X			

DISCUSSION

a) through d)

Although the project site is located in a partially developed area of the city and is not located in an area with expansive or far field views, the proposed project would include the construction of four office/warehouse buildings that would be configured for heavy industrial uses. The proposed project could result in potentially significant impacts related to aesthetics due to the size of the project and the project's potential to introduce new sources of light and glare to the area. Therefore, the criteria identified above for topics a) through d) will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES – In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farm-land), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

DISCUSSION

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The project site is located within an urbanized area of Fresno. There are no agricultural uses located within or adjacent to the project site. Additionally, the site is classified as "Urban and Built-Up Land" by the State Department of Conservation.[1] Therefore, development of the proposed project would not convert agricultural land to a non-agricultural use. The proposed project would result in no impact to the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use and no mitigation is required.

b) Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

The project site is designated Heavy Industrial in the General Plan and is located in the Heavy Industrial (IH) zoning district. The project site is not subject to a Williamson Act contract. Therefore, development of the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract. Therefore, the proposed project would have no impact on existing zoning for agricultural use or a Williamson Act contract and no mitigation is required.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

The project site is located within an existing urban area and is zoned within a Heavy Industrial (IH) district within the City of Fresno. The proposed project would not conflict

[1] Department of Conservation, Farmland Mapping & Monitoring Program. Website: https://www.conservation.ca.gov/dlrp/fmmp (accessed June 2021).

with the existing zoning for, or cause rezoning of, forest land or conversion of forest land to non-forest uses. Therefore, the proposed project would have no impact to existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)), and no mitigation is required.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

Please refer to the discussion for c) above. The proposed project would not convert forest land to non-forest use and would result in no impact to the loss or conversion of forest land to a non-forest use, and no mitigation is required.

e) Would the project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use?

Please refer to discussions a) and c) of this section. The project site is located within an existing urban environment and would not result in the conversion of farmland to non-agricultural uses or forest land to non-forest uses. Therefore, no impact to changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use would occur, and no mitigation is required.

MITIGATION MEASURES

The proposed project would not result in any potentially significant impacts related to agriculture and forestry resources, and no mitigation is required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan (*e.g.*, by having potential emissions of regulated criterion pollutants which exceed the San Joaquin Valley Air Pollution Control Districts (SJVAPCD) adopted thresholds for these pollutants)?	X			
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	X			
c) Expose sensitive receptors to substantial pollutant concentrations?	X			
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	X			

DISCUSSION

a) through d)

Development of the proposed project could increase pollutant concentrations within the City through increased vehicle trips and construction emissions. This increase could contribute to existing air pollution in the San Joaquin Valley Area Air Basin and has the potential to exceed regional air emission thresholds established by the San Joaquin Valley Air Pollution Control District (SJVAPCD). Construction activities associated with project development, including building grading and ground disturbance, could increase concentrations of particulate matter and could expose sensitive receptors to toxic air contaminants. In addition, the proposed project could result in increased cancer and noncancer health risks from project-related emissions of TACs in the exhaust of diesel-

powered trucks and equipment on existing nearby sensitive receptors. Therefore, the criteria identified above for topics a) through d) will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES – Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	X			
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	X			
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	X			
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	X			
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	X			

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	X			

DISCUSSION

a) through f)

Although the project site was previously developed and is located in a partially developed area of the city, the Fresno region supports various special-status natural communities, plants, and animals that could have the potential to occur in the vicinity of the project site. As such, the proposed project could result in potentially significant impacts related to biological resources due to the introduction of new urban uses. Therefore, the criteria identified above for topics a) through f) will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	X			
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	X			
c) Disturb any human remains, including those interred outside of formal cemeteries?	X			

DISCUSSION

a) through c)

Although no evidence of historical resources or archaeological deposits have been identified within or adjacent to the project site, there is a potential for unknown archaeological resources that qualify as a historical resource under CEQA to be discovered during construction. In addition, the City has determined that impacts to cultural resources could occur as a result of development within the City, and that unknown archaeological materials constituting historical resources have the potential to be present. In addition, disturbance of human remains identified during project construction would result in a potentially significant impact. Therefore, the criteria identified above for topics a) through c) will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. ENERGY – Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	X			
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	X			

DISCUSSION

a) through b)

Construction of the proposed project would require energy for the manufacture and transportation of construction materials, preparation of the site for demolition and grading activities, and construction of the residences. Operation of the proposed project would consume energy use associated with natural gas use, electricity consumption, and fuel used for vehicle and truck trips associated with the project. Due to the size of the proposed project, construction and operation of the proposed project could result in a potentially significant impact due to wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, the criteria identified above for topics a) through b) will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS – Would the project:				
a) Directly or Indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X	

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

DISCUSSION

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Fault rupture is generally expected to occur along active fault traces that have exhibited signs of recent geological movement (i.e., 11,000 years). Alquist-Priolo Earthquake Fault Zones delineate areas around active faults with potential surface fault rupture hazards that would require specific geological investigations prior to approval of certain kinds of development within the delineated area. The project site is not located within an Alquist-Priolo Earthquake Fault Zone. In addition, no known active or potentially active faults or fault traces are located in the project vicinity. As a result, the proposed project would have no impact related to rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault would occur.

ii. Strong seismic ground shaking?

The City of Fresno is located in an area with historically low to moderate level of seismicity. However, strong ground shaking could occur within the project site during seismic events and occurrences have the possibility to result in significant impacts. Major seismic activity along the nearby Great Valley Fault Zone or the Nunez Fault, or other associated faults, could affect the project site through strong seismic ground shaking. Strong seismic ground shaking could potentially cause structural damage to the proposed project. However, due to the distance to the

known faults, hazards due to ground shaking would be minimal. In addition, compliance with the California Building Code (Title 24 CCR) would ensure that geotechnical design of the proposed project would minimize or eliminate potential impacts related to strong seismic ground shaking. Therefore, the project would not directly or indirectly cause substantial adverse effects related to strong seismic ground shaking. As such, the proposed project would have a less-than-significant impact.

iii. Seismic-related ground failure, including liquefaction?

Soil liquefaction is a phenomenon primarily associated with saturated soil layers located close to the ground surface. During ground shaking, these soils lose strength and acquire “mobility” sufficient to permit both horizontal and vertical movements. Soils that are most susceptible to liquefaction are clean, loose, uniformly graded, saturated, fine-grained sands that lie relatively close to the ground surface. However, loose sands that contain a significant amount of fines (silt and clay) may also liquefy. Based on the predicted seismic accelerations, and soil and groundwater conditions typically encountered in the region, general liquefaction potential is low in the City of Fresno. Additionally, compliance with the Fresno Municipal Code and the California Building Code would ensure potential impacts associated with seismic-related ground failure, including liquefaction, would not directly or indirectly cause substantial adverse effects. Therefore, the proposed project’s impacts would be less than significant.

iv. Landslides?

A landslide generally occurs on relatively steep slopes and/or on slopes underlain by weak materials. The project site is located on a relatively flat area and is not located next to any hills. In general, the potential for land sliding or slope failure in Fresno is very low and the project site would not be susceptible to landslides. Therefore, the proposed project would not directly or indirectly cause substantial adverse effects by exposing people or structures to risk as a result of landslides. As such, the proposed project’s impacts would be less than significant.

b) Would the project result in substantial soil erosion or the loss of topsoil?

The total project site is 48.03 acres, which would be disturbed/developed during proposed grading and construction activities. Grading and earthmoving during project construction has the potential to result in erosion and loss of topsoil. Exposed soils could be entrained in stormwater runoff and transported off the project sites. However, this impact would not be substantial because the project is required to comply with water quality control measures, which include preparation of a Stormwater Pollution Prevention Plan (SWPPP) (refer to Section X, Hydrology and Water Quality). Although designed primarily to protect stormwater quality, the SWPPP would incorporate Best Management Practices (BMPs) to minimize erosion. Additional details regarding the SWPPP are provided in Section X, Hydrology and Water Quality, of this Initial Study. Impacts related to substantial soil erosion or the loss of topsoil would be less than significant.

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

As described in discussion a) in this section, soils on the project site would not be subject to liquefaction, lateral spreading, or landslides. Additionally, the proposed project would be required to conform with the California Building Code, which would reduce risks related to unstable soils. Therefore, the proposed project would have a less-than-significant impact related to the potential to be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial direct or indirect risks to life or property?

Expansive soils are characterized by the potential for shrinking and swelling as the moisture content of the soil decreases and increases, respectively. Shrink-swell potential is influenced by the amount and type of clay minerals present and can be measured by the percent change of the soil volume. Soil on the project site has mostly been paved over. A few areas of exposed soil occur on-site; however, the soils have been disturbed through previous industrial and agricultural activity and are unlikely to exhibit native soil characteristics. Compliance with the California Building Code requires that geotechnical design of the proposed project minimize or eliminate potential impacts related to expansive soils. As such, the risk of expansive soil affecting the proposed project is low. Impacts to expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), would not create substantial direct or indirect risks to life or property. Therefore, the proposed project's potential impacts would be less than significant.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

The project site is currently served by a wastewater conveyance system maintained by the City of Fresno. Wastewater from the City's collection system is treated at the City's wastewater treatment plant. Development of the proposed project would not involve the use of septic tanks or alternative wastewater disposal systems. Therefore, the proposed project would have no impact related to soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No paleontological resources or unique geological features are known to exist within or near the project site, and the proposed project is not expected to alter or destroy a paleontological resource, site, or unique geologic feature. Furthermore, the proposed project would not require excavation to depths that have not already been disturbed by previous construction. However, should unknown paleontological resource or unique geologic feature be discovered within the project site, Mitigation Measure GEO-1 would be required. Therefore, adherence to the requirements in Mitigation Measure GEO-1 would reduce potential impacts to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature to less than significant with mitigation.

MITIGATION MEASURES

Mitigation Measure GEO-1: Subsequent to a preliminary City review of the project grading plans, if there is evidence that a project will include excavation or construction activities within previously undisturbed soils, a field survey and literature search for unique paleontological/geological resources shall be conducted. The following procedures shall be followed:

- If unique paleontological/geological resources are not found during either the field survey or literature search, excavation and/or construction activities can commence. In the event that unique paleontological/geological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified paleontologist shall be consulted to determine whether the resource requires further study. The qualified paleontologist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to, excavation of the finds and evaluation of the finds. If the resources are determined to be significant, mitigation measures shall be identified by the monitor and recommended to the lead agency. Appropriate mitigation measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the lead agency approves the measures to protect these resources. Any paleontological/geological resources recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.

- If unique paleontological/geological resources are found during the field survey or literature review, the resources shall be inventoried and evaluated for significance. If the resources are found to be significant, mitigation measures shall be identified by the qualified paleontologist. Similar to above, appropriate mitigation measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. In addition, appropriate mitigation for excavation and construction activities in the vicinity of the resources found during the field survey or literature review shall include a paleontological monitor. The monitoring period shall be determined by the qualified paleontologist. If additional paleontological/geological resources are found during excavation and/or construction activities, the procedure identified above for the discovery of unknown resources shall be followed.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS – Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	X			
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	X			

DISCUSSION

a) through b)

Construction and operation of the proposed project would result in the consumption of fuel and energy resulting in the emission of greenhouse gases. Typically, an individual project does not generate sufficient greenhouse gas emissions to influence global climate change sufficiently on its own; therefore, the issue of global climate change is cumulative in nature. Implementation of the project, through construction and operational activities, would generate greenhouse gas emissions that could cumulatively contribute to global climate change and could conflict with the City's Greenhouse Gas Reduction Plan Update. Therefore, the criteria identified above for topics a) through b) will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. HAZARDS AND HAZARDOUS MATERIAL – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	X			
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	X			
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	X			
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	X			
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	X			
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	X			

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	X			

DISCUSSION

a) through g)

The project site is currently vacant but formerly consisted of a former industrial warehouse that has previously been demolished. As such, the public and/or the environment could be affected by the release of hazardous materials from the project site into the environment by exposing workers and/or the public to potentially contaminated soil and groundwater during construction and/or operation of the project. In addition, the proposed project would include the construction of four office/warehouse buildings that would be configured for heavy industrial uses. Construction and operation of the proposed project may include storage and use of hazardous materials that could result in a potentially significant impact. Therefore, the criteria identified above for topics a) through g) will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY – Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	X			
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	X			

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:				
i) Result in a substantial erosion or siltation on- or off-site;	X			
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site:	X			
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	X			
iv) impede or redirect flood flows?	X			
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	X			
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	X			

DISCUSSION

a) through e)

The proposed project would include the construction of four office/warehouse buildings that would be configured for heavy industrial uses. Construction of the proposed project would have the potential to discharge pollutants such as sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. Operation of the proposed project could result in surface water pollution associated with chemicals, liquid

products, petroleum products (such as paints, solvents, and fuels), and waste that may be spilled or leaked and have the potential to be transported via runoff during periods of heavy precipitation into these water bodies. Therefore, the proposed project could have the potential to violate water quality standards or waste discharge requirements or degrade surface or groundwater quality. In addition, the project would increase the amount of impervious surface, which would increase the volume of runoff during a storm, and which can more effectively transport sediments to receiving waters. Therefore, the proposed project would have the potential to alter the existing drainage pattern of the site or area. Therefore, the criteria identified above for topics a) through e) will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. LAND USE AND PLANNING – Would the project:				
a) Physically divide an established community?				X
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				X

DISCUSSION

a) Would the project physically divide an established community?

The physical division of an established community typically refers to the construction of a physical feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local road or bridge) that would impair mobility within an existing community, or between a community and outlying areas. For instance, the construction of an interstate highway through an existing community may constrain travel from one side of the community to another; similarly, such construction may also impair travel to areas outside of the community.

The project site consists of a former industrial warehouse site that has previously been demolished. Nearby parcels consist mostly of low residential, light and heavy industrial, cemetery, and vacant, undeveloped uses. The proposed project would include four office/warehouse buildings that would be configured for heavy industrial uses. These improvements would not affect connectivity, and would not divide an established community. Therefore, the proposed project would have no impact related to physically dividing an established community.

b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The project site is designated Heavy Industrial in the General Plan. This land use is intended to accommodate the broadest range of industrial uses including manufacturing, assembly, wholesaling, distribution, and storage activities that are essential to the development of a balanced economic base. Small-scale commercial services and ancillary office uses are also permitted. The maximum floor area ratio (FAR) is 1.5.

The project site is located in a Heavy Industrial (IH) zoning district which allows for manufacturing, assembly, wholesaling, distribution, and storage activities that are essential to the development of a balanced economic base. Small-scale commercial services and ancillary office uses are also permitted. The Heavy Industrial (IH) zoning districts accommodate the broadest range of industrial uses on sites identified in the General Plan.

The project would not require a change the General Plan land use designation or the current zoning and would be consistent with the City's General Plan and Zoning Ordinance. Additionally, the project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect and therefore would result in no impact.

MITIGATION MEASURES

The proposed project would not result in any potentially significant impacts related to land use and planning, and no mitigation is required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. MINERAL RESOURCES – Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

DISCUSSION

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

The project site is located within an urban area on a previously developed site. There are no known mineral resources within or in the vicinity of the project site. The principal area for mineral resources in the City is along the San Joaquin River Corridor. The City's Resource Conservation and Resilience Element of the City's General Plan includes several policies to conserve aggregate mineral resources. However, the project is located approximately 8 miles from the San Joaquin River Corridor. As a result, the proposed project would not result in the loss of availability of a known mineral resource of value to the region or residents of the State and the proposed project would have no impact.

b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

Please refer to discussion a) above. The proposed project would not result in the loss of availability of any known locally-important mineral resource recovery sites. Therefore, the proposed project would have no impact.

MITIGATION MEASURES

The proposed project would not result in any potentially significant impacts related to mineral resources, and no mitigation is required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. NOISE – Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	X			
b) Generation of excessive groundborne vibration or groundborne noise levels?	X			

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	X			

DISCUSSION

a) through c)

The proposed project could result in the generation of a substantial temporary increase in ambient noise levels as a result of construction activities on the project site. In addition, construction of the proposed project could result in the generation of excessive groundborne vibration at adjacent properties. The project would also increase vehicle trips within the vicinity, which could in turn result in an increase in the ambient noise environment. Therefore, the criteria identified above for topics a) through c), including operation period noise impacts will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. POPULATION AND HOUSING – Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			X	
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

DISCUSSION

a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The proposed project would include four office/warehouse buildings that would be configured for heavy industrial uses. The proposed project would not result in direct population growth as the use proposed is not residential and would not contribute to permanent residency on-site. Further, the site is designated Heavy Industrial by the General Plan and would not generate growth beyond that anticipated in the General Plan. Therefore, the proposed project would not induce substantial unplanned population growth in an area, either directly or indirectly, and this impact would be considered less than significant.

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No housing is currently present on the project site, and therefore, there are no people living on the project site that would be displaced by the proposed project. Therefore, there would be no impacts related to the displacement of substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere, and no mitigation is required.

MITIGATION MEASURES

The proposed project would not result in any potentially significant impacts related to population and housing, and no mitigation is required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. PUBLIC SERVICES – Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?			X	
Police protection?			X	
Schools?				X
Parks?			X	
Other public facilities?			X	

DISCUSSION

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

i. Fire protection?

The City of Fresno Fire Department (FFD) would provide fire protection services to the proposed project. There are 23 FFD fire stations in Fresno, with the closest fire station, Fire Station 3, located approximately 3 miles from the project site. Planned growth under the General Plan would increase calls for fire protection

service in the City. The project is consistent with the site's General Plan designation and does not represent unplanned growth given that the project site would be developed consistent with its land use and zoning designations. The project could result in an incremental increase in the demand for fire protection services as a result of additional employees to the project site. However, the proposed project would be required to comply with all applicable codes for fire safety and emergency access. In addition, the project applicant would be required to submit plans to the FFD for review and approval prior to the issuance of building permits to ensure the project would conform to applicable building codes.

The FFD would continue providing services to the project site and would not require additional firefighters to serve the proposed project. The construction of a new or expanded fire station would not be required. The proposed project would not result in a significant impact on the physical environment due to the incremental increase in demand for fire protection and life safety services. The incremental increase in demand for services is not expected to adversely affect existing responses times to the site or within the City. Therefore, construction and operation of the proposed project would have a less-than-significant impact on fire protection.

ii. Police protection?

The City of Fresno Police Department (FPD) provides police protection to the project site. The FPD headquarters are located at 2323 Mariposa Street, approximately 3.5 miles from the project site. Planned growth under the General Plan would increase calls for police protection service in the City. The project is consistent with the site's General Plan designation and does not represent unplanned growth. The project could result in an incremental increase in the demand for police protection services. The FPD would continue to provide services to the project site and would not require additional officers to serve the project site. The construction of new or expanded police facilities would not be required. Therefore, the proposed project would not result in a substantial adverse impact associated with the provision of additional police facilities or services, and impacts to police protection would represent a less-than-significant impact.

iii. Schools?

The proposed project would not generate student demand or otherwise impact school services given that there is no housing or a residential component. As such, there would be no impact related to schools.

iv. Parks?

Demand for parks generated by the project is within planned services levels of the City of Fresno Parks and Community Services Department and the applicant would be required to pay any required impact fees at the time building permits are obtained or receive credits for construction as may be memorialized within a subdivision or development agreement. Maintenance would be afforded through annexation into a Community Facilities District (CFD). Therefore, impacts to parks

would be less than significant.

v. Other public facilities?

Development of the proposed project could also increase demand for other public services, including libraries, community centers, and public health care facilities. However, due to the minimal increase in population, the proposed project would not result in a substantial increase in the use of these facilities, such that new facilities would be needed to maintain service standards, as these facilities are not currently overused and have capacity to serve new demand. Therefore, impacts to other public facilities would be less than significant.

MITIGATION MEASURES

The proposed project would not result in any potentially significant impacts related to public services, and no mitigation is required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. RECREATION - Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

DISCUSSION

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The proposed project would include four office/warehouse buildings that would be configured for heavy industrial uses and would not generate population growth that would result in an increase in the use of existing neighborhood and regional parks or other

recreational facilities. Therefore, there would be no impact related to the increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

b) Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

The proposed project would include four office/warehouse buildings that would be configured for heavy industrial uses. The proposed project does not include or require the construction or expansion of existing public recreational facilities; therefore, development of the proposed project and associated recreational opportunities for use by users of the project site would not result in additional environmental effects beyond those described in this document. As a result, no impact would occur to recreational facilities and the proposed project would not require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

MITIGATION MEASURES

The proposed project would not result in any potentially significant impacts related to recreation, and no mitigation is required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. TRANSPORTATION – Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	X			
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	X			
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	X			
d) Result in inadequate emergency access?	X			

DISCUSSION

a) through d)

The proposed project could result in an increase in vehicular traffic that could in turn result in a conflict with a program, plan, ordinance, or policy addressing the circulation system. In addition, the proposed project would result in changes to site access and circulation, and therefore could increase hazards due to geometric design features or inadequate emergency access. Therefore, the criteria identified above for topics a) through d) will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. TRIBAL CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC section 5020.1(k), or,	X			
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC section 5024.1. In applying the criteria set forth in subdivision (c) of PRC section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	X			

DISCUSSION

a)

The site is currently vacant. While there is no evidence to suggest the presence Tribal Cultural Resources (TCRs), any artifacts inadvertently discovered during ground-disturbing activities would result in a potentially significant impact. Therefore, the criteria identified above for topic a) will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS – Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effect?	X			
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	X			
c) Result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	X			

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	X			
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	X			

DISCUSSION

a) through e)

The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses. Based on the size of the proposed project, the project could result in in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effect. In addition, the proposed project could

The City of Fresno Department of Public Utilities has determined that adequate sanitary sewer and water services would be available to serve the proposed project would have the potential to generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure. Therefore, the criteria identified above for topics a) through e) will be evaluated in the EIR.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. WILDFIRE – If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				X

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				X
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				X
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X

DISCUSSION

As discussed above in discussion g) in Section IX, Hazards and Hazardous Materials, there are no very high fire hazard severity zones located within the City of Fresno.[2] Therefore, the proposed project would not expose people or structures to a significant loss, injury, or death involving wildland fires, and there would be no impact.

MITIGATION MEASURES

The proposed project would not result in any potentially significant impacts related to wildfire, and no mitigation is required.

---

[2] Cal Fire. *Fire Hazard Severity Zone Viewer.* Website: https://egis.fire.ca.gov/FHSZ/ (accessed August 2021).

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIX. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	X			
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	X			
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

DISCUSSION

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?

As discussed in Section IV, Biological Resources, the proposed project could have potentially significant impacts related to biological resources, and this topic will be evaluated in the EIR. As described in Section V, Cultural Resources, the proposed project may also eliminate important examples of the major periods of California history, and this topic will also be further evaluated in the EIR.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

As discussed throughout this Initial Study, the proposed project could have potentially significant impacts related to aesthetics, air quality, biological resources, cultural resources, energy greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, transportation, tribal cultural resources, and utilities and service systems and these topics, along with potential cumulative effects, will be evaluated in the EIR.

CEQA defines cumulative impacts as "two or more individual effects which, when considered together, are considerable, or which can compound to increase other environmental impacts." Section 15130 of the CEQA Guidelines requires evaluation of potential environmental impacts when the project's incremental effect is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of "reasonably foreseeable probable future" projects, per CEQA Guidelines Section 15355. Cumulative impacts can result from a combination of the proposed project together with other closely related projects that cause an adverse change in the environment. Cumulative impacts can result from individually minor but collectively significant projects taking place over time.

For the topics "scoped out" in this Initial Study (i.e., not further analyzed in the EIR), the proposed project's impacts would be individually limited and not cumulatively considerable, because the impacts are either temporary in nature (i.e., limited to the construction period) or limited to the project site (i.e., accidental discovery). Additionally, for each of the topics not analyzed in the EIR, the proposed project would have no impacts or less-than-significant impacts, and therefore would not substantially contribute to any potential cumulative impacts for these topics.

c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

The proposed project's potential to result in environmental effects that could directly or indirectly impact human beings has been evaluated in this Initial Study. With implementation of the recommended mitigation measures, all environmental effects that could adversely affect human beings, either directly or indirectly, would be less than significant.

APPENDIX C

CALEEMOD OUTPUT SHEETS

This page intentionally left blank

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2740 West Nielsen Office/Warehouse Project

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	901.44	1000sqft	38.03	901,438.00	0
Parking Lot	594.00	Space	10.00	237,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2025
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total project site is 48.03 acres.

Construction Phase - Construction of the proposed project is anticipated to occur in two phases occurring over a total 24-month period starting in the third quarter of 2023 and ending in 2025.

Grading -

Vehicle Trips - Based on trip generation prepared for the proposed project.

Construction Off-road Equipment Mitigation - Assuming compliance with SJVAPCD Regulation VIII (Fugitive PM10 Prohibitions) and use of Tier 2 construction equipment.

Fleet Mix - Based on the trip generation prepared for the proposed project.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstructionPhase	NumDays	55.00	30.00
tblConstructionPhase	NumDays	740.00	385.00
tblConstructionPhase	NumDays	75.00	40.00

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstructionPhase	NumDays	55.00	30.00
tblConstructionPhase	NumDays	30.00	40.00
tblFleetMix	HHD	0.02	0.02
tblFleetMix	HHD	0.02	0.10
tblFleetMix	LDA	0.52	0.52
tblFleetMix	LDA	0.52	0.42
tblFleetMix	LDT1	0.05	0.05
tblFleetMix	LDT1	0.05	0.20
tblFleetMix	LDT2	0.18	0.18
tblFleetMix	LDT2	0.18	0.20
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	6.6560e-003	6.8290e-003
tblFleetMix	LHD2	6.6560e-003	0.08
tblFleetMix	MCY	0.02	0.02
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MDV	0.15	0.16
tblFleetMix	MDV	0.15	0.00
tblFleetMix	MH	2.8650e-003	2.9750e-003
tblFleetMix	MH	2.8650e-003	0.00
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	7.0200e-004	7.0700e-004
tblFleetMix	OBUS	7.0200e-004	0.00
tblFleetMix	SBUS	1.4630e-003	1.4960e-003
tblFleetMix	SBUS	1.4630e-003	0.00
tblFleetMix	UBUS	2.8700e-004	2.8900e-004
tblFleetMix	UBUS	2.8700e-004	0.00
tblLandUse	LandUseSquareFeet	901,440.00	901,438.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblLandUse	LotAcreage	20.69	38.03
tblLandUse	LotAcreage	5.35	10.00
tblVehicleTrips	ST_TR	1.74	2.13
tblVehicleTrips	SU_TR	1.74	2.13
tblVehicleTrips	WD_TR	1.74	2.13

2.0 Emissions Summary

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2033	1.8313	1.6941	4.4900e-003	0.7098	0.0731	0.7829	0.3111	0.0677	0.3788	0.0000	404.7479	404.7479	0.0736	0.0159	411.3119
2024	0.3977	2.9482	3.8001	0.0125	0.6630	0.0896	0.7526	0.1800	0.0843	0.2643	0.0000	1,155.3949	1,155.3949	0.0850	0.0803	1,181.4398
2025	6.4540	0.9298	1.3070	3.9100e-003	0.1981	0.0289	0.2270	0.0537	0.0271	0.0808	0.0000	360.8022	360.8022	0.0334	0.0220	368.2072
Maximum	**6.4540**	**2.9482**	**3.8001**	**0.0125**	**0.7098**	**0.0896**	**0.7829**	**0.3111**	**0.0843**	**0.3788**	**0.0000**	**1,155.3949**	**1,155.3949**	**0.0850**	**0.0803**	**1,181.4398**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.1318	2.5190	2.0026	4.4900e-003	0.3924	0.0700	0.4623	0.1598	0.0699	0.2297	0.0000	404.7476	404.7476	0.0736	0.0159	411.3116
2024	0.3466	4.2726	4.0237	0.0125	0.6630	0.1276	0.7906	0.1800	0.1271	0.3071	0.0000	1,155.3946	1,155.3946	0.0850	0.0803	1,181.4394
2025	6.4429	1.5255	1.4135	3.9100e-003	0.1981	0.0470	0.2451	0.0537	0.0469	0.1006	0.0000	360.8021	360.8021	0.0334	0.0220	368.2071
Maximum	**6.4429**	**4.2726**	**4.0237**	**0.0125**	**0.6630**	**0.1276**	**0.7906**	**0.1800**	**0.1271**	**0.3071**	**0.0000**	**1,155.3946**	**1,155.3946**	**0.0850**	**0.0803**	**1,181.4394**

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.90**	**-45.68**	**-9.39**	**0.00**	**20.21**	**-27.66**	**15.01**	**27.78**	**-36.15**	**11.96**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-4-2023**	**10-3-2023**	1.0746	1.3655
2	**10-4-2023**	**1-3-2024**	0.9364	1.2561
3	**1-4-2024**	**4-3-2024**	0.8395	1.1554
4	**4-4-2024**	**7-3-2024**	0.8239	1.1397
5	**7-4-2024**	**10-3-2024**	0.8334	1.1528
6	**10-4-2024**	**1-3-2025**	0.8479	1.1684
7	**1-4-2025**	**4-3-2025**	0.7880	1.1351
8	**4-4-2025**	**7-3-2025**	6.1078	6.3197
9	**7-4-2025**	**9-30-2025**	0.1510	0.1514
		Highest	6.1078	6.3197

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.1689	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285
Energy	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	1,643.2331	1,643.2331	0.1430	0.0311	1,656.0823
Mobile	0.5343	3.0735	5.7146	0.0256	2.1312	0.0336	2.1648	0.5724	0.0318	0.6042	0.0000	2,435.5069	2,435.5069	0.0498	0.1974	2,495.5884
Waste						0.0000	0.0000		0.0000	0.0000	172.0044	0.0000	172.0044	10.1652	0.0000	426.1336
Water						0.0000	0.0000		0.0000	0.0000	66.1341	104.3637	170.4978	6.8095	0.1624	389.1406
Total	**4.7902**	**3.8650**	**6.3931**	**0.0304**	**2.1312**	**0.0938**	**2.2250**	**0.5724**	**0.0920**	**0.6644**	**238.1385**	**4,183.1304**	**4,421.2689**	**17.1675**	**0.3910**	**4,966.9735**

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.1689	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285
Energy	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	1,643.2331	1,643.2331	0.1430	0.0311	1,656.0823
Mobile	0.5343	3.0735	5.7146	0.0256	2.1312	0.0336	2.1648	0.5724	0.0318	0.6042	0.0000	2,435.5069	2,435.5069	0.0498	0.1974	2,495.5884
Waste						0.0000	0.0000		0.0000	0.0000	172.0044	0.0000	172.0044	10.1652	0.0000	426.1336
Water						0.0000	0.0000		0.0000	0.0000	66.1341	104.3637	170.4978	6.8095	0.1624	389.1406
Total	**4.7902**	**3.8650**	**6.3931**	**0.0304**	**2.1312**	**0.0938**	**2.2250**	**0.5724**	**0.0920**	**0.6644**	**238.1385**	**4,183.1304**	**4,421.2689**	**17.1675**	**0.3910**	**4,966.9735**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/3/2023	8/25/2023	5	40	
2	Grading	Grading	8/28/2023	10/20/2023	5	40	
3	Building Construction	Building Construction	10/23/2023	4/11/2025	5	385	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Paving	Paving	4/14/2025	5/23/2025	5	30	
5	Architectural Coating	Architectural Coating	5/26/2025	7/4/2025	5	30	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 120

Acres of Paving: 10

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,352,157; Non-Residential Outdoor: 450,719; Striped Parking Area: 14,256 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	478.00	187.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	96.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3931	0.0000	0.3931	0.2021	0.0000	0.2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0532	0.5505	0.3649	7.6000e-004		0.0253	0.0253		0.0233	0.0233	0.0000	66.9014	66.9014	0.0216	0.0000	67.4423
Total	**0.0532**	**0.5505**	**0.3649**	**7.6000e-004**	**0.3931**	**0.0253**	**0.4185**	**0.2021**	**0.0233**	**0.2253**	**0.0000**	**66.9014**	**66.9014**	**0.0216**	**0.0000**	**67.4423**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1100e-003	7.2000e-004	8.5100e-003	2.0000e-005	2.8800e-003	1.0000e-005	2.8900e-003	7.6000e-004	1.0000e-005	7.8000e-004	0.0000	2.2918	2.2918	7.0000e-005	7.0000e-005	2.3131
Total	**1.1100e-003**	**7.2000e-004**	**8.5100e-003**	**2.0000e-005**	**2.8800e-003**	**1.0000e-005**	**2.8900e-003**	**7.6000e-004**	**1.0000e-005**	**7.8000e-004**	**0.0000**	**2.2918**	**2.2918**	**7.0000e-005**	**7.0000e-005**	**2.3131**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1769	0.0000	0.1769	0.0909	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0242	0.6744	0.4592	7.6000e-004		0.0189	0.0189		0.0189	0.0189	0.0000	66.9013	66.9013	0.0216	0.0000	67.4422
Total	**0.0242**	**0.6744**	**0.4592**	**7.6000e-004**	**0.1769**	**0.0189**	**0.1958**	**0.0909**	**0.0189**	**0.1098**	**0.0000**	**66.9013**	**66.9013**	**0.0216**	**0.0000**	**67.4422**

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1100e-003	7.2000e-004	8.5100e-003	2.0000e-005	2.8800e-003	1.0000e-005	2.8900e-003	7.6000e-004	1.0000e-005	7.8000e-004	0.0000	2.2918	2.2918	7.0000e-005	7.0000e-005	2.3131
Total	**1.1100e-003**	**7.2000e-004**	**8.5100e-003**	**2.0000e-005**	**2.8800e-003**	**1.0000e-005**	**2.8900e-003**	**7.6000e-004**	**1.0000e-005**	**7.8000e-004**	**0.0000**	**2.2918**	**2.2918**	**7.0000e-005**	**7.0000e-005**	**2.3131**

3.3 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1841	0.0000	0.1841	0.0731	0.0000	0.0731	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0664	0.6903	0.5610	1.2400e-003		0.0285	0.0285		0.0262	0.0262	0.0000	109.0704	109.0704	0.0353	0.0000	109.9523
Total	**0.0664**	**0.6903**	**0.5610**	**1.2400e-003**	**0.1841**	**0.0285**	**0.2126**	**0.0731**	**0.0262**	**0.0993**	**0.0000**	**109.0704**	**109.0704**	**0.0353**	**0.0000**	**109.9523**

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	8.0000e-004	9.4600e-003	3.0000e-005	3.2000e-003	2.0000e-005	3.2100e-003	8.5000e-004	1.0000e-005	8.6000e-004	0.0000	2.5464	2.5464	8.0000e-005	7.0000e-005	2.5701
Total	**1.2400e-003**	**8.0000e-004**	**9.4600e-003**	**3.0000e-005**	**3.2000e-003**	**2.0000e-005**	**3.2100e-003**	**8.5000e-004**	**1.0000e-005**	**8.6000e-004**	**0.0000**	**2.5464**	**2.5464**	**8.0000e-005**	**7.0000e-005**	**2.5701**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0828	0.0000	0.0828	0.0329	0.0000	0.0329	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0362	1.0248	0.7345	1.2400e-003		0.0267	0.0267		0.0267	0.0267	0.0000	109.0703	109.0703	0.0353	0.0000	109.9522
Total	**0.0362**	**1.0248**	**0.7345**	**1.2400e-003**	**0.0828**	**0.0267**	**0.1095**	**0.0329**	**0.0267**	**0.0596**	**0.0000**	**109.0703**	**109.0703**	**0.0353**	**0.0000**	**109.9522**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	8.0000e-004	9.4600e-003	3.0000e-005	3.2000e-003	2.0000e-005	3.2100e-003	8.5000e-004	1.0000e-005	8.6000e-004	0.0000	2.5464	2.5464	8.0000e-005	7.0000e-005	2.5701
Total	**1.2400e-003**	**8.0000e-004**	**9.4600e-003**	**3.0000e-005**	**3.2000e-003**	**2.0000e-005**	**3.2100e-003**	**8.5000e-004**	**1.0000e-005**	**8.6000e-004**	**0.0000**	**2.5464**	**2.5464**	**8.0000e-005**	**7.0000e-005**	**2.5701**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0393	0.3596	0.4061	6.7000e-004		0.0175	0.0175		0.0165	0.0165	0.0000	57.9512	57.9512	0.0138	0.0000	58.2958
Total	**0.0393**	**0.3596**	**0.4061**	**6.7000e-004**		**0.0175**	**0.0175**		**0.0165**	**0.0165**	**0.0000**	**57.9512**	**57.9512**	**0.0138**	**0.0000**	**58.2958**

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0200e-003	0.2054	0.0616	9.4000e-004	0.0310	1.3200e-003	0.0323	8.9500e-003	1.2600e-003	0.0102	0.0000	89.9124	89.9124	4.9000e-004	0.0135	93.9576
Worker	0.0370	0.0240	0.2826	8.2000e-004	0.0955	4.6000e-004	0.0960	0.0254	4.3000e-004	0.0258	0.0000	76.0743	76.0743	2.2900e-003	2.1800e-003	76.7807
Total	**0.0420**	**0.2294**	**0.3441**	**1.7600e-003**	**0.1265**	**1.7800e-003**	**0.1283**	**0.0343**	**1.6900e-003**	**0.0360**	**0.0000**	**165.9867**	**165.9867**	**2.7800e-003**	**0.0157**	**170.7383**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0270	0.5889	0.4468	6.7000e-004		0.0226	0.0226		0.0226	0.0226	0.0000	57.9511	57.9511	0.0138	0.0000	58.2958
Total	**0.0270**	**0.5889**	**0.4468**	**6.7000e-004**		**0.0226**	**0.0226**		**0.0226**	**0.0226**	**0.0000**	**57.9511**	**57.9511**	**0.0138**	**0.0000**	**58.2958**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0200e-003	0.2054	0.0616	9.4000e-004	0.0310	1.3200e-003	0.0323	8.9500e-003	1.2600e-003	0.0102	0.0000	89.9124	89.9124	4.9000e-004	0.0135	93.9576
Worker	0.0370	0.0240	0.2826	8.2000e-004	0.0955	4.6000e-004	0.0960	0.0254	4.3000e-004	0.0258	0.0000	76.0743	76.0743	2.2900e-003	2.1800e-003	76.7807
Total	**0.0420**	**0.2294**	**0.3441**	**1.7600e-003**	**0.1265**	**1.7800e-003**	**0.1283**	**0.0343**	**1.6900e-003**	**0.0360**	**0.0000**	**165.9867**	**165.9867**	**2.7800e-003**	**0.0157**	**170.7383**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0256	1.0762	0.3149	4.8300e-003	0.1624	6.9500e-003	0.1694	0.0469	6.6500e-003	0.0536	0.0000	463.0998	463.0998	2.4100e-003	0.0697	483.9338
Worker	0.1794	0.1108	1.3673	4.1500e-003	0.5006	2.3000e-003	0.5029	0.1331	2.1100e-003	0.1352	0.0000	388.5728	388.5728	0.0108	0.0106	391.9881
Total	**0.2050**	**1.1870**	**1.6822**	**8.9800e-003**	**0.6630**	**9.2500e-003**	**0.6723**	**0.1800**	**8.7600e-003**	**0.1887**	**0.0000**	**851.6726**	**851.6726**	**0.0132**	**0.0803**	**875.9219**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1416	3.0856	2.3415	3.5300e-003		0.1184	0.1184		0.1184	0.1184	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.1416**	**3.0856**	**2.3415**	**3.5300e-003**		**0.1184**	**0.1184**		**0.1184**	**0.1184**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0256	1.0762	0.3149	4.8300e-003	0.1624	6.9500e-003	0.1694	0.0469	6.6500e-003	0.0536	0.0000	463.0998	463.0998	2.4100e-003	0.0697	483.9338
Worker	0.1794	0.1108	1.3673	4.1500e-003	0.5006	2.3000e-003	0.5029	0.1331	2.1100e-003	0.1352	0.0000	388.5728	388.5728	0.0108	0.0106	391.9881
Total	**0.2050**	**1.1870**	**1.6822**	**8.9800e-003**	**0.6630**	**9.2500e-003**	**0.6723**	**0.1800**	**8.7600e-003**	**0.1887**	**0.0000**	**851.6726**	**851.6726**	**0.0132**	**0.0803**	**875.9219**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0499	0.4551	0.5871	9.8000e-004		0.0193	0.0193		0.0181	0.0181	0.0000	84.6506	84.6506	0.0199	0.0000	85.1481
Total	**0.0499**	**0.4551**	**0.5871**	**9.8000e-004**		**0.0193**	**0.0193**		**0.0181**	**0.0181**	**0.0000**	**84.6506**	**84.6506**	**0.0199**	**0.0000**	**85.1481**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.9600e-003	0.2987	0.0860	1.3200e-003	0.0453	1.9400e-003	0.0472	0.0131	1.8500e-003	0.0149	0.0000	126.5513	126.5513	6.4000e-004	0.0191	132.2430
Worker	0.0465	0.0275	0.3544	1.1200e-003	0.1395	6.1000e-004	0.1401	0.0371	5.6000e-004	0.0376	0.0000	105.6584	105.6584	2.7100e-003	2.7400e-003	106.5419
Total	**0.0534**	**0.3261**	**0.4403**	**2.4400e-003**	**0.1847**	**2.5500e-003**	**0.1873**	**0.0501**	**2.4100e-003**	**0.0526**	**0.0000**	**232.2097**	**232.2097**	**3.3500e-003**	**0.0218**	**238.7849**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0395	0.8597	0.6524	9.8000e-004		0.0330	0.0330		0.0330	0.0330	0.0000	84.6505	84.6505	0.0199	0.0000	85.1480
Total	**0.0395**	**0.8597**	**0.6524**	**9.8000e-004**		**0.0330**	**0.0330**		**0.0330**	**0.0330**	**0.0000**	**84.6505**	**84.6505**	**0.0199**	**0.0000**	**85.1480**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.9600e-003	0.2987	0.0860	1.3200e-003	0.0453	1.9400e-003	0.0472	0.0131	1.8500e-003	0.0149	0.0000	126.5513	126.5513	6.4000e-004	0.0191	132.2430
Worker	0.0465	0.0275	0.3544	1.1200e-003	0.1395	6.1000e-004	0.1401	0.0371	5.6000e-004	0.0376	0.0000	105.6584	105.6584	2.7100e-003	2.7400e-003	106.5419
Total	**0.0534**	**0.3261**	**0.4403**	**2.4400e-003**	**0.1847**	**2.5500e-003**	**0.1873**	**0.0501**	**2.4100e-003**	**0.0526**	**0.0000**	**232.2097**	**232.2097**	**3.3500e-003**	**0.0218**	**238.7849**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0137	0.1287	0.2187	3.4000e-004		6.2800e-003	6.2800e-003		5.7800e-003	5.7800e-003	0.0000	30.0289	30.0289	9.7100e-003	0.0000	30.2717
Paving	0.0131					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0268**	**0.1287**	**0.2187**	**3.4000e-004**		**6.2800e-003**	**6.2800e-003**		**5.7800e-003**	**5.7800e-003**	**0.0000**	**30.0289**	**30.0289**	**9.7100e-003**	**0.0000**	**30.2717**

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.5000e-004	4.5700e-003	1.0000e-005	1.8000e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.3626	1.3626	3.0000e-005	4.0000e-005	1.3740
Total	**6.0000e-004**	**3.5000e-004**	**4.5700e-003**	**1.0000e-005**	**1.8000e-003**	**1.0000e-005**	**1.8100e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.3626**	**1.3626**	**3.0000e-005**	**4.0000e-005**	**1.3740**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0140	0.3017	0.2594	3.4000e-004		0.0100	0.0100		0.0100	0.0100	0.0000	30.0289	30.0289	9.7100e-003	0.0000	30.2717
Paving	0.0131					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0271**	**0.3017**	**0.2594**	**3.4000e-004**		**0.0100**	**0.0100**		**0.0100**	**0.0100**	**0.0000**	**30.0289**	**30.0289**	**9.7100e-003**	**0.0000**	**30.2717**

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.5000e-004	4.5700e-003	1.0000e-005	1.8000e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.3626	1.3626	3.0000e-005	4.0000e-005	1.3740
Total	**6.0000e-004**	**3.5000e-004**	**4.5700e-003**	**1.0000e-005**	**1.8000e-003**	**1.0000e-005**	**1.8100e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.3626**	**1.3626**	**3.0000e-005**	**4.0000e-005**	**1.3740**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.3168					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5600e-003	0.0172	0.0271	4.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004	0.0000	3.8299	3.8299	2.1000e-004	0.0000	3.8351
Total	**6.3194**	**0.0172**	**0.0271**	**4.0000e-005**		**7.7000e-004**	**7.7000e-004**		**7.7000e-004**	**7.7000e-004**	**0.0000**	**3.8299**	**3.8299**	**2.1000e-004**	**0.0000**	**3.8351**

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8400e-003	2.2700e-003	0.0293	9.0000e-005	0.0115	5.0000e-005	0.0116	3.0600e-003	5.0000e-005	3.1100e-003	0.0000	8.7206	8.7206	2.2000e-004	2.3000e-004	8.7935
Total	**3.8400e-003**	**2.2700e-003**	**0.0293**	**9.0000e-005**	**0.0115**	**5.0000e-005**	**0.0116**	**3.0600e-003**	**5.0000e-005**	**3.1100e-003**	**0.0000**	**8.7206**	**8.7206**	**2.2000e-004**	**2.3000e-004**	**8.7935**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.3168					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7100e-003	0.0353	0.0275	4.0000e-005		1.4300e-003	1.4300e-003		1.4300e-003	1.4300e-003	0.0000	3.8299	3.8299	2.1000e-004	0.0000	3.8351
Total	**6.3185**	**0.0353**	**0.0275**	**4.0000e-005**		**1.4300e-003**	**1.4300e-003**		**1.4300e-003**	**1.4300e-003**	**0.0000**	**3.8299**	**3.8299**	**2.1000e-004**	**0.0000**	**3.8351**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8400e-003	2.2700e-003	0.0293	9.0000e-005	0.0115	5.0000e-005	0.0116	3.0600e-003	5.0000e-005	3.1100e-003	0.0000	8.7206	8.7206	2.2000e-004	2.3000e-004	8.7935
Total	**3.8400e-003**	**2.2700e-003**	**0.0293**	**9.0000e-005**	**0.0115**	**5.0000e-005**	**0.0116**	**3.0600e-003**	**5.0000e-005**	**3.1100e-003**	**0.0000**	**8.7206**	**8.7206**	**2.2000e-004**	**2.3000e-004**	**8.7935**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5343	3.0735	5.7146	0.0256	2.1312	0.0336	2.1648	0.5724	0.0318	0.6042	0.0000	2,435.5069	2,435.5069	0.0498	0.1974	2,495.5884
Unmitigated	0.5343	3.0735	5.7146	0.0256	2.1312	0.0336	2.1648	0.5724	0.0318	0.6042	0.0000	2,435.5069	2,435.5069	0.0498	0.1974	2,495.5884

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,920.07	1,920.07	1920.07	5,605,658	5,605,658
Total	1,920.07	1,920.07	1,920.07	5,605,658	5,605,658

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.515888	0.053153	0.175761	0.156529	0.025865	0.006829	0.014141	0.022504	0.000707	0.000289	0.023863	0.001496	0.002975
Unrefrigerated Warehouse-No Rail	0.421355	0.200260	0.200260	0.000000	0.000000	0.076042	0.000000	0.102083	0.000000	0.000000	0.000000	0.000000	0.000000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	781.6875	781.6875	0.1265	0.0153	789.4170
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	781.6875	781.6875	0.1265	0.0153	789.4170
NaturalGas Mitigated	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	861.5456	861.5456	0.0165	0.0158	866.6653
NaturalGas Unmitigated	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	861.5456	861.5456	0.0165	0.0158	866.6653

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	1.61448e+007	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	861.5456	861.5456	0.0165	0.0158	866.6653
Total		**0.0871**	**0.7914**	**0.6648**	**4.7500e-003**		**0.0602**	**0.0602**		**0.0602**	**0.0602**	**0.0000**	**861.5456**	**861.5456**	**0.0165**	**0.0158**	**866.6653**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	1.61448e+007	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	861.5456	861.5456	0.0165	0.0158	866.6653
Total		**0.0871**	**0.7914**	**0.6648**	**4.7500e-003**		**0.0602**	**0.0602**		**0.0602**	**0.0602**	**0.0000**	**861.5456**	**861.5456**	**0.0165**	**0.0158**	**866.6653**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	83160	7.6943	1.2400e-003	1.5000e-004	7.7704
Unrefrigerated Warehouse-No Rail	8.36534e+006	773.9932	0.1252	0.0152	781.6467
Total		**781.6875**	**0.1265**	**0.0153**	**789.4170**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	83160	7.6943	1.2400e-003	1.5000e-004	7.7704
Unrefrigerated Warehouse-No Rail	8.36534e+006	773.9932	0.1252	0.0152	781.6467
Total		**781.6875**	**0.1265**	**0.0153**	**789.4170**

6.0 Area Detail

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.1689	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285
Unmitigated	4.1689	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.6317					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.5359					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2600e-003	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285
Total	**4.1689**	**1.2000e-004**	**0.0137**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0267**	**0.0267**	**7.0000e-005**	**0.0000**	**0.0285**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.6317					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.5359					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2600e-003	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285
Total	**4.1689**	**1.2000e-004**	**0.0137**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0267**	**0.0267**	**7.0000e-005**	**0.0000**	**0.0285**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	170.4978	6.8095	0.1624	389.1406
Unmitigated	170.4978	6.8095	0.1624	389.1406

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	208.458 / 0	170.4978	6.8095	0.1624	389.1406
Total		**170.4978**	**6.8095**	**0.1624**	**389.1406**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	208.458 / 0	170.4978	6.8095	0.1624	389.1406
Total		**170.4978**	**6.8095**	**0.1624**	**389.1406**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	172.0044	10.1652	0.0000	426.1336
Unmitigated	172.0044	10.1652	0.0000	426.1336

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	847.35	172.0044	10.1652	0.0000	426.1336
Total		**172.0044**	**10.1652**	**0.0000**	**426.1336**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	847.35	172.0044	10.1652	0.0000	426.1336
Total		**172.0044**	**10.1652**	**0.0000**	**426.1336**

9.0 Operational Offroad

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2740 West Nielsen Office/Warehouse Project - Mitigation

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	901.44	1000sqft	38.03	901,438.00	0
Parking Lot	594.00	Space	10.00	237,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2025
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total project site is 48.03 acres.

Construction Phase - Construction of the proposed project is anticipated to occur in two phases occurring over a total 24-month period starting in the third quarter of 2023 and ending in 2025.

Grading -

Vehicle Trips - Based on trip generation prepared for the proposed project.

Construction Off-road Equipment Mitigation - Assuming compliance with SJVAPCD Regulation VIII (Fugitive PM10 Prohibitions) and use of Tier 4 Final construction equipment.

Fleet Mix - Based on the trip generation prepared for the proposed project.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	30.00	40.00
tblConstructionPhase	NumDays	75.00	40.00
tblConstructionPhase	NumDays	740.00	385.00

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstructionPhase	NumDays	55.00	30.00
tblConstructionPhase	NumDays	55.00	30.00
tblFleetMix	HHD	0.02	0.02
tblFleetMix	HHD	0.02	0.10
tblFleetMix	LDA	0.52	0.52
tblFleetMix	LDA	0.52	0.42
tblFleetMix	LDT1	0.05	0.05
tblFleetMix	LDT1	0.05	0.20
tblFleetMix	LDT2	0.18	0.18
tblFleetMix	LDT2	0.18	0.20
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	6.6560e-003	6.8290e-003
tblFleetMix	LHD2	6.6560e-003	0.08
tblFleetMix	MCY	0.02	0.02
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MDV	0.15	0.16
tblFleetMix	MDV	0.15	0.00
tblFleetMix	MH	2.8650e-003	2.9750e-003
tblFleetMix	MH	2.8650e-003	0.00
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	7.0200e-004	7.0700e-004
tblFleetMix	OBUS	7.0200e-004	0.00
tblFleetMix	SBUS	1.4630e-003	1.4960e-003
tblFleetMix	SBUS	1.4630e-003	0.00
tblFleetMix	UBUS	2.8700e-004	2.8900e-004
tblFleetMix	UBUS	2.8700e-004	0.00
tblLandUse	LandUseSquareFeet	901,440.00	901,438.00

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblLandUse	LotAcreage	20.69	38.03
tblLandUse	LotAcreage	5.35	10.00
tblVehicleTrips	ST_TR	1.74	2.13
tblVehicleTrips	SU_TR	1.74	2.13
tblVehicleTrips	WD_TR	1.74	2.13

2.0 Emissions Summary

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2033	1.8313	1.6941	4.4900e-003	0.7098	0.0731	0.7829	0.3111	0.0677	0.3788	0.0000	404.7479	404.7479	0.0736	0.0159	411.3119
2024	0.3977	2.9482	3.8001	0.0125	0.6630	0.0896	0.7526	0.1800	0.0843	0.2643	0.0000	1,155.3949	1,155.3949	0.0850	0.0803	1,181.4398
2025	6.4540	0.9298	1.3070	3.9100e-003	0.1981	0.0289	0.2270	0.0537	0.0271	0.0808	0.0000	360.8022	360.8022	0.0334	0.0220	368.2072
Maximum	**6.4540**	**2.9482**	**3.8001**	**0.0125**	**0.7098**	**0.0896**	**0.7829**	**0.3111**	**0.0843**	**0.3788**	**0.0000**	**1,155.3949**	**1,155.3949**	**0.0850**	**0.0803**	**1,181.4398**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0771	0.3931	1.8760	4.4900e-003	0.3924	6.1000e-003	0.3985	0.1598	6.0000e-003	0.1658	0.0000	404.7476	404.7476	0.0736	0.0159	411.3116
2024	0.2479	1.4798	3.9695	0.0125	0.6630	0.0146	0.6776	0.1800	0.0141	0.1941	0.0000	1,155.3946	1,155.3946	0.0850	0.0803	1,181.4394
2025	6.4044	0.4305	1.3984	3.9100e-003	0.1981	4.7100e-003	0.2028	0.0537	4.5800e-003	0.0583	0.0000	360.8021	360.8021	0.0334	0.0220	368.2071
Maximum	**6.4044**	**1.4798**	**3.9695**	**0.0125**	**0.6630**	**0.0146**	**0.6776**	**0.1800**	**0.0141**	**0.1941**	**0.0000**	**1,155.3946**	**1,155.3946**	**0.0850**	**0.0803**	**1,181.4394**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**4.62**	**59.66**	**-6.51**	**0.00**	**20.21**	**86.74**	**27.44**	**27.78**	**86.22**	**42.24**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-4-2023**	**10-3-2023**	1.0746	0.1040
2	**10-4-2023**	**1-3-2024**	0.9364	0.3832
3	**1-4-2024**	**4-3-2024**	0.8395	0.4380
4	**4-4-2024**	**7-3-2024**	0.8239	0.4224
5	**7-4-2024**	**10-3-2024**	0.8334	0.4276
6	**10-4-2024**	**1-3-2025**	0.8479	0.4431
7	**1-4-2025**	**4-3-2025**	0.7880	0.4256
8	**4-4-2025**	**7-3-2025**	6.1078	5.9452
9	**7-4-2025**	**9-30-2025**	0.1510	0.1506
		Highest	6.1078	5.9452

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.1689	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285
Energy	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	1,643.2331	1,643.2331	0.1430	0.0311	1,656.0823
Mobile	0.5343	3.0735	5.7146	0.0256	2.1312	0.0336	2.1648	0.5724	0.0318	0.6042	0.0000	2,435.5069	2,435.5069	0.0498	0.1974	2,495.5884
Waste						0.0000	0.0000		0.0000	0.0000	172.0044	0.0000	172.0044	10.1652	0.0000	426.1336
Water						0.0000	0.0000		0.0000	0.0000	66.1341	104.3637	170.4978	6.8095	0.1624	389.1406
Total	**4.7902**	**3.8650**	**6.3931**	**0.0304**	**2.1312**	**0.0938**	**2.2250**	**0.5724**	**0.0920**	**0.6644**	**238.1385**	**4,183.1304**	**4,421.2689**	**17.1675**	**0.3910**	**4,966.9735**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.1689	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285
Energy	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	1,643.2331	1,643.2331	0.1430	0.0311	1,656.0823
Mobile	0.5343	3.0735	5.7146	0.0256	2.1312	0.0336	2.1648	0.5724	0.0318	0.6042	0.0000	2,435.5069	2,435.5069	0.0498	0.1974	2,495.5884
Waste						0.0000	0.0000		0.0000	0.0000	172.0044	0.0000	172.0044	10.1652	0.0000	426.1336
Water						0.0000	0.0000		0.0000	0.0000	66.1341	104.3637	170.4978	6.8095	0.1624	389.1406
Total	**4.7902**	**3.8650**	**6.3931**	**0.0304**	**2.1312**	**0.0938**	**2.2250**	**0.5724**	**0.0920**	**0.6644**	**238.1385**	**4,183.1304**	**4,421.2689**	**17.1675**	**0.3910**	**4,966.9735**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/3/2023	8/25/2023	5	40	
2	Grading	Grading	8/28/2023	10/20/2023	5	40	
3	Building Construction	Building Construction	10/23/2023	4/11/2025	5	385	

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Paving	Paving	4/14/2025	5/23/2025	5	30	
5	Architectural Coating	Architectural Coating	5/26/2025	7/4/2025	5	30	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 120

Acres of Paving: 10

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,352,157; Non-Residential Outdoor: 450,719; Striped Parking Area: 14,256 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	478.00	187.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	96.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3931	0.0000	0.3931	0.2021	0.0000	0.2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0532	0.5505	0.3649	7.6000e-004		0.0253	0.0253		0.0233	0.0233	0.0000	66.9014	66.9014	0.0216	0.0000	67.4423
Total	**0.0532**	**0.5505**	**0.3649**	**7.6000e-004**	**0.3931**	**0.0253**	**0.4185**	**0.2021**	**0.0233**	**0.2253**	**0.0000**	**66.9014**	**66.9014**	**0.0216**	**0.0000**	**67.4423**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1100e-003	7.2000e-004	8.5100e-003	2.0000e-005	2.8800e-003	1.0000e-005	2.8900e-003	7.6000e-004	1.0000e-005	7.8000e-004	0.0000	2.2918	2.2918	7.0000e-005	7.0000e-005	2.3131
Total	**1.1100e-003**	**7.2000e-004**	**8.5100e-003**	**2.0000e-005**	**2.8800e-003**	**1.0000e-005**	**2.8900e-003**	**7.6000e-004**	**1.0000e-005**	**7.8000e-004**	**0.0000**	**2.2918**	**2.2918**	**7.0000e-005**	**7.0000e-005**	**2.3131**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1769	0.0000	0.1769	0.0909	0.0000	0.0909	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.3100e-003	0.0404	0.4174	7.6000e-004		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003	0.0000	66.9013	66.9013	0.0216	0.0000	67.4422
Total	**9.3100e-003**	**0.0404**	**0.4174**	**7.6000e-004**	**0.1769**	**1.2400e-003**	**0.1782**	**0.0909**	**1.2400e-003**	**0.0922**	**0.0000**	**66.9013**	**66.9013**	**0.0216**	**0.0000**	**67.4422**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1100e-003	7.2000e-004	8.5100e-003	2.0000e-005	2.8800e-003	1.0000e-005	2.8900e-003	7.6000e-004	1.0000e-005	7.8000e-004	0.0000	2.2918	2.2918	7.0000e-005	7.0000e-005	2.3131
Total	**1.1100e-003**	**7.2000e-004**	**8.5100e-003**	**2.0000e-005**	**2.8800e-003**	**1.0000e-005**	**2.8900e-003**	**7.6000e-004**	**1.0000e-005**	**7.8000e-004**	**0.0000**	**2.2918**	**2.2918**	**7.0000e-005**	**7.0000e-005**	**2.3131**

3.3 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1841	0.0000	0.1841	0.0731	0.0000	0.0731	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0664	0.6903	0.5610	1.2400e-003		0.0285	0.0285		0.0262	0.0262	0.0000	109.0704	109.0704	0.0353	0.0000	109.9523
Total	**0.0664**	**0.6903**	**0.5610**	**1.2400e-003**	**0.1841**	**0.0285**	**0.2126**	**0.0731**	**0.0262**	**0.0993**	**0.0000**	**109.0704**	**109.0704**	**0.0353**	**0.0000**	**109.9523**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	8.0000e-004	9.4600e-003	3.0000e-005	3.2000e-003	2.0000e-005	3.2100e-003	8.5000e-004	1.0000e-005	8.6000e-004	0.0000	2.5464	2.5464	8.0000e-005	7.0000e-005	2.5701
Total	**1.2400e-003**	**8.0000e-004**	**9.4600e-003**	**3.0000e-005**	**3.2000e-003**	**2.0000e-005**	**3.2100e-003**	**8.5000e-004**	**1.0000e-005**	**8.6000e-004**	**0.0000**	**2.5464**	**2.5464**	**8.0000e-005**	**7.0000e-005**	**2.5701**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0828	0.0000	0.0828	0.0329	0.0000	0.0329	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0152	0.0660	0.6600	1.2400e-003		2.0300e-003	2.0300e-003		2.0300e-003	2.0300e-003	0.0000	109.0703	109.0703	0.0353	0.0000	109.9522
Total	**0.0152**	**0.0660**	**0.6600**	**1.2400e-003**	**0.0828**	**2.0300e-003**	**0.0849**	**0.0329**	**2.0300e-003**	**0.0349**	**0.0000**	**109.0703**	**109.0703**	**0.0353**	**0.0000**	**109.9522**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	8.0000e-004	9.4600e-003	3.0000e-005	3.2000e-003	2.0000e-005	3.2100e-003	8.5000e-004	1.0000e-005	8.6000e-004	0.0000	2.5464	2.5464	8.0000e-005	7.0000e-005	2.5701
Total	**1.2400e-003**	**8.0000e-004**	**9.4600e-003**	**3.0000e-005**	**3.2000e-003**	**2.0000e-005**	**3.2100e-003**	**8.5000e-004**	**1.0000e-005**	**8.6000e-004**	**0.0000**	**2.5464**	**2.5464**	**8.0000e-005**	**7.0000e-005**	**2.5701**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0393	0.3596	0.4061	6.7000e-004		0.0175	0.0175		0.0165	0.0165	0.0000	57.9512	57.9512	0.0138	0.0000	58.2958
Total	**0.0393**	**0.3596**	**0.4061**	**6.7000e-004**		**0.0175**	**0.0175**		**0.0165**	**0.0165**	**0.0000**	**57.9512**	**57.9512**	**0.0138**	**0.0000**	**58.2958**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0200e-003	0.2054	0.0616	9.4000e-004	0.0310	1.3200e-003	0.0323	8.9500e-003	1.2600e-003	0.0102	0.0000	89.9124	89.9124	4.9000e-004	0.0135	93.9576
Worker	0.0370	0.0240	0.2826	8.2000e-004	0.0955	4.6000e-004	0.0960	0.0254	4.3000e-004	0.0258	0.0000	76.0743	76.0743	2.2900e-003	2.1800e-003	76.7807
Total	**0.0420**	**0.2294**	**0.3441**	**1.7600e-003**	**0.1265**	**1.7800e-003**	**0.1283**	**0.0343**	**1.6900e-003**	**0.0360**	**0.0000**	**165.9867**	**165.9867**	**2.7800e-003**	**0.0157**	**170.7383**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.2000e-003	0.0559	0.4365	6.7000e-004		1.0200e-003	1.0200e-003		1.0200e-003	1.0200e-003	0.0000	57.9511	57.9511	0.0138	0.0000	58.2958
Total	**8.2000e-003**	**0.0559**	**0.4365**	**6.7000e-004**		**1.0200e-003**	**1.0200e-003**		**1.0200e-003**	**1.0200e-003**	**0.0000**	**57.9511**	**57.9511**	**0.0138**	**0.0000**	**58.2958**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0200e-003	0.2054	0.0616	9.4000e-004	0.0310	1.3200e-003	0.0323	8.9500e-003	1.2600e-003	0.0102	0.0000	89.9124	89.9124	4.9000e-004	0.0135	93.9576
Worker	0.0370	0.0240	0.2826	8.2000e-004	0.0955	4.6000e-004	0.0960	0.0254	4.3000e-004	0.0258	0.0000	76.0743	76.0743	2.2900e-003	2.1800e-003	76.7807
Total	**0.0420**	**0.2294**	**0.3441**	**1.7600e-003**	**0.1265**	**1.7800e-003**	**0.1283**	**0.0343**	**1.6900e-003**	**0.0360**	**0.0000**	**165.9867**	**165.9867**	**2.7800e-003**	**0.0157**	**170.7383**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0256	1.0762	0.3149	4.8300e-003	0.1624	6.9500e-003	0.1694	0.0469	6.6500e-003	0.0536	0.0000	463.0998	463.0998	2.4100e-003	0.0697	483.9338
Worker	0.1794	0.1108	1.3673	4.1500e-003	0.5006	2.3000e-003	0.5029	0.1331	2.1100e-003	0.1352	0.0000	388.5728	388.5728	0.0108	0.0106	391.9881
Total	**0.2050**	**1.1870**	**1.6822**	**8.9800e-003**	**0.6630**	**9.2500e-003**	**0.6723**	**0.1800**	**8.7600e-003**	**0.1887**	**0.0000**	**851.6726**	**851.6726**	**0.0132**	**0.0803**	**875.9219**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0429	0.2928	2.2873	3.5300e-003		5.3400e-003	5.3400e-003		5.3400e-003	5.3400e-003	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.0429**	**0.2928**	**2.2873**	**3.5300e-003**		**5.3400e-003**	**5.3400e-003**		**5.3400e-003**	**5.3400e-003**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0256	1.0762	0.3149	4.8300e-003	0.1624	6.9500e-003	0.1694	0.0469	6.6500e-003	0.0536	0.0000	463.0998	463.0998	2.4100e-003	0.0697	483.9338
Worker	0.1794	0.1108	1.3673	4.1500e-003	0.5006	2.3000e-003	0.5029	0.1331	2.1100e-003	0.1352	0.0000	388.5728	388.5728	0.0108	0.0106	391.9881
Total	**0.2050**	**1.1870**	**1.6822**	**8.9800e-003**	**0.6630**	**9.2500e-003**	**0.6723**	**0.1800**	**8.7600e-003**	**0.1887**	**0.0000**	**851.6726**	**851.6726**	**0.0132**	**0.0803**	**875.9219**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0499	0.4551	0.5871	9.8000e-004		0.0193	0.0193		0.0181	0.0181	0.0000	84.6506	84.6506	0.0199	0.0000	85.1481
Total	**0.0499**	**0.4551**	**0.5871**	**9.8000e-004**		**0.0193**	**0.0193**		**0.0181**	**0.0181**	**0.0000**	**84.6506**	**84.6506**	**0.0199**	**0.0000**	**85.1481**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.9600e-003	0.2987	0.0860	1.3200e-003	0.0453	1.9400e-003	0.0472	0.0131	1.8500e-003	0.0149	0.0000	126.5513	126.5513	6.4000e-004	0.0191	132.2430
Worker	0.0465	0.0275	0.3544	1.1200e-003	0.1395	6.1000e-004	0.1401	0.0371	5.6000e-004	0.0376	0.0000	105.6584	105.6584	2.7100e-003	2.7400e-003	106.5419
Total	**0.0534**	**0.3261**	**0.4403**	**2.4400e-003**	**0.1847**	**2.5500e-003**	**0.1873**	**0.0501**	**2.4100e-003**	**0.0526**	**0.0000**	**232.2097**	**232.2097**	**3.3500e-003**	**0.0218**	**238.7849**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0120	0.0816	0.6373	9.8000e-004		1.4900e-003	1.4900e-003		1.4900e-003	1.4900e-003	0.0000	84.6505	84.6505	0.0199	0.0000	85.1480
Total	**0.0120**	**0.0816**	**0.6373**	**9.8000e-004**		**1.4900e-003**	**1.4900e-003**		**1.4900e-003**	**1.4900e-003**	**0.0000**	**84.6505**	**84.6505**	**0.0199**	**0.0000**	**85.1480**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.9600e-003	0.2987	0.0860	1.3200e-003	0.0453	1.9400e-003	0.0472	0.0131	1.8500e-003	0.0149	0.0000	126.5513	126.5513	6.4000e-004	0.0191	132.2430
Worker	0.0465	0.0275	0.3544	1.1200e-003	0.1395	6.1000e-004	0.1401	0.0371	5.6000e-004	0.0376	0.0000	105.6584	105.6584	2.7100e-003	2.7400e-003	106.5419
Total	**0.0534**	**0.3261**	**0.4403**	**2.4400e-003**	**0.1847**	**2.5500e-003**	**0.1873**	**0.0501**	**2.4100e-003**	**0.0526**	**0.0000**	**232.2097**	**232.2097**	**3.3500e-003**	**0.0218**	**238.7849**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0137	0.1287	0.2187	3.4000e-004		6.2800e-003	6.2800e-003		5.7800e-003	5.7800e-003	0.0000	30.0289	30.0289	9.7100e-003	0.0000	30.2717
Paving	0.0131					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0268**	**0.1287**	**0.2187**	**3.4000e-004**		**6.2800e-003**	**6.2800e-003**		**5.7800e-003**	**5.7800e-003**	**0.0000**	**30.0289**	**30.0289**	**9.7100e-003**	**0.0000**	**30.2717**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.5000e-004	4.5700e-003	1.0000e-005	1.8000e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.3626	1.3626	3.0000e-005	4.0000e-005	1.3740
Total	**6.0000e-004**	**3.5000e-004**	**4.5700e-003**	**1.0000e-005**	**1.8000e-003**	**1.0000e-005**	**1.8100e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.3626**	**1.3626**	**3.0000e-005**	**4.0000e-005**	**1.3740**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2100e-003	0.0182	0.2594	3.4000e-004		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	30.0289	30.0289	9.7100e-003	0.0000	30.2717
Paving	0.0131					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0173**	**0.0182**	**0.2594**	**3.4000e-004**		**5.6000e-004**	**5.6000e-004**		**5.6000e-004**	**5.6000e-004**	**0.0000**	**30.0289**	**30.0289**	**9.7100e-003**	**0.0000**	**30.2717**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.5000e-004	4.5700e-003	1.0000e-005	1.8000e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.3626	1.3626	3.0000e-005	4.0000e-005	1.3740
Total	**6.0000e-004**	**3.5000e-004**	**4.5700e-003**	**1.0000e-005**	**1.8000e-003**	**1.0000e-005**	**1.8100e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.3626**	**1.3626**	**3.0000e-005**	**4.0000e-005**	**1.3740**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.3168					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5600e-003	0.0172	0.0271	4.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004	0.0000	3.8299	3.8299	2.1000e-004	0.0000	3.8351
Total	**6.3194**	**0.0172**	**0.0271**	**4.0000e-005**		**7.7000e-004**	**7.7000e-004**		**7.7000e-004**	**7.7000e-004**	**0.0000**	**3.8299**	**3.8299**	**2.1000e-004**	**0.0000**	**3.8351**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8400e-003	2.2700e-003	0.0293	9.0000e-005	0.0115	5.0000e-005	0.0116	3.0600e-003	5.0000e-005	3.1100e-003	0.0000	8.7206	8.7206	2.2000e-004	2.3000e-004	8.7935
Total	**3.8400e-003**	**2.2700e-003**	**0.0293**	**9.0000e-005**	**0.0115**	**5.0000e-005**	**0.0116**	**3.0600e-003**	**5.0000e-005**	**3.1100e-003**	**0.0000**	**8.7206**	**8.7206**	**2.2000e-004**	**2.3000e-004**	**8.7935**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.3168					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.5000e-004	1.9300e-003	0.0275	4.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	3.8299	3.8299	2.1000e-004	0.0000	3.8351
Total	**6.3173**	**1.9300e-003**	**0.0275**	**4.0000e-005**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**3.8299**	**3.8299**	**2.1000e-004**	**0.0000**	**3.8351**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8400e-003	2.2700e-003	0.0293	9.0000e-005	0.0115	5.0000e-005	0.0116	3.0600e-003	5.0000e-005	3.1100e-003	0.0000	8.7206	8.7206	2.2000e-004	2.3000e-004	8.7935
Total	**3.8400e-003**	**2.2700e-003**	**0.0293**	**9.0000e-005**	**0.0115**	**5.0000e-005**	**0.0116**	**3.0600e-003**	**5.0000e-005**	**3.1100e-003**	**0.0000**	**8.7206**	**8.7206**	**2.2000e-004**	**2.3000e-004**	**8.7935**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5343	3.0735	5.7146	0.0256	2.1312	0.0336	2.1648	0.5724	0.0318	0.6042	0.0000	2,435.5069	2,435.5069	0.0498	0.1974	2,495.5884
Unmitigated	0.5343	3.0735	5.7146	0.0256	2.1312	0.0336	2.1648	0.5724	0.0318	0.6042	0.0000	2,435.5069	2,435.5069	0.0498	0.1974	2,495.5884

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,920.07	1,920.07	1920.07	5,605,658	5,605,658
Total	1,920.07	1,920.07	1,920.07	5,605,658	5,605,658

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.515888	0.053153	0.175761	0.156529	0.025865	0.006829	0.014141	0.022504	0.000707	0.000289	0.023863	0.001496	0.002975
Unrefrigerated Warehouse-No Rail	0.421355	0.200260	0.200260	0.000000	0.000000	0.076042	0.000000	0.102083	0.000000	0.000000	0.000000	0.000000	0.000000

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	781.6875	781.6875	0.1265	0.0153	789.4170
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	781.6875	781.6875	0.1265	0.0153	789.4170
NaturalGas Mitigated	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	861.5456	861.5456	0.0165	0.0158	866.6653
NaturalGas Unmitigated	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	861.5456	861.5456	0.0165	0.0158	866.6653

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	1.61448e+007	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	861.5456	861.5456	0.0165	0.0158	866.6653
Total		**0.0871**	**0.7914**	**0.6648**	**4.7500e-003**		**0.0602**	**0.0602**		**0.0602**	**0.0602**	**0.0000**	**861.5456**	**861.5456**	**0.0165**	**0.0158**	**866.6653**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	1.61448e+007	0.0871	0.7914	0.6648	4.7500e-003		0.0602	0.0602		0.0602	0.0602	0.0000	861.5456	861.5456	0.0165	0.0158	866.6653
Total		**0.0871**	**0.7914**	**0.6648**	**4.7500e-003**		**0.0602**	**0.0602**		**0.0602**	**0.0602**	**0.0000**	**861.5456**	**861.5456**	**0.0165**	**0.0158**	**866.6653**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	83160	7.6943	1.2400e-003	1.5000e-004	7.7704
Unrefrigerated Warehouse-No Rail	8.36534e+006	773.9932	0.1252	0.0152	781.6467
Total		**781.6875**	**0.1265**	**0.0153**	**789.4170**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	83160	7.6943	1.2400e-003	1.5000e-004	7.7704
Unrefrigerated Warehouse-No Rail	8.36534e+006	773.9932	0.1252	0.0152	781.6467
Total		**781.6875**	**0.1265**	**0.0153**	**789.4170**

6.0 Area Detail

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.1689	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285
Unmitigated	4.1689	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.6317					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.5359					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2600e-003	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285
Total	**4.1689**	**1.2000e-004**	**0.0137**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0267**	**0.0267**	**7.0000e-005**	**0.0000**	**0.0285**

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.6317					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.5359					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.2600e-003	1.2000e-004	0.0137	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0267	0.0267	7.0000e-005	0.0000	0.0285
Total	**4.1689**	**1.2000e-004**	**0.0137**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0267**	**0.0267**	**7.0000e-005**	**0.0000**	**0.0285**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	170.4978	6.8095	0.1624	389.1406
Unmitigated	170.4978	6.8095	0.1624	389.1406

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	208.458 / 0	170.4978	6.8095	0.1624	389.1406
Total		**170.4978**	**6.8095**	**0.1624**	**389.1406**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	208.458 / 0	170.4978	6.8095	0.1624	389.1406
Total		**170.4978**	**6.8095**	**0.1624**	**389.1406**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	172.0044	10.1652	0.0000	426.1336
Unmitigated	172.0044	10.1652	0.0000	426.1336

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	847.35	172.0044	10.1652	0.0000	426.1336
Total		**172.0044**	**10.1652**	**0.0000**	**426.1336**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	847.35	172.0044	10.1652	0.0000	426.1336
Total		**172.0044**	**10.1652**	**0.0000**	**426.1336**

9.0 Operational Offroad

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX D

HEALTH RISK ASSESSMENT

This page intentionally left blank

CARLSBAD
CLOVIS
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

MEMORANDUM

DATE: February 3, 2023

TO: Paul Starn, Scannell Properties
Jake Kurth, Scannell Properties

FROM: Amy Fischer, Principal
Cara Cunningham, Associate

SUBJECT: Health Risk Assessment for the 2740 West Nielsen Avenue Office/Warehouse Project

LSA has prepared a health risk assessment (HRA) for the proposed 2740 West Nielsen Avenue Office/Warehouse Project (project) in the City of Fresno (City), Fresno County, California. An HRA is a process used to estimate the increased health risk levels for people living and/or working near a project that emits toxic air contaminants (TACs). An HRA combines the results of studies on the health effects of various animal and human exposure to TACs with the results of studies that estimate exposure levels at different distances from pollutant sources. The purpose of this HRA is to determine the increased cancer and noncancer health risks from project-related emissions of TACs in the exhaust of diesel-powered construction and operational-related trucks and equipment on existing nearby sensitive receptors.

This HRA has been prepared in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment (OEHHA) and the San Joaquin Valley Air Pollution Control District (SJVAPCD). This HRA evaluates the project against the significance criteria established by the SJVAPCD and is in compliance with all other applicable requirements.

PROJECT DESCRIPTION

The approximately 48.03-acre project site is located in the City of Fresno, on the northeast corner of the intersection of North Marks Avenue and West Nielsen Avenue and (Assessor's Parcel Number [APNs] 458-020-71 and 458-020-72). The project site itself is generally bounded to the north by vacant, undeveloped land and industrial uses, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue.

The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be

comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. The proposed project would also subdivide the project site into four separate parcels and would consist of each proposed building on a separate parcel.

As identified above, future tenants have not been identified. Therefore, it is conservatively assumed that the proposed project would be operational 24 hours per day, 7 days per week; however, it is possible that future tenants may operate fewer hours.

The proposed project would comply with the latest California Green Building Standards Code (CALGreen) building measures and Title 24 standards. The proposed project would also include cool roof materials.

Vehicular access to the site would be provided by North Hughes Avenue, West Nielsen Avenue, and North Marks Avenue.

A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining 188 spaces would be dedicated for trailers and would be located along the eastern and western edges of the project site and would be located behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.

The proposed project would include demolition of the existing asphalt on the project site, which would be collected and hauled off site for disposal. Construction of the proposed project is anticipated to occur in two phases occurring over a total 24-month period starting in the third quarter of 2023 and ending in 2025. The first phase would include the construction of Buildings 2, 3, and 4 and would occur for 12 months. The second phase would include the construction of Building 1 and would occur for 12 months. The proposed project would not require any soil import or export.

BACKGROUND

This section provides a discussion of the regulatory guidance from the California Air Resources Board (CARB), the California Air Pollution Control Officers Association (CAPCOA), and the SJVAPCD.

California Air Resources Board Handbook and Technical Advisory

CARB has developed an *Air Quality and Land Use Handbook* (CARB Handbook;)[1] and a supplement, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*[2], which

[1] California Air Resources Board, 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April. Website: www.arb.ca.gov/ch/handbook.pdf (accessed July 2021).

[2] California Air Resources Board, 2017. *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*. April. Website: www.arb.ca.gov/ch/rd_technical_analysis_fact_sheet.pdf (accessed July 2021).

are intended to serve as general reference guides for evaluating and reducing air pollution impacts associated with new projects that are part of the land use decision-making process. According to the CARB Handbook, recent air pollution studies have shown an association between both respiratory and other noncancer health effects and proximity to high-traffic roadways and other land uses associated with high volume truck traffic. Other studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the overall cancer risk from airborne toxics in California. The CARB Handbook recommends that planning agencies recognize that the configuration of industrial operations can reduce population exposure and risk. For example, locating the main entry and exit points away from sensitive land uses helps to reduce cancer risks and other health impacts.

California Air Pollution Control Officers Association

In 2009, CAPCOA published guidance[1] on assessing the health risk impacts for land use projects. The guidance focused on the acute, chronic, and cancer impacts of sources affected by the California Environmental Quality Act (CEQA) and recommended procedures to identify when a project should undergo further risk evaluation, how to conduct the HRA, how to engage the public, what to do with the results from the HRA, and what mitigation measures may be appropriate for various land use projects.

San Joaquin Valley Air Pollution Control District

Toxic air emissions are regulated under the SJVAPCD's Integrated Air Toxic Program. This program integrates the State and federal requirements and is aimed at protecting public health. These guidelines incorporate the OEHHA guidance and the options to be selected when using the CARB's Hotspots Analysis and Reporting Program Version 2 (HARP2) program for risk assessment calculations.

City of Fresno

This HRA is intended to meet the requirements of the City of Fresno General Plan Program Environmental Impact Report (PEIR), which requires the implementation of the following air quality mitigation measure applicable to the project:

> **GP PEIR Mitigation Measure AIR-3.1:** Prior to future discretionary approval for projects that require environmental evaluation under CEQA, the City of Fresno shall evaluate new development proposals for new industrial or warehousing land uses that: (1) have the potential to generate 100 or more truck trips per day or have 40 or more trucks with operating diesel-powered transport refrigeration units, and (2) are within 1,000 feet of a sensitive land use (e.g., residential, schools, hospitals, or nursing homes), as measured from the property line of the project to the property line of the nearest sensitive use. Such projects shall submit a Health Risk Assessment (HRA) to the City Planning and Development Department. The HRA shall be prepared in accordance with policies and procedures of the most current State Office of

[1] California Air Pollution Control Officers Association, 2009. *Health Risk Assessments for Proposed Land Use Projects*. July. Website: www.capcoa.org/wp-content/uploads/2012/03/CAPCOA_HRA_LU_Guidelines_8-6-09.pdf (accessed July 2021).

Environmental Health Hazard Assessment (OEHHA) and the SJVAPCD. If the HRA shows that the incremental health risks exceed their respective thresholds, as established by the SJVAPCD at the time a project is considered, the Applicant will be required to identify and demonstrate that best available control technologies for toxics (T-BACTs), including appropriate enforcement mechanisms to reduce risks to an acceptable level. T-BACTs may include, but are not limited to:

- Restricting idling on site or electrifying warehousing docks to reduce diesel particulate matter;
- Requiring use of newer equipment and/or vehicles;
- Provide charging infrastructure for: electric forklifts, electric yard trucks, local drayage trucks, last mile delivery trucks, electric and fuel-cell heavy duty trucks; and/or
- Install solar panels, zero-emission backup electricity generators, and energy storage to minimize emissions associated with electricity generation at the project site.
- T-BACTs identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site plan.

The City will, in addition to noticing procedures in the Development Code, notice all residents within 1,000 feet of a proposed warehouse project before any discretionary project approval, and consider "Warehouse Projects: Best Practices and Mitigation Measure to comply with the California Environmental Quality Act" published in March 2021 by Xavier Becerra, Attorney General State of California before any discretionary approval of a specific warehouse project where applicable.

SETTING

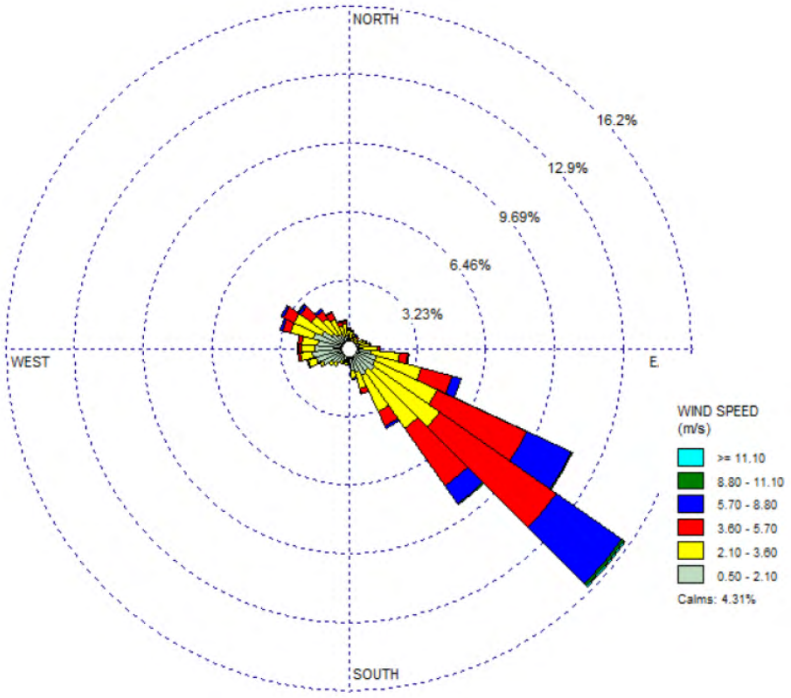
Regional Air Quality

The project site is located in the City of Fresno, California, which is part of the San Joaquin Valley Air Basin (Basin) and is under the jurisdiction of the SJVAPCD.

Climate/Meteorology

Air quality in the project area is not only affected by various emission sources (e.g., mobile and industrial) but also by atmospheric conditions (e.g., wind speed, wind direction, temperature, and rainfall). The nearest representative meteorological station that provides the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) ready meteorological data is the Fresno Meteorological Station, which is about 6.75 miles from the project

site. Figure 1 shows the wind rose[1] from data measured at this station and the wind patterns for the project area.



Source: SJVAPCD Meteorological Data for AERMOD.

Figure 1: Project Area Wind Patterns

In addition, the Office of Environmental Health Hazard Assessment (OEHHA), on behalf of the California Environmental Protection Agency (CalEPA), released Version 4.0 of the California Communities Environmental Health Screening Tool (CalEnviroScreen) in October 2021. CalEnviroScreen identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution. Pollution Burden scores for each census tract are derived from the average percentiles of the seven Exposures indicators (ozone and $PM_{2.5}$ concentrations, diesel PM emissions, drinking water contaminants, pesticide use, toxic releases from facilities, and traffic density) and the five Environmental Effects indicators (cleanup sites, impaired water bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities). According to the CalEnviroScreen 4.0 Map,[2] the project site has a pollution burden percentile of 97. Surrounding areas have pollution burdens ranging from 56 to 100.0. In addition,

1 A wind rose provides a succinct view of how wind speed and direction are typically distributed at a particular location. Presented in a circular format, the wind rose shows the frequency of winds blowing from particular directions.

2 Office of Environmental Health Hazard Assessment (OEHHA). 2021. *CalEnviroScreen 4.0.* Website: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40 (accessed May 2021).

according to the Senate Bill (SB) 535 Disadvantaged Communities Map,[1] the project area is designated as an SB 535 disadvantaged community.

Toxic Air Contaminants

The public's exposure to TACs is a significant environmental health issue in the State of California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. Health and Safety Code §39655 defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant pursuant to Subsection (b) of United States Code [USC] Title 42, Section 7412, is a TAC. Under State law, the California Environmental Protection Agency (CalEPA), acting through CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or that may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (the Tanner Air Toxics Act), AB 2588 (the Air Toxics "Hot Spot" Information and Assessment Act of 1987), and Senate Bill (SB) 25 (the Children's Environmental Health Protection Act). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Once TACs are identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology (T-BACT) to minimize emissions.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987 (AB 2588). Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the designated air quality management district or air pollution control district. High-priority facilities are required to perform an HRA and, if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

To date, CARB has designated nearly 200 compounds as TACs. Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (DPM).

THRESHOLDS OF SIGNIFICANCE

Both the State and federal governments have established health-based ambient air quality standards (AAQS) for seven air pollutants. For other air pollutants without defined significance standards, the

[1] OEHHA. 2022. *SB 535 Disadvantaged Communities using CalEnviroScreen 4.0 results.* Website: https://experience.arcgis.com/experience/1c21c53da8de48f1b946f3402fbae55c/page/SB-535-Disadvantaged-Communities/.pdf (accessed October 2022).

definition of substantial pollutant concentrations varies. For TACs, "substantial" is taken to mean that the individual health risk exceeds a threshold considered to be a prudent risk management level.

The following limits for maximum individual cancer risk (MICR) and noncancer acute and chronic Hazard Index (HI) from project emissions of TACs are considered appropriate for use in determining the health risk for projects in the Basin:

- **MICR:** MICR is the estimated probability of a maximum exposed individual (MEI) contracting cancer as a result of exposure to TACs over a period of 70 years for adults and 9 years for children in residential locations, 350 days per year. As a conservative measure, the SJVAPCD does not recognize indoor adjustments for residents. However, the typical person spends the majority of their time indoors versus remaining outdoors 24 hours per day, 350 days per year. The MICR calculations include multi-pathway consideration, when applicable.

  The SJVAPCD's *Update to the District's Risk Management Policy to Address the OEHHA Revised Risk Assessment Guidance Document*[1] states that emissions of TACs are considered significant if an HRA shows an increased risk of greater than 20 in 1 million. Thus, the cumulative increase in MICR that is the sum of the calculated MICR values for all TACs would be considered significant if it would result in an increased MICR greater than 20 in 1 million (2.0×10^{-5}) at any receptor location.

- **Chronic HI:** Chronic HI is the ratio of the estimated long-term level of exposure to a TAC for a potential MEI to its chronic reference exposure level. The chronic HI calculations include multi-pathway consideration when applicable. The project would be considered significant if the cumulative increase in total chronic HI for any target organ system would exceed 1.0 at any receptor location.

- **Acute HI:** Acute HI is the ratio of the estimated maximum 1-hour concentration of a TAC for a potential MEI to its acute reference exposure level. The project would be considered significant if the cumulative increase in total acute HI for any target organ system would exceed 1.0 at any receptor location.

The SJVAPCD Governing Board first adopted thresholds for land use projects in 1995 in the *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI).[2] The GAMAQI was revised in 2002 and 2015 but retained the original health risk thresholds. The previous project TAC threshold of 10 in 1 million was revised to 20 in 1 million, with the update to the SJVAPCD Risk Management Policy effective July 1, 2015.

---

1 San Joaquin Valley Air Pollution Control District, 2015. *Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document*. Website: www.valleyair.org/busind/pto/staff-report-5-28-15.pdf (accessed July 2021).

2 San Joaquin Valley Air Pollution Control District, 2015. *Guidance for Assessing and Mitigating Air Quality Impacts.* Website: www.valleyair.org/transportation/GAMAQI_3-19-15.pdf (accessed July 2021).

IMPACT ANALYSIS

For the purposes of an HRA, short-term emissions are of concern for analyzing acute health impacts, and long-term emissions are of concern for analyzing chronic and carcinogenic health impacts. A screening-level multi-pathway assessment has been conducted. This technique was chosen as recommended in the OEHHA *Air Toxic Hot Spots Program Risk Assessment Guidelines*.[1] The analysis herein has been conducted in accordance with the guidelines in the SJVAPCD GAMAQI and the SJVAPCD *Guidance for Air Dispersion Modeling*[2].

This HRA has been conducted using three models: (1) CARB's California Emissions Factor Model, Version 2021 (EMFAC2021) for on-road vehicle emissions factors and percentages of fuel type within the overall vehicle fleet; (2) the United States Environmental Protection Agency's (USEPA) AERMOD air dispersion model to determine how the TACs would move through the atmosphere after release from sources both on site and on surrounding roadways; and (3) CARB's HARP2 model to translate the pollutant concentrations from AERMOD into individual health risks at any sensitive receptor locations surrounding the project site.

The OEHHA has determined that long-term exposure to diesel exhaust particulates poses the highest cancer risk of any TAC it has evaluated. Exposure to diesel exhaust can also have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, DPM made people with allergies more susceptible to the materials to which they were allergic, such as dust and pollen. Exposure to DPM also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks. For risk assessment procedures, the OEHHA specifies that the surrogate for whole diesel exhaust is DPM.

The conservative nature of this analysis is due primarily to the following three factors:

- The CARB-adopted diesel exhaust unit risk factor (URF) of 300 in 1 million per microgram per cubic meter ($\mu g/m^3$) is based on the upper 95th percentile of estimated risk for each of the epidemiological studies used to develop the URF. Therefore, the risk factor is already representative of the conservative risk posed by DPM.

- The risk estimates assume sensitive receptors would be subject to DPM 24 hours per day, 350 days per year. As a conservative measure, SJVAPCD does not recognize indoor adjustments for residents. However, typical people spend the majority of their time indoors versus remaining outdoors 24 hours per day, 350 days per year.

- The exposure to DPM is assumed to be constant for the given period analyzed (i.e., 70 years). However, emissions from DPM are expected to substantially decrease in the future with the

1 California Environmental Protection Agency Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. March. Website: https://oehha.ca.gov/air/air-toxics-hot-spots (accessed July 2021).

2 San Joaquin Valley Air Pollution Control District, 2006. *Guidance for Air Dispersion Modeling*. Website: www.valleyair.org/busind/pto/Tox_Resources/Modeling%20Guidance.pdf (accessed July 2021).

implementation of standard regulatory requirements and technological advancement to reduce DPM.

- The emissions derived assume that every truck accessing the project site will idle for 15 minutes.

Improvements over the last 40 years to diesel fuel and diesel engines have resulted in lower emissions of some of these contaminants. These improvements have resulted in a 75 percent reduction in particle emissions from diesel-powered trucks and other equipment result in an 85 percent reduction as compared to 2000 levels.[1] These improvements are anticipated to continue into the foreseeable future.

Emission Sources

Construction

To estimate the potential cancer risk associated with construction of the proposed project from equipment exhaust (including DPM), a dispersion model was used to translate an emission rate from the source location to a concentration at the receptor location of interest (i.e., a nearby residence and worksites). Dispersion modeling varies from a simpler, more conservative screening-level analysis to a more complex and refined detailed analysis. This refined assessment was conducted using the CARB exposure methodology with the air dispersion modeling performed using the USEPA dispersion model AERMOD. The model provides a detailed estimate of exhaust concentrations based on site and source geometry, source emissions strength, distance from the source to the receptor, and meteorological data.

Operation

The first step of an HRA is to characterize the project-related emissions of TACs. The proposed project would generate a total of 1,920 daily trips, with up to 342 truck trips per day.[2] The trucks would access the site by North Hughes Avenue, West Nielsen Avenue, and North Marks Avenue. As identified in the Project Description, Building 1 would provide 122 loading dock doors; Building 2 would provide 46 loading dock doors; Building 3 would provide 18 loading dock doors; and Building 4 would provide 15 loading dock doors. As such, the proposed project would have a total of 201 loading dock doors. As the project would contain multiple loading docks, offsite queuing of trucks is not anticipated. While the TAC emissions from gasoline-powered vehicles have a small health effect compared to DPM, this HRA includes both gasoline- and diesel-powered vehicle emissions. For the diesel exhaust emissions, it is sufficient to only consider the DPM (particulate matter less than 10 microns in diameter [PM_{10}] and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]) portions of the exhaust; all the TACs for the gasoline exhaust emissions are contained in the reactive organic gas (ROG) emissions. Using

---

1 California Environmental Protection Agency Office of Environmental Health Hazard Assessment, and the American Lung Association of California, 2001. *Health Effects of Diesel Exhaust*. May 21. Website: https://oehha.ca.gov/air/health-effects-diesel-exhaust (accessed July 2021).

2 LSA, 2021. *Traffic Impact Study 2740 West Nielsen Avenue Warehouse Project, City of Fresno, Fresno County, California.* November.

speciation data from CARB, the emission rates of the TAC components are derived from the total ROG emissions. This data is attached.

Project trucks would operate in two modes: stationary idling and moving on and off the site. The emissions from trucks while idling result in a much higher concentration of TACs at nearby sensitive receptors compared to the emissions from moving trucks. This is due to the dispersion of emissions that occurs with distance and with travel of the vehicle. For this HRA, the truck travel emissions were modeled as a series of volume sources along the on-site driveway and along East Avenue going north and south of the site driveway. LSA assumed vehicles traveling on site would maneuver slowly, averaging approximately 5-15 miles per hour (mph), and that vehicles traveling on roadways would average 5-55 mph.

The idling emissions of trucks operating on the project site were modeled as point sources within the area sources representing the planned loading docks. EMFAC2021 was used to determine the emissions factors of idling and operating diesel trucks to determine the total emissions of DPM. While it is expected that the truck emissions rate will continue to reduce over time, an HRA only allows for a single emission rate to represent the entire 70-year exposure period. The use of emissions factors for the year 2022, was used as a conservative estimate of emissions, although, the project is not expected to be fully operational until 2025.

The tables in the attachment show the development of the exhaust emission rates for the trucks while operating both on the project site and on North Hughes Avenue, West Nielsen Avenue, and North Marks Avenue. The tables show the average daily traffic for the project on each stretch of road by vehicle category. The PM_{10}, emissions factors for trucks at the average vehicle speed of 5-15 mph on site and 5-55 mph on roadways are also shown. Because the AERMOD dispersion model cannot use emissions in grams per mile, emissions are converted to grams per second.

American Meteorological Society/Environmental Protection Agency Regulatory Model Dispersion Modeling

In order to assess the dispersion of emissions associated with the project, air dispersion modeling was performed using AERMOD. The model is approved by the USEPA when estimating the air quality impacts associated with point and fugitive sources in simple and complex terrain. The model was used to calculate the annual average pollutant concentrations associated with each emitting source. Inputs for each emitting source were based on the characterizations described above. Details of these inputs are attached.

For the volume sources used to represent on-road mobile source activity, vertical (sigma z) dispersion parameters were developed as described in the SJVAPCD's modeling guidance for trucks. For the truck unloading locations, individual point sources represent the trucks idling at each loading dock. For all the idling sources, the release parameters were set to the SJVAPCD default parameters.

The model requires additional input parameters, including local meteorology. Due to the model's sensitivity to individual parameters (e.g., wind speed, temperature, and direction), the USEPA recommends meteorological data used as input into dispersion models be selected on the basis of relative spatial and temporal conditions that exist in the area of concern. As such, 5 years of

meteorological data from SJVAPCD's Fresno Monitoring Station[1] (the nearest available station) was used to represent local weather conditions and prevailing winds. Figure 2 shows the graphical representation of the wind patterns.

Receptors were placed at the nearest sensitive receptor locations, as shown on Figure 2.

Figure 2: Model Receptor Locations

HOTSPOTS ANALYSIS AND REPORTING PROGRAM MODELING

CARB's HARP2 model is a tool that assists with the programmatic requirements of the Air Toxics "Hot Spots" Program (AB 2588). HARP2 was used to translate the TAC concentrations from AERMOD into long-term carcinogenic and chronic, and short-term acute health risk levels following the guidance in the SJVAPCD risk assessment guidelines. These guidelines specify a minimum set of TAC pathways and HARP2 modeling options for the carcinogenic assessment. To estimate chronic noncancer risks at residential receptors, the "OEHHA-Derived Method" risk-calculation option was used. Following the OEHHA guidance, an 8-hour chronic noncancer risk was calculated for residential receptors because the project would operate more than 8 hours per day and 5 days per week.

The dose-response relationship for a specific pollutant describes the association between exposure and the observed response (health effect). In other words, the relationship estimates how different levels of exposure to a pollutant change the likelihood and severity of health effects. The dose-

[1] San Joaquin Valley Air Pollution Control District (SJVAPCD). Meteorological Data for AERMOD. Website: http://www.valleyair.org/busind/pto/Tox_Resources/AirQualityMonitoring.htm (accessed July 2021).

response relationship (the response occurring with increasing doses) varies with each pollutant, individual sensitivity, and type of health effect. Combining the results of the emission characterization and dispersion modeling described above with the dose-response assessment gives an estimate of the increased health risk for an individual exposed to the maximum predicted long-term concentrations of TACs.

Discrete variants for daily breathing rates, exposure frequency, and exposure duration were obtained from relevant distribution profiles presented in the OEHHA guidance document entitled *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*[1] and guidance from SJVAPCD. The risk calculation outputs are attached.

Carcinogenic and Chronic Project-Related Emission Impact Results

The following section describes the potential impacts on sensitive receptors from construction and operation of the proposed project. The HRA analysis and results are presented below; data outputs are attached.

Construction Health Risk Assessment

A construction HRA, which evaluates construction-period health risk to off-site receptors, was performed for the proposed project. Table A, below, identifies the results of the analysis assuming the use of Tier 2 construction equipment, as proposed by the project, at the maximally exposed individual (MEI), which is the nearest sensitive receptor. Model snap shots of the sources are attached.

Table A: Unmitigated Inhalation Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index
Sensitive Receptor Risk	41.59	0.030	0.000
Worker Receptor Risk	0.35	0.014	0.000
Threshold	**20.0**	**1.0**	**1.0**
Exceed?	**Yes**	**No**	**No**

Source: LSA (October 2022).
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
$\mu g/m^3$ = micrograms per cubic meter

As shown in Table A, the maximum cancer risk for the sensitive receptor MEI would be 41.59 in one million, which would exceed the SJVAPCD cancer risk threshold of 20 in one million. The worker receptor risk would be lower at 0.35 in one million, which would not exceed the threshold. The total chronic hazard index would be 0.030 for the sensitive receptor MEI and 0.0014 for the worker receptor MEI, which would both be below the threshold of 1.0. In addition, the total acute hazard

[1] California Environmental Protection Agency (CalEPA) Office of Environmental Health Hazard Assessment, 2015. op. cit.

index would be nominal (0.000), which would also not exceed the threshold of 1.0. Therefore, since the maximum cancer risk for the worker sensitive receptor MEI would exceed the SJVAPCD threshold, implementation of Mitigation Measure AIR-1 would be required to reduce substantial pollutant concentrations during project construction by requiring the use of Tier 4 construction equipment.

Mitigation Measure AIR-1 During construction of the proposed project, the project contractor shall ensure all off-road diesel-powered construction equipment of 50 horsepower or more used for the project construction at a minimum meets the California Air Resources Board Tier 4 emissions standards or equivalent.

Table B identifies the results of the analysis with implementation of Mitigation Measure AIR-1.

Table B: Mitigated Inhalation Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index
Sensitive Receptor Risk	4.33	0.003	0.000
Worker Receptor Risk	0.04	0.002	0.000
Threshold	**20.0**	**1.0**	**1.0**
Exceed?	**No**	**No**	**No**

Source: LSA (October 2022).
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
$\mu g/m^3$ = micrograms per cubic meter

As shown in B, the mitigated cancer risk at the sensitive receptor MEI would be 4.33 in one million, which would not exceed the SJVAPCD cancer risk of 20 in one million. Therefore, with implementation of Mitigation Measure AIR-1, construction of the proposed project would not exceed SJVAPCD thresholds and would not expose nearby sensitive receptors to substantial pollutant concentrations.

Operational Health Risk Assessment

The carcinogenic and chronic health risks from the proposed project are also shown in Table C. The residential risk incorporates both the risk for a child living in a nearby residence for 9 years (the standard period of time for child risk) and an adult living in a nearby residence for 70 years (considered a conservative period of time for an individual to live in any one residence).

Table C: Health Risk Levels for Existing Residents near the Project Site

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index
Maximally Exposed Resident	6.154	0.001	0.001
Maximally Exposed Worker	0.417	0.001	0.001
SJVAPCD Significance Threshold	**20**	**1.00**	**1.0**
Significant?	**No**	**No**	**No**

Source: LSA (August 2021).
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
SJVAPCD = San Joaquin Valley Air Pollution Control District
$\mu g/m^3$ = micrograms per cubic meter

For the nearest residential receptor, the maximum cancer risk for the MEI would be 6.154 in 1 million, which is less than the threshold of 20 in 1 million. The chronic health risks from the project's activity would be 0.001, which would not exceed the threshold of 1.0. In addition, the total acute hazard index would be 0.001, which would also not exceed the threshold of 1.0.

For the nearest worker receptor, the maximum cancer risk for the MEI would be 0.417 in 1 million, less than the threshold of 20 in 1 million. The chronic health risks from the project's activity would be 0.001, which would not exceed the threshold of 1.0. In addition, the total acute hazard index would be 0.001, which would also not exceed the threshold of 1.0.

As demonstrated in the analysis, the health risk levels to nearby residents from project operation-related emissions of TACs would be well below the SJVAPCD's HRA thresholds. However, as discussed above, CalEnviroScreen identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution. Pollution Burden scores for each census tract are derived from the average percentiles of the seven exposures indicators (ozone and $PM_{2.5}$ concentrations, diesel PM emissions, drinking water contaminants, pesticide use, toxic releases from facilities, and traffic density) and the five Environmental Effects indicators (cleanup sites, impaired water bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities). According to the CalEnviroScreen 4.0 Map,[1] the project site has a pollution burden percentile of 97. Surrounding areas have pollution burdens ranging from 56 to 100.0. In addition, according to the SB 535 Disadvantaged Communities Map,[2] the project area is designated as an SB 535 disadvantaged community. Based on the CalEnviroScreen results, the project area is already at an elevated risk level. Therefore, although the maximum cancer risk for the MEI would be 6.154 in one million is less than the project risk criteria, any additional risk increase is potentially significant. Therefore, to reduce the cumulative health risk, the project applicant shall ensure that the proposed project would provide the infrastructure for AC and/or DC chargers for electric heavy-duty trucks, which would further reduce TAC emissions. The infrastructure provided shall accommodate a minimum of one future charger per 50,000 square feet. With implementation of Mitigation Measure

1 OEHHA. 2021. op. cit.
2 OEHHA. 2022. op. cit.

AIR-2, impacts would be less than significant related to the exposure of sensitive receptors to substantial pollutant concentrations during project operation.

Mitigation Measure AIR-2 The project applicant shall ensure that the proposed project provides the infrastructure for AC and/or DC chargers for electric heavy-duty trucks. The infrastructure provided shall accommodate a minimum of one future charger per 50,000 square feet.

CONCLUSION

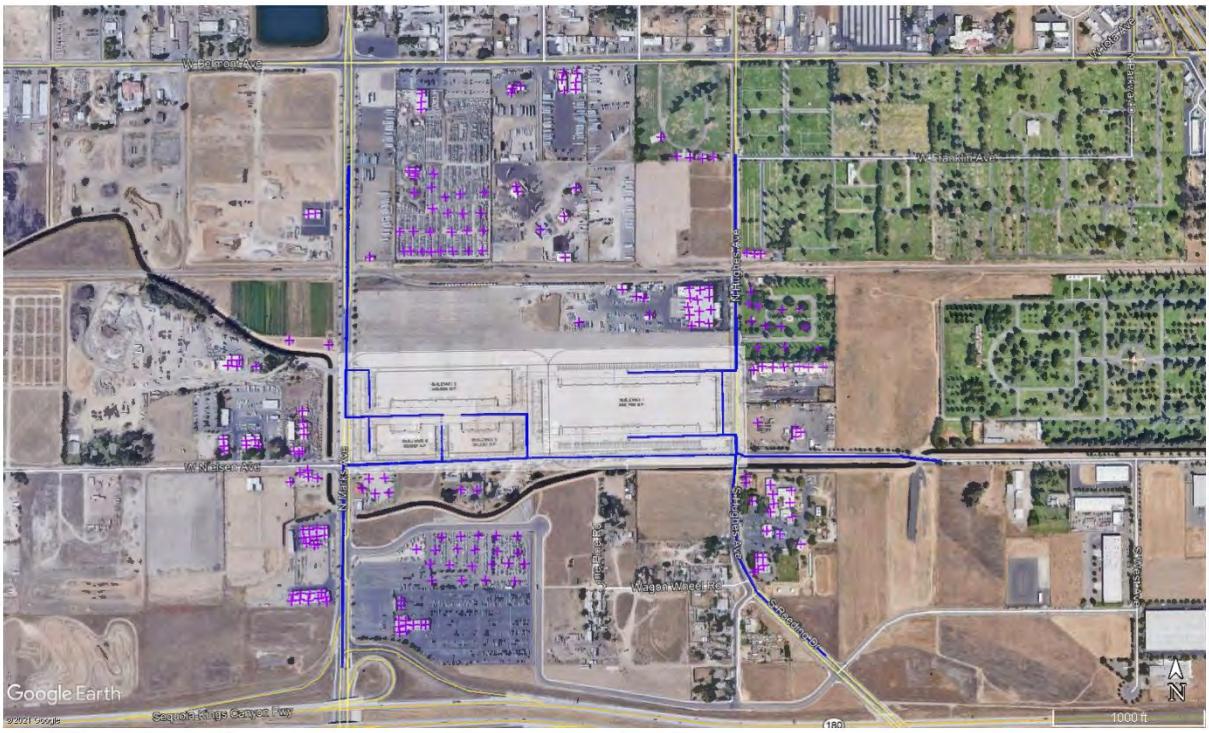
As these results show, with implementation of Mitigation Measures AIR-1 and AIR-2, health risk levels to nearby residents from project-related construction and operational emissions of TACs would be well below the SJVAPCD's HRA thresholds. As such, no significant health risk would occur from project-related emissions. The HARP modeling reports and AERMOD information are attached.

Attachment: HRA Model Output

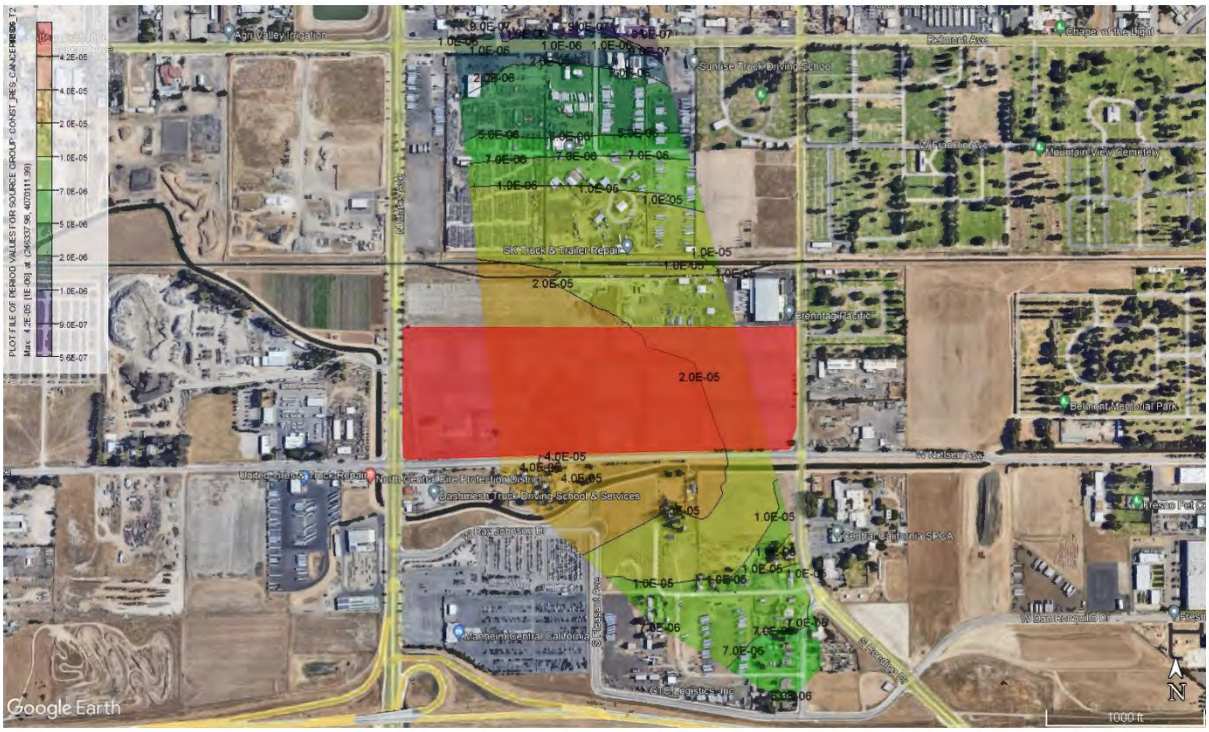
Project Location

Project Sensitive Receptors

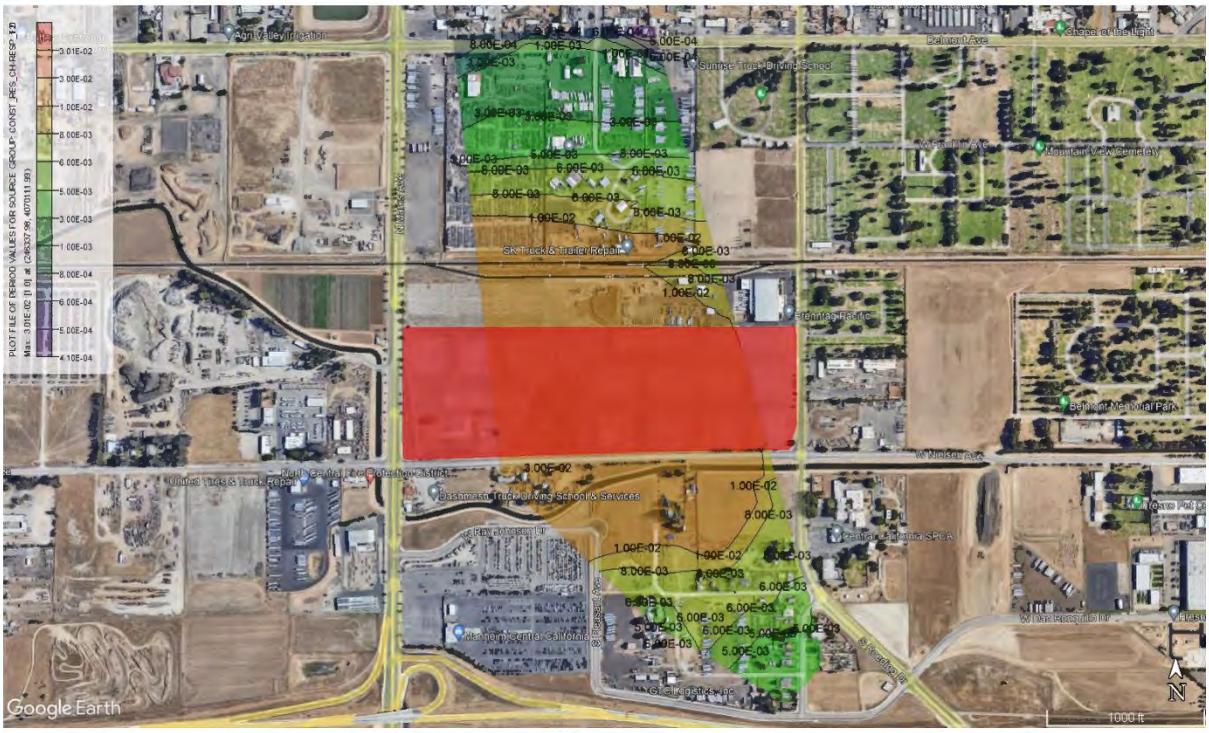
Project Worker Receptors



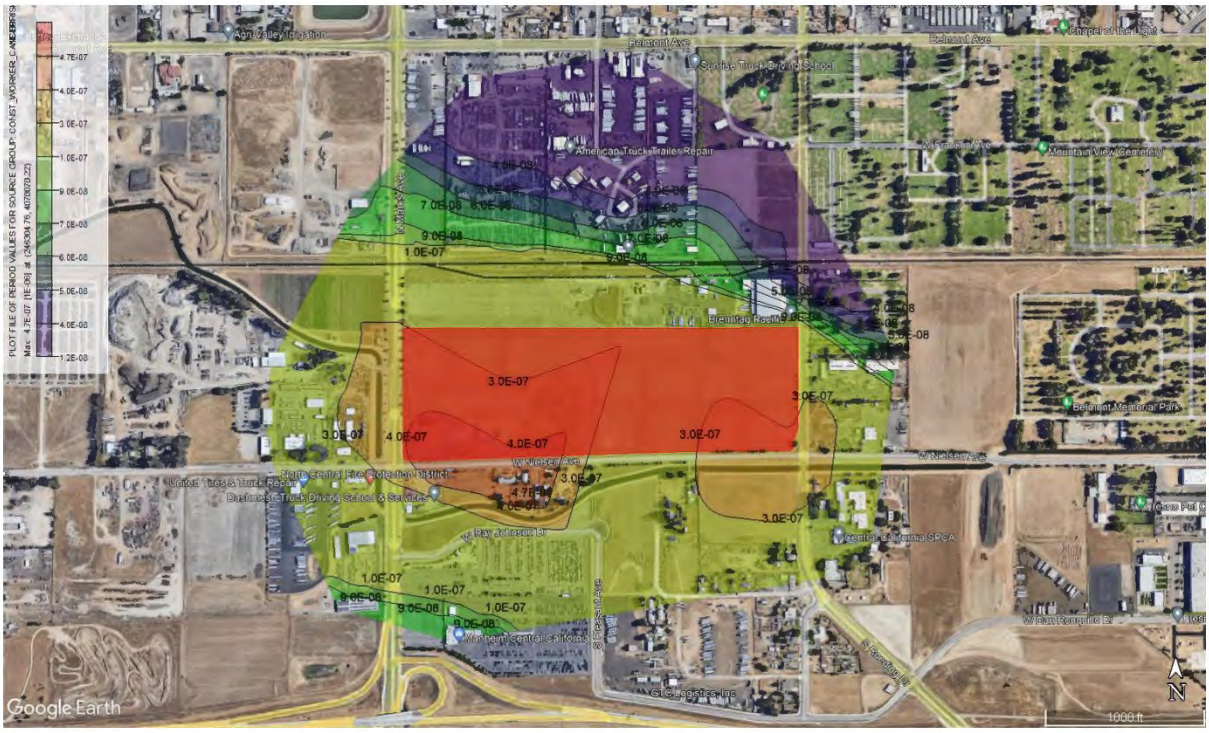
Unmitigated Construction Cancer Risk – Sensitive Receptors



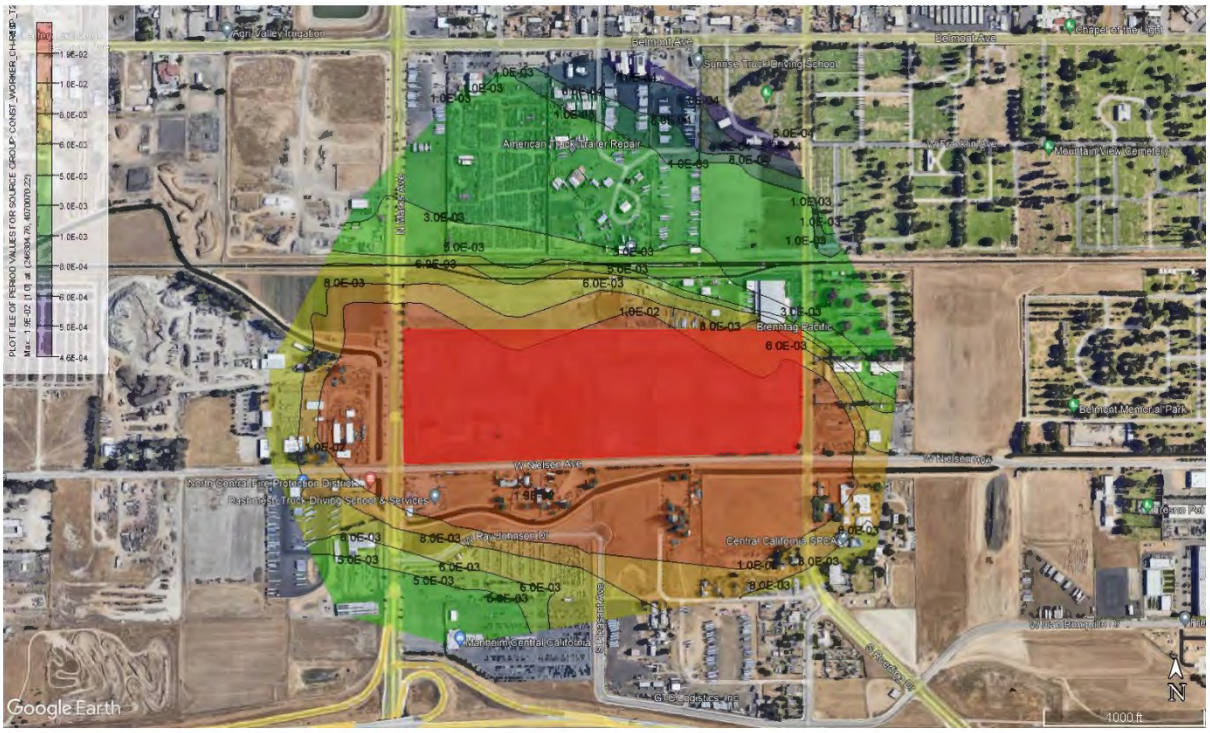
Unmitigated Construction Chronic Hazard Index – Sensitive Receptors



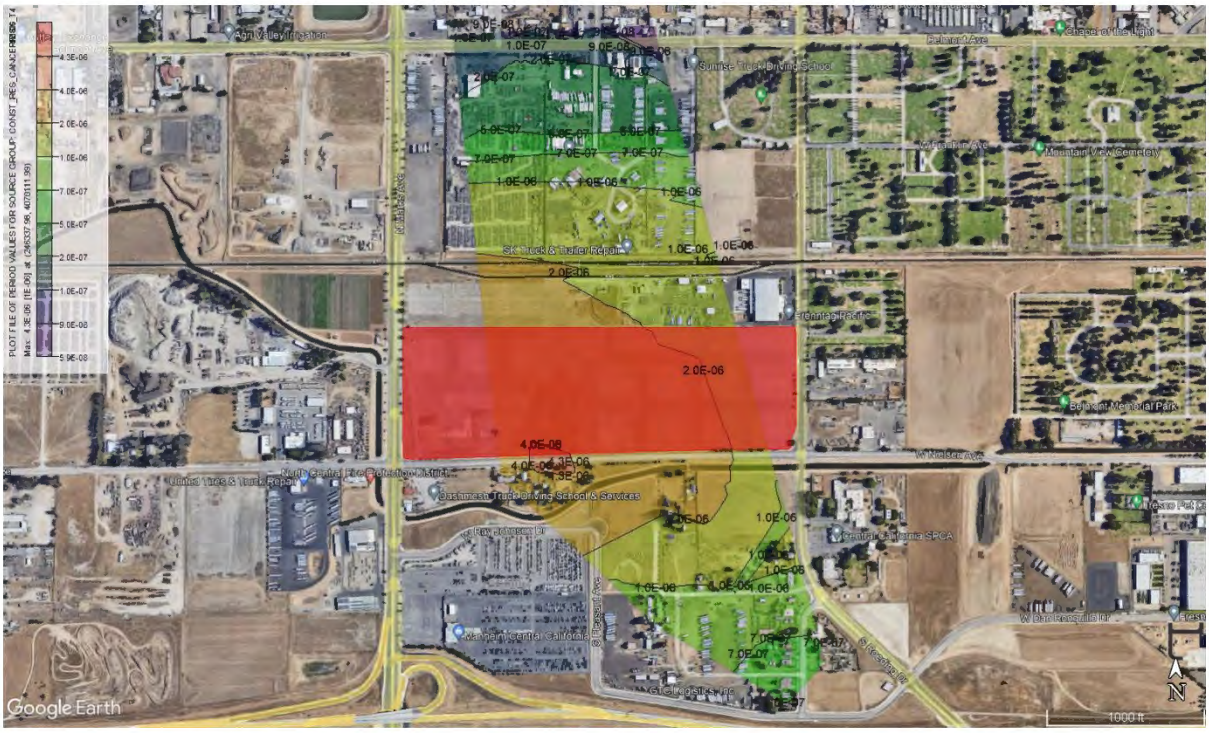
Unmitigated Construction Cancer Risk – Worker Receptors



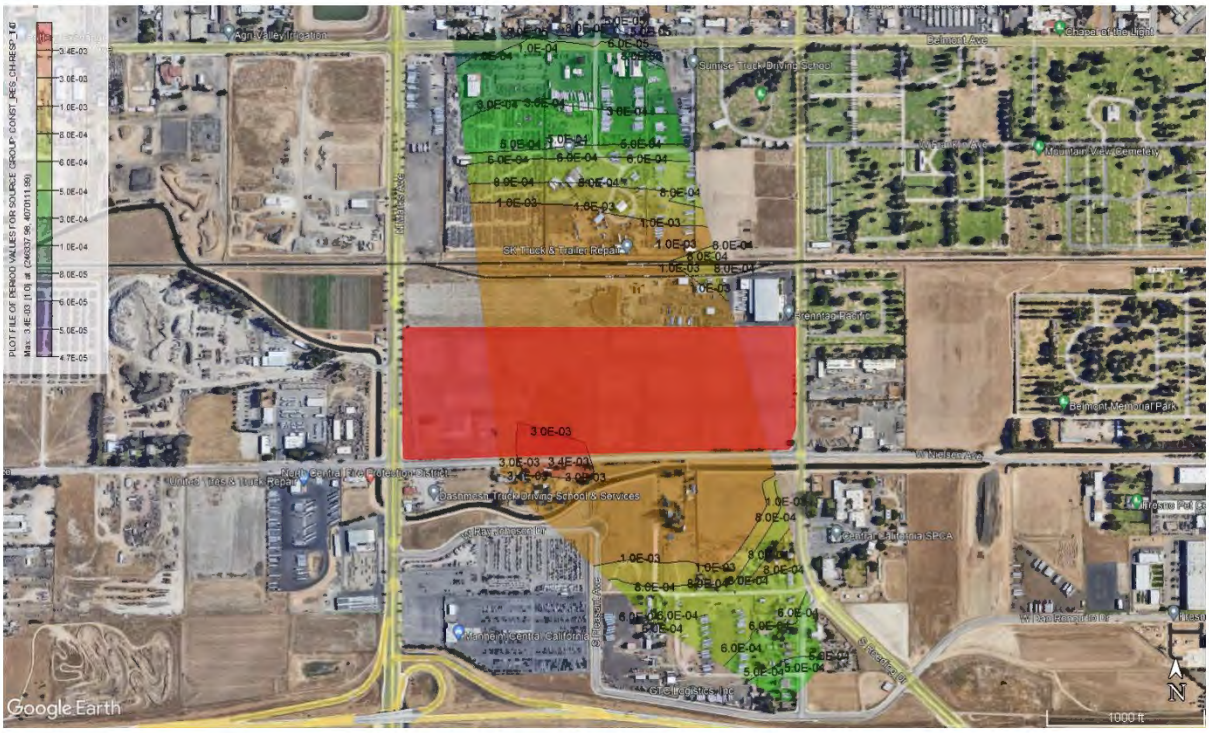
Unmitigated Construction Chronic Hazard Index – Worker Receptors



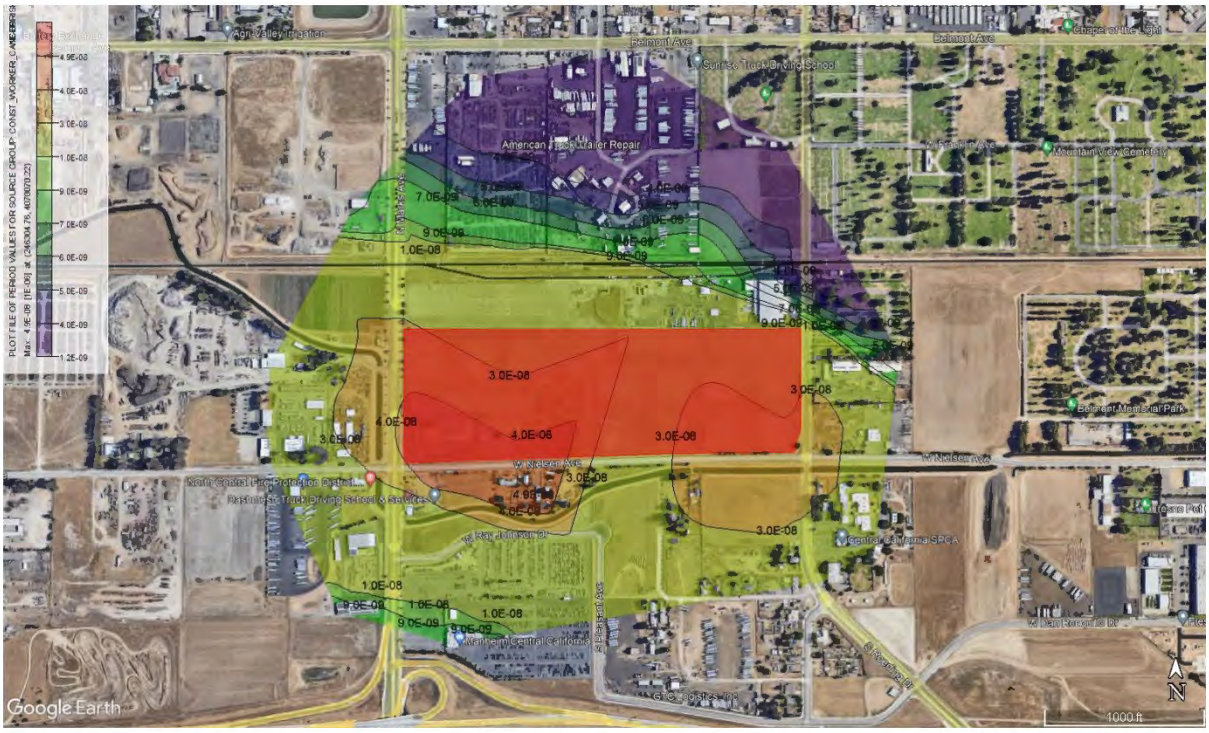
Mitigated Construction Cancer Risk – Sensitive Receptors



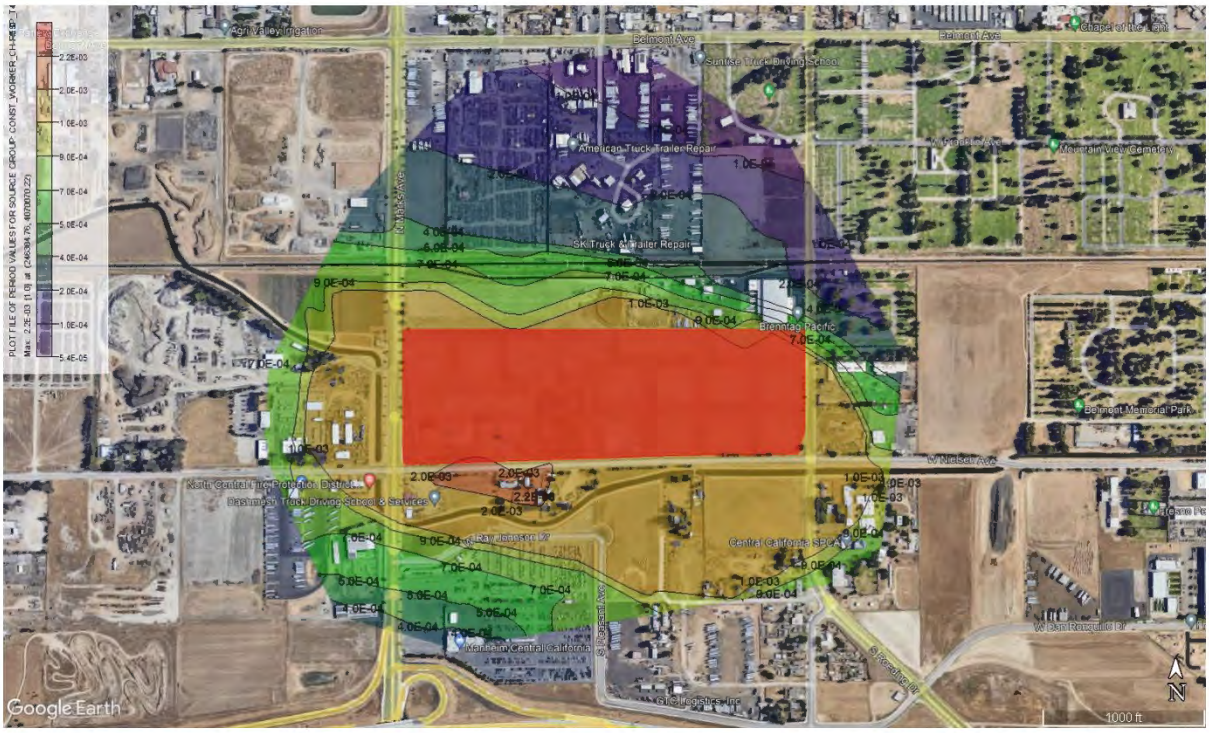
Mitigated Construction Chronic Hazard Index – Sensitive Receptors



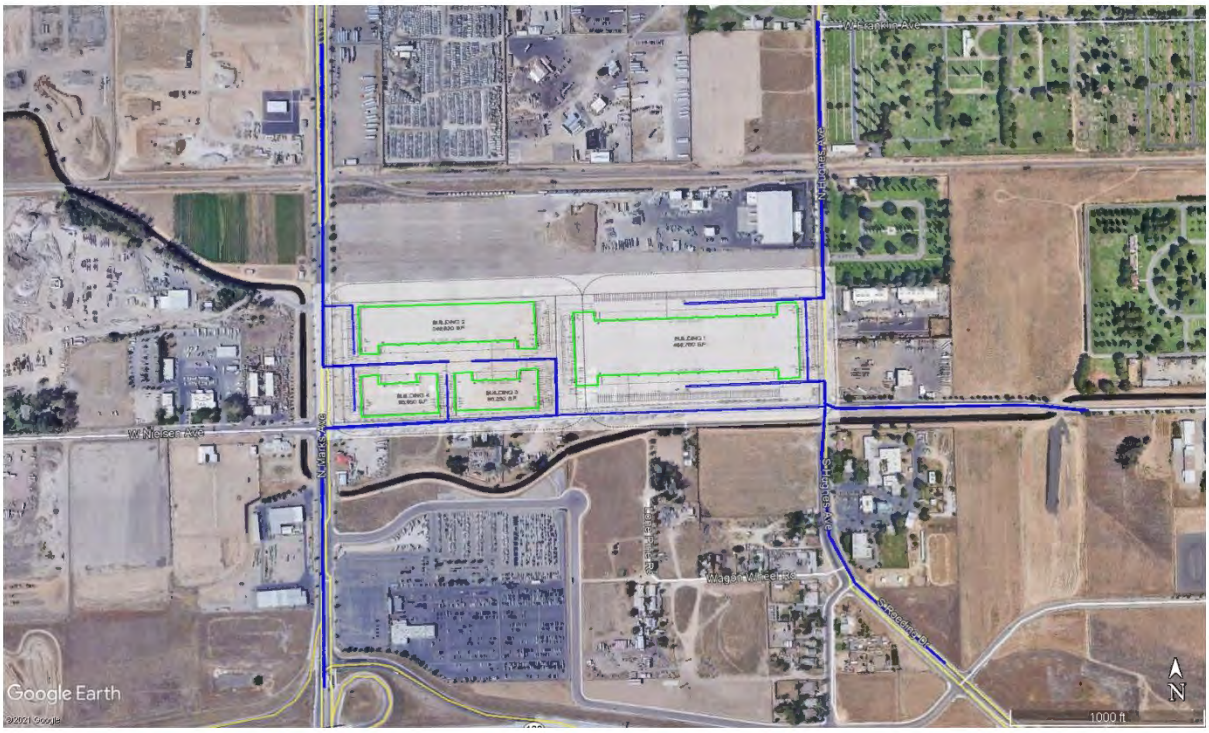
Mitigated Construction Cancer Risk – Worker Receptors



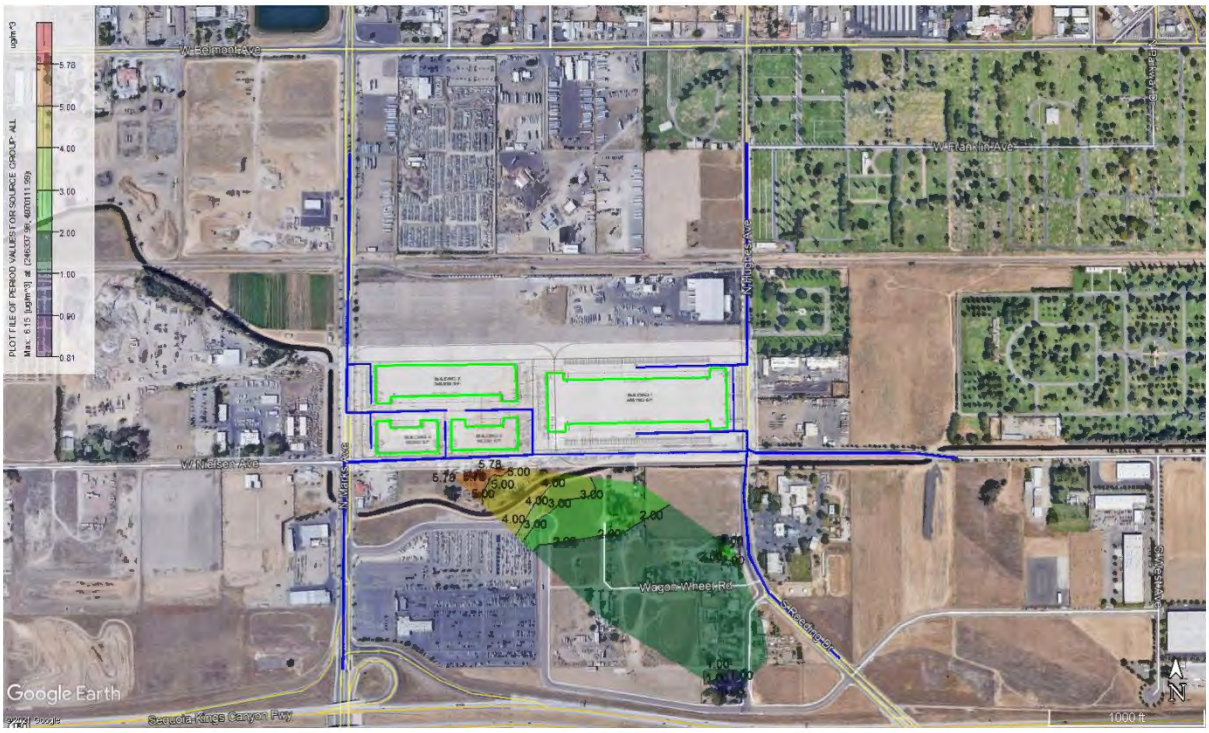
Mitigated Construction Chronic Hazard Index – Worker Receptors



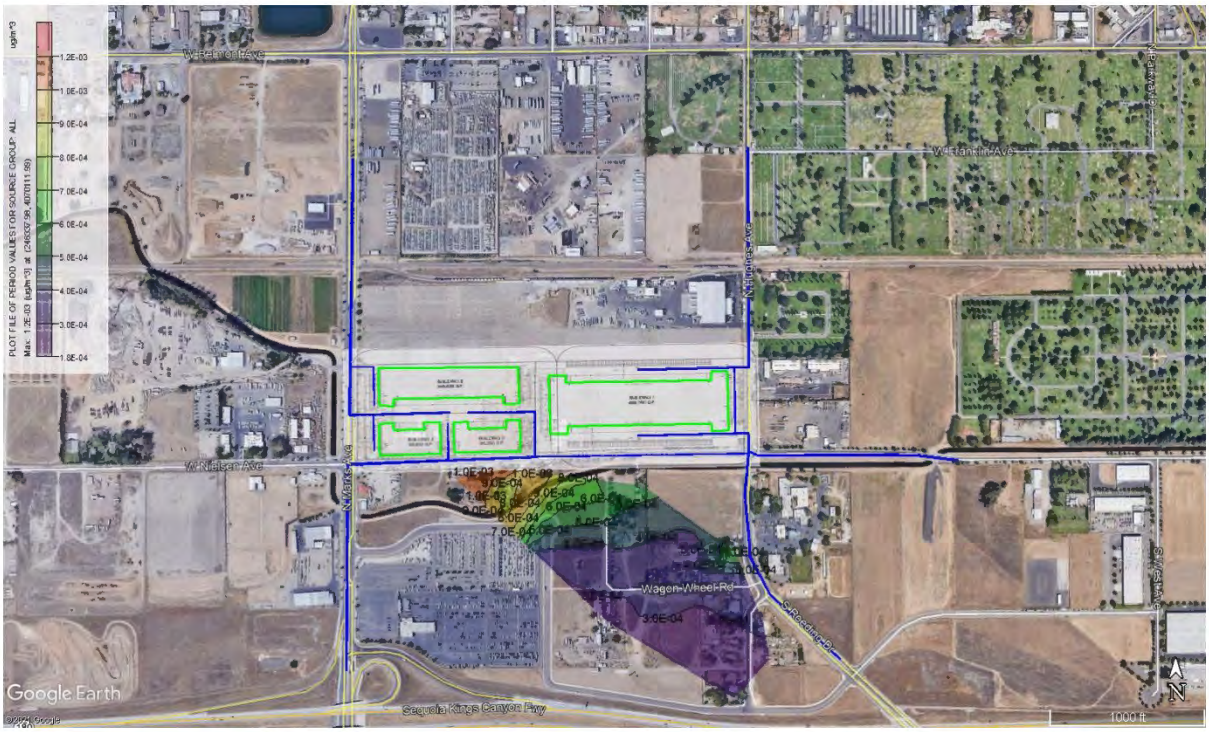
Project Operational Emissions Sources



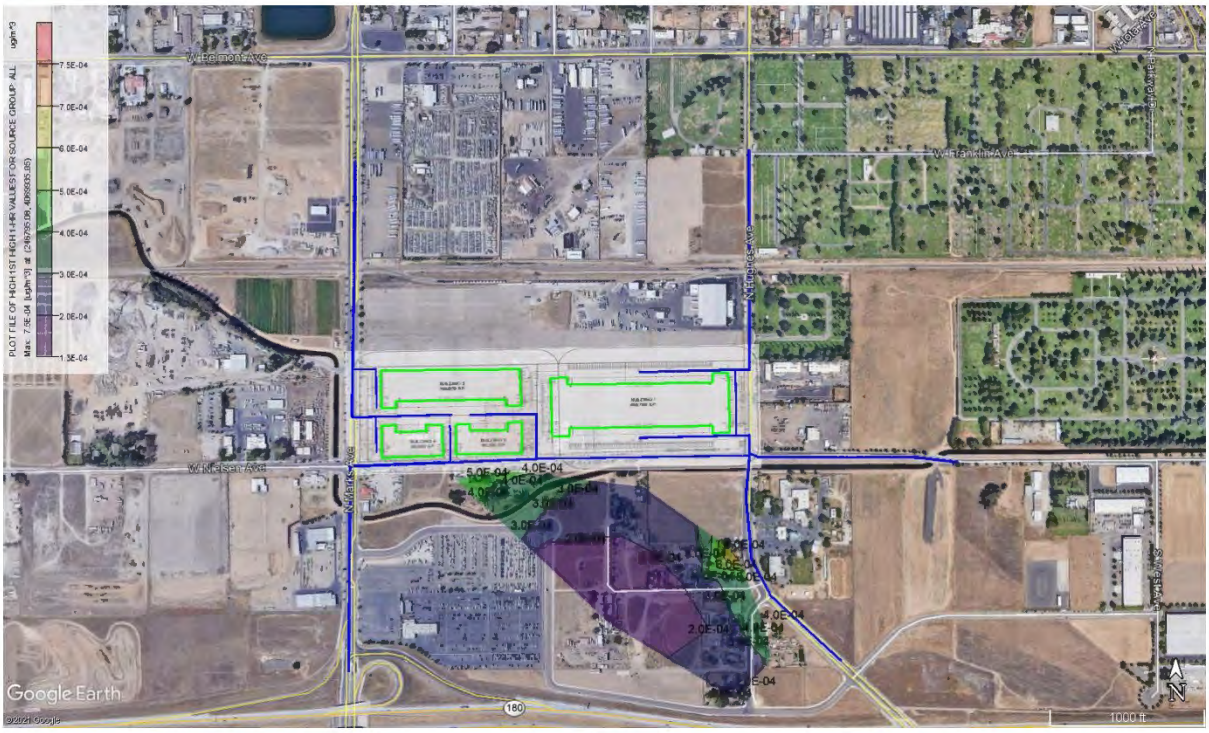
Operational Cancer Risk – Sensitive Receptors



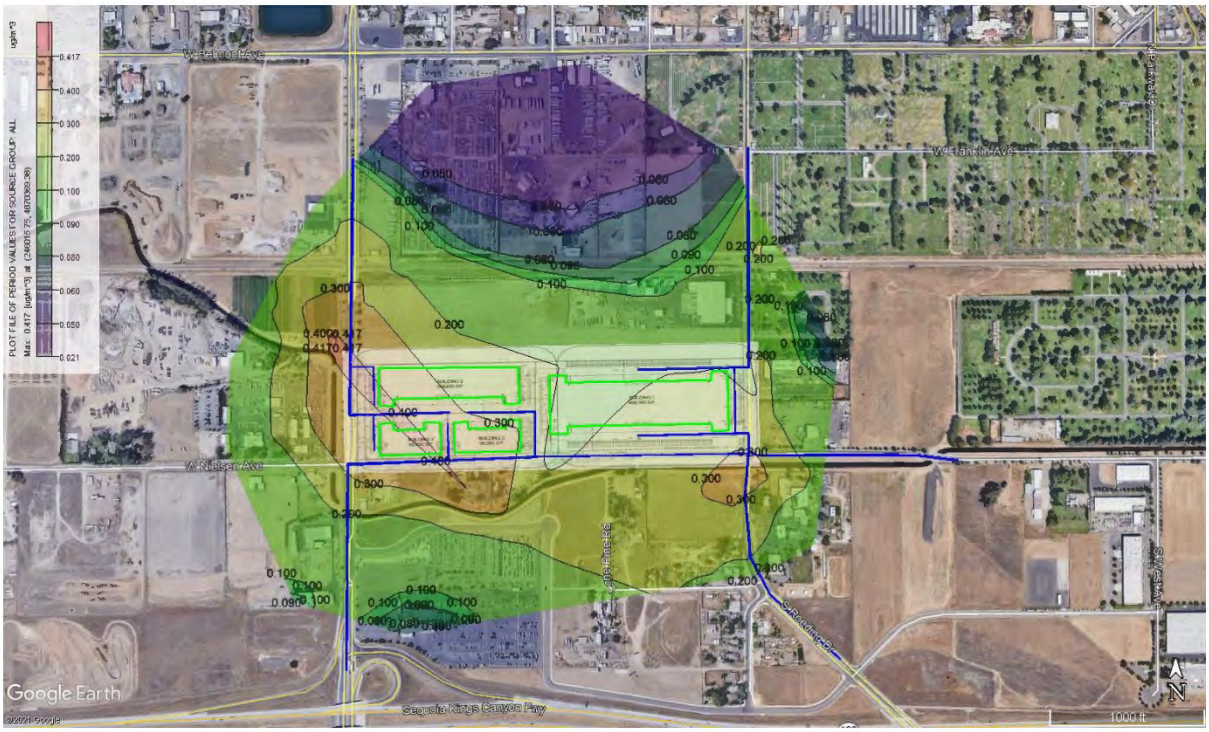
Operational Chronic Hazard Index – Sensitive Receptors



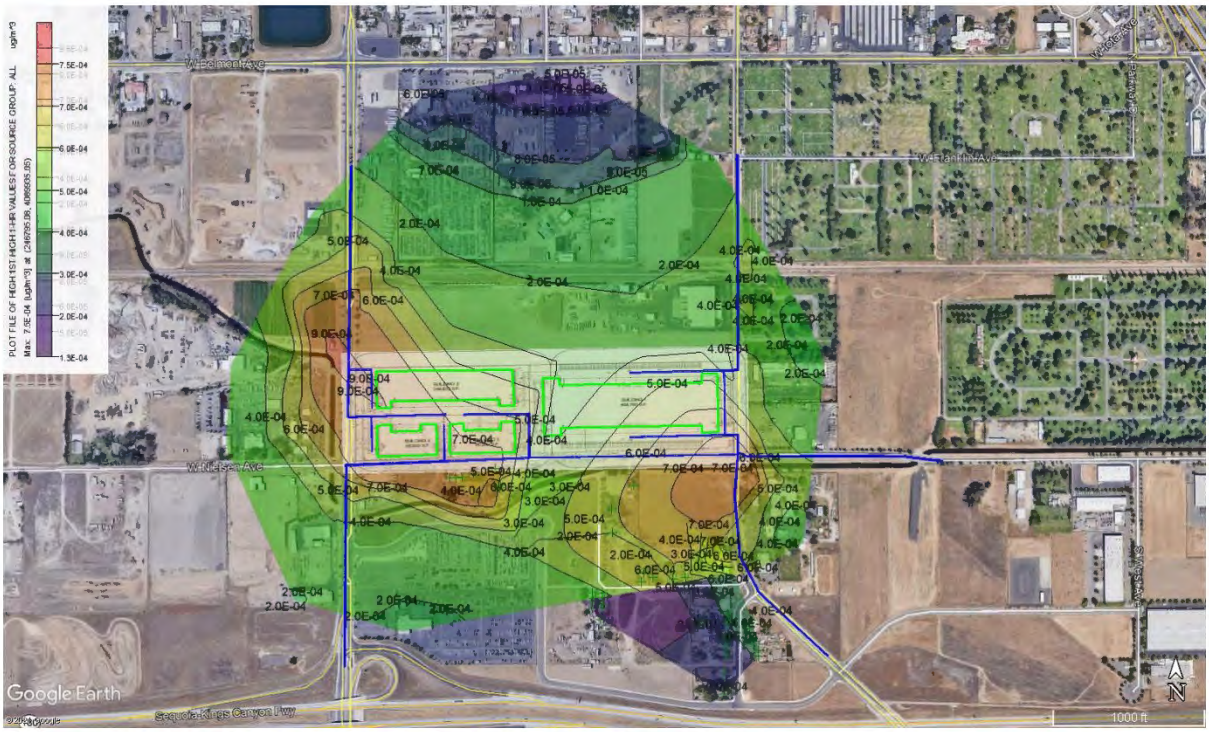
Operational Acute Hazard Index – Sensitive Receptors



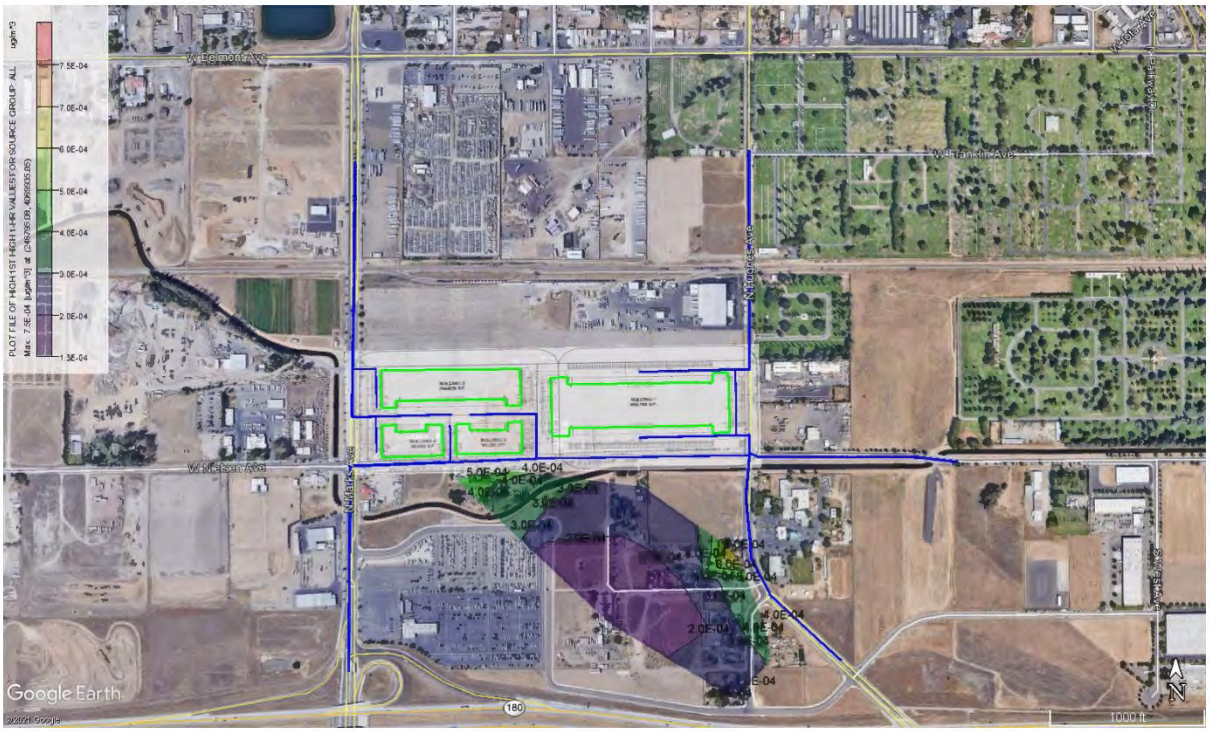
Operational Cancer Risk – Worker Receptors



Operational Chronic Hazard Index – Worker Receptors



Operational Acute Hazard Index – Worker Receptors



Construction	Worker Receptor	Sensitive Receptor
Cancer Risk (in a Million)	0.28	34.04
Chronic HI	9.98E-03	2.12E-02
Acute HI	0.0	0.0
PM 2.5	---	---

Construction (T2)	Worker Receptor	Sensitive Receptor
Cancer Risk (in a Million)	0.35	41.59
Chronic HI	1.42E-02	3.01E-02
Acute HI	0.0	0.0
PM 2.5	---	---

Construction (T2L3)	Worker Receptor	Sensitive Receptor
Cancer Risk (in a Million)	0.07	8.18
Chronic HI	3.01E-03	6.37E-03
Acute HI	0.0	0.0
PM 2.5	---	---

Construction (T4)	Worker Receptor	Sensitive Receptor
Cancer Risk (in a Million)	0.04	4.33
Chronic HI	1.63E-03	3.45E-03
Acute HI	0.0	0.0
PM 2.5	---	---

PM 10				
Tons/Yr	UM	T2	T2L3	T4
Year 1	0.0731	0.07	0.012	6.10E-03
Year 2	0.0896	0.1276	0.027	0.0146
Year 3	0.0289	0.047	9.27E-03	4.71E-03

PM 2.5				
Tons/Yr	UM	T2	T2L3	T4
Year 1	0.0677	0.0699	0.0119	6.00E-03
Year 2	0.0843	0.1271	0.0265	0.0141
Year 3	0.0271	0.0469	9.13E-03	4.58E-03

PM 10				
Lbs /Yr	UM	T2	T2L3	T4
Year 1	146.2	140	24	12.2
Year 2	179.2	255.2	54	29.2
Year 3	57.8	94	18.54	9.42

PM 2.5				
Lbs /Yr	UM	T2	T2L3	T4
Year 1	135.4	139.8	23.8	12
Year 2	168.6	254.2	53	28.2
Year 3	54.2	93.8	18.26	9.16

PM 10				
% Chng	UM	T2	T2L3	T4
Year 1	100%	96%	16%	8%
Year 2	100%	142%	30%	16%
Year 3	100%	163%	32%	16%

PM 2.5				
g/sec	UM	T2	T2L3	T4
Year 1	0.001948	0.002011	0.000342	0.000173
Year 2	0.002425	0.003656	0.000762	0.000406
Year 3	0.00078	0.001349	0.000263	0.000132

			UnMitigated				T2				T2L3				T4			
						3.40E-05				4.16E-05				8.18E-06				4.33E-06
			Yr 1	Yr 2	Yr 3	Total	Yr 1	Yr 2	Yr 3	Total	Yr 1	Yr 2	Yr 3	Total	Yr 1	Yr 2	Yr 3	Total
1	246795.1	4069935	4.12E-06	4.66E-06	3.56E-07	9.14E-06	3.94E-06	6.64E-06	5.80E-07	1.12E-05	6.76E-07	1.40E-06	1.14E-07	2.20E-06	3.44E-07	7.60E-07	5.81E-08	1.16E-06
2	246568.9	4070024	7.17E-06	8.12E-06	6.21E-07	1.59E-05	6.87E-06	1.16E-05	1.01E-06	1.94E-05	1.18E-06	2.45E-06	1.99E-07	3.82E-06	5.98E-07	1.32E-06	1.01E-07	2.02E-06
3	246614.9	4070070	9.35E-06	1.06E-05	8.09E-07	2.07E-05	8.95E-06	1.51E-05	1.32E-06	2.53E-05	1.53E-06	3.19E-06	2.59E-07	4.98E-06	7.80E-07	1.72E-06	1.32E-07	2.64E-06
4	246568.9	4069977	5.44E-06	6.16E-06	4.71E-07	1.21E-05	5.21E-06	8.78E-06	7.66E-07	1.48E-05	8.94E-07	1.86E-06	1.51E-07	2.90E-06	4.54E-07	1.00E-06	7.68E-08	1.54E-06
5	246713.2	4069883	3.56E-06	4.02E-06	3.08E-07	7.89E-06	3.40E-06	5.73E-06	5.00E-07	9.64E-06	5.84E-07	1.21E-06	9.87E-08	1.90E-06	2.97E-07	6.56E-07	5.01E-08	1.00E-06
6	246688.5	4069881	3.54E-06	4.01E-06	3.06E-07	7.86E-06	3.39E-06	5.71E-06	4.98E-07	9.60E-06	5.81E-07	1.21E-06	9.83E-08	1.89E-06	2.96E-07	6.53E-07	4.99E-08	9.99E-07
7	246648.2	4069885	3.60E-06	4.07E-06	3.11E-07	7.99E-06	3.45E-06	5.80E-06	5.07E-07	9.76E-06	5.91E-07	1.23E-06	9.99E-08	1.92E-06	3.00E-07	6.64E-07	5.08E-08	1.02E-06
8	246624.4	4069876	3.46E-06	3.92E-06	2.99E-07	7.68E-06	3.31E-06	5.58E-06	4.87E-07	9.38E-06	5.68E-07	1.18E-06	9.61E-08	1.85E-06	2.89E-07	6.38E-07	4.88E-08	9.76E-07
9	246629.7	4069895	3.74E-06	4.23E-06	3.23E-07	8.29E-06	3.58E-06	6.02E-06	5.26E-07	1.01E-05	6.13E-07	1.27E-06	1.04E-07	1.99E-06	3.12E-07	6.89E-07	5.27E-08	1.05E-06
10	246845.9	4069794	2.57E-06	2.90E-06	2.22E-07	5.69E-06	2.46E-06	4.14E-06	3.61E-07	6.95E-06	4.21E-07	8.75E-07	7.12E-08	1.37E-06	2.14E-07	4.73E-07	3.62E-08	7.24E-07
11	246839.2	4069777	2.46E-06	2.79E-06	2.13E-07	5.46E-06	2.36E-06	3.97E-06	3.46E-07	6.67E-06	4.04E-07	8.40E-07	6.83E-08	1.31E-06	2.05E-07	4.54E-07	3.47E-08	6.94E-07
12	246796.1	4069809	2.73E-06	3.09E-06	2.36E-07	6.06E-06	2.62E-06	4.41E-06	3.85E-07	7.41E-06	4.49E-07	9.32E-07	7.59E-08	1.46E-06	2.28E-07	5.04E-07	3.85E-08	7.71E-07
13	246792.1	4069788	2.58E-06	2.92E-06	2.23E-07	5.72E-06	2.47E-06	4.16E-06	3.63E-07	6.99E-06	4.23E-07	8.79E-07	7.15E-08	1.37E-06	2.15E-07	4.75E-07	3.64E-08	7.27E-07
14	246748.6	4069789	2.58E-06	2.93E-06	2.24E-07	5.73E-06	2.47E-06	4.17E-06	3.64E-07	7.00E-06	4.24E-07	8.82E-07	7.17E-08	1.38E-06	2.16E-07	4.77E-07	3.64E-08	7.29E-07
15	246738.6	4069788	2.57E-06	2.91E-06	2.23E-07	5.71E-06	2.47E-06	4.15E-06	3.62E-07	6.98E-06	4.23E-07	8.78E-07	7.15E-08	1.37E-06	2.15E-07	4.75E-07	3.63E-08	7.26E-07
16	246793.6	4069768	2.43E-06	2.75E-06	2.10E-07	5.39E-06	2.33E-06	3.92E-06	3.42E-07	6.59E-06	3.99E-07	8.29E-07	6.75E-08	1.30E-06	2.03E-07	4.48E-07	3.43E-08	6.85E-07
17	246792.8	4069727	2.17E-06	2.45E-06	1.87E-07	4.81E-06	2.07E-06	3.49E-06	3.05E-07	5.87E-06	3.56E-07	7.39E-07	6.01E-08	1.15E-06	1.81E-07	4.00E-07	3.05E-08	6.11E-07
18	246790.2	4069744	2.27E-06	2.57E-06	1.97E-07	5.04E-06	2.18E-06	3.66E-06	3.20E-07	6.16E-06	3.73E-07	7.75E-07	6.31E-08	1.21E-06	1.90E-07	4.19E-07	3.20E-08	6.41E-07
19	246793	4069760	2.37E-06	2.69E-06	2.05E-07	5.27E-06	2.27E-06	3.83E-06	3.34E-07	6.43E-06	3.90E-07	8.10E-07	6.59E-08	1.27E-06	1.98E-07	4.38E-07	3.35E-08	6.69E-07
20	246856.1	4069721	2.12E-06	2.40E-06	1.84E-07	4.71E-06	2.03E-06	3.42E-06	2.99E-07	5.75E-06	3.48E-07	7.24E-07	5.89E-08	1.13E-06	1.77E-07	3.91E-07	2.99E-08	5.98E-07
21	246851.4	4069752	2.30E-06	2.60E-06	1.99E-07	5.10E-06	2.20E-06	3.70E-06	3.23E-07	6.23E-06	3.77E-07	7.84E-07	6.38E-08	1.22E-06	1.92E-07	4.24E-07	3.24E-08	6.48E-07
22	246855.5	4069733	2.19E-06	2.47E-06	1.89E-07	4.85E-06	2.09E-06	3.52E-06	3.08E-07	5.93E-06	3.59E-07	7.46E-07	6.07E-08	1.17E-06	1.82E-07	4.03E-07	3.08E-08	6.16E-07
23	246784.3	4069648	1.73E-06	1.96E-06	1.50E-07	3.84E-06	1.66E-06	2.79E-06	2.44E-07	4.70E-06	2.84E-07	5.91E-07	4.81E-08	9.23E-07	1.45E-07	3.20E-07	2.44E-08	4.89E-07
24	246785	4069667	1.83E-06	2.07E-06	1.58E-07	4.06E-06	1.75E-06	2.95E-06	2.58E-07	4.96E-06	3.00E-07	6.24E-07	5.08E-08	9.76E-07	1.53E-07	3.38E-07	2.58E-08	5.16E-07
25	246785.1	4069689	1.95E-06	2.20E-06	1.68E-07	4.32E-06	1.86E-06	3.14E-06	2.74E-07	5.27E-06	3.19E-07	6.64E-07	5.40E-08	1.04E-06	1.62E-07	3.59E-07	2.74E-08	5.49E-07
26	246545	4069857	3.16E-06	3.57E-06	2.73E-07	7.00E-06	3.02E-06	5.09E-06	4.44E-07	8.56E-06	5.18E-07	1.08E-06	8.76E-08	1.68E-06	2.63E-07	5.82E-07	4.45E-08	8.90E-07
27	246544.5	4069848	3.04E-06	3.44E-06	2.63E-07	6.75E-06	2.91E-06	4.90E-06	4.28E-07	8.24E-06	4.99E-07	1.04E-06	8.44E-08	1.62E-06	2.54E-07	5.61E-07	4.29E-08	8.57E-07
28	246546.4	4069834	2.88E-06	3.26E-06	2.49E-07	6.40E-06	2.76E-06	4.65E-06	4.06E-07	7.82E-06	4.73E-07	9.84E-07	8.00E-08	1.54E-06	2.41E-07	5.32E-07	4.07E-08	8.13E-07
29	246543.6	4069826	2.79E-06	3.15E-06	2.41E-07	6.18E-06	2.67E-06	4.49E-06	3.92E-07	7.55E-06	4.58E-07	9.51E-07	7.73E-08	1.49E-06	2.33E-07	5.14E-07	3.93E-08	7.86E-07
30	246540.7	4069803	2.54E-06	2.88E-06	2.20E-07	5.64E-06	2.44E-06	4.10E-06	3.58E-07	6.89E-06	4.17E-07	8.67E-07	7.06E-08	1.36E-06	2.12E-07	4.69E-07	3.59E-08	7.17E-07
31	246526	4069858	3.14E-06	3.55E-06	2.71E-07	6.96E-06	3.00E-06	5.06E-06	4.41E-07	8.50E-06	5.15E-07	1.07E-06	8.71E-08	1.67E-06	2.62E-07	5.79E-07	4.42E-08	8.85E-07
32	246525.5	4069847	3.00E-06	3.40E-06	2.60E-07	6.66E-06	2.87E-06	4.84E-06	4.22E-07	8.13E-06	4.93E-07	1.02E-06	8.33E-08	1.60E-06	2.50E-07	5.54E-07	4.23E-08	8.46E-07
33	246524.1	4069839	2.89E-06	3.28E-06	2.50E-07	6.42E-06	2.77E-06	4.67E-06	4.07E-07	7.85E-06	4.75E-07	9.87E-07	8.03E-08	1.54E-06	2.42E-07	5.34E-07	4.08E-08	8.16E-07
34	246523.6	4069827	2.76E-06	3.12E-06	2.38E-07	6.12E-06	2.64E-06	4.44E-06	3.88E-07	7.47E-06	4.52E-07	9.40E-07	7.65E-08	1.47E-06	2.30E-07	5.08E-07	3.89E-08	7.77E-07
35	246293.4	4070103	1.34E-05	1.52E-05	1.16E-06	2.98E-05	1.29E-05	2.17E-05	1.89E-06	3.64E-05	2.21E-06	4.58E-06	3.73E-07	7.16E-06	1.12E-06	2.48E-06	1.90E-07	3.79E-06
36	246270	4070097	1.23E-05	1.39E-05	1.06E-06	2.73E-05	1.18E-05	1.98E-05	1.73E-06	3.33E-05	2.02E-06	4.19E-06	3.41E-07	6.55E-06	1.03E-06	2.27E-06	1.73E-07	3.47E-06
37	246257.7	4070096	1.21E-05	1.37E-05	1.05E-06	2.68E-05	1.16E-05	1.95E-05	1.70E-06	3.28E-05	1.99E-06	4.13E-06	3.36E-07	6.45E-06	1.01E-06	2.23E-06	1.71E-07	3.41E-06
38	246246.5	4070096	1.20E-05	1.35E-05	1.04E-06	2.66E-05	1.15E-05	1.93E-05	1.68E-06	3.24E-05	1.96E-06	4.08E-06	3.32E-07	6.38E-06	9.99E-07	2.21E-06	1.69E-07	3.38E-06
39	246346.9	4070079	1.06E-05	1.20E-05	9.19E-07	2.36E-05	1.02E-05	1.71E-05	1.50E-06	2.88E-05	1.74E-06	3.62E-06	2.95E-07	5.66E-06	8.87E-07	1.96E-06	1.50E-07	3.00E-06
40	246344.7	4070073	1.01E-05	1.14E-05	8.71E-07	2.23E-05	9.64E-06	1.62E-05	1.42E-06	2.73E-05	1.65E-06	3.43E-06	2.79E-07	5.37E-06	8.40E-07	1.86E-06	1.42E-07	2.84E-06
41	246338	4070112	1.53E-05	1.74E-05	1.33E-06	3.40E-05	1.47E-05	2.47E-05	2.16E-06	4.16E-05	2.52E-06	5.23E-06	4.26E-07	8.18E-06	1.28E-06	2.83E-06	2.16E-07	4.33E-06
42	246302.9	4070951	3.12E-07	3.53E-07	2.70E-08	6.91E-07	2.98E-07	5.02E-07	4.38E-08	8.45E-07	5.12E-08	1.06E-07	8.65E-09	1.66E-07	2.60E-08	5.75E-08	4.39E-09	8.79E-08
43	246397.1	4070950	2.76E-07	3.13E-07	2.39E-08	6.12E-07	2.64E-07	4.45E-07	3.88E-08	7.48E-07	4.53E-08	9.42E-08	7.66E-09	1.47E-07	2.30E-08	5.09E-08	3.89E-09	7.79E-08
44	246565.5	4070955	2.09E-07	2.36E-07	1.81E-08	4.63E-07	2.00E-07	3.36E-07	2.94E-08	5.65E-07	3.42E-08	7.12E-08	5.79E-09	1.11E-07	1.74E-08	3.85E-08	2.94E-09	5.88E-08
45	246549.9	4070941	2.22E-07	2.51E-07	1.92E-08	4.92E-07	2.12E-07	3.58E-07	3.12E-08	6.01E-07	3.64E-08	7.57E-08	6.16E-09	1.18E-07	1.85E-08	4.09E-08	3.13E-09	6.26E-08
46	246519.3	4070943	2.33E-07	2.63E-07	2.01E-08	5.16E-07	2.23E-07	3.75E-07	3.27E-08	6.31E-07	3.82E-08	7.94E-08	6.46E-09	1.24E-07	1.94E-08	4.29E-08	3.28E-09	6.56E-08
47	246200.5	4070942	3.59E-07	4.07E-07	3.11E-08	7.97E-07	3.44E-07	5.79E-07	5.06E-08	9.74E-07	5.90E-08	1.23E-07	9.98E-09	1.92E-07	3.00E-08	6.63E-08	5.07E-09	1.01E-07
48	246179.1	4070943	3.69E-07	4.17E-07	3.19E-08	8.18E-07	3.53E-07	5.94E-07	5.19E-08	9.99E-07	6.05E-08	1.26E-07	1.02E-08	1.97E-07	3.08E-08	6.80E-08	5.20E-09	1.04E-07
49	246220.7	4070943	3.51E-07	3.97E-07	3.04E-08	7.78E-07	3.36E-07	5.66E-07	4.94E-08	9.51E-07	5.76E-08	1.20E-07	9.74E-09	1.87E-07	2.93E-08	6.47E-08	4.95E-09	9.89E-08

			UnMitigated			T2			T2L3			T4		
			1.73E-02	2.12E-02	6.82E-03	1.65E-02	3.01E-02	1.11E-02	2.83E-03	6.37E-03	2.19E-03	1.44E-03	3.45E-03	1.11E-03
			Yr 1	Yr 2	Yr 3	Yr 1	Yr 2	Yr 3	Yr 1	Yr 2	Yr 3	Yr 1	Yr 2	Yr 3
1	246795.1	4069935	4.63E-03	5.68E-03	1.83E-03	4.44E-03	8.08E-03	2.98E-03	7.60E-04	1.71E-03	5.87E-04	3.86E-04	9.25E-04	2.98E-04
2	246568.9	4070024	8.07E-03	9.89E-03	3.19E-03	7.72E-03	1.41E-02	5.19E-03	1.32E-03	2.98E-03	1.02E-03	6.73E-04	1.61E-03	5.20E-04
3	246614.9	4070070	1.05E-02	1.29E-02	4.16E-03	1.01E-02	1.83E-02	6.76E-03	1.73E-03	3.88E-03	1.33E-03	8.77E-04	2.10E-03	6.77E-04
4	246568.9	4069977	6.12E-03	7.50E-03	2.42E-03	5.86E-03	1.07E-02	3.94E-03	1.00E-03	2.26E-03	7.76E-04	5.11E-04	1.22E-03	3.94E-04
5	246713.2	4069883	4.00E-03	4.90E-03	1.58E-03	3.83E-03	6.98E-03	2.57E-03	6.56E-04	1.48E-03	5.07E-04	3.34E-04	7.99E-04	2.58E-04
6	246688.5	4069881	3.98E-03	4.88E-03	1.57E-03	3.81E-03	6.95E-03	2.56E-03	6.54E-04	1.47E-03	5.05E-04	3.32E-04	7.96E-04	2.57E-04
7	246648.2	4069885	4.05E-03	4.96E-03	1.60E-03	3.88E-03	7.07E-03	2.60E-03	6.65E-04	1.50E-03	5.13E-04	3.38E-04	8.09E-04	2.61E-04
8	246624.4	4069876	3.89E-03	4.77E-03	1.54E-03	3.73E-03	6.79E-03	2.50E-03	6.39E-04	1.44E-03	4.94E-04	3.25E-04	7.77E-04	2.51E-04
9	246629.7	4069895	4.20E-03	5.15E-03	1.66E-03	4.02E-03	7.33E-03	2.70E-03	6.90E-04	1.55E-03	5.33E-04	3.51E-04	8.39E-04	2.71E-04
10	246845.9	4069794	2.89E-03	3.54E-03	1.14E-03	2.76E-03	5.04E-03	1.86E-03	4.74E-04	1.07E-03	3.66E-04	2.41E-04	5.76E-04	1.86E-04
11	246839.2	4069777	2.77E-03	3.39E-03	1.09E-03	2.65E-03	4.83E-03	1.78E-03	4.55E-04	1.02E-03	3.51E-04	2.31E-04	5.53E-04	1.78E-04
12	246796.1	4069809	3.07E-03	3.77E-03	1.22E-03	2.94E-03	5.37E-03	1.98E-03	5.05E-04	1.14E-03	3.90E-04	2.56E-04	6.14E-04	1.98E-04
13	246792.1	4069788	2.90E-03	3.55E-03	1.15E-03	2.78E-03	5.06E-03	1.86E-03	4.76E-04	1.07E-03	3.68E-04	2.42E-04	5.79E-04	1.87E-04
14	246748.6	4069789	2.91E-03	3.56E-03	1.15E-03	2.78E-03	5.07E-03	1.87E-03	4.77E-04	1.07E-03	3.69E-04	2.43E-04	5.80E-04	1.87E-04
15	246738.6	4069788	2.90E-03	3.55E-03	1.14E-03	2.77E-03	5.05E-03	1.86E-03	4.75E-04	1.07E-03	3.67E-04	2.42E-04	5.78E-04	1.87E-04
16	246793.6	4069768	2.73E-03	3.35E-03	1.08E-03	2.62E-03	4.77E-03	1.76E-03	4.49E-04	1.01E-03	3.47E-04	2.28E-04	5.46E-04	1.76E-04
17	246792.8	4069727	2.44E-03	2.99E-03	9.63E-04	2.33E-03	4.25E-03	1.57E-03	4.00E-04	9.00E-04	3.09E-04	2.03E-04	4.87E-04	1.57E-04
18	246790.2	4069744	2.56E-03	3.13E-03	1.01E-03	2.45E-03	4.46E-03	1.64E-03	4.20E-04	9.44E-04	3.24E-04	2.13E-04	5.10E-04	1.65E-04
19	246793	4069760	2.67E-03	3.27E-03	1.06E-03	2.56E-03	4.66E-03	1.72E-03	4.38E-04	9.86E-04	3.39E-04	2.23E-04	5.33E-04	1.72E-04
20	246856.1	4069721	2.39E-03	2.92E-03	9.43E-04	2.29E-03	4.17E-03	1.53E-03	3.92E-04	8.81E-04	3.03E-04	1.99E-04	4.77E-04	1.54E-04
21	246851.4	4069752	2.58E-03	3.17E-03	1.02E-03	2.47E-03	4.51E-03	1.66E-03	4.24E-04	9.54E-04	3.28E-04	2.16E-04	5.16E-04	1.66E-04
22	246855.5	4069733	2.46E-03	3.01E-03	9.72E-04	2.35E-03	4.29E-03	1.58E-03	4.04E-04	9.08E-04	3.12E-04	2.05E-04	4.91E-04	1.58E-04
23	246784.3	4069648	1.95E-03	2.39E-03	7.70E-04	1.87E-03	3.40E-03	1.25E-03	3.20E-04	7.20E-04	2.47E-04	1.63E-04	3.89E-04	1.26E-04
24	246785	4069667	2.06E-03	2.52E-03	8.14E-04	1.97E-03	3.59E-03	1.32E-03	3.38E-04	7.60E-04	2.61E-04	1.72E-04	4.11E-04	1.33E-04
25	246785.1	4069689	2.19E-03	2.68E-03	8.65E-04	2.10E-03	3.82E-03	1.41E-03	3.59E-04	8.08E-04	2.77E-04	1.83E-04	4.37E-04	1.41E-04
26	246545	4069857	3.55E-03	4.35E-03	1.40E-03	3.40E-03	6.20E-03	2.28E-03	5.83E-04	1.31E-03	4.50E-04	2.96E-04	7.09E-04	2.29E-04
27	246544.5	4069848	3.42E-03	4.19E-03	1.35E-03	3.27E-03	5.97E-03	2.20E-03	5.61E-04	1.26E-03	4.34E-04	2.85E-04	6.83E-04	2.20E-04
28	246546.4	4069834	3.24E-03	3.97E-03	1.28E-03	3.11E-03	5.66E-03	2.08E-03	5.32E-04	1.20E-03	4.11E-04	2.71E-04	6.48E-04	2.09E-04
29	246543.6	4069826	3.13E-03	3.84E-03	1.24E-03	3.00E-03	5.47E-03	2.02E-03	5.14E-04	1.16E-03	3.97E-04	2.62E-04	6.26E-04	2.02E-04
30	246540.7	4069803	2.86E-03	3.51E-03	1.13E-03	2.74E-03	4.99E-03	1.84E-03	4.69E-04	1.06E-03	3.63E-04	2.39E-04	5.71E-04	1.84E-04
31	246526	4069858	3.53E-03	4.32E-03	1.39E-03	3.38E-03	6.16E-03	2.27E-03	5.79E-04	1.30E-03	4.47E-04	2.94E-04	7.05E-04	2.27E-04
32	246525.5	4069847	3.38E-03	4.14E-03	1.33E-03	3.23E-03	5.89E-03	2.17E-03	5.54E-04	1.25E-03	4.28E-04	2.82E-04	6.74E-04	2.17E-04
33	246524.1	4069839	3.26E-03	3.99E-03	1.29E-03	3.12E-03	5.68E-03	2.09E-03	5.34E-04	1.20E-03	4.13E-04	2.72E-04	6.50E-04	2.10E-04
34	246523.6	4069827	3.10E-03	3.80E-03	1.23E-03	2.97E-03	5.41E-03	1.99E-03	5.09E-04	1.14E-03	3.93E-04	2.59E-04	6.19E-04	2.00E-04
35	246293.4	4070103	1.51E-02	1.85E-02	5.98E-03	1.45E-02	2.64E-02	9.72E-03	2.48E-03	5.58E-03	1.92E-03	1.26E-03	3.02E-03	9.74E-04
36	246270	4070097	1.38E-02	1.69E-02	5.46E-03	1.32E-02	2.41E-02	8.89E-03	2.27E-03	5.10E-03	1.75E-03	1.15E-03	2.76E-03	8.91E-04
37	246257.7	4070096	1.36E-02	1.67E-02	5.38E-03	1.30E-02	2.38E-02	8.75E-03	2.23E-03	5.03E-03	1.73E-03	1.14E-03	2.72E-03	8.77E-04
38	246246.5	4070096	1.35E-02	1.65E-02	5.32E-03	1.29E-02	2.35E-02	8.65E-03	2.21E-03	4.97E-03	1.71E-03	1.12E-03	2.69E-03	8.67E-04
39	246346.9	4070079	1.19E-02	1.46E-02	4.72E-03	1.14E-02	2.09E-02	7.68E-03	1.96E-03	4.41E-03	1.52E-03	9.97E-04	2.39E-03	7.70E-04
40	246344.7	4070073	1.13E-02	1.39E-02	4.48E-03	1.08E-02	1.98E-02	7.28E-03	1.86E-03	4.18E-03	1.44E-03	9.45E-04	2.26E-03	7.29E-04
41	246338	4070112	1.73E-02	2.12E-02	6.82E-03	1.65E-02	3.01E-02	1.11E-02	2.83E-03	6.37E-03	2.19E-03	1.44E-03	3.45E-03	1.11E-03
42	246302.9	4070951	3.50E-04	4.30E-04	1.39E-04	3.36E-04	6.12E-04	2.25E-04	5.75E-05	1.29E-04	4.44E-05	2.92E-05	7.00E-05	2.26E-05
43	246397.1	4070950	3.10E-04	3.81E-04	1.23E-04	2.97E-04	5.42E-04	2.00E-04	5.10E-05	1.15E-04	3.94E-05	2.59E-05	6.20E-05	2.00E-05
44	246565.5	4070955	2.35E-04	2.88E-04	9.28E-05	2.25E-04	4.10E-04	1.51E-04	3.85E-05	8.67E-05	2.98E-05	1.96E-05	4.69E-05	1.51E-05
45	246549.9	4070941	2.50E-04	3.06E-04	9.86E-05	2.39E-04	4.36E-04	1.60E-04	4.10E-05	9.22E-05	3.16E-05	2.08E-05	4.98E-05	1.61E-05
46	246519.3	4070943	2.62E-04	3.21E-04	1.03E-04	2.51E-04	4.57E-04	1.68E-04	4.30E-05	9.67E-05	3.32E-05	2.18E-05	5.23E-05	1.69E-05
47	246200.5	4070942	4.04E-04	4.95E-04	1.60E-04	3.87E-04	7.06E-04	2.60E-04	6.64E-05	1.49E-04	5.13E-05	3.37E-05	8.07E-05	2.60E-05
48	246179.1	4070943	4.15E-04	5.08E-04	1.64E-04	3.97E-04	7.24E-04	2.67E-04	6.81E-05	1.53E-04	5.26E-05	3.46E-05	8.28E-05	2.67E-05
49	246220.7	4070943	3.95E-04	4.84E-04	1.56E-04	3.78E-04	6.89E-04	2.54E-04	6.48E-05	1.46E-04	5.00E-05	3.29E-05	7.88E-05	2.54E-05

			UnMitigated				T2				T2L3				T4			
						2.76E-07				3.52E-07				6.94E-08				3.66E-08
			Yr 1	Yr 2	Yr 3	Total	Yr 1	Yr 2	Yr 3	Total	Yr 1	Yr 2	Yr 3	Total	Yr 1	Yr 2	Yr 3	Total
1	246074.6	4070081	8.75E-08	1.07E-07	3.46E-08	2.29E-07	8.38E-08	1.53E-07	5.63E-08	2.93E-07	1.44E-08	3.23E-08	1.11E-08	5.78E-08	7.30E-09	1.75E-08	5.64E-09	3.04E-08
2	246863.3	4069919	5.34E-08	6.54E-08	2.11E-08	1.40E-07	5.11E-08	9.32E-08	3.43E-08	1.79E-07	8.76E-09	1.97E-08	6.77E-09	3.53E-08	4.45E-09	1.07E-08	3.44E-09	1.86E-08
3	246874.2	4069902	5.01E-08	6.14E-08	1.98E-08	1.31E-07	4.79E-08	8.74E-08	3.22E-08	1.67E-07	8.22E-09	1.85E-08	6.35E-09	3.31E-08	4.18E-09	1.00E-08	3.23E-09	1.74E-08
4	246855.2	4069890	4.91E-08	6.02E-08	1.94E-08	1.29E-07	4.70E-08	8.57E-08	3.16E-08	1.64E-07	8.06E-09	1.81E-08	6.23E-09	3.24E-08	4.10E-09	9.81E-09	3.16E-09	1.71E-08
5	246883.3	4069972	6.12E-08	7.51E-08	2.42E-08	1.61E-07	5.86E-08	1.07E-07	3.94E-08	2.05E-07	1.01E-08	2.26E-08	7.77E-09	4.04E-08	5.11E-09	1.22E-08	3.95E-09	2.13E-08
6	246891.4	4070009	6.78E-08	8.31E-08	2.68E-08	1.78E-07	6.49E-08	1.18E-07	4.36E-08	2.27E-07	1.11E-08	2.50E-08	8.60E-09	4.48E-08	5.66E-09	1.35E-08	4.37E-09	2.36E-08
7	246898.6	4070025	6.98E-08	8.55E-08	2.76E-08	1.83E-07	6.68E-08	1.22E-07	4.48E-08	2.33E-07	1.15E-08	2.58E-08	8.85E-09	4.61E-08	5.82E-09	1.39E-08	4.49E-09	2.42E-08
8	246897.7	4070044	7.40E-08	9.07E-08	2.93E-08	1.94E-07	7.09E-08	1.29E-07	4.76E-08	2.48E-07	1.22E-08	2.73E-08	9.39E-09	4.89E-08	6.18E-09	1.48E-08	4.77E-09	2.57E-08
9	246893.2	4070063	7.97E-08	9.77E-08	3.15E-08	2.09E-07	7.63E-08	1.39E-07	5.13E-08	2.67E-07	1.31E-08	2.94E-08	1.01E-08	5.26E-08	6.65E-09	1.59E-08	5.14E-09	2.77E-08
10	246856.1	4070032	8.11E-08	9.94E-08	3.21E-08	2.13E-07	7.77E-08	1.42E-07	5.22E-08	2.71E-07	1.33E-08	3.00E-08	1.03E-08	5.36E-08	6.77E-09	1.62E-08	5.23E-09	2.82E-08
11	246844.3	4070069	9.96E-08	1.22E-07	3.94E-08	2.61E-07	9.53E-08	1.74E-07	6.40E-08	3.33E-07	1.63E-08	3.68E-08	1.26E-08	6.57E-08	8.31E-09	1.99E-08	6.42E-09	3.46E-08
12	246845.2	4070080	1.05E-07	1.29E-07	4.16E-08	2.76E-07	1.01E-07	1.84E-07	6.76E-08	3.52E-07	1.73E-08	3.88E-08	1.33E-08	6.94E-08	8.77E-09	2.10E-08	6.78E-09	3.66E-08
13	246934.8	4070051	6.43E-08	7.88E-08	2.54E-08	1.69E-07	6.16E-08	1.12E-07	4.13E-08	2.15E-07	1.06E-08	2.38E-08	8.15E-09	4.25E-08	5.37E-09	1.28E-08	4.14E-09	2.24E-08
14	246931.2	4070027	6.26E-08	7.67E-08	2.47E-08	1.64E-07	5.99E-08	1.09E-07	4.02E-08	2.09E-07	1.03E-08	2.31E-08	7.94E-09	4.13E-08	5.22E-09	1.25E-08	4.03E-09	2.18E-08
15	246934.8	4069998	5.81E-08	7.12E-08	2.30E-08	1.52E-07	5.57E-08	1.01E-07	3.74E-08	1.94E-07	9.54E-09	2.15E-08	7.37E-09	3.84E-08	4.85E-09	1.16E-08	3.74E-09	2.02E-08
16	246957.5	4070166	5.07E-08	6.22E-08	2.01E-08	1.33E-07	4.86E-08	8.85E-08	3.26E-08	1.70E-07	8.33E-09	1.87E-08	6.43E-09	3.35E-08	4.23E-09	1.01E-08	3.27E-09	1.76E-08
17	246866.1	4070294	6.75E-08	8.28E-08	2.67E-08	1.77E-07	6.47E-08	1.18E-07	4.34E-08	2.26E-07	1.11E-08	2.49E-08	8.57E-09	4.46E-08	5.64E-09	1.35E-08	4.35E-09	2.35E-08
18	246883.3	4070300	4.90E-08	6.00E-08	1.94E-08	1.28E-07	4.69E-08	8.55E-08	3.15E-08	1.64E-07	8.04E-09	1.81E-08	6.21E-09	3.23E-08	4.09E-09	9.78E-09	3.16E-09	1.70E-08
19	246905	4070298	3.79E-08	4.64E-08	1.50E-08	9.92E-08	3.62E-08	6.61E-08	2.43E-08	1.27E-07	6.21E-09	1.40E-08	4.80E-09	2.50E-08	3.16E-09	7.56E-09	2.44E-09	1.32E-08
20	246927.6	4070298	3.01E-08	3.69E-08	1.19E-08	7.90E-08	2.89E-08	5.26E-08	1.94E-08	1.01E-07	4.95E-09	1.11E-08	3.82E-09	1.99E-08	2.52E-09	6.02E-09	1.94E-09	1.05E-08
21	246958.4	4070298	2.33E-08	2.85E-08	9.21E-09	6.10E-08	2.23E-08	4.07E-08	1.50E-08	7.79E-08	3.82E-09	8.60E-09	2.95E-09	1.54E-08	1.94E-09	4.65E-09	1.50E-09	8.10E-09
22	246976.5	4070296	2.10E-08	2.58E-08	8.31E-09	5.51E-08	2.01E-08	3.67E-08	1.35E-08	7.03E-08	3.45E-09	7.76E-09	2.67E-09	1.39E-08	1.75E-09	4.20E-09	1.35E-09	7.31E-09
23	247005.4	4070296	1.76E-08	2.16E-08	6.96E-09	4.62E-08	1.69E-08	3.07E-08	1.13E-08	5.89E-08	2.89E-09	6.51E-09	2.23E-09	1.16E-08	1.47E-09	3.52E-09	1.13E-09	6.12E-09
24	246946.7	4070158	5.63E-08	6.90E-08	2.23E-08	1.48E-07	5.39E-08	9.83E-08	3.62E-08	1.88E-07	9.24E-09	2.08E-08	7.14E-09	3.72E-08	4.70E-09	1.12E-08	3.63E-09	1.96E-08
25	246947.7	4070175	5.28E-08	6.47E-08	2.09E-08	1.38E-07	5.05E-08	9.21E-08	3.39E-08	1.77E-07	8.66E-09	1.95E-08	6.69E-09	3.49E-08	4.40E-09	1.05E-08	3.40E-09	1.83E-08
26	246863.4	4069895	4.95E-08	6.07E-08	1.96E-08	1.30E-07	4.74E-08	8.64E-08	3.18E-08	1.66E-07	8.13E-09	1.83E-08	6.28E-09	3.27E-08	4.13E-09	9.89E-09	3.19E-09	1.72E-08
27	246873.4	4069919	5.28E-08	6.47E-08	2.09E-08	1.38E-07	5.06E-08	9.21E-08	3.39E-08	1.77E-07	8.67E-09	1.95E-08	6.69E-09	3.49E-08	4.41E-09	1.05E-08	3.40E-09	1.84E-08
28	246909	4069964	5.68E-08	6.97E-08	2.25E-08	1.49E-07	5.44E-08	9.92E-08	3.65E-08	1.90E-07	9.33E-09	2.10E-08	7.21E-09	3.75E-08	4.74E-09	1.13E-08	3.66E-09	1.98E-08
29	246951.3	4069944	4.95E-08	6.06E-08	1.96E-08	1.30E-07	4.74E-08	8.63E-08	3.18E-08	1.65E-07	8.12E-09	1.83E-08	6.27E-09	3.27E-08	4.13E-09	9.88E-09	3.19E-09	1.72E-08
30	246779.5	4070389	4.16E-08	5.10E-08	1.65E-08	1.09E-07	3.99E-08	7.27E-08	2.68E-08	1.39E-07	6.83E-09	1.54E-08	5.28E-09	2.75E-08	3.47E-09	8.32E-09	2.68E-09	1.45E-08
31	246784.5	4070417	2.30E-08	2.82E-08	9.11E-09	6.04E-08	2.21E-08	4.02E-08	1.48E-08	7.71E-08	3.78E-09	8.51E-09	2.92E-09	1.52E-08	1.92E-09	4.60E-09	1.48E-09	8.01E-09
32	246781.7	4070442	1.70E-08	2.08E-08	6.72E-09	4.45E-08	1.63E-08	2.97E-08	1.09E-08	5.69E-08	2.79E-09	6.28E-09	2.15E-09	1.12E-08	1.42E-09	3.39E-09	1.09E-09	5.91E-09
33	246782.8	4070460	1.42E-08	1.74E-08	5.61E-09	3.72E-08	1.36E-08	2.47E-08	9.12E-09	4.74E-08	2.33E-09	5.24E-09	1.80E-09	9.36E-09	1.18E-09	2.83E-09	9.13E-10	4.93E-09
34	246741.7	4070461	1.76E-08	2.15E-08	6.94E-09	4.60E-08	1.68E-08	3.06E-08	1.13E-08	5.88E-08	2.88E-09	6.49E-09	2.23E-09	1.16E-08	1.47E-09	3.51E-09	1.13E-09	6.10E-09
35	246743.9	4070442	2.11E-08	2.59E-08	8.35E-09	5.53E-08	2.02E-08	3.69E-08	1.36E-08	7.07E-08	3.47E-09	7.80E-09	2.68E-09	1.39E-08	1.76E-09	4.22E-09	1.36E-09	7.34E-09
36	246738.9	4070423	2.75E-08	3.38E-08	1.09E-08	7.22E-08	2.64E-08	4.81E-08	1.77E-08	9.22E-08	4.52E-09	1.02E-08	3.49E-09	1.82E-08	2.30E-09	5.50E-09	1.77E-09	9.57E-09
37	246741.2	4070407	3.65E-08	4.47E-08	1.44E-08	9.56E-08	3.49E-08	6.37E-08	2.34E-08	1.22E-07	5.99E-09	1.35E-08	4.62E-09	2.41E-08	3.04E-09	7.28E-09	2.35E-09	1.27E-08
38	246744.5	4070386	6.08E-08	7.45E-08	2.40E-08	1.59E-07	5.82E-08	1.06E-07	3.91E-08	2.03E-07	9.97E-09	2.24E-08	7.70E-09	4.01E-08	5.07E-09	1.21E-08	3.91E-09	2.11E-08
39	246760.6	4070393	4.53E-08	5.55E-08	1.79E-08	1.19E-07	4.34E-08	7.91E-08	2.91E-08	1.52E-07	7.44E-09	1.67E-08	5.74E-09	2.99E-08	3.78E-09	9.05E-09	2.92E-09	1.57E-08
40	246760.6	4070414	2.83E-08	3.47E-08	1.12E-08	7.43E-08	2.71E-08	4.95E-08	1.82E-08	9.48E-08	4.65E-09	1.05E-08	3.59E-09	1.87E-08	2.37E-09	5.66E-09	1.83E-09	9.85E-09
41	246757.8	4070437	2.06E-08	2.53E-08	8.15E-09	5.40E-08	1.97E-08	3.60E-08	1.33E-08	6.90E-08	3.38E-09	7.61E-09	2.61E-09	1.36E-08	1.72E-09	4.12E-09	1.33E-09	7.16E-09
42	246763.9	4070457	1.62E-08	1.99E-08	6.41E-09	4.25E-08	1.55E-08	2.83E-08	1.04E-08	5.42E-08	2.66E-09	5.98E-09	2.05E-09	1.07E-08	1.35E-09	3.24E-09	1.04E-09	5.63E-09
43	246660.6	4070410	5.23E-08	6.42E-08	2.07E-08	1.37E-07	5.01E-08	9.14E-08	3.36E-08	1.75E-07	8.59E-09	1.93E-08	6.64E-09	3.46E-08	4.37E-09	1.05E-08	3.37E-09	1.82E-08
44	246650.5	4070444	3.12E-08	3.82E-08	1.23E-08	8.18E-08	2.99E-08	5.45E-08	2.01E-08	1.04E-07	5.12E-09	1.15E-08	3.96E-09	2.06E-08	2.60E-09	6.23E-09	2.01E-09	1.08E-08
45	246636.1	4070447	3.17E-08	3.89E-08	1.25E-08	8.31E-08	3.04E-08	5.54E-08	2.04E-08	1.06E-07	5.21E-09	1.17E-08	4.02E-09	2.09E-08	2.65E-09	6.33E-09	2.04E-09	1.10E-08
46	246607.7	4070462	2.96E-08	3.62E-08	1.17E-08	7.75E-08	2.83E-08	5.16E-08	1.90E-08	9.89E-08	4.85E-09	1.09E-08	3.75E-09	1.95E-08	2.47E-09	5.90E-09	1.90E-09	1.03E-08
47	246860.1	4070528	6.69E-09	8.20E-09	2.64E-09	1.75E-08	6.40E-09	1.17E-08	4.30E-09	2.24E-08	1.10E-09	2.47E-09	8.48E-10	4.42E-09	5.58E-10	1.34E-09	4.31E-10	2.32E-09
48	246874.6	4070527	6.47E-09	7.93E-09	2.56E-09	1.70E-08	6.19E-09	1.13E-08	4.16E-09	2.16E-08	1.06E-09	2.39E-09	8.20E-10	4.27E-09	5.40E-10	1.29E-09	4.17E-10	2.25E-09
49	246887.9	4070525	6.28E-09	7.69E-09	2.48E-09	1.65E-08	6.01E-09	1.10E-08	4.04E-09	2.10E-08	1.03E-09	2.32E-09	7.96E-10	4.15E-09	5.24E-10	1.25E-09	4.04E-10	2.18E-09
50	246798.4	4070720	3.47E-09	4.25E-09	1.37E-09	9.09E-09	3.32E-09	6.05E-09	2.23E-09	1.16E-08	5.69E-10	1.28E-09	4.40E-10	2.29E-09	2.89E-10	6.93E-10	2.24E-10	1.21E-09
51	246776.2	4070718	3.67E-09	4.50E-09	1.45E-09	9.62E-09	3.52E-09	6.41E-09	2.36E-09	1.23E-08	6.03E-10	1.36E-09	4.66E-10	2.42E-09	3.06E-10	7.33E-10	2.37E-10	1.28E-09
52	246751.7	4070720	3.94E-09	4.83E-09	1.56E-09	1.03E-08	3.77E-09	6.88E-09	2.53E-09	1.32E-08	6.47E-10	1.45E-09	4.99E-10	2.60E-09	3.29E-10	7.87E-10	2.54E-10	1.37E-09
53	246725	4070723	4.18E-09	5.12E-09	1.65E-09	1.09E-08	4.00E-09	7.29E-09	2.69E-09	1.40E-08	6.86E-10	1.54E-09	5.30E-10	2.76E-09	3.48E-10	8.34E-10	2.69E-10	1.45E-09
54	246695	4070762	3.92E-09	4.81E-09	1.55E-09	1.03E-08	3.76E-09	6.85E-09	2.52E-09	1.31E-08	6.44E-10	1.45E-09	4.97E-10	2.59E-09	3.27E-10	7.84E-10	2.53E-10	1.36E-09
55	246494.9	4070530	2.15E-08	2.63E-08	8.49E-09	5.63E-08	2.06E-08	3.75E-08	1.38E-08	7.19E-08	3.53E-09	7.93E-09	2.72E-09	1.42E-08	1.79E-09	4.29E-09	1.38E-09	7.47E-09
56	246495.5	4070612	1.24E-08	1.52E-08	4.91E-09	3.25E-08	1.19E-08	2.17E-08	7.98E-09	4.15E-08	2.04E-09	4.58E-09	1.57E-09	8.19E-09	1.04E-09	2.48E-09	8.00E-10	4.31E-09
57	246521	4070668	8.71E-09	1.07E-08	3.44E-09	2.28E-08	8.34E-09	1.52E-08	5.60E-09	2.91E-08	1.43E-09	3.22E-09	1.10E-09	5.75E-09	7.27E-10	1.74E-09	5.61E-10	3.03E-09
58	246400.4	4070675	1.07E-08	1.31E-08	4.22E-09	2.80E-08	1.02E-08	1.87E-08	6.87E-09	3.58E-08	1.75E-09	3.95E-09	1.36E-09	7.06E-09	8.92E-10	2.13E-09	6.89E-10	3.71E-09
59	246404.3	4070664	1.12E-08	1.37E-08	4.42E-09	2.93E-08	1.07E-08	1.95E-08	7.19E-09	3.74E-08	1.83E-09	4.13E-09	1.42E-09	7.38E-09	9.33E-10	2.23E-09	7.20E-10	3.88E-09
60	246447.1	4070587	1.58E-08	1.94E-08	6.25E-09	4.14E-08	1.51E-08	2.76E-08	1.02E-08	5.29E-08	2.59E-09	5.84E-09	2.00E-09	1.04E-08	1.32E-09	3.16E-09	1.02E-09	5.49E-09
61	246526	4070863	4.16E-09	5.10E-09	1.64E-09	1.09E-08	3.98E-09	7.26E-09	2.67E-09	1.39E-08	6.83E-10	1.54E-09	5.28E-10	2.75E-09	3.47E-10	8.31E-10	2.68E-10	1.45E-09
62	246527.1	4070877	3.98E-09	4.88E-09	1.57E-09	1.04E-08	3.81E-09	6.95E-09	2.56E-09	1.33E-08	6.54E-10	1.47E-09	5.05E-10	2.63E-09	3.32E-10	7.96E-10	2.57E-10	1.38E-09
63	246529.9	4070895	3.77E-09	4.62E-09	1.49E-09	9.88E-09	3.61E-09	6.58E-09	2.42E-09	1.26E-08	6.19E-10	1.39E-09	4.78E-10	2.49E-09	3.14E-10	7.53E-10	2.43E-10	1.31E-09
64	246503.2	4070897	3.93E-09	4.81E-09	1.55E-09	1.03E-08	3.76E-09	6.86E-09	2.53E-09	1.31E-08	6.45E-10	1.45E-09	4.98E-10	2.59E-09	3.28E-10	7.84E-10	2.53E-10	1.37E-09
65	246499.4	4070884	4.11E-09	5.04E-09	1.62E-09	1.08E-08	3.94E-09	7.17E-09	2.64E-09	1.38E-08	6.75E-10	1.52E-09	5.21E-10	2.71E-09	3.43E-10	8.21E-10	2.65E-10	1.43E-09
66	246503.2	4070861	4.36E-09	5.34E-09	1.72E-09	1.14E-08	4.17E-09	7.61E-09	2.80E-09	1.46E-08	7.16E-10	1.61E-09	5.53E-10	2.88E-09	3.64E-10	8.71E-10	2.81E-10	1.52E-09
67	246415.4	4070874	4.84E-09	5.93E-09	1.91E-09	1.27E-08	4.64E-09	8.45E-09	3.11E-09	1.62E-08	7.95E-10	1.79E-09	6.14E-10	3.20E-09	4.04E-10	9.67E-10	3.12E-10	1.68E-09
68	246396.5	4070861	5.18E-09	6.35E-09	2.05E-09	1.36E-08	4.96E-09	9.04E-09	3.33E-09	1.73E-08	8.50E-10	1.91E-09	6.57E-10	3.42E-09	4.32E-10	1.03E-09	3.34E-10	1.80E-09
69	246398.7	4070869	5.03E-09	6.17E-09	1.99E-09	1.32E-08	4.82E-09	8.79E-09	3.24E-09	1.68E-08	8.26E-10	1.86E-09	6.38E-10	3.32E-09	4.20E-10	1.01E-09	3.24E-10	1.75E-09
70	246217	4070865	6.50E-09	7.96E-09	2.57E-09	1.70E-08	6.22E-09	1.13E-08	4.18E-09	2.17E-08	1.07E-09	2.40E-09	8.24E-10	4.29E-09	5.42E-10	1.30E-09	4.19E-10	2.26E-09
71	246215.9	4070847	6.98E-09	8.55E-09	2.76E-09	1.83E-08	6.68E-09	1.22E-08	4.48E-09	2.33E-08	1.15E-09	2.58E-09	8.85E-10	4.61E-09	5.82E-10	1.39E-09	4.49E-10	2.42E-09
72	246215.3	4070833	7.36E-09	9.02E-09	2.91E-09	1.93E-08	7.05E-09	1.28E-08	4.73E-09	2.46E-08	1.21E-09	2.72E-09	9.33E-10	4.86E-09	6.14E-10	1.47E-09	4.74E-10	2.56E-09
73	246187.5	4070711	1.23E-08	1.51E-08	4.86E-09	3.23E-08	1.18E-08	2.15E-08	7.91E-09	4.12E-08	2.02E-09	4.54E-09	1.56E-09	8.13E-09	1.03E-09	2.46E-09	7.93E-10	4.28E-09
74	246200.9	4070711	1.22E-08	1.49E-08	4.81E-09	3.19E-08	1.16E-08	2.12E-08	7.82E-09	4.07E-08	2.00E-09	4.49E-09	1.54E-09	8.03E-09	1.02E-09	2.43E-09	7.84E-10	4.23E-09
75	246198.1	4070701	1.28E-08	1.56E-08	5.04E-09	3.34E-08	1.22E-08	2.23E-08	8.20E-09	4.27E-08	2.09E-09	4.71E-09	1.62E-09	8.42E-09	1.06E-09	2.55E-09	8.22E-10	4.43E-09
76	246329.8	4070549	2.45E-08	3.00E-08	9.67E-09	6.41E-08	2.34E-08	4.27E-08	1.57E-08	8.18E-08	4.01E-09	9.03E-09	3.10E-09	1.61E-08	2.04E-09	4.88E-09	1.58E-09	8.50E-09
77	246301.5	4070548	2.55E-08	3.12E-08	1.01E-08	6.67E-08	2.44E-08	4.44E-08	1.64E-08	8.52E-08	4.18E-09	9.40E-09	3.23E-09	1.68E-08	2.12E-09	5.08E-09	1.64E-09	8.85E-09
78	246270.3	4070549	2.63E-08	3.22E-08	1.04E-08	6.89E-08	2.52E-08	4.59E-08	1.69E-08	8.80E-08	4.32E-09	9.71E-09	3.33E-09	1.74E-08	2.19E-09	5.25E-09	1.69E-09	9.14E-09
79	246246.4	4070549	2.69E-08	3.29E-08	1.06E-08	7.04E-08	2.57E-08	4.69E-08	1.73E-08	8.99E-08	4.41E-09	9.92E-09	3.41E-09	1.77E-08	2.24E-09	5.37E-09	1.73E-09	9.34E-09
80	246227	4070549	2.74E-08	3.36E-08	1.09E-08	7.19E-08	2.63E-08	4.79E-08	1.76E-08	9.18E-08	4.51E-09	1.01E-08	3.48E-09	1.81E-08	2.29E-09	5.48E-09	1.77E-09	9.54E-09
81	246209.2	4070550	2.77E-08	3.40E-08	1.10E-08	7.26E-08	2.65E-08	4.84E-08	1.78E-08	9.27E-08	4.55E-09	1.02E-08	3.51E-09	1.83E-08	2.31E-09	5.53E-09	1.79E-09	9.63E-09
82	246185.9	4070552	2.81E-08	3.45E-08	1.11E-08	7.38E-08	2.70E-08	4.91E-08	1.81E-08	9.42E-08	4.62E-09	1.04E-08	3.57E-09	1.86E-08	2.35E-09	5.62E-09	1.81E-09	9.78E-09
83	246172	4070552	2.85E-08	3.49E-08	1.13E-08	7.46E-08	2.73E-08	4.97E-08	1.83E-08	9.52E-08	4.67E-09	1.05E-08	3.61E-09	1.88E-08	2.37E-09	5.68E-09	1.83E-09	9.89E-09
84	246164.7	4070591	2.25E-08	2.75E-08	8.88E-09	5.89E-08	2.15E-08	3.92E-08	1.44E-08	7.51E-08	3.69E-09	8.29E-09	2.85E-09	1.48E-08	1.87E-09	4.48E-09	1.45E-09	7.81E-09
85	246192	4070591	2.20E-08	2.70E-08	8.70E-09	5.77E-08	2.11E-08	3.84E-08	1.41E-08	7.36E-08	3.61E-09	8.13E-09	2.79E-09	1.45E-08	1.84E-09	4.40E-09	1.42E-09	7.65E-09
86	246225.9	4070589	2.17E-08	2.66E-08	8.57E-09	5.68E-08	2.08E-08	3.78E-08	1.39E-08	7.25E-08	3.56E-09	8.01E-09	2.75E-09	1.43E-08	1.81E-09	4.33E-09	1.40E-09	7.54E-09
87	246268.7	4070587	2.11E-08	2.59E-08	8.36E-09	5.54E-08	2.02E-08	3.69E-08	1.36E-08	7.07E-08	3.47E-09	7.81E-09	2.68E-09	1.40E-08	1.76E-09	4.22E-09	1.36E-09	7.35E-09
88	246300.4	4070590	2.01E-08	2.46E-08	7.95E-09	5.27E-08	1.93E-08	3.51E-08	1.29E-08	6.73E-08	3.30E-09	7.43E-09	2.55E-09	1.33E-08	1.68E-09	4.02E-09	1.30E-09	6.99E-09
89	246332.6	4070588	1.92E-08	2.36E-08	7.61E-09	5.04E-08	1.84E-08	3.36E-08	1.24E-08	6.44E-08	3.16E-09	7.11E-09	2.44E-09	1.27E-08	1.61E-09	3.84E-09	1.24E-09	6.69E-09
90	246328.7	4070623	1.58E-08	1.94E-08	6.26E-09	4.15E-08	1.52E-08	2.76E-08	1.02E-08	5.30E-08	2.60E-09	5.85E-09	2.01E-09	1.05E-08	1.32E-09	3.16E-09	1.02E-09	5.50E-09
91	246292.6	4070623	1.67E-08	2.05E-08	6.61E-09	4.38E-08	1.60E-08	2.92E-08	1.08E-08	5.60E-08	2.75E-09	6.18E-09	2.12E-09	1.10E-08	1.40E-09	3.34E-09	1.08E-09	5.82E-09
92	246262.6	4070626	1.70E-08	2.08E-08	6.70E-09	4.44E-08	1.62E-08	2.96E-08	1.09E-08	5.67E-08	2.78E-09	6.26E-09	2.15E-09	1.12E-08	1.41E-09	3.39E-09	1.09E-09	5.89E-09
93	246258.1	4070658	1.42E-08	1.74E-08	5.61E-09	3.72E-08	1.36E-08	2.48E-08	9.13E-09	4.75E-08	2.33E-09	5.24E-09	1.80E-09	9.37E-09	1.18E-09	2.83E-09	9.15E-10	4.93E-09
94	246288.7	4070663	1.34E-08	1.65E-08	5.31E-09	3.52E-08	1.29E-08	2.34E-08	8.64E-09	4.49E-08	2.20E-09	4.96E-09	1.70E-09	8.87E-09	1.12E-09	2.68E-09	8.65E-10	4.67E-09
95	246337	4070665	1.25E-08	1.54E-08	4.96E-09	3.29E-08	1.20E-08	2.19E-08	8.07E-09	4.20E-08	2.06E-09	4.64E-09	1.59E-09	8.29E-09	1.05E-09	2.51E-09	8.09E-10	4.36E-09
96	246236.4	4070705	1.20E-08	1.47E-08	4.73E-09	3.13E-08	1.14E-08	2.09E-08	7.69E-09	4.00E-08	1.96E-09	4.42E-09	1.52E-09	7.90E-09	9.98E-10	2.39E-09	7.70E-10	4.16E-09
97	246231.4	4070678	1.34E-08	1.65E-08	5.32E-09	3.52E-08	1.29E-08	2.35E-08	8.64E-09	4.50E-08	2.21E-09	4.97E-09	1.70E-09	8.88E-09	1.12E-09	2.69E-09	8.66E-10	4.67E-09
98	246232	4070636	1.64E-08	2.01E-08	6.48E-09	4.29E-08	1.57E-08	2.86E-08	1.05E-08	5.48E-08	2.69E-09	6.05E-09	2.08E-09	1.08E-08	1.37E-09	3.27E-09	1.06E-09	5.69E-09
99	246196.4	4070668	1.46E-08	1.79E-08	5.79E-09	3.84E-08	1.40E-08	2.55E-08	9.41E-09	4.90E-08	2.40E-09	5.41E-09	1.86E-09	9.66E-09	1.22E-09	2.92E-09	9.43E-10	5.09E-09
100	246103.6	4070542	3.10E-08	3.80E-08	1.23E-08	8.13E-08	2.97E-08	5.41E-08	1.99E-08	1.04E-07	5.09E-09	1.15E-08	3.93E-09	2.05E-08	2.59E-09	6.20E-09	2.00E-09	1.08E-08
101	245996.9	4070633	1.95E-08	2.40E-08	7.73E-09	5.12E-08	1.87E-08	3.41E-08	1.26E-08	6.54E-08	3.21E-09	7.22E-09	2.48E-09	1.29E-08	1.63E-09	3.90E-09	1.26E-09	6.79E-09
102	245982.4	4070632	1.97E-08	2.41E-08	7.78E-09	5.16E-08	1.88E-08	3.43E-08	1.27E-08	6.58E-08	3.23E-09	7.27E-09	2.50E-09	1.30E-08	1.64E-09	3.93E-09	1.27E-09	6.84E-09
103	246015.8	4070369	1.04E-07	1.28E-07	4.11E-08	2.73E-07	9.96E-08	1.82E-07	6.69E-08	3.48E-07	1.71E-08	3.84E-08	1.32E-08	6.87E-08	8.68E-09	2.08E-08	6.70E-09	3.62E-08
104	245936.3	4070380	6.39E-08	7.83E-08	2.53E-08	1.68E-07	6.12E-08	1.12E-07	4.11E-08	2.14E-07	1.05E-08	2.36E-08	8.10E-09	4.22E-08	5.33E-09	1.28E-08	4.12E-09	2.22E-08
105	245959.1	4070239	9.88E-08	1.21E-07	3.91E-08	2.59E-07	9.46E-08	1.73E-07	6.35E-08	3.31E-07	1.62E-08	3.65E-08	1.25E-08	6.53E-08	8.25E-09	1.97E-08	6.37E-09	3.44E-08
106	245960.2	4070216	9.89E-08	1.21E-07	3.91E-08	2.59E-07	9.47E-08	1.73E-07	6.36E-08	3.31E-07	1.62E-08	3.65E-08	1.25E-08	6.53E-08	8.25E-09	1.98E-08	6.37E-09	3.44E-08
107	245960.2	4070205	9.76E-08	1.20E-07	3.86E-08	2.56E-07	9.35E-08	1.70E-07	6.28E-08	3.27E-07	1.60E-08	3.61E-08	1.24E-08	6.45E-08	8.15E-09	1.95E-08	6.29E-09	3.39E-08
108	245960.7	4070192	9.60E-08	1.18E-07	3.79E-08	2.51E-07	9.19E-08	1.67E-07	6.17E-08	3.21E-07	1.58E-08	3.54E-08	1.22E-08	6.34E-08	8.01E-09	1.92E-08	6.18E-09	3.34E-08
109	245950.2	4070154	8.26E-08	1.01E-07	3.27E-08	2.17E-07	7.91E-08	1.44E-07	5.31E-08	2.76E-07	1.36E-08	3.05E-08	1.05E-08	5.46E-08	6.89E-09	1.65E-08	5.32E-09	2.87E-08

110	245940.2	4070159	7.95E-08	9.74E-08	3.14E-08	2.08E-07	7.61E-08	1.39E-07	5.11E-08	2.66E-07	1.30E-08	2.94E-08	1.01E-08	5.25E-08	6.63E-09	1.59E-08	5.12E-09	2.76E-08
111	245956.3	4070159	8.64E-08	1.06E-07	3.42E-08	2.27E-07	8.28E-08	1.51E-07	5.56E-08	2.89E-07	1.42E-08	3.19E-08	1.10E-08	5.71E-08	7.21E-09	1.73E-08	5.57E-09	3.00E-08
112	245869	4070172	6.03E-08	7.40E-08	2.39E-08	1.58E-07	5.78E-08	1.05E-07	3.88E-08	2.02E-07	9.91E-09	2.23E-08	7.65E-09	3.98E-08	5.04E-09	1.21E-08	3.89E-09	2.10E-08
113	245844	4070174	5.52E-08	6.77E-08	2.18E-08	1.45E-07	5.29E-08	9.64E-08	3.55E-08	1.85E-07	9.06E-09	2.04E-08	7.00E-09	3.65E-08	4.61E-09	1.10E-08	3.56E-09	1.92E-08
114	245844	4070183	5.57E-08	6.82E-08	2.20E-08	1.46E-07	5.33E-08	9.72E-08	3.58E-08	1.86E-07	9.14E-09	2.06E-08	7.06E-09	3.68E-08	4.64E-09	1.11E-08	3.59E-09	1.93E-08
115	245862.3	4070184	5.97E-08	7.31E-08	2.36E-08	1.56E-07	5.71E-08	1.04E-07	3.84E-08	2.00E-07	9.80E-09	2.20E-08	7.57E-09	3.94E-08	4.98E-09	1.19E-08	3.84E-09	2.07E-08
116	245800.1	4070164	4.71E-08	5.78E-08	1.86E-08	1.24E-07	4.51E-08	8.23E-08	3.03E-08	1.58E-07	7.74E-09	1.74E-08	5.98E-09	3.11E-08	3.93E-09	9.41E-09	3.04E-09	1.64E-08
117	245800.1	4070173	4.753E-08	5.825E-08	1.879E-08	1.25E-07	4.55E-08	8.30E-08	3.06E-08	1.59E-07	7.80E-09	1.76E-08	6.03E-09	3.14E-08	3.97E-09	9.49E-09	3.06E-09	1.65E-08
118	245798.4	4070188	4.772E-08	5.849E-08	1.886E-08	1.25E-07	4.57E-08	8.33E-08	3.07E-08	1.60E-07	7.83E-09	1.76E-08	6.05E-09	3.15E-08	3.98E-09	9.53E-09	3.07E-09	1.66E-08
119	245868.5	4070330	5.625E-08	6.895E-08	2.224E-08	1.47E-07	5.39E-08	9.82E-08	3.62E-08	1.88E-07	9.23E-09	2.08E-08	7.13E-09	3.71E-08	4.69E-09	1.12E-08	3.62E-09	1.96E-08
120	245830.7	4070332	4.852E-08	5.947E-08	1.918E-08	1.27E-07	4.65E-08	8.47E-08	3.12E-08	1.62E-07	7.96E-09	1.79E-08	6.15E-09	3.20E-08	4.05E-09	9.69E-09	3.13E-09	1.69E-08
121	245812.3	4070334	4.514E-08	5.533E-08	1.785E-08	1.18E-07	4.32E-08	7.88E-08	2.90E-08	1.51E-07	7.41E-09	1.67E-08	5.72E-09	2.98E-08	3.77E-09	9.02E-09	2.91E-09	1.57E-08
122	245820.7	4070344	4.562E-08	5.591E-08	1.803E-08	1.20E-07	4.37E-08	7.96E-08	2.93E-08	1.53E-07	7.49E-09	1.68E-08	5.78E-09	3.01E-08	3.81E-09	9.11E-09	2.94E-09	1.59E-08
123	245835.7	4070344	4.822E-08	5.911E-08	1.907E-08	1.26E-07	4.62E-08	8.42E-08	3.10E-08	1.61E-07	7.92E-09	1.78E-08	6.12E-09	3.18E-08	4.02E-09	9.63E-09	3.11E-09	1.68E-08
124	245985.3	4070104	7.756E-08	9.507E-08	3.066E-08	2.03E-07	7.43E-08	1.35E-07	4.99E-08	2.60E-07	1.27E-08	2.86E-08	9.84E-09	5.12E-08	6.47E-09	1.55E-08	5.00E-09	2.70E-08
125	245966.4	4070107	7.375E-08	9.04E-08	2.916E-08	1.93E-07	7.06E-08	1.29E-07	4.74E-08	2.47E-07	1.21E-08	2.72E-08	9.35E-09	4.87E-08	6.15E-09	1.47E-08	4.75E-09	2.56E-08
126	245950.7	4070116	7.239E-08	8.873E-08	2.862E-08	1.90E-07	6.93E-08	1.26E-07	4.65E-08	2.42E-07	1.19E-08	2.67E-08	9.18E-09	4.78E-08	6.04E-09	1.45E-08	4.66E-09	2.52E-08
127	245966.7	4070120	7.849E-08	9.621E-08	3.103E-08	2.06E-07	7.52E-08	1.37E-07	5.05E-08	2.63E-07	1.29E-08	2.90E-08	9.95E-09	5.18E-08	6.55E-09	1.57E-08	5.06E-09	2.73E-08
128	245930.7	4070098	6.277E-08	7.694E-08	2.482E-08	1.65E-07	6.01E-08	1.10E-07	4.04E-08	2.10E-07	1.03E-08	2.32E-08	7.96E-09	4.14E-08	5.24E-09	1.25E-08	4.04E-09	2.18E-08
129	245996	4070003	4.627E-08	5.671E-08	1.829E-08	1.21E-07	4.43E-08	8.08E-08	2.97E-08	1.55E-07	7.60E-09	1.71E-08	5.87E-09	3.06E-08	3.86E-09	9.24E-09	2.98E-09	1.61E-08
130	245995.7	4069989	4.342E-08	5.322E-08	1.717E-08	1.14E-07	4.16E-08	7.58E-08	2.79E-08	1.45E-07	7.13E-09	1.60E-08	5.51E-09	2.87E-08	3.62E-09	8.67E-09	2.80E-09	1.51E-08
131	245980.9	4070004	4.552E-08	5.579E-08	1.799E-08	1.19E-07	4.36E-08	7.94E-08	2.93E-08	1.52E-07	7.47E-09	1.68E-08	5.77E-09	3.01E-08	3.80E-09	9.09E-09	2.93E-09	1.58E-08
132	245979.8	4069988	4.215E-08	5.166E-08	1.666E-08	1.10E-07	4.04E-08	7.36E-08	2.71E-08	1.41E-07	6.92E-09	1.56E-08	5.34E-09	2.78E-08	3.52E-09	8.42E-09	2.72E-09	1.47E-08
133	245965.5	4070001	4.385E-08	5.374E-08	1.734E-08	1.15E-07	4.20E-08	7.65E-08	2.82E-08	1.47E-07	7.20E-09	1.62E-08	5.56E-09	2.90E-08	3.66E-09	8.76E-09	2.83E-09	1.52E-08
134	245965.8	4069986	4.1E-08	5.025E-08	1.621E-08	1.07E-07	3.93E-08	7.16E-08	2.64E-08	1.37E-07	6.73E-09	1.51E-08	5.20E-09	2.71E-08	3.42E-09	8.19E-09	2.64E-09	1.43E-08
135	245952.5	4070001	4.299E-08	5.269E-08	1.7E-08	1.13E-07	4.12E-08	7.50E-08	2.76E-08	1.44E-07	7.06E-09	1.59E-08	5.45E-09	2.84E-08	3.59E-09	8.59E-09	2.77E-09	1.49E-08
136	245953.9	4069986	4.028E-08	4.937E-08	1.592E-08	1.06E-07	3.86E-08	7.03E-08	2.59E-08	1.35E-07	6.61E-09	1.49E-08	5.11E-09	2.66E-08	3.36E-09	8.04E-09	2.60E-09	1.40E-08
137	245959.2	4069975	3.862E-08	4.733E-08	1.527E-08	1.01E-07	3.70E-08	6.74E-08	2.48E-08	1.29E-07	6.34E-09	1.43E-08	4.90E-09	2.55E-08	3.22E-09	7.71E-09	2.49E-09	1.34E-08
138	245974.5	4069971	3.878E-08	4.754E-08	1.533E-08	1.02E-07	3.71E-08	6.77E-08	2.49E-08	1.30E-07	6.37E-09	1.43E-08	4.92E-09	2.56E-08	3.24E-09	7.75E-09	2.50E-09	1.35E-08
139	245982.1	4069972	3.952E-08	4.843E-08	1.562E-08	1.04E-07	3.78E-08	6.90E-08	2.54E-08	1.32E-07	6.49E-09	1.46E-08	5.01E-09	2.61E-08	3.30E-09	7.89E-09	2.55E-09	1.37E-08
140	245996.3	4069858	2.486E-08	3.047E-08	9.827E-09	6.52E-08	2.38E-08	4.34E-08	1.60E-08	8.32E-08	4.08E-09	9.18E-09	3.15E-09	1.64E-08	2.07E-09	4.96E-09	1.60E-09	8.64E-09
141	245994.6	4069865	2.557E-08	3.134E-08	1.011E-08	6.70E-08	2.45E-08	4.46E-08	1.64E-08	8.56E-08	4.20E-09	9.44E-09	3.24E-09	1.69E-08	2.13E-09	5.11E-09	1.65E-09	8.89E-09
142	245986.1	4069876	2.654E-08	3.253E-08	1.049E-08	6.96E-08	2.54E-08	4.63E-08	1.71E-08	8.88E-08	4.36E-09	9.80E-09	3.37E-09	1.75E-08	2.21E-09	5.30E-09	1.71E-09	9.23E-09
143	245980.3	4069863	2.531E-08	3.102E-08	1.001E-08	6.63E-08	2.42E-08	4.42E-08	1.63E-08	8.47E-08	4.15E-09	9.35E-09	3.21E-09	1.67E-08	2.11E-09	5.05E-09	1.63E-09	8.80E-09
144	245963.5	4069874	2.605E-08	3.192E-08	1.03E-08	6.83E-08	2.49E-08	4.55E-08	1.67E-08	8.71E-08	4.28E-09	9.62E-09	3.30E-09	1.72E-08	2.17E-09	5.20E-09	1.68E-09	9.05E-09
145	245959.7	4069860	2.474E-08	3.032E-08	9.78E-09	6.48E-08	2.37E-08	4.32E-08	1.59E-08	8.28E-08	4.06E-09	9.14E-09	3.14E-09	1.63E-08	2.06E-09	4.94E-09	1.59E-09	8.60E-09
146	245944.7	4069875	2.573E-08	3.154E-08	1.017E-08	6.74E-08	2.46E-08	4.49E-08	1.65E-08	8.61E-08	4.22E-09	9.50E-09	3.26E-09	1.70E-08	2.15E-09	5.14E-09	1.66E-09	8.94E-09
147	245942.3	4069862	2.461E-08	3.016E-08	9.727E-09	6.45E-08	2.36E-08	4.29E-08	1.58E-08	8.23E-08	4.04E-09	9.09E-09	3.12E-09	1.62E-08	2.05E-09	4.91E-09	1.59E-09	8.55E-09
148	245929.6	4069872	2.517E-08	3.085E-08	9.949E-09	6.60E-08	2.41E-08	4.39E-08	1.62E-08	8.42E-08	4.13E-09	9.30E-09	3.19E-09	1.66E-08	2.10E-09	5.03E-09	1.62E-09	8.75E-09
149	245926.1	4069860	2.411E-08	2.955E-08	9.532E-09	6.32E-08	2.31E-08	4.21E-08	1.55E-08	8.07E-08	3.96E-09	8.90E-09	3.06E-09	1.59E-08	2.01E-09	4.82E-09	1.55E-09	8.38E-09
150	246145.7	4069854	2.798E-08	3.429E-08	1.106E-08	7.33E-08	2.68E-08	4.88E-08	1.80E-08	9.36E-08	4.59E-09	1.03E-08	3.55E-09	1.85E-08	2.33E-09	5.59E-09	1.80E-09	9.72E-09
151	246145.5	4069844	2.71E-08	3.322E-08	1.072E-08	7.10E-08	2.60E-08	4.73E-08	1.74E-08	9.07E-08	4.45E-09	1.00E-08	3.44E-09	1.79E-08	2.26E-09	5.41E-09	1.75E-09	9.42E-09
152	246139.6	4069815	2.437E-08	2.987E-08	9.634E-09	6.39E-08	2.33E-08	4.25E-08	1.57E-08	8.15E-08	4.00E-09	9.00E-09	3.09E-09	1.61E-08	2.03E-09	4.87E-09	1.57E-09	8.47E-09
153	246139.9	4069802	2.329E-08	2.855E-08	9.209E-09	6.11E-08	2.23E-08	4.07E-08	1.50E-08	7.79E-08	3.82E-09	8.60E-09	2.95E-09	1.54E-08	1.94E-09	4.65E-09	1.50E-09	8.10E-09
154	246140.5	4069791	2.242E-08	2.748E-08	8.864E-09	5.88E-08	2.15E-08	3.91E-08	1.44E-08	7.50E-08	3.68E-09	8.28E-09	2.84E-09	1.48E-08	1.87E-09	4.48E-09	1.44E-09	7.79E-09
155	246153.9	4069793	2.29E-08	2.807E-08	9.053E-09	6.00E-08	2.19E-08	4.00E-08	1.47E-08	7.66E-08	3.76E-09	8.46E-09	2.90E-09	1.51E-08	1.91E-09	4.57E-09	1.48E-09	7.96E-09
156	246153.6	4069805	2.392E-08	2.931E-08	9.455E-09	6.27E-08	2.29E-08	4.17E-08	1.54E-08	8.00E-08	3.93E-09	8.83E-09	3.03E-09	1.58E-08	2.00E-09	4.78E-09	1.54E-09	8.31E-09
157	246153.9	4069813	2.462E-08	3.018E-08	9.734E-09	6.45E-08	2.36E-08	4.30E-08	1.58E-08	8.24E-08	4.04E-09	9.09E-09	3.12E-09	1.63E-08	2.05E-09	4.92E-09	1.59E-09	8.56E-09
158	246168.7	4069805	2.426E-08	2.973E-08	9.589E-09	6.36E-08	2.32E-08	4.23E-08	1.56E-08	8.12E-08	3.98E-09	8.96E-09	3.08E-09	1.60E-08	2.02E-09	4.84E-09	1.56E-09	8.43E-09
159	246184.3	4069805	2.469E-08	3.026E-08	9.761E-09	6.47E-08	2.36E-08	4.31E-08	1.59E-08	8.26E-08	4.05E-09	9.12E-09	3.13E-09	1.63E-08	2.06E-09	4.93E-09	1.59E-09	8.58E-09
160	246193	4069804	2.48E-08	3.04E-08	9.805E-09	6.50E-08	2.38E-08	4.33E-08	1.59E-08	8.30E-08	4.07E-09	9.16E-09	3.15E-09	1.64E-08	2.07E-09	4.95E-09	1.60E-09	8.62E-09
161	246382.7	4069976	7.596E-08	9.31E-08	3.003E-08	1.99E-07	7.27E-08	1.33E-07	4.88E-08	2.54E-07	1.25E-08	2.81E-08	9.63E-09	5.02E-08	6.34E-09	1.52E-08	4.89E-09	2.64E-08
162	246340.7	4069978	7.343E-08	9E-08	2.903E-08	1.92E-07	7.03E-08	1.28E-07	4.72E-08	2.46E-07	1.21E-08	2.71E-08	9.31E-09	4.85E-08	6.13E-09	1.47E-08	4.73E-09	2.55E-08
163	246304.8	4069980	7.131E-08	8.741E-08	2.819E-08	1.87E-07	6.83E-08	1.24E-07	4.59E-08	2.39E-07	1.17E-08	2.63E-08	9.04E-09	4.71E-08	5.95E-09	1.42E-08	4.59E-09	2.48E-08
164	246268.9	4069979	6.721E-08	8.238E-08	2.657E-08	1.76E-07	6.44E-08	1.17E-07	4.32E-08	2.25E-07	1.10E-08	2.48E-08	8.52E-09	4.44E-08	5.61E-09	1.34E-08	4.33E-09	2.34E-08
165	246230.6	4069979	6.254E-08	7.665E-08	2.472E-08	1.64E-07	5.99E-08	1.09E-07	4.02E-08	2.09E-07	1.03E-08	2.31E-08	7.93E-09	4.13E-08	5.22E-09	1.25E-08	4.03E-09	2.17E-08
166	246180	4069956	4.897E-08	6.003E-08	1.936E-08	1.28E-07	4.69E-08	8.55E-08	3.15E-08	1.64E-07	8.04E-09	1.81E-08	6.21E-09	3.23E-08	4.09E-09	9.78E-09	3.16E-09	1.70E-08
167	246217.8	4069953	5.186E-08	6.356E-08	2.05E-08	1.36E-07	4.97E-08	9.05E-08	3.33E-08	1.74E-07	8.51E-09	1.92E-08	6.58E-09	3.42E-08	4.33E-09	1.04E-08	3.34E-09	1.80E-08
168	246261.8	4069954	5.667E-08	6.946E-08	2.24E-08	1.49E-07	5.43E-08	9.89E-08	3.64E-08	1.90E-07	9.30E-09	2.09E-08	7.19E-09	3.74E-08	4.73E-09	1.13E-08	3.65E-09	1.97E-08
169	246296.7	4069951	5.864E-08	7.188E-08	2.318E-08	1.54E-07	5.62E-08	1.02E-07	3.77E-08	1.96E-07	9.63E-09	2.17E-08	7.44E-09	3.87E-08	4.89E-09	1.17E-08	3.78E-09	2.04E-08
170	246341.1	4069947	6.096E-08	7.472E-08	2.41E-08	1.60E-07	5.84E-08	1.06E-07	3.92E-08	2.04E-07	1.00E-08	2.25E-08	7.73E-09	4.03E-08	5.09E-09	1.22E-08	3.93E-09	2.12E-08
171	246382.3	4069942	6.218E-08	7.621E-08	2.458E-08	1.63E-07	5.95E-08	1.09E-07	4.00E-08	2.08E-07	1.02E-08	2.30E-08	7.88E-09	4.11E-08	5.19E-09	1.24E-08	4.01E-09	2.16E-08
172	246395.5	4069920	5.587E-08	6.848E-08	2.209E-08	1.46E-07	5.35E-08	9.75E-08	3.59E-08	1.87E-07	9.17E-09	2.06E-08	7.08E-09	3.69E-08	4.66E-09	1.12E-08	3.60E-09	1.94E-08
173	246362.9	4069922	5.442E-08	6.67E-08	2.152E-08	1.43E-07	5.21E-08	9.50E-08	3.50E-08	1.82E-07	8.93E-09	2.01E-08	6.90E-09	3.59E-08	4.54E-09	1.09E-08	3.51E-09	1.89E-08
174	246329.8	4069922	5.231E-08	6.412E-08	2.068E-08	1.37E-07	5.01E-08	9.13E-08	3.36E-08	1.75E-07	8.59E-09	1.93E-08	6.63E-09	3.45E-08	4.37E-09	1.04E-08	3.37E-09	1.82E-08
175	246290.1	4069918	4.817E-08	5.905E-08	1.904E-08	1.26E-07	4.61E-08	8.41E-08	3.10E-08	1.61E-07	7.91E-09	1.78E-08	6.11E-09	3.18E-08	4.02E-09	9.62E-09	3.10E-09	1.67E-08
176	246245.2	4069922	4.551E-08	5.579E-08	1.799E-08	1.19E-07	4.36E-08	7.94E-08	2.93E-08	1.52E-07	7.47E-09	1.68E-08	5.77E-09	3.01E-08	3.80E-09	9.09E-09	2.93E-09	1.58E-08
177	246206	4069925	4.306E-08	5.278E-08	1.702E-08	1.13E-07	4.12E-08	7.52E-08	2.77E-08	1.44E-07	7.07E-09	1.59E-08	5.46E-09	2.84E-08	3.59E-09	8.60E-09	2.77E-09	1.50E-08
178	246208.4	4069893	3.663E-08	4.49E-08	1.448E-08	9.60E-08	3.51E-08	6.39E-08	2.36E-08	1.23E-07	6.01E-09	1.35E-08	4.65E-09	2.42E-08	3.06E-09	7.32E-09	2.36E-09	1.27E-08
179	246268.9	4069891	4.023E-08	4.931E-08	1.591E-08	1.05E-07	3.85E-08	7.02E-08	2.59E-08	1.35E-07	6.60E-09	1.49E-08	5.10E-09	2.66E-08	3.36E-09	8.04E-09	2.59E-09	1.40E-08
180	246316.1	4069890	4.318E-08	5.293E-08	1.707E-08	1.13E-07	4.14E-08	7.54E-08	2.78E-08	1.44E-07	7.09E-09	1.59E-08	5.48E-09	2.85E-08	3.60E-09	8.62E-09	2.78E-09	1.50E-08
181	246375.2	4069886	4.575E-08	5.608E-08	1.809E-08	1.20E-07	4.38E-08	7.99E-08	2.94E-08	1.53E-07	7.51E-09	1.69E-08	5.80E-09	3.02E-08	3.82E-09	9.14E-09	2.95E-09	1.59E-08
182	246120	4070100	1.314E-07	1.611E-07	5.197E-08	3.45E-07	1.26E-07	2.29E-07	8.45E-08	4.40E-07	2.16E-08	4.85E-08	1.67E-08	8.68E-08	1.10E-08	2.63E-08	8.47E-09	4.57E-08
183	246088.8	4070100	1.109E-07	1.36E-07	4.385E-08	2.91E-07	1.06E-07	1.94E-07	7.13E-08	3.71E-07	1.82E-08	4.10E-08	1.41E-08	7.32E-08	9.26E-09	2.22E-08	7.15E-09	3.86E-08
184	246100.2	4070069	8.694E-08	1.066E-07	3.437E-08	2.28E-07	8.33E-08	1.52E-07	5.59E-08	2.91E-07	1.43E-08	3.21E-08	1.10E-08	5.74E-08	7.26E-09	1.74E-08	5.60E-09	3.02E-08
185	246127.1	4070070	9.638E-08	1.181E-07	3.81E-08	2.53E-07	9.23E-08	1.68E-07	6.20E-08	3.22E-07	1.58E-08	3.56E-08	1.22E-08	6.36E-08	8.04E-09	1.92E-08	6.21E-09	3.35E-08
186	246272.2	4070072	1.398E-07	1.714E-07	5.527E-08	3.66E-07	1.34E-07	2.44E-07	8.99E-08	4.68E-07	2.29E-08	5.16E-08	1.77E-08	9.23E-08	1.17E-08	2.79E-08	9.01E-09	4.86E-08
187	246304.8	4070070	1.414E-07	1.734E-07	5.592E-08	3.71E-07	1.35E-07	2.47E-07	9.09E-08	4.73E-07	2.32E-08	5.22E-08	1.79E-08	9.34E-08	1.18E-08	2.83E-08	9.11E-09	4.92E-08
188	246872	4070188	1.012E-07	1.24E-07	4E-08	2.65E-07	9.69E-08	1.77E-07	6.50E-08	3.39E-07	1.66E-08	3.74E-08	1.28E-08	6.68E-08	8.44E-09	2.02E-08	6.52E-09	3.52E-08
189	246519.3	4070400	7.942E-08	9.735E-08	3.14E-08	2.08E-07	7.61E-08	1.39E-07	5.11E-08	2.66E-07	1.30E-08	2.93E-08	1.01E-08	5.24E-08	6.63E-09	1.59E-08	5.12E-09	2.76E-08
190	246876.9	4070339	3.293E-08	4.036E-08	1.302E-08	8.63E-08	3.15E-08	5.75E-08	2.12E-08	1.10E-07	5.41E-09	1.22E-08	4.18E-09	2.17E-08	2.75E-09	6.58E-09	2.12E-09	1.14E-08
191	246865.6	4070391	1.661E-08	2.036E-08	6.566E-09	4.35E-08	1.59E-08	2.90E-08	1.07E-08	5.56E-08	2.73E-09	6.13E-09	2.11E-09	1.10E-08	1.39E-09	3.32E-09	1.07E-09	5.77E-09
192	246860.6	4070426	1.222E-08	1.498E-08	4.832E-09	3.20E-08	1.17E-08	2.13E-08	7.86E-09	4.09E-08	2.01E-09	4.51E-09	1.55E-09	8.07E-09	1.02E-09	2.44E-09	7.87E-10	4.25E-09
193	246865.6	4070450	1.009E-08	1.237E-08	3.99E-09	2.65E-08	9.66E-09	1.76E-08	6.49E-09	3.38E-08	1.66E-09	3.73E-09	1.28E-09	6.66E-09	8.42E-10	2.02E-09	6.50E-10	3.51E-09
194	246930.7	4070337	1.994E-08	2.444E-08	7.883E-09	5.23E-08	1.91E-08	3.48E-08	1.28E-08	6.67E-08	3.27E-09	7.36E-09	2.53E-09	1.32E-08	1.66E-09	3.98E-09	1.28E-09	6.93E-09
195	246997.1	4070332	1.411E-08	1.73E-08	5.579E-09	3.70E-08	1.35E-08	2.46E-08	9.07E-09	4.72E-08	2.32E-09	5.21E-09	1.79E-09	9.32E-09	1.18E-09	2.82E-09	9.09E-10	4.91E-09
196	246891.9	4070381	1.6E-08	1.961E-08	6.325E-09	4.19E-08	1.53E-08	2.79E-08	1.03E-08	5.35E-08	2.63E-09	5.91E-09	2.03E-09	1.06E-08	1.33E-09	3.20E-09	1.03E-09	5.56E-09
197	246924.5	4070379	1.38E-08	1.691E-08	5.454E-09	3.62E-08	1.32E-08	2.41E-08	8.87E-09	4.62E-08	2.26E-09	5.10E-09	1.75E-09	9.11E-09	1.15E-09	2.76E-09	8.89E-10	4.80E-09
198	246974.6	4070376	1.132E-08	1.388E-08	4.476E-09	2.97E-08	1.08E-08	1.98E-08	7.28E-09	3.79E-08	1.86E-09	4.18E-09	1.44E-09	7.48E-09	9.45E-10	2.26E-09	7.30E-10	3.94E-09
199	246879.4	4070420	1.18E-08	1.446E-08	4.664E-09	3.09E-08	1.13E-08	2.06E-08	7.59E-09	3.95E-08	1.94E-09	4.36E-09	1.50E-09	7.79E-09	9.85E-10	2.36E-09	7.60E-10	4.10E-09
200	246927	4070413	1.041E-08	1.276E-08	4.115E-09	2.73E-08	9.97E-09	1.82E-08	6.69E-09	3.48E-08	1.71E-09	3.84E-09	1.32E-09	6.87E-09	8.69E-10	2.08E-09	6.71E-10	3.62E-09
201	246962.1	4070413	9.246E-09	1.133E-08	3.656E-09	2.42E-08	8.85E-09	1.61E-08	5.94E-09	3.09E-08	1.52E-09	3.42E-09	1.17E-09	6.11E-09	7.72E-10	1.85E-09	5.96E-10	3.21E-09

			UnMitigated			T2			T2L3			T4		
			8.14E-03	9.98E-03	3.22E-03	7.80E-03	1.42E-02	5.23E-03	1.34E-03	3.01E-03	1.03E-03	6.79E-04	1.63E-03	5.25E-04
			Yr 1	Yr 2	Yr 3	Yr 1	Yr 2	Yr 3	Yr 1	Yr 2	Yr 3	Yr 1	Yr 2	Yr 3
1	246074.6	4070081	6.77E-03	8.30E-03	2.68E-03	6.49E-03	1.18E-02	4.36E-03	1.11E-03	2.50E-03	8.59E-04	5.65E-04	1.35E-03	4.37E-04
2	246863.3	4069919	4.13E-03	5.07E-03	1.63E-03	3.96E-03	7.21E-03	2.66E-03	6.78E-04	1.53E-03	5.24E-04	3.45E-04	8.25E-04	2.66E-04
3	246874.2	4069902	3.88E-03	4.75E-03	1.53E-03	3.71E-03	6.76E-03	2.49E-03	6.36E-04	1.43E-03	4.91E-04	3.23E-04	7.74E-04	2.50E-04
4	246855.2	4069890	3.80E-03	4.66E-03	1.50E-03	3.64E-03	6.64E-03	2.44E-03	6.24E-04	1.40E-03	4.82E-04	3.17E-04	7.59E-04	2.45E-04
5	246883.3	4069972	4.74E-03	5.81E-03	1.87E-03	4.54E-03	8.28E-03	3.05E-03	7.78E-04	1.75E-03	6.01E-04	3.96E-04	9.47E-04	3.06E-04
6	246891.4	4070009	5.25E-03	6.43E-03	2.08E-03	5.03E-03	9.16E-03	3.38E-03	8.62E-04	1.94E-03	6.66E-04	4.38E-04	1.05E-03	3.38E-04
7	246898.6	4070025	5.40E-03	6.62E-03	2.14E-03	5.17E-03	9.43E-03	3.47E-03	8.87E-04	1.99E-03	6.85E-04	4.51E-04	1.08E-03	3.48E-04
8	246897.7	4070044	5.73E-03	7.02E-03	2.27E-03	5.49E-03	1.00E-02	3.68E-03	9.41E-04	2.12E-03	7.27E-04	4.78E-04	1.14E-03	3.69E-04
9	246893.2	4070063	6.17E-03	7.57E-03	2.44E-03	5.91E-03	1.08E-02	3.97E-03	1.01E-03	2.28E-03	7.83E-04	5.15E-04	1.23E-03	3.98E-04
10	246856.1	4070032	6.28E-03	7.70E-03	2.48E-03	6.01E-03	1.10E-02	4.04E-03	1.03E-03	2.32E-03	7.96E-04	5.24E-04	1.25E-03	4.05E-04
11	246844.3	4070069	7.71E-03	9.45E-03	3.05E-03	7.38E-03	1.35E-02	4.96E-03	1.27E-03	2.85E-03	9.78E-04	6.43E-04	1.54E-03	4.97E-04
12	246845.2	4070080	8.14E-03	9.98E-03	3.22E-03	7.80E-03	1.42E-02	5.23E-03	1.34E-03	3.01E-03	1.03E-03	6.79E-04	1.63E-03	5.25E-04
13	246934.8	4070051	4.98E-03	6.10E-03	1.97E-03	4.77E-03	8.69E-03	3.20E-03	8.17E-04	1.84E-03	6.31E-04	4.15E-04	9.94E-04	3.21E-04
14	246931.2	4070027	4.85E-03	5.94E-03	1.92E-03	4.64E-03	8.46E-03	3.12E-03	7.96E-04	1.79E-03	6.15E-04	4.04E-04	9.68E-04	3.12E-04
15	246934.8	4069998	4.50E-03	5.52E-03	1.78E-03	4.31E-03	7.85E-03	2.89E-03	7.39E-04	1.66E-03	5.71E-04	3.76E-04	8.99E-04	2.90E-04
16	246957.5	4070166	3.93E-03	4.81E-03	1.55E-03	3.76E-03	6.86E-03	2.53E-03	6.45E-04	1.45E-03	4.98E-04	3.28E-04	7.84E-04	2.53E-04
17	246866.1	4070294	5.23E-03	6.41E-03	2.07E-03	5.01E-03	9.13E-03	3.36E-03	8.58E-04	1.93E-03	6.63E-04	4.36E-04	1.04E-03	3.37E-04
18	246883.3	4070300	3.79E-03	4.65E-03	1.50E-03	3.63E-03	6.62E-03	2.44E-03	6.22E-04	1.40E-03	4.81E-04	3.16E-04	7.57E-04	2.44E-04
19	246905	4070298	2.93E-03	3.59E-03	1.16E-03	2.81E-03	5.12E-03	1.88E-03	4.81E-04	1.08E-03	3.72E-04	2.45E-04	5.85E-04	1.89E-04
20	246927.6	4070298	2.33E-03	2.86E-03	9.23E-04	2.23E-03	4.07E-03	1.50E-03	3.83E-04	8.62E-04	2.96E-04	1.95E-04	4.66E-04	1.50E-04
21	246958.4	4070298	1.80E-03	2.21E-03	7.13E-04	1.73E-03	3.15E-03	1.16E-03	2.96E-04	6.66E-04	2.29E-04	1.50E-04	3.60E-04	1.16E-04
22	246976.5	4070296	1.63E-03	1.99E-03	6.43E-04	1.56E-03	2.84E-03	1.05E-03	2.67E-04	6.01E-04	2.06E-04	1.36E-04	3.25E-04	1.05E-04
23	247005.4	4070296	1.36E-03	1.67E-03	5.39E-04	1.31E-03	2.38E-03	8.77E-04	2.24E-04	5.04E-04	1.73E-04	1.14E-04	2.72E-04	8.79E-05
24	246946.7	4070158	4.36E-03	5.34E-03	1.72E-03	4.17E-03	7.61E-03	2.80E-03	7.15E-04	1.61E-03	5.53E-04	3.64E-04	8.70E-04	2.81E-04
25	246947.7	4070175	4.09E-03	5.01E-03	1.62E-03	3.91E-03	7.13E-03	2.63E-03	6.71E-04	1.51E-03	5.18E-04	3.41E-04	8.16E-04	2.63E-04
26	246863.4	4069895	3.83E-03	4.70E-03	1.52E-03	3.67E-03	6.69E-03	2.46E-03	6.29E-04	1.42E-03	4.86E-04	3.20E-04	7.66E-04	2.47E-04
27	246873.4	4069919	4.09E-03	5.01E-03	1.62E-03	3.91E-03	7.13E-03	2.63E-03	6.71E-04	1.51E-03	5.18E-04	3.41E-04	8.16E-04	2.63E-04
28	246909	4069964	4.40E-03	5.39E-03	1.74E-03	4.21E-03	7.68E-03	2.83E-03	7.22E-04	1.63E-03	5.58E-04	3.67E-04	8.79E-04	2.83E-04
29	246951.3	4069944	3.83E-03	4.69E-03	1.51E-03	3.67E-03	6.68E-03	2.46E-03	6.29E-04	1.41E-03	4.86E-04	3.20E-04	7.65E-04	2.47E-04
30	246779.5	4070389	3.22E-03	3.95E-03	1.27E-03	3.09E-03	5.63E-03	2.07E-03	5.29E-04	1.19E-03	4.09E-04	2.69E-04	6.44E-04	2.08E-04
31	246784.5	4070417	1.78E-03	2.19E-03	7.05E-04	1.71E-03	3.11E-03	1.15E-03	2.93E-04	6.59E-04	2.26E-04	1.49E-04	3.56E-04	1.15E-04
32	246781.7	4070442	1.32E-03	1.61E-03	5.20E-04	1.26E-03	2.30E-03	8.46E-04	2.16E-04	4.86E-04	1.67E-04	1.10E-04	2.63E-04	8.48E-05
33	246782.8	4070460	1.10E-03	1.35E-03	4.34E-04	1.05E-03	1.92E-03	7.06E-04	1.80E-04	4.05E-04	1.39E-04	9.16E-05	2.19E-04	7.07E-05
34	246741.7	4070461	1.36E-03	1.67E-03	5.37E-04	1.30E-03	2.37E-03	8.74E-04	2.23E-04	5.02E-04	1.72E-04	1.13E-04	2.72E-04	8.76E-05
35	246743.9	4070442	1.63E-03	2.00E-03	6.46E-04	1.57E-03	2.85E-03	1.05E-03	2.68E-04	6.04E-04	2.07E-04	1.36E-04	3.26E-04	1.05E-04
36	246738.9	4070423	2.13E-03	2.61E-03	8.43E-04	2.04E-03	3.72E-03	1.37E-03	3.50E-04	7.88E-04	2.70E-04	1.78E-04	4.26E-04	1.37E-04
37	246741.2	4070407	2.82E-03	3.46E-03	1.12E-03	2.70E-03	4.93E-03	1.82E-03	4.64E-04	1.04E-03	3.58E-04	2.36E-04	5.64E-04	1.82E-04
38	246744.5	4070386	4.70E-03	5.77E-03	1.86E-03	4.50E-03	8.21E-03	3.02E-03	7.72E-04	1.74E-03	5.97E-04	3.93E-04	9.40E-04	3.03E-04
39	246760.6	4070393	3.51E-03	4.30E-03	1.39E-03	3.36E-03	6.12E-03	2.25E-03	5.76E-04	1.30E-03	4.45E-04	2.93E-04	7.00E-04	2.26E-04
40	246760.6	4070414	2.19E-03	2.69E-03	8.68E-04	2.10E-03	3.83E-03	1.41E-03	3.60E-04	8.11E-04	2.78E-04	1.83E-04	4.38E-04	1.41E-04
41	246757.8	4070437	1.60E-03	1.96E-03	6.31E-04	1.53E-03	2.79E-03	1.03E-03	2.62E-04	5.89E-04	2.02E-04	1.33E-04	3.19E-04	1.03E-04
42	246763.9	4070457	1.25E-03	1.54E-03	4.96E-04	1.20E-03	2.19E-03	8.07E-04	2.06E-04	4.63E-04	1.59E-04	1.05E-04	2.51E-04	8.08E-05
43	246660.6	4070410	4.05E-03	4.97E-03	1.60E-03	3.88E-03	7.07E-03	2.61E-03	6.65E-04	1.50E-03	5.14E-04	3.38E-04	8.09E-04	2.61E-04
44	246650.5	4070444	2.42E-03	2.96E-03	9.55E-04	2.31E-03	4.22E-03	1.55E-03	3.97E-04	8.92E-04	3.06E-04	2.02E-04	4.83E-04	1.56E-04
45	246636.1	4070447	2.46E-03	3.01E-03	9.71E-04	2.35E-03	4.29E-03	1.58E-03	4.03E-04	9.07E-04	3.11E-04	2.05E-04	4.90E-04	1.58E-04
46	246607.7	4070462	2.29E-03	2.80E-03	9.05E-04	2.19E-03	3.99E-03	1.47E-03	3.76E-04	8.45E-04	2.90E-04	1.91E-04	4.57E-04	1.47E-04
47	246860.1	4070528	5.18E-04	6.35E-04	2.05E-04	4.96E-04	9.04E-04	3.33E-04	8.50E-05	1.91E-04	6.57E-05	4.32E-05	1.03E-04	3.34E-05
48	246874.6	4070527	5.01E-04	6.14E-04	1.98E-04	4.80E-04	8.74E-04	3.22E-04	8.22E-05	1.85E-04	6.35E-05	4.18E-05	1.00E-04	3.23E-05
49	246887.9	4070525	4.86E-04	5.96E-04	1.92E-04	4.65E-04	8.48E-04	3.12E-04	7.98E-05	1.80E-04	6.16E-05	4.06E-05	9.71E-05	3.13E-05
50	246798.4	4070720	2.69E-04	3.29E-04	1.06E-04	2.57E-04	4.69E-04	1.73E-04	4.41E-05	9.92E-05	3.41E-05	2.24E-05	5.36E-05	1.73E-05
51	246776.2	4070718	2.84E-04	3.48E-04	1.12E-04	2.72E-04	4.96E-04	1.83E-04	4.67E-05	1.05E-04	3.60E-05	2.37E-05	5.68E-05	1.83E-05
52	246751.7	4070720	3.05E-04	3.74E-04	1.21E-04	2.92E-04	5.32E-04	1.96E-04	5.01E-05	1.13E-04	3.87E-05	2.54E-05	6.09E-05	1.96E-05
53	246725	4070723	3.23E-04	3.96E-04	1.28E-04	3.10E-04	5.64E-04	2.08E-04	5.31E-05	1.19E-04	4.10E-05	2.70E-05	6.46E-05	2.08E-05
54	246695	4070762	3.04E-04	3.72E-04	1.20E-04	2.91E-04	5.30E-04	1.95E-04	4.99E-05	1.12E-04	3.85E-05	2.53E-05	6.07E-05	1.96E-05
55	246494.9	4070530	1.66E-03	2.04E-03	6.57E-04	1.59E-03	2.90E-03	1.07E-03	2.73E-04	6.14E-04	2.11E-04	1.39E-04	3.32E-04	1.07E-04
56	246495.5	4070612	9.61E-04	1.18E-03	3.80E-04	9.20E-04	1.68E-03	6.18E-04	1.58E-04	3.55E-04	1.22E-04	8.02E-05	1.92E-04	6.19E-05
57	246521	4070668	6.74E-04	8.26E-04	2.67E-04	6.46E-04	1.18E-03	4.34E-04	1.11E-04	2.49E-04	8.55E-05	5.63E-05	1.35E-04	4.34E-05
58	246400.4	4070675	8.27E-04	1.01E-03	3.27E-04	7.92E-04	1.44E-03	5.32E-04	1.36E-04	3.06E-04	1.05E-04	6.90E-05	1.65E-04	5.33E-05
59	246404.3	4070664	8.65E-04	1.06E-03	3.42E-04	8.29E-04	1.51E-03	5.56E-04	1.42E-04	3.20E-04	1.10E-04	7.22E-05	1.73E-04	5.58E-05
60	246447.1	4070587	1.22E-03	1.50E-03	4.84E-04	1.17E-03	2.14E-03	7.87E-04	2.01E-04	4.52E-04	1.55E-04	1.02E-04	2.44E-04	7.88E-05
61	246526	4070863	3.22E-04	3.95E-04	1.27E-04	3.08E-04	5.62E-04	2.07E-04	5.29E-05	1.19E-04	4.08E-05	2.69E-05	6.43E-05	2.08E-05
62	246527.1	4070877	3.08E-04	3.78E-04	1.22E-04	2.95E-04	5.38E-04	1.98E-04	5.06E-05	1.14E-04	3.91E-05	2.57E-05	6.16E-05	1.99E-05
63	246529.9	4070895	2.92E-04	3.58E-04	1.15E-04	2.79E-04	5.09E-04	1.88E-04	4.79E-05	1.08E-04	3.70E-05	2.43E-05	5.83E-05	1.88E-05
64	246503.2	4070897	3.04E-04	3.73E-04	1.20E-04	2.91E-04	5.31E-04	1.96E-04	4.99E-05	1.12E-04	3.86E-05	2.54E-05	6.07E-05	1.96E-05
65	246499.4	4070884	3.18E-04	3.90E-04	1.26E-04	3.05E-04	5.55E-04	2.05E-04	5.22E-05	1.18E-04	4.03E-05	2.66E-05	6.35E-05	2.05E-05
66	246503.2	4070861	3.38E-04	4.14E-04	1.33E-04	3.23E-04	5.89E-04	2.17E-04	5.54E-05	1.25E-04	4.28E-05	2.82E-05	6.74E-05	2.17E-05
67	246415.4	4070874	3.75E-04	4.59E-04	1.48E-04	3.59E-04	6.54E-04	2.41E-04	6.15E-05	1.38E-04	4.75E-05	3.13E-05	7.49E-05	2.41E-05
68	246396.5	4070861	4.01E-04	4.91E-04	1.58E-04	3.84E-04	7.00E-04	2.58E-04	6.58E-05	1.48E-04	5.08E-05	3.34E-05	8.01E-05	2.58E-05
69	246398.7	4070869	3.90E-04	4.78E-04	1.54E-04	3.73E-04	6.80E-04	2.51E-04	6.40E-05	1.44E-04	4.94E-05	3.25E-05	7.79E-05	2.51E-05
70	246217	4070865	5.03E-04	6.17E-04	1.99E-04	4.82E-04	8.78E-04	3.23E-04	8.26E-05	1.86E-04	6.38E-05	4.20E-05	1.00E-04	3.24E-05
71	246215.9	4070847	5.40E-04	6.62E-04	2.14E-04	5.17E-04	9.43E-04	3.47E-04	8.87E-05	1.99E-04	6.85E-05	4.51E-05	1.08E-04	3.48E-05
72	246215.3	4070833	5.70E-04	6.99E-04	2.25E-04	5.46E-04	9.95E-04	3.66E-04	9.36E-05	2.10E-04	7.23E-05	4.76E-05	1.14E-04	3.67E-05
73	246187.5	4070711	9.53E-04	1.17E-03	3.77E-04	9.12E-04	1.66E-03	6.13E-04	1.56E-04	3.52E-04	1.21E-04	7.95E-05	1.90E-04	6.14E-05
74	246200.9	4070711	9.42E-04	1.15E-03	3.72E-04	9.02E-04	1.64E-03	6.06E-04	1.55E-04	3.48E-04	1.19E-04	7.86E-05	1.88E-04	6.07E-05
75	246198.1	4070701	9.88E-04	1.21E-03	3.90E-04	9.46E-04	1.72E-03	6.35E-04	1.62E-04	3.65E-04	1.25E-04	8.24E-05	1.97E-04	6.36E-05
76	246329.8	4070549	1.89E-03	2.32E-03	7.49E-04	1.81E-03	3.31E-03	1.22E-03	3.11E-04	6.99E-04	2.40E-04	1.58E-04	3.78E-04	1.22E-04
77	246301.5	4070548	1.97E-03	2.42E-03	7.79E-04	1.89E-03	3.44E-03	1.27E-03	3.24E-04	7.28E-04	2.50E-04	1.64E-04	3.94E-04	1.27E-04
78	246270.3	4070549	2.04E-03	2.50E-03	8.05E-04	1.95E-03	3.55E-03	1.31E-03	3.34E-04	7.52E-04	2.58E-04	1.70E-04	4.07E-04	1.31E-04
79	246246.4	4070549	2.08E-03	2.55E-03	8.22E-04	1.99E-03	3.63E-03	1.34E-03	3.41E-04	7.68E-04	2.64E-04	1.74E-04	4.15E-04	1.34E-04
80	246227	4070549	2.13E-03	2.60E-03	8.40E-04	2.04E-03	3.71E-03	1.37E-03	3.49E-04	7.85E-04	2.70E-04	1.77E-04	4.24E-04	1.37E-04
81	246209.2	4070550	2.15E-03	2.63E-03	8.48E-04	2.05E-03	3.74E-03	1.38E-03	3.52E-04	7.92E-04	2.72E-04	1.79E-04	4.28E-04	1.38E-04
82	246185.9	4070552	2.18E-03	2.67E-03	8.61E-04	2.09E-03	3.80E-03	1.40E-03	3.58E-04	8.05E-04	2.76E-04	1.82E-04	4.35E-04	1.40E-04
83	246172	4070552	2.20E-03	2.70E-03	8.71E-04	2.11E-03	3.85E-03	1.42E-03	3.62E-04	8.14E-04	2.79E-04	1.84E-04	4.40E-04	1.42E-04
84	246164.7	4070591	1.74E-03	2.13E-03	6.87E-04	1.66E-03	3.03E-03	1.12E-03	2.85E-04	6.42E-04	2.20E-04	1.45E-04	3.47E-04	1.12E-04
85	246192	4070591	1.70E-03	2.09E-03	6.74E-04	1.63E-03	2.97E-03	1.10E-03	2.80E-04	6.29E-04	2.16E-04	1.42E-04	3.40E-04	1.10E-04
86	246225.9	4070589	1.68E-03	2.06E-03	6.64E-04	1.61E-03	2.93E-03	1.08E-03	2.76E-04	6.20E-04	2.13E-04	1.40E-04	3.35E-04	1.08E-04
87	246268.7	4070587	1.64E-03	2.01E-03	6.47E-04	1.57E-03	2.86E-03	1.05E-03	2.69E-04	6.04E-04	2.08E-04	1.37E-04	3.27E-04	1.05E-04
88	246300.4	4070590	1.56E-03	1.91E-03	6.15E-04	1.49E-03	2.72E-03	1.00E-03	2.56E-04	5.75E-04	1.97E-04	1.30E-04	3.11E-04	1.00E-04
89	246332.6	4070588	1.49E-03	1.83E-03	5.89E-04	1.43E-03	2.60E-03	9.58E-04	2.45E-04	5.50E-04	1.89E-04	1.24E-04	2.98E-04	9.60E-05
90	246328.7	4070623	1.23E-03	1.50E-03	4.85E-04	1.17E-03	2.14E-03	7.88E-04	2.01E-04	4.53E-04	1.55E-04	1.02E-04	2.45E-04	7.90E-05
91	246292.6	4070623	1.30E-03	1.59E-03	5.12E-04	1.24E-03	2.26E-03	8.33E-04	2.13E-04	4.78E-04	1.64E-04	1.08E-04	2.59E-04	8.35E-05
92	246262.6	4070626	1.31E-03	1.61E-03	5.19E-04	1.26E-03	2.29E-03	8.44E-04	2.15E-04	4.85E-04	1.66E-04	1.10E-04	2.62E-04	8.46E-05
93	246258.1	4070658	1.10E-03	1.35E-03	4.34E-04	1.05E-03	1.92E-03	7.07E-04	1.80E-04	4.06E-04	1.39E-04	9.17E-05	2.19E-04	7.08E-05

94	246288.7	4070663	1.04E-03	1.27E-03	4.11E-04	9.96E-04	1.82E-03	6.69E-04	1.71E-04	3.84E-04	1.32E-04	8.68E-05	2.08E-04	6.70E-05
95	246337	4070665	9.72E-04	1.19E-03	3.84E-04	9.30E-04	1.70E-03	6.25E-04	1.59E-04	3.59E-04	1.23E-04	8.11E-05	1.94E-04	6.26E-05
96	246236.4	4070705	9.26E-04	1.13E-03	3.66E-04	8.86E-04	1.62E-03	5.95E-04	1.52E-04	3.42E-04	1.17E-04	7.72E-05	1.85E-04	5.96E-05
97	246231.4	4070678	1.04E-03	1.28E-03	4.12E-04	9.97E-04	1.82E-03	6.69E-04	1.71E-04	3.84E-04	1.32E-04	8.69E-05	2.08E-04	6.71E-05
98	246232	4070636	1.27E-03	1.55E-03	5.01E-04	1.21E-03	2.21E-03	8.15E-04	2.08E-04	4.68E-04	1.61E-04	1.06E-04	2.53E-04	8.17E-05
99	246196.4	4070668	1.13E-03	1.39E-03	4.48E-04	1.08E-03	1.98E-03	7.28E-04	1.86E-04	4.19E-04	1.44E-04	9.45E-05	2.26E-04	7.30E-05
100	246103.6	4070542	2.40E-03	2.94E-03	9.50E-04	2.30E-03	4.19E-03	1.54E-03	3.94E-04	8.87E-04	3.05E-04	2.00E-04	4.80E-04	1.55E-04
101	245996.9	4070633	1.51E-03	1.85E-03	5.98E-04	1.45E-03	2.64E-03	9.73E-04	2.48E-04	5.59E-04	1.92E-04	1.26E-04	3.02E-04	9.75E-05
102	245982.4	4070632	1.52E-03	1.87E-03	6.02E-04	1.46E-03	2.66E-03	9.80E-04	2.50E-04	5.63E-04	1.93E-04	1.27E-04	3.04E-04	9.82E-05
103	246015.8	4070369	8.06E-03	9.87E-03	3.19E-03	7.71E-03	1.41E-02	5.18E-03	1.32E-03	2.98E-03	1.02E-03	6.72E-04	1.61E-03	5.19E-04
104	245936.3	4070380	4.95E-03	6.06E-03	1.96E-03	4.74E-03	8.64E-03	3.18E-03	8.12E-04	1.83E-03	6.27E-04	4.13E-04	9.88E-04	3.19E-04
105	245959.1	4070239	7.65E-03	9.38E-03	3.03E-03	7.33E-03	1.34E-02	4.92E-03	1.26E-03	2.83E-03	9.70E-04	6.39E-04	1.53E-03	4.93E-04
106	245960.2	4070216	7.66E-03	9.38E-03	3.03E-03	7.33E-03	1.34E-02	4.92E-03	1.26E-03	2.83E-03	9.71E-04	6.39E-04	1.53E-03	4.93E-04
107	245960.2	4070205	7.56E-03	9.27E-03	2.99E-03	7.24E-03	1.32E-02	4.86E-03	1.24E-03	2.79E-03	9.59E-04	6.31E-04	1.51E-03	4.87E-04
108	245960.7	4070192	7.43E-03	9.11E-03	2.94E-03	7.11E-03	1.30E-02	4.78E-03	1.22E-03	2.74E-03	9.42E-04	6.20E-04	1.48E-03	4.79E-04
109	245950.2	4070154	6.40E-03	7.84E-03	2.53E-03	6.13E-03	1.12E-02	4.11E-03	1.05E-03	2.36E-03	8.11E-04	5.34E-04	1.28E-03	4.12E-04
110	245940.2	4070159	6.15E-03	7.54E-03	2.43E-03	5.89E-03	1.07E-02	3.96E-03	1.01E-03	2.27E-03	7.80E-04	5.14E-04	1.23E-03	3.97E-04
111	245956.3	4070159	6.69E-03	8.20E-03	2.65E-03	6.41E-03	1.17E-02	4.30E-03	1.10E-03	2.47E-03	8.49E-04	5.59E-04	1.34E-03	4.31E-04
112	245869	4070172	4.67E-03	5.73E-03	1.85E-03	4.47E-03	8.16E-03	3.00E-03	7.67E-04	1.73E-03	5.92E-04	3.90E-04	9.33E-04	3.01E-04
113	245844	4070174	4.27E-03	5.24E-03	1.69E-03	4.09E-03	7.46E-03	2.75E-03	7.02E-04	1.58E-03	5.42E-04	3.57E-04	8.54E-04	2.75E-04
114	245844	4070183	4.31E-03	5.28E-03	1.70E-03	4.13E-03	7.52E-03	2.77E-03	7.07E-04	1.59E-03	5.47E-04	3.60E-04	8.61E-04	2.78E-04
115	245862.3	4070184	4.62E-03	5.66E-03	1.83E-03	4.42E-03	8.06E-03	2.97E-03	7.58E-04	1.71E-03	5.86E-04	3.86E-04	9.23E-04	2.98E-04
116	245800.1	4070164	3.65E-03	4.47E-03	1.44E-03	3.49E-03	6.37E-03	2.35E-03	5.99E-04	1.35E-03	4.63E-04	3.05E-04	7.29E-04	2.35E-04
117	245800.1	4070173	0.00368	0.00451	0.001455	3.52E-03	6.42E-03	2.37E-03	6.04E-04	1.36E-03	4.67E-04	3.07E-04	7.35E-04	2.37E-04
118	245798.4	4070188	0.003694	0.004528	0.001461	3.54E-03	6.45E-03	2.38E-03	6.06E-04	1.36E-03	4.69E-04	3.08E-04	7.38E-04	2.38E-04
119	245868.5	4070330	0.004355	0.005338	0.001722	4.17E-03	7.60E-03	2.80E-03	7.15E-04	1.61E-03	5.52E-04	3.63E-04	8.70E-04	2.81E-04
120	245830.7	4070332	0.003757	0.004605	0.001485	3.60E-03	6.56E-03	2.42E-03	6.17E-04	1.39E-03	4.76E-04	3.13E-04	7.50E-04	2.42E-04
121	245812.3	4070334	0.003495	0.004284	0.001382	3.35E-03	6.10E-03	2.25E-03	5.74E-04	1.29E-03	4.43E-04	2.92E-04	6.98E-04	2.25E-04
122	245820.7	4070344	0.003532	0.004329	0.001396	3.38E-03	6.16E-03	2.27E-03	5.80E-04	1.30E-03	4.48E-04	2.95E-04	7.05E-04	2.28E-04
123	245835.7	4070344	0.003734	0.004576	0.001476	3.58E-03	6.52E-03	2.40E-03	6.13E-04	1.38E-03	4.73E-04	3.12E-04	7.46E-04	2.41E-04
124	245985.3	4070104	0.006005	0.007361	0.002374	5.75E-03	1.05E-02	3.86E-03	9.86E-04	2.22E-03	7.62E-04	5.01E-04	1.20E-03	3.87E-04
125	245966.4	4070107	0.00571	0.006999	0.002258	5.47E-03	9.97E-03	3.67E-03	9.37E-04	2.11E-03	7.24E-04	4.76E-04	1.14E-03	3.68E-04
126	245950.7	4070116	0.005605	0.00687	0.002216	5.37E-03	9.78E-03	3.60E-03	9.20E-04	2.07E-03	7.11E-04	4.68E-04	1.12E-03	3.61E-04
127	245966.7	4070120	0.006077	0.007449	0.002403	5.82E-03	1.06E-02	3.91E-03	9.98E-04	2.24E-03	7.71E-04	5.07E-04	1.21E-03	3.92E-04
128	245930.7	4070098	0.00486	0.005957	0.001921	4.65E-03	8.48E-03	3.12E-03	7.98E-04	1.79E-03	6.16E-04	4.06E-04	9.71E-04	3.13E-04
129	245996	4070003	0.003582	0.004391	0.001416	3.43E-03	6.25E-03	2.30E-03	5.88E-04	1.32E-03	4.54E-04	2.99E-04	7.15E-04	2.31E-04
130	245995.7	4069989	0.003362	0.004121	0.001329	3.22E-03	5.87E-03	2.16E-03	5.52E-04	1.24E-03	4.26E-04	2.81E-04	6.71E-04	2.17E-04
131	245980.9	4070004	0.003524	0.004319	0.001393	3.37E-03	6.15E-03	2.27E-03	5.78E-04	1.30E-03	4.47E-04	2.94E-04	7.04E-04	2.27E-04
132	245979.8	4069988	0.003263	0.004	0.00129	3.12E-03	5.70E-03	2.10E-03	5.36E-04	1.21E-03	4.14E-04	2.72E-04	6.52E-04	2.10E-04
133	245965.5	4070001	0.003395	0.004161	0.001342	3.25E-03	5.93E-03	2.18E-03	5.57E-04	1.25E-03	4.30E-04	2.83E-04	6.78E-04	2.19E-04
134	245965.8	4069986	0.003174	0.00389	0.001255	3.04E-03	5.54E-03	2.04E-03	5.21E-04	1.17E-03	4.02E-04	2.65E-04	6.34E-04	2.05E-04
135	245952.5	4070001	0.003329	0.00408	0.001316	3.19E-03	5.81E-03	2.14E-03	5.46E-04	1.23E-03	4.22E-04	2.78E-04	6.65E-04	2.14E-04
136	245953.9	4069986	0.003118	0.003822	0.001233	2.99E-03	5.44E-03	2.00E-03	5.12E-04	1.15E-03	3.95E-04	2.60E-04	6.23E-04	2.01E-04
137	245959.2	4069975	0.00299	0.003665	0.001182	2.86E-03	5.22E-03	1.92E-03	4.91E-04	1.10E-03	3.79E-04	2.49E-04	5.97E-04	1.93E-04
138	245974.5	4069971	0.003003	0.003681	0.001187	2.88E-03	5.24E-03	1.93E-03	4.93E-04	1.11E-03	3.81E-04	2.51E-04	6.00E-04	1.93E-04
139	245982.1	4069972	0.003059	0.00375	0.00121	2.93E-03	5.34E-03	1.97E-03	5.02E-04	1.13E-03	3.88E-04	2.55E-04	6.11E-04	1.97E-04
140	245996.3	4069858	0.001925	0.002359	0.000761	1.84E-03	3.36E-03	1.24E-03	3.16E-04	7.11E-04	2.44E-04	1.61E-04	3.84E-04	1.24E-04
141	245994.6	4069865	0.00198	0.002427	0.000783	1.90E-03	3.46E-03	1.27E-03	3.25E-04	7.31E-04	2.51E-04	1.65E-04	3.95E-04	1.28E-04
142	245986.1	4069876	0.002055	0.002519	0.000812	1.97E-03	3.59E-03	1.32E-03	3.37E-04	7.59E-04	2.61E-04	1.71E-04	4.10E-04	1.32E-04
143	245980.3	4069863	0.001959	0.002402	0.000775	1.88E-03	3.42E-03	1.26E-03	3.22E-04	7.24E-04	2.48E-04	1.63E-04	3.91E-04	1.26E-04
144	245963.5	4069874	0.002017	0.002472	0.000797	1.93E-03	3.52E-03	1.30E-03	3.31E-04	7.45E-04	2.56E-04	1.68E-04	4.03E-04	1.30E-04
145	245959.7	4069860	0.001915	0.002348	0.000757	1.83E-03	3.34E-03	1.23E-03	3.14E-04	7.07E-04	2.43E-04	1.60E-04	3.83E-04	1.23E-04
146	245944.7	4069875	0.001992	0.002442	0.000788	1.91E-03	3.48E-03	1.28E-03	3.27E-04	7.36E-04	2.53E-04	1.66E-04	3.98E-04	1.28E-04
147	245942.3	4069862	0.001905	0.002335	0.000753	1.82E-03	3.33E-03	1.22E-03	3.13E-04	7.04E-04	2.42E-04	1.59E-04	3.80E-04	1.23E-04
148	245929.6	4069872	0.001949	0.002388	0.00077	1.87E-03	3.40E-03	1.25E-03	3.20E-04	7.20E-04	2.47E-04	1.63E-04	3.89E-04	1.26E-04
149	245926.1	4069860	0.001867	0.002288	0.000738	1.79E-03	3.26E-03	1.20E-03	3.06E-04	6.89E-04	2.37E-04	1.56E-04	3.73E-04	1.20E-04
150	246145.7	4069854	0.002166	0.002655	0.000856	2.07E-03	3.78E-03	1.39E-03	3.56E-04	8.00E-04	2.75E-04	1.81E-04	4.33E-04	1.40E-04
151	246145.5	4069844	0.002099	0.002572	0.00083	2.01E-03	3.66E-03	1.35E-03	3.44E-04	7.75E-04	2.66E-04	1.75E-04	4.19E-04	1.35E-04
152	246139.6	4069815	0.001887	0.002313	0.000746	1.81E-03	3.29E-03	1.21E-03	3.10E-04	6.97E-04	2.39E-04	1.57E-04	3.77E-04	1.22E-04
153	246139.9	4069802	0.001803	0.002211	0.000713	1.73E-03	3.15E-03	1.16E-03	2.96E-04	6.66E-04	2.29E-04	1.50E-04	3.60E-04	1.16E-04
154	246140.5	4069791	0.001736	0.002128	0.000686	1.66E-03	3.03E-03	1.12E-03	2.85E-04	6.41E-04	2.20E-04	1.45E-04	3.47E-04	1.12E-04
155	246153.9	4069793	0.001773	0.002173	0.000701	1.70E-03	3.09E-03	1.14E-03	2.91E-04	6.55E-04	2.25E-04	1.48E-04	3.54E-04	1.14E-04
156	246153.6	4069805	0.001852	0.00227	0.000732	1.77E-03	3.23E-03	1.19E-03	3.04E-04	6.84E-04	2.35E-04	1.55E-04	3.70E-04	1.19E-04
157	246153.9	4069813	0.001906	0.002337	0.000754	1.83E-03	3.33E-03	1.23E-03	3.13E-04	7.04E-04	2.42E-04	1.59E-04	3.81E-04	1.23E-04
158	246168.7	4069805	0.001878	0.002302	0.000742	1.80E-03	3.28E-03	1.21E-03	3.08E-04	6.94E-04	2.38E-04	1.57E-04	3.75E-04	1.21E-04
159	246184.3	4069805	0.001912	0.002343	0.000756	1.83E-03	3.34E-03	1.23E-03	3.14E-04	7.06E-04	2.42E-04	1.60E-04	3.82E-04	1.23E-04
160	246193	4069804	0.00192	0.002354	0.000759	1.84E-03	3.35E-03	1.23E-03	3.15E-04	7.09E-04	2.44E-04	1.60E-04	3.84E-04	1.24E-04
161	246382.7	4069976	0.005881	0.007209	0.002325	5.63E-03	1.03E-02	3.78E-03	9.65E-04	2.17E-03	7.46E-04	4.91E-04	1.17E-03	3.79E-04
162	246340.7	4069978	0.005685	0.006968	0.002248	5.44E-03	9.92E-03	3.66E-03	9.33E-04	2.10E-03	7.21E-04	4.74E-04	1.14E-03	3.66E-04
163	246304.8	4069980	0.005521	0.006768	0.002183	5.29E-03	9.64E-03	3.55E-03	9.06E-04	2.04E-03	7.00E-04	4.61E-04	1.10E-03	3.56E-04
164	246268.9	4069979	0.005204	0.006378	0.002057	4.98E-03	9.08E-03	3.35E-03	8.54E-04	1.92E-03	6.60E-04	4.34E-04	1.04E-03	3.35E-04
165	246230.6	4069979	0.004842	0.005935	0.001914	4.64E-03	8.45E-03	3.11E-03	7.95E-04	1.79E-03	6.14E-04	4.04E-04	9.67E-04	3.12E-04
166	246180	4069956	0.003792	0.004647	0.001499	3.63E-03	6.62E-03	2.44E-03	6.22E-04	1.40E-03	4.81E-04	3.16E-04	7.57E-04	2.44E-04
167	246217.8	4069953	0.004015	0.004921	0.001587	3.84E-03	7.01E-03	2.58E-03	6.59E-04	1.48E-03	5.09E-04	3.35E-04	8.02E-04	2.59E-04
168	246261.8	4069954	0.004387	0.005378	0.001735	4.20E-03	7.66E-03	2.82E-03	7.20E-04	1.62E-03	5.56E-04	3.66E-04	8.76E-04	2.83E-04
169	246296.7	4069951	0.00454	0.005565	0.001795	4.35E-03	7.93E-03	2.92E-03	7.45E-04	1.68E-03	5.76E-04	3.79E-04	9.07E-04	2.93E-04
170	246341.1	4069947	0.00472	0.005785	0.001866	4.52E-03	8.24E-03	3.03E-03	7.75E-04	1.74E-03	5.99E-04	3.94E-04	9.43E-04	3.04E-04
171	246382.3	4069942	0.004814	0.0059	0.001903	4.61E-03	8.40E-03	3.10E-03	7.90E-04	1.78E-03	6.10E-04	4.02E-04	9.61E-04	3.10E-04
172	246395.5	4069920	0.004326	0.005302	0.00171	4.14E-03	7.55E-03	2.78E-03	7.10E-04	1.60E-03	5.49E-04	3.61E-04	8.64E-04	2.79E-04
173	246362.9	4069922	0.004213	0.005164	0.001666	4.03E-03	7.35E-03	2.71E-03	6.92E-04	1.56E-03	5.34E-04	3.52E-04	8.42E-04	2.71E-04
174	246329.8	4069922	0.00405	0.004964	0.001601	3.88E-03	7.07E-03	2.60E-03	6.65E-04	1.50E-03	5.14E-04	3.38E-04	8.09E-04	2.61E-04
175	246290.1	4069918	0.00373	0.004572	0.001475	3.57E-03	6.51E-03	2.40E-03	6.12E-04	1.38E-03	4.73E-04	3.11E-04	7.45E-04	2.40E-04
176	246245.2	4069922	0.003524	0.004319	0.001393	3.37E-03	6.15E-03	2.27E-03	5.78E-04	1.30E-03	4.47E-04	2.94E-04	7.04E-04	2.27E-04
177	246206	4069925	0.003334	0.004086	0.001318	3.19E-03	5.82E-03	2.14E-03	5.47E-04	1.23E-03	4.23E-04	2.78E-04	6.66E-04	2.15E-04
178	246208.4	4069893	0.002836	0.003477	0.001121	2.72E-03	4.95E-03	1.82E-03	4.66E-04	1.05E-03	3.60E-04	2.37E-04	5.66E-04	1.83E-04
179	246268.9	4069891	0.003115	0.003818	0.001231	2.98E-03	5.44E-03	2.00E-03	5.11E-04	1.15E-03	3.95E-04	2.60E-04	6.22E-04	2.01E-04
180	246316.1	4069890	0.003343	0.004098	0.001322	3.20E-03	5.84E-03	2.15E-03	5.49E-04	1.23E-03	4.24E-04	2.79E-04	6.68E-04	2.15E-04
181	246375.2	4069886	0.003542	0.004342	0.0014	3.39E-03	6.18E-03	2.28E-03	5.81E-04	1.31E-03	4.49E-04	2.96E-04	7.07E-04	2.28E-04
182	246120	4070100	0.010177	0.012474	0.004024	9.75E-03	1.78E-02	6.54E-03	1.67E-03	3.76E-03	1.29E-03	8.49E-04	2.03E-03	6.56E-04
183	246088.8	4070100	0.008588	0.010527	0.003395	8.22E-03	1.50E-02	5.52E-03	1.41E-03	3.17E-03	1.09E-03	7.17E-04	1.72E-03	5.53E-04
184	246100.2	4070069	0.006732	0.008251	0.002661	6.45E-03	1.18E-02	4.33E-03	1.11E-03	2.49E-03	8.54E-04	5.62E-04	1.34E-03	4.34E-04
185	246127.1	4070070	0.007462	0.009146	0.00295	7.15E-03	1.30E-02	4.80E-03	1.22E-03	2.76E-03	9.46E-04	6.23E-04	1.49E-03	4.81E-04
186	246272.2	4070072	0.010824	0.013267	0.004279	1.04E-02	1.89E-02	6.96E-03	1.78E-03	4.00E-03	1.37E-03	9.03E-04	2.16E-03	6.97E-04
187	246304.8	4070070	0.010951	0.013423	0.00433	1.05E-02	1.91E-02	7.04E-03	1.80E-03	4.04E-03	1.39E-03	9.14E-04	2.19E-03	7.06E-04
188	246872	4070188	0.007833	0.009601	0.003097	7.50E-03	1.37E-02	5.04E-03	1.29E-03	2.89E-03	9.93E-04	6.54E-04	1.56E-03	5.05E-04
189	246519.3	4070400	0.006149	0.007537	0.002431	5.89E-03	1.07E-02	3.95E-03	1.01E-03	2.27E-03	7.80E-04	5.13E-04	1.23E-03	3.96E-04

190	246876.9	4070339	0.00255	0.003125	0.001008	2.44E-03	4.45E-03	1.64E-03	4.19E-04	9.42E-04	3.23E-04	2.13E-04	5.09E-04	1.64E-04
191	246865.6	4070391	0.001286	0.001576	0.000508	1.23E-03	2.24E-03	8.27E-04	2.11E-04	4.75E-04	1.63E-04	1.07E-04	2.57E-04	8.28E-05
192	246860.6	4070426	0.000946	0.00116	0.000374	9.06E-04	1.65E-03	6.08E-04	1.55E-04	3.49E-04	1.20E-04	7.90E-05	1.89E-04	6.10E-05
193	246865.6	4070450	0.000781	0.000958	0.000309	7.48E-04	1.36E-03	5.02E-04	1.28E-04	2.89E-04	9.91E-05	6.52E-05	1.56E-04	5.03E-05
194	246930.7	4070337	0.001544	0.001892	0.00061	1.48E-03	2.69E-03	9.93E-04	2.53E-04	5.70E-04	1.96E-04	1.29E-04	3.08E-04	9.95E-05
195	246997.1	4070332	0.001093	0.001339	0.000432	1.05E-03	1.91E-03	7.02E-04	1.79E-04	4.04E-04	1.39E-04	9.12E-05	2.18E-04	7.04E-05
196	246891.9	4070381	0.001239	0.001518	0.00049	1.19E-03	2.16E-03	7.96E-04	2.03E-04	4.57E-04	1.57E-04	1.03E-04	2.47E-04	7.98E-05
197	246924.5	4070379	0.001068	0.001309	0.000422	1.02E-03	1.86E-03	6.87E-04	1.75E-04	3.95E-04	1.35E-04	8.91E-05	2.13E-04	6.88E-05
198	246974.6	4070376	0.000877	0.001075	0.000347	8.39E-04	1.53E-03	5.64E-04	1.44E-04	3.24E-04	1.11E-04	7.31E-05	1.75E-04	5.65E-05
199	246879.4	4070420	0.000913	0.00112	0.000361	8.75E-04	1.59E-03	5.87E-04	1.50E-04	3.37E-04	1.16E-04	7.62E-05	1.82E-04	5.89E-05
200	246927	4070413	0.000806	0.000988	0.000319	7.72E-04	1.41E-03	5.18E-04	1.32E-04	2.98E-04	1.02E-04	6.72E-05	1.61E-04	5.19E-05
201	246962.1	4070413	0.000716	0.000877	0.000283	6.86E-04	1.25E-03	4.60E-04	1.18E-04	2.64E-04	9.08E-05	5.97E-05	1.43E-04	4.61E-05

Worker Impact

Cancer Risk	0.41693	In a million
Chronic Hi	0.000955	
Acute HI	0.00068	

Resident Impact

Cancer Risk	6.1537	In a million
Chronic Hi	0.0012373	
Acute HI	0.0007478	

AERMOD Modeling Sources

Volume Sources	3252	Onsite / Offsite Travel
Points	30	Onsite idling Pionts
Total Sources	3282	

Truck Emissions Est.

						g/mile	
Trucks	Daily	AM Peak	PM Peak	Annual	% Contribution	Avg PM10_5-15	Avg PM10_5-55
2-4 Axle Trucks	147	7	10	53655	43%	0.0681	0.0382
5+ Axle Trucks	197	10	9	71905	57%	0.0596	0.0272
Totals	344	17	19	125560	100%		

Location	Driveways	HUGHES1	HUGHES2	NIELSEN	HUGHES3	MARKS1	NIELSEN2	MARKS2
DW2	48%					100%		
DW5	11%						100%	100%
DW6	25%	100%		69%	31%			
DW7	16%		100%					
Total	100%	100%	100%	100%		100%	100%	100%

Truck Idling Emissions Est.

Annual Truck Trips		
Location	2-4 Axle Trucks	5+ Axle Trucks
DW2	25754	34514
DW5	5902	7910
DW6	13414	17976
DW7	8585	11505
Total	53655	71905

Vehicle Category	PM10_IDLEX g/veh/day
HHDT	0.037
MHDT	0.015
Average	0.026
LHDT1	0.028
LHDT2	0.028
Average	0.028

Location	2-4 Axle Trucks	5+ Axle Trucks	lbs/yr	# Pts	lbs/Yr/Pt		
DW2	1.58	2.01	3.59	6	0.60	1-4	8-9
DW5	0.36	0.46	0.82	6	0.14	10-12	5-7
DW6	0.82	1.05	1.87	9	0.21	13-21	
DW7	0.53	0.67	1.20	9	0.13	22-30	
Total	3.29	4.18	7.47	30	0.25		

Truck Travel Emissions Est.

Emissions Estimation				Onsite Travel Emissions (lbs/Yr)			Offsite Travel Emissions (lbs/Yr)			
Description	Model Name	Dist (m)	Dist (mi)	2-4 Axle Trucks	5+ Axle Trucks	Total	2-4 Axle Trucks	5+ Axle Trucks	Total	
Truck Driveway 6	DW6	218.6	0.14	0.27	0.32	0.59				0.59
Truck North Hughes Ave	HUGHES1	426.9	0.27				0.30	0.29	0.59	0.59
Truck Driveway 7	DW7	218.1	0.14	0.17	0.20	0.38				0.38
Truck Hughes ave South intersection	HUGHES2	36.3	0.02				0.02	0.02	0.03	0.03
Truck Nielsen Ave East	NIELSEN	410.4	0.26				0.20	0.19	0.39	0.39
Truck Hughes ave south 2	HUGHES3	474.2	0.29				0.10	0.10	0.20	0.20
Truck Driveway 5	DW5	220.8	0.14	0.12	0.14	0.26				0.26
Truck Driveway 2	DW2	197.1	0.12	0.47	0.56	1.03				1.03
Truck Marks Ave North	MARKS1	499.2	0.31				0.67	0.64	1.31	1.31
Truck Nielsen ave West	NIELSEN2	369.8	0.23				0.11	0.11	0.22	0.22
Truck Marks South	MARKS2	401.1	0.25				0.12	0.12	0.24	0.24

Passenger Car Emissions Est.

						g/mile			
Cars	Daily	AM Peak	PM Peak	Max Hourly	Annual	Avg PM10 5-55	Avg ROG 5-55	Sum Of VMT	% of Travel
Diesel	3	0.2	0.3	0.3	1129	0.15		25796.31	0.19%
Electricity	48	3	4	4	17415			397932.21	3.00%
Gasoline	1504	88	124	124	549114		0.82	12547048.28	94.68%
Plug-in Hybrid	34	2	3	3	12327		0.00	281660.30	2.13%
Totals	1589	93	131		579985			13252437.11	100.00%

Location	% Traffic Contribution
DW6_CAR	15%
DW7CAR	5%
DW5CAR	31%
DW1CAR	29%
DW4CAR	10%
DW3CAR	10%
Total	100%

Emissions Estimation (lbs/yr)				PM10 5-55	ROG 5-55		
Description	Model Name	Dist (m)	Dist (mi)	Diesel	Gasoline	Plug-in Hybrid	Total ROG
Passenger Veh	DW6_CAR	516.3	0.32	0.02	2.59	0.01	2.61
Passenger Veh	DW7CAR	543.5	0.34	0.01	0.30	0.00	0.30
Passenger Veh	DW5CAR	981.9	0.61	0.07	21.05	0.25	21.30
Passenger Veh	DW1CAR	528.5	0.33	0.03	9.92	0.11	10.03
Passenger Veh	DW4CAR	672.2	0.42	0.02	1.50	0.01	1.51
Passenger Veh	DW3CAR	618.8	0.38	0.01	1.38	0.01	1.39

CARB			TOG Running Exhaust (lbs /Yr)					
CAS#	**Chemical Name**	**Fraction**	DW6_CAR	DW7CAR	DW5CAR	DW1CAR	DW4CAR	DW3CAR
75070	Acetaldehyde	2.80E-03	7.30E-03	8.50E-04	5.96E-02	2.81E-02	4.22E-03	3.88E-03
107028	Acrolein	1.30E-03	3.39E-03	3.95E-04	2.77E-02	1.30E-02	1.96E-03	1.80E-03
71432	Benzene	2.47E-02	6.44E-02	7.50E-03	5.26E-01	2.48E-01	3.72E-02	3.42E-02
106990	1,3-Butadiene	5.50E-03	1.43E-02	1.67E-03	1.17E-01	5.51E-02	8.28E-03	7.62E-03
100414	Ethylbenzene	1.05E-02	2.74E-02	3.19E-03	2.24E-01	1.05E-01	1.58E-02	1.46E-02
50000	Formaldehyde	1.58E-02	4.12E-02	4.80E-03	3.37E-01	1.58E-01	2.38E-02	2.19E-02
110543	Hexane	1.60E-02	4.17E-02	4.86E-03	3.41E-01	1.60E-01	2.41E-02	2.22E-02
67561	Methanol	1.20E-03	3.13E-03	3.64E-04	2.56E-02	1.20E-02	1.81E-03	1.66E-03
78933	Methyl Ethyl Ketone	2.00E-04	5.21E-04	6.07E-05	4.26E-03	2.01E-03	3.01E-04	2.77E-04
91203	Naphthalene	5.00E-04	1.30E-03	1.52E-04	1.06E-02	5.01E-03	7.53E-04	6.93E-04
115071	Propylene	3.06E-02	7.98E-02	9.29E-03	6.52E-01	3.07E-01	4.61E-02	4.24E-02
100425	Styrene	1.20E-03	3.13E-03	3.64E-04	2.56E-02	1.20E-02	1.81E-03	1.66E-03
108883	Toluene	5.76E-02	1.50E-01	1.75E-02	1.23E+00	5.77E-01	8.67E-02	7.98E-02
1330207	Xylenes	4.80E-02	1.25E-01	1.46E-02	1.02E+00	4.81E-01	7.23E-02	6.65E-02

Emissions Estimation (lbs/Hr)				PM10 5-55	ROG 5-55		
Description	Model Name	Dist (m)	Dist (mi)	Diesel	Gasoline	Plug-in Hybrid	Total ROG
Passenger Veh	DW6_CAR	516.3	0.32	3.93E-06	5.85E-04	3.32E-06	5.89E-04
Passenger Veh	DW7CAR	543.5	0.34	1.38E-06	6.85E-05	1.30E-07	6.86E-05
Passenger Veh	DW5CAR	981.9	0.61	1.54E-05	4.76E-03	5.58E-05	4.81E-03
Passenger Veh	DW1CAR	528.5	0.33	7.77E-06	2.24E-03	2.46E-05	2.26E-03
Passenger Veh	DW4CAR	672.2	0.42	3.41E-06	3.39E-04	1.28E-06	3.40E-04
Passenger Veh	DW3CAR	618.8	0.38	3.14E-06	3.12E-04	1.18E-06	3.13E-04

CARB			TOG Running Exhaust (lbs /Hr)					
CAS#	**Chemical Name**	**Fraction**	DW6_CAR	DW7CAR	DW5CAR	DW1CAR	DW4CAR	DW3CAR
75070	Acetaldehyde	2.80E-03	1.65E-06	1.92E-07	1.35E-05	6.34E-06	9.52E-07	8.76E-07
107028	Acrolein	1.30E-03	7.65E-07	8.92E-08	6.25E-06	2.94E-06	4.42E-07	4.07E-07
71432	Benzene	2.47E-02	1.45E-05	1.69E-06	1.19E-04	5.59E-05	8.40E-06	7.73E-06
106990	1,3-Butadiene	5.50E-03	3.24E-06	3.77E-07	2.65E-05	1.25E-05	1.87E-06	1.72E-06
100414	Ethylbenzene	1.05E-02	6.18E-06	7.20E-07	5.05E-05	2.38E-05	3.57E-06	3.29E-06
50000	Formaldehyde	1.58E-02	9.30E-06	1.08E-06	7.60E-05	3.58E-05	5.37E-06	4.95E-06
110543	Hexane	1.60E-02	9.42E-06	1.10E-06	7.70E-05	3.62E-05	5.44E-06	5.01E-06
67561	Methanol	1.20E-03	7.06E-07	8.23E-08	5.77E-06	2.72E-06	4.08E-07	3.76E-07
78933	Methyl Ethyl Ketone	2.00E-04	1.18E-07	1.37E-08	9.62E-07	4.53E-07	6.80E-08	6.26E-08
91203	Naphthalene	5.00E-04	2.94E-07	3.43E-08	2.41E-06	1.13E-06	1.70E-07	1.57E-07
115071	Propylene	3.06E-02	1.80E-05	2.10E-06	1.47E-04	6.93E-05	1.04E-05	9.58E-06
100425	Styrene	1.20E-03	7.06E-07	8.23E-08	5.77E-06	2.72E-06	4.08E-07	3.76E-07
108883	Toluene	5.76E-02	3.39E-05	3.95E-06	2.77E-04	1.30E-04	1.96E-05	1.80E-05

1330207	Xylenes	4.80E-02	2.83E-05	3.29E-06	2.31E-04	1.09E-04	1.63E-05	1.50E-05

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: Fresno
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, g/mile for RUNEX, PMBW and PMTW, mph for Speed

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Total VMT	CVMT	EVMT	NOx_RUNEX	PM2.5_RUNEX	PM10_RUNEX	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	SOx_RUNEX	NH3_RUNEX	PM10_PMBW	PM2.5_PMBW	Fuel Consumption	Energy Consumption
Fresno	2022	HHDT	Aggregate	5	Gasoline	3.205037631	3.205037631	0	8.591839237	0.025672367	0.027921041	5693.711382	1.684502263	0.245566408	10.58983867	15.45266773	442.2181919	0.056288134	0.032079248	0.164294525	0.057503084	600.3947512	0
Fresno	2022	HHDT	Aggregate	5	Diesel	852.5886091	852.5886091	0	20.72265906	0.128514756	0.134325623	3531.391987	0.029414085	0.556372246	0.633277184	0.720937868	1.409413264	0.03344017	0.130439164	0.158666437	0.055533253	315.4578473	0
Fresno	2022	HHDT	Aggregate	5	Natural Gas	69.43054795	69.43054795	0	2.745882371	0.007388685	0.00803587	4088.835078	8.537500354	0.833535779	0.121984034	8.713145315	23.66402645	0	1.06	0.14571373	0.050999806	472.6069722	0
Fresno	2022	HHDT	Aggregate	10	Gasoline	4.621040869	4.621040869	0	8.284671523	0.017591994	0.019132898	4553.626456	1.14812649	0.230763473	7.243076101	10.56907964	319.5462751	0.045017233	0.032079248	0.164294525	0.057503084	480.1742201	0
Fresno	2022	HHDT	Aggregate	10	Diesel	13418.61648	13418.61648	0	9.841586121	0.024137187	0.025228563	3151.123719	0.010194075	0.496460825	0.219475649	0.249856319	1.022865716	0.029839257	0.191120681	0.146840188	0.051394066	281.4886336	0
Fresno	2022	HHDT	Aggregate	10	Natural Gas	678.677293	678.677293	0	7.866227148	0.00850809	0.009253324	3947.62232	13.42047764	0.804748634	0.826430385	14.41968667	55.39274546	0	0.730661496	0.189049195	0.066167218	456.2849312	0
Fresno	2022	HHDT	Aggregate	15	Gasoline	2.256278694	2.256278694	0	8.144393705	0.012645352	0.013752974	3690.257456	0.817342596	0.221554737	5.171344645	7.546013967	242.1700921	0.036481952	0.032079248	0.162113075	0.056739576	389.1330379	0
Fresno	2022	HHDT	Aggregate	15	Diesel	30609.15619	30609.15619	0	6.34229482	0.013413296	0.014019785	2535.724709	0.005619243	0.39950446	0.120980751	0.137727376	0.610722344	0.024011797	0.198067503	0.143012836	0.050054492	226.5152837	0
Fresno	2022	HHDT	Aggregate	15	Natural Gas	1237.093274	1237.093274	0	5.762291031	0.007601953	0.008267818	2894.194931	8.306191006	0.59000057	0.478104551	8.886579637	35.7239039	0	0.692953999	0.193547283	0.067741549	334.5247918	0
Fresno	2022	HHDT	Aggregate	20	Gasoline	2.390320188	2.390320188	0	8.068046029	0.009531424	0.010366293	3053.513968	0.613545227	0.214959685	3.892036007	5.679249805	193.6390487	0.030187094	0.032079248	0.158594607	0.055508112	321.9892326	0
Fresno	2022	HHDT	Aggregate	20	Diesel	54878.46681	54878.46681	0	4.265183734	0.009037133	0.009445752	2152.399467	0.003281374	0.339111413	0.070647076	0.080426318	0.386799954	0.020381936	0.204174771	0.093287774	0.032650721	192.2729918	0
Fresno	2022	HHDT	Aggregate	20	Natural Gas	1295.912353	1295.912353	0	4.33342846	0.00661074	0.007189783	2314.853125	5.487983742	0.471897953	0.251139536	5.797682241	25.64363855	0	0.691306514	0.193009753	0.067553413	267.5617152	0
Fresno	2022	HHDT	Aggregate	25	Gasoline	2.924001513	2.924001513	0	8.055858476	0.007531342	0.008191022	2604.333515	0.483879297	0.210807738	3.076436972	4.489129607	162.6536958	0.025746488	0.032079248	0.155076139	0.054276649	274.6237151	0
Fresno	2022	HHDT	Aggregate	25	Diesel	36515.70616	36515.70616	0	3.989041913	0.010259994	0.010723905	1968.322085	0.002986226	0.310109946	0.064292623	0.073192257	0.333504027	0.018638833	0.199193121	0.136115013	0.047640255	175.8294321	0
Fresno	2022	HHDT	Aggregate	25	Natural Gas	1195.167372	1195.167372	0	3.286428767	0.00565216	0.00614724	1951.09225	4.046624523	0.397742919	0.178381677	4.267238046	19.2480873	0	0.731150234	0.186037368	0.065113079	225.5165061	0
Fresno	2022	HHDT	Aggregate	30	Gasoline	3.760439397	3.760439397	0	8.11310823	0.006236907	0.006783205	2308.117717	0.399905275	0.209079845	2.547402094	3.717163155	143.0770589	0.022818093	0.032079248	0.152894689	0.053513141	243.3881293	0
Fresno	2022	HHDT	Aggregate	30	Diesel	39819.45636	39819.45636	0	3.340474242	0.010761215	0.011247789	1820.373017	0.002319959	0.28680051	0.049948089	0.056862097	0.259079629	0.017237844	0.19775336	0.134634716	0.047122151	162.6132005	0
Fresno	2022	HHDT	Aggregate	30	Natural Gas	1378.357034	1378.357034	0	2.694679222	0.005067525	0.005511396	1715.407291	3.241787851	0.349696998	0.14395279	3.419719194	15.40051039	0	0.754130468	0.18178043	0.063623151	198.2749195	0
Fresno	2022	HHDT	Aggregate	35	Gasoline	4.580111942	4.580111942	0	8.226896203	0.005412058	0.005886107	2137.521516	0.346404609	0.209331811	2.210148134	3.225042969	131.7389262	0.021131576	0.032079248	0.129375358	0.045281375	225.3989731	0
Fresno	2022	HHDT	Aggregate	35	Diesel	45292.20406	45292.20406	0	2.765101208	0.011474191	0.011993003	1697.967082	0.001795159	0.267515405	0.038649288	0.043999272	0.19814593	0.016078733	0.197993503	0.115222948	0.040328032	151.6787268	0
Fresno	2022	HHDT	Aggregate	35	Natural Gas	1519.661208	1519.661208	0	2.329250639	0.004788831	0.005208291	1546.15876	2.725802805	0.315194578	0.121344415	2.875759888	12.81821516	0	0.763670222	0.172455311	0.060359359	178.7123707	0
Fresno	2022	HHDT	Aggregate	40	Gasoline	4.694236954	4.694236954	0	8.393744442	0.004920195	0.005351161	2067.628967	0.314216446	0.211386553	2.007430624	2.929238054	126.8979343	0.020440617	0.032079248	0.112332365	0.039316328	218.0288912	0
Fresno	2022	HHDT	Aggregate	40	Diesel	54996.30334	54996.30334	0	2.253057435	0.012811165	0.013390429	1599.242318	0.001370854	0.251961278	0.029514103	0.033599559	0.147943467	0.015143868	0.199976243	0.100382933	0.035134026	142.8596827	0
Fresno	2022	HHDT	Aggregate	40	Natural Gas	1606.954482	1606.954482	0	2.080916439	0.004778744	0.00519732	1416.902311	2.360174632	0.288844805	0.104849385	2.489768271	10.93898183	0	0.767539987	0.165915038	0.058070263	163.7722966	0
Fresno	2022	HHDT	Aggregate	45	Gasoline	4.751768429	4.751768429	0	8.618004153	0.004685674	0.005096098	2075.345761	0.298189982	0.215286645	1.907050166	2.782763125	127.8926847	0.020516906	0.032079248	0.095289372	0.03335128	218.8426174	0
Fresno	2022	HHDT	Aggregate	45	Diesel	60301.78434	60301.78434	0	1.974193963	0.015307181	0.015999304	1540.197341	0.001133172	0.242658718	0.024396879	0.027773989	0.113145388	0.014584748	0.200380571	0.085863868	0.030052354	137.5852184	0
Fresno	2022	HHDT	Aggregate	45	Natural Gas	1637.803718	1637.803718	0	1.851414402	0.004884048	0.005311848	1313.026511	2.045173825	0.267669044	0.089430409	2.155847423	9.443088219	0	0.779468347	0.156987487	0.054945621	151.7658384	0
Fresno	2022	HHDT	Aggregate	50	Gasoline	5.189386878	5.189386878	0	8.850301488	0.004673974	0.005083373	2142.133156	0.297299713	0.219799257	1.903010008	2.776867737	135.4810428	0.021177167	0.032079248	0.083018417	0.029056446	225.8852647	0
Fresno	2022	HHDT	Aggregate	50	Diesel	71194.85061	71194.85061	0	1.714905913	0.018288839	0.019115779	1506.201351	0.000945634	0.237302636	0.020359251	0.023177457	0.085276819	0.014262826	0.202904125	0.074736465	0.026157763	134.54837	0
Fresno	2022	HHDT	Aggregate	50	Natural Gas	1631.07375	1631.07375	0	1.729885118	0.005317546	0.005783316	1230.960795	1.829457501	0.250939411	0.079732266	1.928155337	8.431902435	0	0.781343372	0.151870894	0.053154813	142.2802934	0
Fresno	2022	HHDT	Aggregate	55	Gasoline	8.654297159	8.654297159	0	9.11395658	0.004883043	0.005310755	2245.741996	0.310652454	0.225481521	1.989806284	2.903520658	150.8422931	0.022201446	0.032079248	0.083018417	0.029056446	236.8106875	0
Fresno	2022	HHDT	Aggregate	55	Diesel	114585.2245	114585.2245	0	1.644771147	0.022458781	0.023474267	1493.327809	0.000865563	0.235274404	0.018635326	0.0212149	0.069297105	0.014140921	0.205096598	0.072882543	0.02550889	133.3983816	0
Fresno	2022	HHDT	Aggregate	55	Natural Gas	1921.745356	1921.745356	0	1.365700353	0.00494488	0.005378009	1157.885857	1.471215605	0.236042607	0.059372171	1.545178152	7.361972701	0	0.842475234	0.133954756	0.046884165	133.833945	0
Fresno	2022	HHDT	Aggregate	60	Gasoline	18.58288343	18.58288343	0	9.440364842	0.00534267	0.005810641	2368.127025	0.339062102	0.233090974	2.172710458	3.170414001	176.39531	0.023411347	0.032079248	0.083018417	0.029056446	249.7160358	0
Fresno	2022	HHDT	Aggregate	60	Diesel	302529.7874	302529.7874	0	1.697673693	0.028147172	0.029419862	1515.911193	0.000851507	0.238832426	0.01833272	0.020870406	0.061997778	0.014354772	0.20870636	0.07106649	0.024873272	135.4157464	0
Fresno	2022	HHDT	Aggregate	60	Natural Gas	2829.091597	2829.091597	0	0.943895725	0.003582386	0.003896171	1150.594227	1.187528748	0.23455616	0.03897595	1.237035036	6.91058842	0	0.93103467	0.10796924	0.037789234	132.9911438	0
Fresno	2022	HHDT	Aggregate	65	Gasoline	17.75847063	17.75847063	0	9.766802528	0.006121726	0.006657936	2499.158829	0.389075289	0.241151139	2.493930273	3.6391372	218.0668775	0.024706729	0.032079248	0.083018417	0.029056446	263.5331759	0
Fresno	2022	HHDT	Aggregate	65	Diesel	507553.9082	507553.9082	0	1.996547039	0.03474584	0.036316893	1593.688899	0.000919177	0.251086335	0.019789635	0.022528993	0.064123905	0.015091281	0.210732581	0.070680933	0.024738327	142.3635981	0
Fresno	2022	HHDT	Aggregate	65	Natural Gas	3684.526963	3684.526963	0	0.925149392	0.003502198	0.00380896	1151.189461	1.174336942	0.234677502	0.03808074	1.22276664	6.914879526	0	0.935175937	0.106638005	0.037323302	133.0599437	0
Fresno	2022	HHDT	Aggregate	70	Gasoline	1.129727638	1.129727638	0	10.02725467	0.006667166	0.007251151	2564.71322	0.421886168	0.247709824	2.704277909	3.946075977	246.3851333	0.025354801	0.032079248	0.083018417	0.029056446	270.4458045	0
Fresno	2022	HHDT	Aggregate	70	Diesel	556102.2268	556102.2268	0	1.926830564	0.036030091	0.037659212	1585.97366	0.000875952	0.249870796	0.018859001	0.021469538	0.061231128	0.015018222	0.212904972	0.070079275	0.024527746	141.6743988	0
Fresno	2022	HHDT	Aggregate	70	Natural Gas	1505.313859	1505.313859	0	0.769695693	0.002888305	0.003141295	1149.111336	1.072492334	0.234253863	0.031056391	1.112481628	6.755692167	0	0.967810249	0.097302043	0.034055715	132.8197442	0
Fresno	2022	HHDT	Aggregate	75	Gasoline	0.377280518	0.377280518	0	10.13941071	0.006667166	0.007251151	2562.208648	0.418564299	0.250412489	2.68270712	3.914599932	244.8652871	0.025330041	0.032079248	0.083018417	0.029056446	270.1817005	0
Fresno	2022	HHDT	Aggregate	75	Diesel	97367.3921	97367.3921	0	1.909294124	0.035881076	0.037503459	1584.982801	0.00086971	0.249714686	0.018724614	0.021316548	0.061191992	0.015008839	0.21322059	0.069916555	0.024470794	141.5858858	0
Fresno	2022	HHDT	Aggregate	75	Natural Gas	255.0571013	255.0571013	0	0.367897251	0.001330874	0.001447446	1141.444196	0.813379433	0.232690866	0.013112678	0.831812208	6.224009537	0	1.051262512	0.07289963	0.025514871	131.9335398	0
Fresno	2022	HHDT	Aggregate	80	Diesel	6565.463618	6565.463618	0	1.744909998	0.030692679	0.032080466	1612.69483	0.000823925	0.254080727	0.017738888	0.020194374	0.059664351	0.015271256	0.213107619	0.069925359	0.024473875	144.0613903	0
Fresno	2022	HHDT	Aggregate	80	Natural Gas	87.62472055	87.62472055	0	0.325415203	0.001187977	0.001292034	1141.648867	0.789126294	0.23273259	0.011394209	0.805497015	6.104528528	0	1.0593018	0.070340272	0.024619095	131.9571966	0
Fresno	2022	HHDT	Aggregate	85	Diesel	643.4627222	643.4627222	0	1.736053652	0.031818547	0.03325724	1609.627025	0.000808334	0.253597393	0.017403217	0.019812238	0.058810085	0.015242205	0.214005505	0.069855789	0.024449526	143.7873445	0
Fresno	2022	HHDT	Aggregate	85	Natural Gas	6.940589239	6.940589239	0	0.339739385	0.001247814	0.001357111	1142.009613	0.798949345	0.23280613	0.012062406	0.816123546	6.103410906	0	1.056208734	0.071267862	0.024943752	131.9988933	0
Fresno	2022	HHDT	Aggregate	90	Diesel	0.537434188	0.537434188	0	1.855074178	0.036877696	0.038545142	1582.462245	0.000843641	0.249317571	0.018163359	0.020677602	0.06054083	0.014984971	0.214684312	0.069756572	0.0244148	141.3607255	0
Fresno	2022	LDA	Aggregate	5	Gasoline	275.5393984	275.5393984	0	0.092336661	0.009089105	0.00988513	721.9237138	0.020352495	0.00956606	0.079251016	0.115609968	1.865226655	0.007136951	0.032708965	0.00595458	0.002084103	76.12595359	0
Fresno	2022	LDA	Aggregate	5	Diesel	0.5584213	0.5584213	0	0.312974149	0.088117231	0.092101501	612.5172953	0.013983451	0.096502349	0.301055465	0.342731632	4.16248566	0.005803913	0.0031	0.006027715	0.0021097	54.71592735	0
Fresno	2022	LDA	Aggregate	5	Electricity	9898.23463	0	9898.235	0	0	0	0	0	0	0	0	0	0	0	0.00132448	0.000463568	0	630004.1988
Fresno	2022	LDA	Aggregate	5	Plug-in Hybrid	1997.565272	3.708837041	1993.856	4.71851E-05	1.83741E-05	1.99835E-05	1.594642941	1.61805E-05	8.79701E-06	5.04314E-05	7.35894E-05	0.004346685	1.57647E-05	7.00336E-05	0.001327083	0.000464479	0.168153106	471892.2658
Fresno	2022	LDA	Aggregate	10	Gasoline	1377.841218	1377.841218	0	0.082162809	0.005730425	0.00623229	577.6845928	0.012717738	0.008525404	0.04960797	0.072364917	1.604286657	0.005711	0.032708965	0.007364236	0.002577483	60.91611851	0
Fresno	2022	LDA	Aggregate	10	Diesel	2.792398795	2.792398795	0	0.302098228	0.063183062	0.066039919	510.2847233	0.010185049	0.080395566	0.219278119	0.24963356	3.093054929	0.004835207	0.0031	0.007454684	0.002609139	45.58353219	0
Fresno	2022	LDA	Aggregate	10	Electricity	15835.3428	0	15835.34	0	0	0	0	0	0	0	0	0	0	0	0.002343567	0.000820248	0	425185.0569
Fresno	2022	LDA	Aggregate	10	Plug-in Hybrid	7990.772569	18.54612652	7972.226	3.87656E-05	1.44518E-05	1.57176E-05	1.380394026	9.5655E-06	7.2273E-06	2.98137E-05	4.35041E-05	0.003117391	1.36466E-05	8.75455E-05	0.002348172	0.00082186	0.145560825	334504.7891
Fresno	2022	LDA	Aggregate	15	Gasoline	2286.744586	2286.744586	0	0.07089135	0.003811137	0.004144909	478.5988345	0.008568374	0.007363544	0.033475316	0.048830384	1.527451851	0.004731437	0.032708965	0.00876579	0.003068027	50.4676491	0
Fresno	2022	LDA	Aggregate	15	Diesel	4.634425755	4.634425755	0	0.277012047	0.047047251	0.049174519	419.7077328	0.005874897	0.066125124	0.126483072	0.143992568	1.620697634	0.003976944	0.0031	0.008873453	0.003105708	37.49232551	0
Fresno	2022	LDA	Aggregate	15	Electricity	35266.6637	0	35266.66	0	0	0	0	0	0	0	0	0	0	0	0.003362653	0.001176929	0	357684.5769
Fresno	2022	LDA	Aggregate	15	Plug-in Hybrid	19542.68263	30.78021898	19511.9	1.98401E-05	6.50976E-06	7.07996E-06	0.771712125	4.26146E-06	3.69892E-06	1.32821E-05	1.93812E-05	0.001644281	7.62916E-06	5.94096E-05	0.003369259	0.001179241	0.081376079	289717.994
Fresno	2022	LDA	Aggregate	20	Gasoline	593909.1812	593909.1812	0	0.06397179	0.002673567	0.00290771	394.5042894	0.005984169	0.006648434	0.023412746	0.034151275	1.348993543	0.003900077	0.032708965	0.010175446	0.003561406	41.5999844	0
Fresno	2022	LDA	Aggregate	20	Diesel	1203.644702	1203.644702	0	0.263388558	0.036428426	0.038075558	344.2966185	0.003305568	0.054244072	0.071166926	0.081018814	0.756962779	0.003262385	0.0031	0.010300422	0.003605148	30.75588055	0
Fresno	2022	LDA	Aggregate	20	Electricity	51791.46242	0	51791.46	0	0	0	0	0	0	0	0	0	0	0	0.004385059	0.001534771	0	334944.5347
Fresno	2022	LDA	Aggregate	20	Plug-in Hybrid	36378.73979	7994.182982	28384.56	0.002315954	0.000636006	0.000691715	92.19912737	0.00043488	0.000431777	0.001355431	0.001977841	0.180076772	0.000911482	0.008288881	0.004394089	0.001537931	9.722282781	212175.6651
Fresno	2022	LDA	Aggregate	25	Gasoline	81052.86531	81052.86531	0	0.058262555	0.00197816	0.002151399	337.6145142	0.004440558	0.006056094	0.017395784	0.025373876	1.240767148	0.003337663	0.032708965	0.011333956	0.003966885	35.60102868	0
Fresno	2022	LDA	Aggregate	25	Diesel	164.2656066	164.2656066	0	0.262687489	0.029374328	0.030702505	288.6037677	0.002395847	0.045469641	0.051581182	0.058721747	0.511810213	0.002734667	0.0031	0.011473161	0.004015606	25.78086025	0
Fresno	2022	LDA	Aggregate	25	Electricity	56566.82992	0	56566.83	0	0	0	0	0	0	0	0	0	0	0	0.004989208	0.001746223	0	331465.6743
Fresno	2022	LDA	Aggregate	25	Plug-in Hybrid	29506.2163	1090.99414	28415.22	0.000337314	7.90562E-05	8.59808E-05	13.86083028	5.77608E-05	6.28875E-05	0.000180028	0.000262697	0.025837394	0.000137028	0.001394692	0.004999086	0.00174968	1.461607234	251409.857
Fresno	2022	LDA	Aggregate	30	Gasoline	245686.616	245686.616	0	0.053858046	0.001543598	0.001678778	299.929371	0.003473881	0.005597326	0.013622829	0.019870067	1.145068647	0.002965107	0.032708965	0.012257524	0.004290133	31.62717742	0
Fresno	2022	LDA	Aggregate	30	Diesel	497.9202261	497.9202261	0	0.267349815	0.024753167	0.025872395	249.9838199	0.001941789	0.039385053	0.041805569	0.047592861	0.411171866	0.002368724	0.0031	0.012408072	0.004342825	22.3309556	0
Fresno	2022	LDA	Aggregate	30	Electricity	56711.42565	0	56711.43	0	0	0	0	0	0	0	0	0	0	0	0.00517842	0.001812447	0	331846.1361
Fresno	2022	LDA	Aggregate	30	Plug-in Hybrid	26009.17554	3307.010276	22702.17	0.00102895	0.000211866	0.000230423	43.48535015	0.000163765	0.000191833	0.000510421	0.000744805	0.07805096	0.000429897	0.004795992	0.005188875	0.001816106	4.58547584	224097.5294
Fresno	2022	LDA	Aggregate	35	Gasoline	492233.0388	492233.0388	0	0.050740593	0.001270244	0.001381484	278.2614298	0.002864092	0.005270904	0.01124014	0.016394306	1.060325341	0.002750898	0.032708965	0.01317299	0.004610546	29.3423201	0
Fresno	2022	LDA	Aggregate	35	Diesel	997.5829776	997.5829776	0	0.274174589	0.021745987	0.022729244	225.9803378	0.001652829	0.035603294	0.035584437	0.040510515	0.349604082	0.002141279	0.0031	0.013334782	0.004667174	20.18673405	0
Fresno	2022	LDA	Aggregate	35	Electricity	53299.82978	0	53299.83	0	0	0	0	0	0	0	0	0	0	0	0.005370951	0.001879833	0	333403.3612
Fresno	2022	LDA	Aggregate	35	Plug-in Hybrid	22918.39605	6625.59379	16292.8	0.002118324	0.000396053	0.000430744	91.49584563	0.000316286	0.000394932	0.000985797	0.001438473	0.159146442	0.00090453	0.010904607	0.005382172	0.00188376	9.6481226	180500.2118
Fresno	2022	LDA	Aggregate	40	Gasoline	1295346.528	1295346.528	0	0.048744311	0.001102309	0.001198842	268.4885624	0.002480975	0.005059816	0.009740823	0.014207176	0.970535348	0.002654283	0.032708965	0.012038784	0.004213574	28.31178343	0
Fresno	2022	LDA	Aggregate	40	Diesel	2625.211119	2625.211119	0	0.282301277	0.019890083	0.020789424	211.4670289	0.001471351	0.033316717	0.031677312	0.036062514	0.312325619	0.002003758	0.0031	0.012186646	0.004265326	18.89026592	0
Fresno	2022	LDA	Aggregate	40	Electricity	46413.31796	0	46413.32	0	0	0	0	0	0	0	0	0	0	0	0.004959333	0.001735766	0	337996.5411
Fresno	2022	LDA	Aggregate	40	Plug-in Hybrid	28433.82675	17435.72502	10998.1	0.004134779	0.00072864	0.000792463	180.7946783	0.000580728	0.000770872	0.001810011	0.002641163	0.302938651	0.001787339	0.023129921	0.004970392	0.001739637	19.06457293	102766.707
Fresno	2022	LDA	Aggregate	45	Gasoline	1040517.544	1040517.544	0	0.047460805	0.001008731	0.001097068	269.3005305	0.002270149	0.004921779	0.008914169	0.013001232	0.901164958	0.00266231	0.032708965	0.008854906	0.003099217	28.39740446	0
Fresno	2022	LDA	Aggregate	45	Diesel	2108.762533	2108.762533	0	0.291173296	0.018928932	0.019784815	204.2609048	0.001367543	0.032181389	0.029442401	0.033518216	0.29252126	0.001935476	0.0031	0.008963663	0.003137282	18.24654571	0
Fresno	2022	LDA	Aggregate	45	Electricity	34309.11663	0	34309.12	0	0	0	0	0	0	0	0	0	0	0	0.003940246	0.001379086	0	344877.5501
Fresno	2022	LDA	Aggregate	45	Plug-in Hybrid	20588.87047	14005.65592	6583.215	0.004250881	0.000739621	0.000804406	188.8883136	0.000568384	0.000792518	0.001771536	0.002585021	0.308322444	0.001867353	0.025659039	0.003949148	0.001382202	19.91803666	86661.68142
Fresno	2022	LDA	Aggregate	50	Gasoline	2236309.305	2236309.305	0	0.047052729	0.000973434	0.001058679	276.9136121	0.002188305	0.00487346	0.008591202	0.01252997	0.838206117	0.002737573	0.032708965	0.005662927	0.001982025	29.2001944	0
Fresno	2022	LDA	Aggregate	50	Diesel	4532.211207	4532.211207	0	0.300646893	0.018744567	0.019592114	204.7808674	0.001326852	0.032263309	0.028566343	0.032520882	0.287502983	0.001940403	0.0031	0.00573248	0.002006368	18.29299376	0
Fresno	2022	LDA	Aggregate	50	Electricity	19591.54912	0	19591.55	0	0	0	0	0	0	0	0	0	0	0	0.002924479	0.001023568	0	355019.4389
Fresno	2022	LDA	Aggregate	50	Plug-in Hybrid	33265.58891	30101.34605	3164.243	0.005290216	0.000949718	0.001032904	238.0178734	0.000675644	0.000986287	0.002105844	0.003072843	0.379089381	0.002353049	0.034131875	0.002931371	0.00102598	25.09868735	26455.79597
Fresno	2022	LDA	Aggregate	55	Gasoline	2172436.752	2172436.752	0	0.047309817	0.000990622	0.001077372	288.2928892	0.002225137	0.004892725	0.008731493	0.012734408	0.785364236	0.002850069	0.032708965	0.003645661	0.001275981	30.40012495	0
Fresno	2022	LDA	Aggregate	55	Diesel	4402.764042	4402.764042	0	0.310418572	0.019328657	0.020202614	214.2870524	0.001344926	0.033761012	0.028955465	0.032963872	0.297430006	0.002030479	0.0031	0.003690438	0.001291653	19.1421775	0
Fresno	2022	LDA	Aggregate	55	Electricity	7752.289503	0	7752.29	0	0	0	0	0	0	0	0	0	0	0	0.002157675	0.000755186	0	368986.6923
Fresno	2022	LDA	Aggregate	55	Plug-in Hybrid	30314.85921	29241.60371	1073.256	0.005296732	0.001030978	0.001121283	241.8378493	0.000651102	0.000987502	0.002029352	0.002961225	0.37760961	0.002390813	0.036384389	0.002162816	0.000756986	25.50149904	10735.13312
Fresno	2022	LDA	Aggregate	60	Gasoline	1234170.391	1234170.391	0	0.048345082	0.001063163	0.001156265	300.11413	0.00238563	0.004990648	0.009354145	0.013642376	0.739669681	0.002966934	0.032708965	0.002795007	0.000978252	31.64666003	0
Fresno	2022	LDA	Aggregate	60	Diesel	2501.228638	2501.228638	0	0.320964925	0.020850492	0.021793258	232.3128971	0.001438275	0.036600992	0.03096522	0.035251844	0.330288959	0.002201283	0.0031	0.002829336	0.000990267	20.75241907	0
Fresno	2022	LDA	Aggregate	60	Electricity	1985.099507	0	1985.1	0	0	0	0	0	0	0	0	0	0	0	0.001639833	0.000573942	0	386630.2541
Fresno	2022	LDA	Aggregate	60	Plug-in Hybrid	16819.80237	16612.27717	207.5252	0.005118334	0.001134087	0.001233423	237.0991703	0.000608193	0.000954242	0.001895611	0.002766071	0.363914733	0.002343967	0.037254414	0.001643756	0.000575315	25.00181126	3936.660946
Fresno	2022	LDA	Aggregate	65	Gasoline	1430655.132	1430655.132	0	0.050374821	0.001203397	0.001308779	308.885917	0.002692541	0.005188501	0.010547168	0.015382219	0.695057778	0.003053652	0.032708965	0.001944353	0.000680523	32.571634	0
Fresno	2022	LDA	Aggregate	65	Diesel	2899.433996	2899.433996	0	0.332150209	0.023528093	0.024591929	261.1667136	0.00161751	0.041146922	0.034824039	0.039644853	0.391285664	0.002474687	0.0031	0.001968233	0.000688882	23.32991907	0
Fresno	2022	LDA	Aggregate	65	Electricity	289.7629383	0	289.7629	0	0	0	0	0	0	0	0	0	0	0	0.00112531	0.000393859	0	404777.6705
Fresno	2022	LDA	Aggregate	65	Plug-in Hybrid	19279.25473	19257.01652	22.23822	0.004919508	0.001299889	0.001413748	229.9966446	0.000564476	0.000917174	0.001759357	0.00256725	0.345913139	0.002273751	0.037676297	0.001128008	0.000394803	24.25285879	404.1451724
Fresno	2022	LDA	Aggregate	70	Gasoline	1090839.161	1090839.161	0	0.05167503	0.001306146	0.001420526	312.1758652	0.002922695	0.005315461	0.011442491	0.01668793	0.68049749	0.003086176	0.032708965	0.001944353	0.000680523	32.91855493	0
Fresno	2022	LDA	Aggregate	70	Diesel	2210.746724	2210.746724	0	0.337687449	0.025394967	0.026543215	282.0187522	0.001742476	0.044432169	0.037514482	0.042707743	0.433980082	0.002672271	0.0031	0.001968233	0.000688882	25.19262342	0
Fresno	2022	LDA	Aggregate	70	Electricity	46.99705403	0	46.99705	0	0	0	0	0	0	0	0	0	0	0	0.00112531	0.000393859	0	449707.4317
Fresno	2022	LDA	Aggregate	70	Plug-in Hybrid	14684.33602	14682.9989	1.337115	0.004689551	0.001413403	0.001537204	222.0683449	0.00052291	0.000874302	0.001629803	0.002378204	0.329995935	0.002195372	0.037716371	0.001128009	0.000394803	23.4168295	31.83079255
Fresno	2022	LDT1	Aggregate	5	Gasoline	23.83848359	23.83848359	0	0.415726617	0.015369455	0.016714836	864.2416076	0.071025792	0.027666042	0.32177663	0.469330487	5.175396705	0.008543908	0.03740487	0.00862254	0.003017889	91.13319768	0
Fresno	2022	LDT1	Aggregate	5	Diesel	0.006619168	0.006619168	0	1.055915172	0.959926667	1.003330291	1039.551347	0.054208209	0.163781738	1.167070831	1.328632549	5.020259718	0.009850277	0.0031	0.009765241	0.003417834	92.86271006	0
Fresno	2022	LDT1	Aggregate	5	Electricity	15.71092425	0	15.71092	0	0	0	0	0	0	0	0	0	0	0	0.001327687	0.00046469	0	630004.1988
Fresno	2022	LDT1	Aggregate	5	Plug-in Hybrid	3.97653661	0.006266491	3.97027	4.00486E-05	1.00434E-05	1.09231E-05	1.353462172	1.37414E-05	7.47495E-06	4.28039E-05	6.24594E-05	0.003689274	1.33804E-05	6.61864E-05	0.001320994	0.000462348	0.142720895	472025.0254
Fresno	2022	LDT1	Aggregate	10	Gasoline	119.2048957	119.2048957	0	0.360933446	0.009863231	0.010726573	692.4763982	0.045439251	0.024157539	0.206355394	0.300970063	4.356164932	0.006845834	0.03740487	0.010727921	0.003754772	73.02077096	0
Fresno	2022	LDT1	Aggregate	10	Diesel	0.033099307	0.033099307	0	1.113219517	0.668251682	0.698467058	875.0595265	0.037739495	0.137865985	0.812509105	0.924987596	3.565978178	0.008291634	0.0031	0.012149637	0.004252373	78.16872086	0
Fresno	2022	LDT1	Aggregate	10	Electricity	25.13457	0	25.13457	0	0	0	0	0	0	0	0	0	0	0	0.00234924	0.000822234	0	425185.0569
Fresno	2022	LDT1	Aggregate	10	Plug-in Hybrid	15.90604561	0.031335735	15.87471	3.29048E-05	7.90001E-06	8.59198E-06	1.171699626	8.12413E-06	6.14157E-06	2.53063E-05	3.69269E-05	0.002646089	1.15834E-05	8.27422E-05	0.002337398	0.000818089	0.123554262	334622.4369
Fresno	2022	LDT1	Aggregate	15	Gasoline	197.8393057	197.8393057	0	0.305641527	0.006669522	0.007253283	573.3055459	0.031280135	0.020545454	0.14235308	0.207616632	4.061654099	0.005667709	0.03740487	0.012843881	0.004495358	60.45435349	0
Fresno	2022	LDT1	Aggregate	15	Diesel	0.054933514	0.054933514	0	1.167667748	0.4868107	0.50882212	725.5685646	0.027482159	0.114313623	0.591674704	0.673582313	2.66551135	0.006875131	0.0031	0.014546015	0.005091105	64.81475246	0
Fresno	2022	LDT1	Aggregate	15	Electricity	55.97683855	0	55.97684	0	0	0	0	0	0	0	0	0	0	0	0.003370794	0.001179778	0	357684.5769
Fresno	2022	LDT1	Aggregate	15	Plug-in Hybrid	38.90511645	0.05200659	38.85311	1.68387E-05	3.55814E-06	3.8698E-06	0.654967058	3.61892E-06	3.14289E-06	1.12728E-05	1.64492E-05	0.001395533	6.47502E-06	5.61437E-05	0.003353801	0.00117383	0.069065458	289787.1342
Fresno	2022	LDT1	Aggregate	20	Gasoline	51382.46781	51382.46781	0	0.272131863	0.004748512	0.005164112	473.0377869	0.022262749	0.018347234	0.101501099	0.148031491	3.541294959	0.00467646	0.03740487	0.014949262	0.005232242	49.88124358	0
Fresno	2022	LDT1	Aggregate	20	Diesel	14.26723326	14.26723326	0	1.225789062	0.3711023	0.387881899	596.1099694	0.020942126	0.093917368	0.450871633	0.513287379	2.098321949	0.005648445	0.0031	0.016930411	0.005925644	53.25026743	0
Fresno	2022	LDT1	Aggregate	20	Electricity	82.20574405	0	82.20574	0	0	0	0	0	0	0	0	0	0	0	0.004395675	0.001538486	0	334944.5347
Fresno	2022	LDT1	Aggregate	20	Plug-in Hybrid	70.02785628	13.5070578	56.5208	0.002032794	0.000359516	0.000391007	80.92641524	0.000381934	0.000379414	0.001189709	0.001736021	0.158059713	0.00080004	0.008101011	0.004373658	0.00153078	8.533589372	219481.8245
Fresno	2022	LDT1	Aggregate	25	Gasoline	7012.345279	7012.345279	0	0.245691164	0.003557156	0.003868469	404.9040559	0.016782381	0.016594061	0.076634817	0.111762472	3.224028496	0.004002889	0.03740487	0.015816806	0.005535882	42.69662678	0
Fresno	2022	LDT1	Aggregate	25	Diesel	1.947099275	1.947099275	0	1.284441944	0.296035886	0.309421315	499.8167208	0.01670429	0.078746328	0.359633535	0.40941887	1.740345541	0.004736017	0.0031	0.017912926	0.006269524	44.64842968	0
Fresno	2022	LDT1	Aggregate	25	Electricity	89.78542265	0	89.78542	0	0	0	0	0	0	0	0	0	0	0	0.005001287	0.00175045	0	331465.6743
Fresno	2022	LDT1	Aggregate	25	Plug-in Hybrid	58.42521637	1.843355469	56.58186	0.000287829	4.34439E-05	4.72493E-05	11.82739529	4.93161E-05	5.37223E-05	0.000153618	0.000224158	0.022046953	0.000116926	0.001325129	0.004976099	0.001741635	1.247184055	252825.9596
Fresno	2022	LDT1	Aggregate	30	Gasoline	21255.74926	21255.74926	0	0.226119697	0.002802041	0.003047256	359.717003	0.013284906	0.01528246	0.060737341	0.08857536	2.95544155	0.003556169	0.03740487	0.015435933	0.005402577	37.93170851	0
Fresno	2022	LDT1	Aggregate	30	Diesel	5.9020274	5.9020274	0	1.343912914	0.247122254	0.258296026	432.2000159	0.01394382	0.068093289	0.300202225	0.341760275	1.520260302	0.004095315	0.0031	0.017481578	0.006118552	38.60825621	0
Fresno	2022	LDT1	Aggregate	30	Electricity	90.0149315	0	90.01493	0	0	0	0	0	0	0	0	0	0	0	0.005190956	0.001816835	0	331846.1361
Fresno	2022	LDT1	Aggregate	30	Plug-in Hybrid	50.79328658	5.587560236	45.20573	0.000890228	0.000118049	0.000128389	37.62269624	0.00014177	0.000166158	0.000441607	0.000644391	0.067528203	0.000371939	0.004620247	0.005164883	0.001807709	3.96726631	228498.5826
Fresno	2022	LDT1	Aggregate	35	Gasoline	42585.88531	42585.88531	0	0.21296101	0.002319951	0.002522968	333.6660145	0.011035852	0.014387951	0.050498579	0.073641522	2.727470452	0.003298628	0.03740487	0.01505506	0.005269271	35.18466433	0
Fresno	2022	LDT1	Aggregate	35	Diesel	11.82470958	11.82470958	0	1.404591004	0.215871499	0.225632251	390.0771251	0.012180185	0.06145681	0.262232216	0.298533943	1.39855631	0.003696179	0.0031	0.01705023	0.00596758	34.84543506	0
Fresno	2022	LDT1	Aggregate	35	Electricity	84.59989273	0	84.59989	0	0	0	0	0	0	0	0	0	0	0	0.005383953	0.001884384	0	333403.3612
Fresno	2022	LDT1	Aggregate	35	Plug-in Hybrid	43.63774578	11.19467474	32.44307	0.001879754	0.000226337	0.000246162	81.19138713	0.00028083	0.00035085	0.000874775	0.001276469	0.141223028	0.00080266	0.010774533	0.005357045	0.001874966	8.561530327	188766.8805
Fresno	2022	LDT1	Aggregate	40	Gasoline	112067.81	112067.81	0	0.205329843	0.002018343	0.002194958	321.9051756	0.009587156	0.013853665	0.043890009	0.064002447	2.497283262	0.00318236	0.03740487	0.013288233	0.004650882	33.94449856	0
Fresno	2022	LDT1	Aggregate	40	Diesel	31.11757093	31.11757093	0	1.466284238	0.197330853	0.206253279	364.0669884	0.011133796	0.057358902	0.239704081	0.272887159	1.354932661	0.00344972	0.0031	0.015049254	0.005267239	32.52195986	0
Fresno	2022	LDT1	Aggregate	40	Electricity	73.66931072	0	73.66931	0	0	0	0	0	0	0	0	0	0	0	0.004971339	0.001739969	0	337996.5411
Fresno	2022	LDT1	Aggregate	40	Plug-in Hybrid	51.35957842	29.45958909	21.89999	0.0038677	0.000438942	0.00047739	169.1165768	0.000543538	0.000721893	0.001693096	0.002470562	0.283370883	0.00167189	0.024090983	0.00494676	0.001731366	17.83313172	113290.2341
Fresno	2022	LDT1	Aggregate	45	Gasoline	90021.10237	90021.10237	0	0.201452881	0.001844941	0.002006376	322.7214958	0.00875712	0.013560897	0.040094001	0.05846519	2.326289374	0.003190431	0.03740487	0.010135452	0.003547408	34.0305785	0
Fresno	2022	LDT1	Aggregate	45	Diesel	24.99592022	24.99592022	0	1.528260452	0.188760287	0.19729519	351.0223405	0.010649988	0.055303713	0.229287982	0.261029123	1.382389778	0.003326115	0.0031	0.011478651	0.004017528	31.35668663	0
Fresno	2022	LDT1	Aggregate	45	Electricity	54.45697666	0	54.45698	0	0	0	0	0	0	0	0	0	0	0	0.003949785	0.001382425	0	344877.5501
Fresno	2022	LDT1	Aggregate	45	Plug-in Hybrid	36.77294483	23.66410734	13.10884	0.00402133	0.000450603	0.000490072	178.6882	0.000538008	0.000750568	0.001675871	0.002445428	0.291672796	0.001766515	0.027027819	0.003930304	0.001375606	18.84244743	96617.85533
Fresno	2022	LDT1	Aggregate	50	Gasoline	193475.8621	193475.8621	0	0.202090584	0.001772083	0.001927136	331.6812416	0.008388608	0.013559468	0.038396518	0.055988216	2.178751463	0.003279007	0.03740487	0.00698267	0.002443935	34.9753725	0
Fresno	2022	LDT1	Aggregate	50	Diesel	53.72192838	53.72192838	0	1.590973669	0.188947803	0.197491185	351.6054678	0.010660341	0.055395585	0.229510859	0.261282854	1.485318105	0.00333164	0.0031	0.007908048	0.002767817	31.40877716	0

Fresno	2022	LDT1	Aggregate	50	Electricity	31.09659001	0	31.09659	0	0	0	0	0	0	0	0	0	0	0	0.002931559	0.001026046	0	355019.4389
Fresno	2022	LDT1	Aggregate	50	Plug-in Hybrid	57.16036314	50.85955901	6.300804	0.00520188	0.000601416	0.000654095	234.0434446	0.000664754	0.000970914	0.002070681	0.003021533	0.372759336	0.002313758	0.037370327	0.002917223	0.001021028	24.6795888	30658.24147
Fresno	2022	LDT1	Aggregate	55	Gasoline	187949.8836	187949.8836	0	0.206534155	0.001789041	0.001945572	345.1310613	0.008440145	0.013798564	0.038607734	0.056294597	2.063653122	0.003411972	0.03740487	0.00485613	0.001699645	36.39363918	0
Fresno	2022	LDT1	Aggregate	55	Diesel	52.18754461	52.18754461	0	1.653553126	0.19791988	0.206868938	367.6321601	0.01116632	0.057920597	0.240404287	0.273684297	1.68067185	0.003483502	0.0031	0.005499688	0.001924891	32.84043523	0
Fresno	2022	LDT1	Aggregate	55	Electricity	12.30478339	0	12.30478	0	0	0	0	0	0	0	0	0	0	0	0.002162898	0.000757014	0	368986.6923
Fresno	2022	LDT1	Aggregate	55	Plug-in Hybrid	51.54405098	49.40692907	2.137122	0.005263465	0.000659791	0.000717583	240.3189144	0.000647394	0.000982408	0.002016606	0.002942626	0.37523792	0.002375797	0.040258594	0.002152346	0.000753321	25.34132925	12572.18065
Fresno	2022	LDT1	Aggregate	60	Gasoline	106775.1137	106775.1137	0	0.215603407	0.001899249	0.002065417	359.1278678	0.008919752	0.01432754	0.040761625	0.05943362	1.974450469	0.003550345	0.03740487	0.00375583	0.001314541	37.86958494	0
Fresno	2022	LDT1	Aggregate	60	Diesel	29.64796202	29.64796202	0	1.716236475	0.216946972	0.226756351	398.2208867	0.012239643	0.062739863	0.26351231	0.299991245	2.002762325	0.003773345	0.0031	0.004253571	0.00148875	35.57291407	0
Fresno	2022	LDT1	Aggregate	60	Electricity	3.150839432	0	3.150839	0	0	0	0	0	0	0	0	0	0	0	0.001643803	0.000575331	0	386630.2541
Fresno	2022	LDT1	Aggregate	60	Plug-in Hybrid	28.48151764	28.06828272	0.413235	0.005107085	0.00072876	0.000792593	236.5780619	0.000607214	0.00095322	0.001891445	0.002759992	0.363114903	0.002338815	0.041390627	0.001635791	0.000572527	24.94686103	4629.263955
Fresno	2022	LDT1	Aggregate	65	Gasoline	123774.1284	123774.1284	0	0.230819587	0.002121384	0.002306982	369.5781943	0.009891832	0.015238435	0.0451456	0.065824154	1.897641378	0.003653657	0.03740487	0.002655531	0.000929436	38.97155882	0
Fresno	2022	LDT1	Aggregate	65	Diesel	34.36803325	34.36803325	0	1.779290023	0.248849472	0.260101341	447.2916729	0.014039391	0.070470985	0.302259819	0.344102709	2.513341227	0.004238316	0.0031	0.003007454	0.001052609	39.95638795	0
Fresno	2022	LDT1	Aggregate	65	Electricity	0.459924799	0	0.459925	0	0	0	0	0	0	0	0	0	0	0	0.001128035	0.000394812	0	404777.6705
Fresno	2022	LDT1	Aggregate	65	Plug-in Hybrid	32.58114473	32.53686284	0.044282	0.004918495	0.000836971	0.000910282	229.9492918	0.000564693	0.000918021	0.001758995	0.002566721	0.345841921	0.002273283	0.041942917	0.001122539	0.000392889	24.2478655	476.1978923
Fresno	2022	LDT1	Aggregate	70	Gasoline	94374.71224	94374.71224	0	0.240582256	0.00228563	0.002485595	373.4573708	0.010633645	0.015823331	0.048495753	0.070707903	1.883864024	0.003692006	0.03740487	0.002655531	0.000929436	39.38061313	0
Fresno	2022	LDT1	Aggregate	70	Diesel	26.2047755	26.2047755	0	1.810516581	0.271092503	0.283350103	482.5849529	0.015294209	0.076031456	0.329275321	0.374858062	2.870719045	0.004572738	0.0031	0.003007454	0.001052609	43.10912267	0
Fresno	2022	LDT1	Aggregate	70	Electricity	0.074595843	0	0.074596	0	0	0	0	0	0	0	0	0	0	0	0.001128035	0.000394812	0	449707.4317
Fresno	2022	LDT1	Aggregate	70	Plug-in Hybrid	24.81121587	24.80855334	0.002663	0.004689475	0.000910233	0.000989961	222.064735	0.00052321	0.000875275	0.001629776	0.002378166	0.329990571	0.002195336	0.041995493	0.001122539	0.000392889	23.41644884	37.51283523
Fresno	2022	LDT2	Aggregate	5	Gasoline	122.216587	122.216587	0	0.188839133	0.00937527	0.010196347	905.8031672	0.02757619	0.014364457	0.111638289	0.162874518	2.3974023	0.008954786	0.034143466	0.008248567	0.002886998	95.51581221	0
Fresno	2022	LDT2	Aggregate	5	Diesel	0.305872985	0.305872985	0	0.192247958	0.037423153	0.039115262	810.077234	0.013327535	0.127627998	0.286933982	0.326655262	2.483803797	0.007675893	0.0031	0.00794898	0.002782143	72.36387841	0
Fresno	2022	LDT2	Aggregate	5	Electricity	252.4452273	0	252.4452	0	0	0	0	0	0	0	0	0	0	0	0.001320691	0.000462242	0	630004.1988
Fresno	2022	LDT2	Aggregate	5	Plug-in Hybrid	195.9236013	0.331054159	195.5925	4.29418E-05	1.39006E-05	1.51182E-05	1.451239116	1.47441E-05	8.02521E-06	4.58962E-05	6.69716E-05	0.003955795	1.4347E-05	7.07433E-05	0.001322821	0.000462987	0.153031351	471971.2034
Fresno	2022	LDT2	Aggregate	10	Gasoline	611.1469066	611.1469066	0	0.166544959	0.005921031	0.006439581	726.6882035	0.017355376	0.012725267	0.070460955	0.102797049	2.055259854	0.007184053	0.034143466	0.010262634	0.003591922	76.62836308	0
Fresno	2022	LDT2	Aggregate	10	Diesel	1.529525026	1.529525026	0	0.170923029	0.027955404	0.029219423	681.8958992	0.009876883	0.107432977	0.21264348	0.242080464	1.852961613	0.00646131	0.0031	0.009889897	0.003461464	60.91349055	0
Fresno	2022	LDT2	Aggregate	10	Electricity	403.8656247	0	403.8656	0	0	0	0	0	0	0	0	0	0	0	0.002336862	0.000817902	0	425185.0569
Fresno	2022	LDT2	Aggregate	10	Plug-in Hybrid	783.7117893	1.65544408	782.0563	3.52809E-05	1.09337E-05	1.18914E-05	1.25630983	8.71667E-06	6.59349E-06	2.71337E-05	3.95935E-05	0.002837168	1.24199E-05	8.84364E-05	0.002340631	0.000819221	0.132476302	334574.7394
Fresno	2022	LDT2	Aggregate	15	Gasoline	1014.29458	1014.29458	0	0.142715849	0.003944311	0.00428974	600.715402	0.011771759	0.010941046	0.047916475	0.069905421	1.950037045	0.005938683	0.034143466	0.012286822	0.004300388	63.34468857	0
Fresno	2022	LDT2	Aggregate	15	Diesel	2.538487764	2.538487764	0	0.133845063	0.021419336	0.022387824	565.4040826	0.005141541	0.089079643	0.110694346	0.126018154	0.935540644	0.005357491	0.0031	0.011840566	0.004144198	50.50732273	0
Fresno	2022	LDT2	Aggregate	15	Electricity	899.4433115	0	899.4433	0	0	0	0	0	0	0	0	0	0	0	0.003353033	0.001173562	0	357684.5769
Fresno	2022	LDT2	Aggregate	15	Plug-in Hybrid	1916.818426	2.747470273	1914.071	1.80555E-05	4.92473E-06	5.35609E-06	0.702295401	3.88304E-06	3.37431E-06	1.20873E-05	1.76378E-05	0.001496375	6.94291E-06	6.00102E-05	0.003358441	0.001175454	0.074056173	289759.1049
Fresno	2022	LDT2	Aggregate	20	Gasoline	263430.7598	263430.7598	0	0.128124343	0.002771008	0.00301368	495.9211171	0.008270453	0.009845467	0.033742145	0.049225794	1.718458313	0.004902685	0.034143466	0.014300889	0.005005311	52.29426216	0
Fresno	2022	LDT2	Aggregate	20	Diesel	659.2914655	659.2914655	0	0.109260954	0.016911207	0.017675857	464.5226196	0.002360131	0.073185728	0.050812235	0.057846352	0.399078784	0.004401588	0.0031	0.013781483	0.004823519	41.4956216	0
Fresno	2022	LDT2	Aggregate	20	Electricity	1320.892865	0	1320.893	0	0	0	0	0	0	0	0	0	0	0	0.004372514	0.00153038	0	334944.5347
Fresno	2022	LDT2	Aggregate	20	Plug-in Hybrid	3498.025156	713.5680259	2784.457	0.002149888	0.000490795	0.000533785	85.58799046	0.000404208	0.000401783	0.00125824	0.00183602	0.16716437	0.000846124	0.008540538	0.004379812	0.001532934	9.025146655	216460.5275
Fresno	2022	LDT2	Aggregate	25	Gasoline	35951.3181	35951.3181	0	0.116270051	0.002052719	0.002232484	424.3375383	0.006167169	0.008947826	0.025210313	0.036778307	1.577678764	0.004195009	0.034143466	0.015130807	0.005295782	44.74586321	0
Fresno	2022	LDT2	Aggregate	25	Diesel	89.97581456	89.97581456	0	0.099324051	0.013815807	0.014440497	389.4854715	0.001562245	0.061363595	0.03363421	0.038290312	0.255558624	0.003690573	0.0031	0.014581258	0.00510344	34.79258288	0
Fresno	2022	LDT2	Aggregate	25	Electricity	1442.684152	0	1442.684	0	0	0	0	0	0	0	0	0	0	0	0.004974935	0.001741227	0	331465.6743
Fresno	2022	LDT2	Aggregate	25	Plug-in Hybrid	2884.848454	97.3831268	2787.465	0.000307954	5.99985E-05	6.52538E-05	12.6543855	5.28E-05	5.75521E-05	0.000164359	0.000239832	0.023588511	0.000125101	0.001413297	0.004983003	0.001744051	1.33438914	252250.0361
Fresno	2022	LDT2	Aggregate	30	Gasoline	108975.2676	108975.2676	0	0.107245288	0.001603196	0.001743592	376.9031565	0.004842055	0.008259112	0.019823	0.02891857	1.454129698	0.003726071	0.034143466	0.014766453	0.005168258	39.74396692	0
Fresno	2022	LDT2	Aggregate	30	Diesel	272.7337685	272.7337685	0	0.095373324	0.011773308	0.012305645	336.7947089	0.001226755	0.053062144	0.026411323	0.030067535	0.199887464	0.003191301	0.0031	0.014230137	0.004980548	30.08573793	0
Fresno	2022	LDT2	Aggregate	30	Electricity	1446.371931	0	1446.372	0	0	0	0	0	0	0	0	0	0	0	0.005163605	0.001807262	0	331846.1361
Fresno	2022	LDT2	Aggregate	30	Plug-in Hybrid	2522.214848	295.1867376	2227.028	0.000947109	0.000162114	0.000176313	40.0266069	0.00015093	0.000177001	0.000469823	0.000685565	0.071842933	0.000395704	0.004899904	0.005172098	0.001810234	4.220755685	226693.9837
Fresno	2022	LDT2	Aggregate	35	Gasoline	218331.9058	218331.9058	0	0.100952825	0.001319971	0.001435563	349.6179899	0.00400064	0.007774319	0.016394608	0.023916757	1.34549871	0.00345633	0.034143466	0.014402099	0.005040735	36.8667802	0
Fresno	2022	LDT2	Aggregate	35	Diesel	546.4219982	546.4219982	0	0.09369947	0.010411754	0.010882527	303.9701688	0.001013922	0.047890624	0.021829153	0.024851039	0.165255147	0.002880272	0.0031	0.013879017	0.004857656	27.15353477	0
Fresno	2022	LDT2	Aggregate	35	Electricity	1359.362365	0	1359.362	0	0	0	0	0	0	0	0	0	0	0	0.005355585	0.001874455	0	333403.3612
Fresno	2022	LDT2	Aggregate	35	Plug-in Hybrid	2189.691444	591.4065129	1598.285	0.001979042	0.000307588	0.000334529	85.47989322	0.000295864	0.000369854	0.00092098	0.001343892	0.148682388	0.000845056	0.011307744	0.005364623	0.001877618	9.013747936	185326.4611
Fresno	2022	LDT2	Aggregate	40	Gasoline	574556.0617	574556.0617	0	0.097029596	0.0011456	0.001245921	337.5125577	0.003467467	0.007466694	0.01421584	0.020738065	1.231362318	0.003336655	0.034143466	0.012711902	0.004449166	35.5902775	0
Fresno	2022	LDT2	Aggregate	40	Diesel	1437.94866	1437.94866	0	0.093351488	0.009529722	0.009960614	283.7015985	0.000874299	0.044697302	0.018823139	0.021428892	0.142951318	0.002688217	0.0031	0.012250207	0.004287573	25.34295141	0
Fresno	2022	LDT2	Aggregate	40	Electricity	1183.728315	0	1183.728	0	0	0	0	0	0	0	0	0	0	0	0.004945145	0.001730801	0	337996.5411
Fresno	2022	LDT2	Aggregate	40	Plug-in Hybrid	2635.216108	1556.328635	1078.887	0.003982288	0.000583373	0.000634471	174.1269593	0.000560019	0.000744232	0.001743257	0.002543757	0.291766254	0.001721422	0.024726228	0.004953931	0.001733876	18.36147029	108775.2112
Fresno	2022	LDT2	Aggregate	45	Gasoline	461525.6605	461525.6605	0	0.094654797	0.001048048	0.001139825	338.535768	0.003169541	0.007273421	0.012992922	0.018953843	1.143650817	0.003346771	0.034143466	0.009695861	0.003393551	35.69817375	0
Fresno	2022	LDT2	Aggregate	45	Diesel	1155.066057	1155.066057	0	0.093809008	0.00901522	0.009422848	273.5364707	0.000783275	0.043095782	0.016863457	0.019197925	0.12885511	0.002591897	0.0031	0.009343709	0.003270298	24.43490457	0
Fresno	2022	LDT2	Aggregate	45	Electricity	875.0219678	0	875.022	0	0	0	0	0	0	0	0	0	0	0	0.003928974	0.001375141	0	344877.5501
Fresno	2022	LDT2	Aggregate	45	Plug-in Hybrid	1895.955155	1250.157555	645.7976	0.00412045	0.000595975	0.000648177	183.0926231	0.000551642	0.000770052	0.001717179	0.002505704	0.298862137	0.001810057	0.027606381	0.00393603	0.00137761	19.30688833	92318.76577
Fresno	2022	LDT2	Aggregate	50	Gasoline	991923.8125	991923.8125	0	0.094161632	0.001010691	0.001099197	348.1396115	0.003047389	0.007219629	0.012484035	0.018211277	1.064568167	0.003441714	0.034143466	0.006679821	0.002337937	36.71088704	0
Fresno	2022	LDT2	Aggregate	50	Diesel	2482.500163	2482.500163	0	0.094837435	0.008814056	0.009212589	273.9908765	0.000728146	0.043167374	0.015676563	0.017846724	0.121023802	0.002596203	0.0031	0.006437211	0.002253024	24.47549646	0
Fresno	2022	LDT2	Aggregate	50	Electricity	499.6641578	0	499.6642	0	0	0	0	0	0	0	0	0	0	0	0.002916113	0.001020639	0	355019.4389
Fresno	2022	LDT2	Aggregate	50	Plug-in Hybrid	2997.278115	2686.873459	310.4047	0.005240864	0.000782126	0.000850633	235.7974158	0.000670189	0.000979441	0.002086199	0.003044177	0.375552874	0.002331098	0.037531245	0.002921542	0.00102254	24.86454287	28803.64332
Fresno	2022	LDT2	Aggregate	55	Gasoline	963592.8899	963592.8899	0	0.095159529	0.001027478	0.001117453	362.4143483	0.003086308	0.00727411	0.012628689	0.018422112	0.998688337	0.003582835	0.034143466	0.004645512	0.001625929	38.21614021	0
Fresno	2022	LDT2	Aggregate	55	Diesel	2411.596007	2411.596007	0	0.096226479	0.008916134	0.009319282	286.479782	0.000702982	0.045135006	0.015134794	0.017229957	0.118808454	0.002714542	0.0031	0.004476787	0.001566876	25.59112544	0
Fresno	2022	LDT2	Aggregate	55	Electricity	197.7149015	0	197.7149	0	0	0	0	0	0	0	0	0	0	0	0.002151502	0.000753026	0	368986.6923
Fresno	2022	LDT2	Aggregate	55	Plug-in Hybrid	2715.415875	2610.132077	105.2838	0.005278233	0.000854049	0.000928856	240.9931908	0.000649649	0.000986425	0.002022264	0.002950882	0.376290746	0.002382463	0.040243795	0.002155547	0.000754441	25.41243085	11756.68969
Fresno	2022	LDT2	Aggregate	60	Gasoline	547421.1445	547421.1445	0	0.09792608	0.001101254	0.001197689	377.2199975	0.003291664	0.007455969	0.01344708	0.019615779	0.94219904	0.003729204	0.034143466	0.003592934	0.001257527	39.77737742	0
Fresno	2022	LDT2	Aggregate	60	Diesel	1370.037762	1370.037762	0	0.098482373	0.009425451	0.009851629	310.3162487	0.000722768	0.048890451	0.015560777	0.017714911	0.12587947	0.002940404	0.0031	0.003462439	0.001211854	27.72042757	0
Fresno	2022	LDT2	Aggregate	60	Electricity	50.62810844	0	50.62811	0	0	0	0	0	0	0	0	0	0	0	0.001635142	0.0005723	0	386630.2541
Fresno	2022	LDT2	Aggregate	60	Plug-in Hybrid	1503.184658	1482.826932	20.35773	0.00511209	0.000941605	0.001024082	236.8099168	0.00060822	0.000955375	0.001893298	0.002762696	0.363470768	0.002341107	0.041300083	0.001638227	0.000573379	24.97130984	4321.106637
Fresno	2022	LDT2	Aggregate	65	Gasoline	634572.7267	634572.7267	0	0.102984975	0.001244572	0.001353557	388.3136943	0.003692155	0.007801499	0.015052873	0.021958068	0.887397277	0.003838876	0.034143466	0.002540356	0.000889125	40.94719388	0
Fresno	2022	LDT2	Aggregate	65	Diesel	1588.153119	1588.153119	0	0.101408898	0.010409686	0.010880366	348.554982	0.000786147	0.054914979	0.016925292	0.01926832	0.142881187	0.003302736	0.0031	0.002448091	0.000856832	31.13627847	0
Fresno	2022	LDT2	Aggregate	65	Electricity	7.390133043	0	7.390133	0	0	0	0	0	0	0	0	0	0	0	0.001122091	0.000392732	0	404777.6705
Fresno	2022	LDT2	Aggregate	65	Plug-in Hybrid	1721.080282	1718.898766	2.181516	0.004918946	0.001080462	0.001175101	229.9703836	0.000565127	0.000919279	0.001759156	0.002566956	0.345873642	0.002273491	0.041814024	0.001124212	0.000393474	24.25008961	444.1042468
Fresno	2022	LDT2	Aggregate	70	Gasoline	483846.0123	483846.0123	0	0.106235146	0.001349702	0.001467892	392.3436641	0.003994219	0.008023536	0.016266314	0.023728074	0.869862445	0.003878717	0.034143466	0.002540356	0.000889125	41.37214915	0
Fresno	2022	LDT2	Aggregate	70	Diesel	1210.927482	1210.927482	0	0.10285578	0.011095914	0.011597622	376.0575028	0.000830337	0.059248013	0.017876658	0.020351386	0.154781476	0.003563336	0.0031	0.002448091	0.000856832	33.59306776	0
Fresno	2022	LDT2	Aggregate	70	Electricity	1.198615958	0	1.198616	0	0	0	0	0	0	0	0	0	0	0	0.001122091	0.000392732	0	449707.4317
Fresno	2022	LDT2	Aggregate	70	Plug-in Hybrid	1310.748971	1310.617804	0.131168	0.004689509	0.001174937	0.001277852	222.0663431	0.000523567	0.000876401	0.001629788	0.002378183	0.329992961	0.002195352	0.041862902	0.001124213	0.000393474	23.41661841	34.98167967
Fresno	2022	LHDT1	Aggregate	5	Gasoline	12595.3495	12595.3495	0	0.367314402	0.004856924	0.005282348	1683.584729	0.039687346	0.020579166	0.200479002	0.29253849	3.138481608	0.016643949	0.044806962	0.078000022	0.027300008	177.5319061	0
Fresno	2022	LHDT1	Aggregate	5	Diesel	7298.710481	7298.710481	0	2.812824445	0.111581516	0.116626737	1218.659985	0.023410496	0.192000377	0.504014189	0.573786645	1.614762269	0.011547423	0.148075826	0.078000022	0.027300008	108.8624137	0
Fresno	2022	LHDT1	Aggregate	10	Gasoline	32843.39251	32843.39251	0	0.327106551	0.003321576	0.003612517	1411.229939	0.02650422	0.018224464	0.134110619	0.195693901	2.435541781	0.013951445	0.044806962	0.078000022	0.027300008	148.8124338	0
Fresno	2022	LHDT1	Aggregate	10	Diesel	24271.53893	24271.53893	0	2.62805453	0.090261736	0.094342971	1054.432637	0.018946143	0.166126291	0.4078993	0.464366234	1.27543551	0.009991285	0.148075826	0.078000022	0.027300008	94.19204976	0
Fresno	2022	LHDT1	Aggregate	15	Gasoline	74788.83333	74788.83333	0	0.296258716	0.002392102	0.002601629	1185.40684	0.018607747	0.016407108	0.094402647	0.137752121	1.949131336	0.011718953	0.044806962	0.078000022	0.027300008	124.9996701	0
Fresno	2022	LHDT1	Aggregate	15	Diesel	52565.20006	52565.20006	0	2.473508681	0.073700233	0.077032631	877.5954668	0.015561594	0.138265523	0.335031967	0.38141162	1.018616828	0.008315663	0.148075826	0.078000022	0.027300008	78.3952554	0
Fresno	2022	LHDT1	Aggregate	20	Gasoline	86417.91617	86417.91617	0	0.274357032	0.001804412	0.001962463	1002.207625	0.013600423	0.01510066	0.069280093	0.101093349	1.593916384	0.009907843	0.044806962	0.078000022	0.027300008	105.6815418	0
Fresno	2022	LHDT1	Aggregate	20	Diesel	57628.43775	57628.43775	0	2.341203355	0.060480115	0.063214758	758.4261926	0.012897728	0.119490355	0.277680497	0.316120784	0.81766612	0.007186474	0.148075826	0.078000022	0.027300008	67.74991135	0
Fresno	2022	LHDT1	Aggregate	25	Gasoline	66568.43774	66568.43774	0	0.260419399	0.001420774	0.001545221	858.1986326	0.010327235	0.014247358	0.052923763	0.07722623	1.331904063	0.008484167	0.044806962	0.078000022	0.027300008	90.49597352	0
Fresno	2022	LHDT1	Aggregate	25	Diesel	61677.80269	61677.80269	0	2.243015082	0.049802531	0.05205438	659.5311201	0.010752069	0.103909397	0.231485721	0.263531103	0.657764132	0.006249393	0.148075826	0.078000022	0.027300008	58.9156537	0
Fresno	2022	LHDT1	Aggregate	30	Gasoline	58868.34598	58868.34598	0	0.247780197	0.001166929	0.001269141	749.2609225	0.008252575	0.013483312	0.042650323	0.062235251	1.153615337	0.007407207	0.044806962	0.078000022	0.027300008	79.0086281	0
Fresno	2022	LHDT1	Aggregate	30	Diesel	52063.87959	52063.87959	0	2.161431787	0.041206164	0.043069323	578.1730412	0.009007693	0.091091398	0.193930327	0.220776784	0.530535168	0.005478483	0.148075826	0.078000022	0.027300008	51.64796874	0
Fresno	2022	LHDT1	Aggregate	35	Gasoline	21996.96249	21996.96249	0	0.243985286	0.001001732	0.001089475	671.606974	0.006814339	0.013214669	0.035546615	0.051869537	1.024603275	0.006639519	0.044806962	0.078000022	0.027300008	70.82011625	0
Fresno	2022	LHDT1	Aggregate	35	Diesel	27476.13043	27476.13043	0	2.116404619	0.034420728	0.035977081	519.138553	0.007596094	0.08179049	0.163539424	0.186178761	0.431292343	0.004919102	0.148075826	0.078000022	0.027300008	46.37444129	0
Fresno	2022	LHDT1	Aggregate	40	Gasoline	6493.001718	6493.001718	0	0.244454793	0.000902029	0.000981039	621.5216578	0.00590636	0.013192585	0.031097189	0.045376945	0.949522339	0.006144374	0.044806962	0.078000022	0.027300008	65.53868224	0
Fresno	2022	LHDT1	Aggregate	40	Diesel	15083.4975	15083.4975	0	2.095169302	0.029288545	0.030612844	472.4956009	0.006477306	0.074441874	0.139452591	0.158757503	0.357615666	0.004477136	0.148075826	0.078000022	0.027300008	42.20784486	0
Fresno	2022	LHDT1	Aggregate	45	Gasoline	7993.456516	7993.456516	0	0.239110775	0.000854953	0.00092984	595.3052627	0.005521593	0.01287867	0.029312184	0.04277227	0.941315143	0.005885199	0.044806962	0.078000022	0.027300008	62.77419613	0
Fresno	2022	LHDT1	Aggregate	45	Diesel	16280.05443	16280.05443	0	2.090197084	0.025722383	0.026885435	440.6271545	0.005629221	0.069420988	0.121193815	0.137971101	0.308671258	0.004175166	0.148075826	0.078000022	0.027300008	39.36104917	0
Fresno	2022	LHDT1	Aggregate	50	Gasoline	59022.56886	59022.56886	0	0.233475855	0.000854006	0.000928809	589.5934867	0.005520531	0.012569674	0.029460785	0.042989108	0.991859526	0.005828732	0.044806962	0.078000022	0.027300008	62.1718965	0
Fresno	2022	LHDT1	Aggregate	50	Diesel	62862.44868	62862.44868	0	2.111278748	0.023683656	0.024754525	428.6566857	0.005042058	0.067535035	0.108552546	0.123579857	0.284984248	0.00406174	0.148075826	0.078000022	0.027300008	38.29173193	0
Fresno	2022	LHDT1	Aggregate	55	Gasoline	16233.9937	16233.9937	0	0.248377997	0.000897191	0.000975777	600.2161042	0.0055627	0.013373142	0.029671381	0.04329641	1.057146023	0.005933747	0.044806962	0.078000022	0.027300008	63.29203823	0
Fresno	2022	LHDT1	Aggregate	55	Diesel	37856.3377	37856.3377	0	2.169905265	0.023173208	0.024220997	431.1026945	0.004716032	0.067920405	0.101533392	0.115589017	0.288579327	0.004084917	0.148075826	0.078000022	0.027300008	38.51023292	0
Fresno	2022	LHDT2	Aggregate	5	Gasoline	2103.173892	2103.173892	0	0.326504829	0.003887123	0.004227601	1890.849635	0.025549015	0.019227915	0.1182116	0.17249409	1.876441278	0.018692974	0.044974059	0.091000026	0.031850009	199.3877314	0
Fresno	2022	LHDT2	Aggregate	5	Diesel	2659.928371	2659.928371	0	2.591312405	0.09916926	0.103653254	1450.428377	0.020940532	0.228515582	0.450837318	0.513248312	1.426117655	0.013743546	0.160218508	0.091000026	0.031850009	129.5661924	0
Fresno	2022	LHDT2	Aggregate	10	Gasoline	5484.196024	5484.196024	0	0.286129155	0.002664327	0.002897699	1587.98121	0.016824474	0.016845244	0.077593675	0.113224508	1.529069549	0.015698811	0.044974059	0.091000026	0.031850009	167.4506345	0
Fresno	2022	LHDT2	Aggregate	10	Diesel	8845.474166	8845.474166	0	2.378701643	0.081214929	0.084887107	1265.079089	0.017236794	0.199313726	0.371098025	0.422470429	1.139721464	0.011987267	0.160218508	0.091000026	0.031850009	113.0090139	0
Fresno	2022	LHDT2	Aggregate	15	Gasoline	12488.25383	12488.25383	0	0.254745029	0.001923694	0.002092193	1335.8581	0.011628845	0.01498763	0.053546688	0.078135201	1.260290144	0.013206317	0.044974059	0.091000026	0.031850009	140.8645675	0
Fresno	2022	LHDT2	Aggregate	15	Diesel	19156.76301	19156.76301	0	2.197597151	0.066924186	0.069950201	1069.620407	0.01435349	0.168519131	0.309022188	0.351801216	0.916506893	0.010135197	0.160218508	0.091000026	0.031850009	95.54876723	0
Fresno	2022	LHDT2	Aggregate	20	Gasoline	14430.08033	14430.08033	0	0.231759952	0.001454038	0.001581399	1130.442714	0.008348959	0.013624435	0.038486664	0.05615965	1.044726986	0.011175577	0.044974059	0.091000026	0.031850009	119.2037717	0
Fresno	2022	LHDT2	Aggregate	20	Diesel	21001.99987	21001.99987	0	2.040859216	0.055290712	0.057790712	925.102607	0.012029076	0.145750292	0.258978928	0.294830292	0.737431314	0.008765817	0.160218508	0.091000026	0.031850009	82.63904942	0
Fresno	2022	LHDT2	Aggregate	25	Gasoline	11115.61059	11115.61059	0	0.216123756	0.001146064	0.001246449	968.1369824	0.006203533	0.012696895	0.028729176	0.041921545	0.873535278	0.00957102	0.044974059	0.091000026	0.031850009	102.0888351	0
Fresno	2022	LHDT2	Aggregate	25	Diesel	22477.74284	22477.74284	0	1.918861297	0.045747138	0.04781562	804.077478	0.010116093	0.126682734	0.217793525	0.247943448	0.59190177	0.007619043	0.160218508	0.091000026	0.031850009	71.82792259	0
Fresno	2022	LHDT2	Aggregate	30	Gasoline	9829.847781	9829.847781	0	0.202308547	0.000941279	0.001023727	844.5757352	0.004818405	0.011883049	0.022505244	0.032839599	0.748929414	0.008349491	0.044974059	0.091000026	0.031850009	89.05945601	0
Fresno	2022	LHDT2	Aggregate	30	Diesel	18974.06272	18974.06272	0	1.816536491	0.037965822	0.039682468	703.2603075	0.008529386	0.110798948	0.183632658	0.209053572	0.473931226	0.006663749	0.160218508	0.091000026	0.031850009	62.82196468	0
Fresno	2022	LHDT2	Aggregate	35	Gasoline	3673.057044	3673.057044	0	0.196228057	0.000807484	0.000878213	755.7622111	0.003861573	0.011531453	0.018240657	0.026616724	0.654916529	0.007471479	0.044974059	0.091000026	0.031850009	79.69418086	0
Fresno	2022	LHDT2	Aggregate	35	Diesel	10013.34949	10013.34949	0	1.750815048	0.031754801	0.033190612	627.7939478	0.007219063	0.098909192	0.155422184	0.176937824	0.380169447	0.005948667	0.160218508	0.091000026	0.031850009	56.08058467	0
Fresno	2022	LHDT2	Aggregate	40	Gasoline	1084.202681	1084.202681	0	0.194137852	0.000726636	0.000790283	697.7378535	0.00324755	0.011424294	0.015529908	0.022661205	0.596402124	0.006897849	0.044974059	0.091000026	0.031850009	73.57558484	0
Fresno	2022	LHDT2	Aggregate	40	Diesel	5497.001564	5497.001564	0	1.710929137	0.027002085	0.028223	568.5895869	0.006156019	0.089581521	0.132535473	0.150882824	0.308886597	0.005387675	0.160218508	0.091000026	0.031850009	50.79188256	0
Fresno	2022	LHDT2	Aggregate	45	Gasoline	1334.748913	1334.748913	0	0.188288961	0.000688703	0.000749028	666.5496439	0.002946892	0.011107045	0.014244637	0.020785741	0.581029079	0.006589522	0.044974059	0.091000026	0.031850009	70.28682712	0
Fresno	2022	LHDT2	Aggregate	45	Diesel	5933.072528	5933.072528	0	1.690916468	0.02364572	0.024714874	527.879946	0.005324152	0.0831677	0.11462585	0.130493909	0.259486611	0.005001931	0.160218508	0.091000026	0.031850009	47.15530647	0
Fresno	2022	LHDT2	Aggregate	50	Gasoline	9855.599946	9855.599946	0	0.183023682	0.000688542	0.000748853	658.6190839	0.002882138	0.010833519	0.014017264	0.020453958	0.60326278	0.00651112	0.044974059	0.091000026	0.031850009	69.45055947	0
Fresno	2022	LHDT2	Aggregate	50	Diesel	22909.473	22909.473	0	1.698847989	0.0216583	0.022637592	510.1831755	0.004716338	0.080379567	0.101539975	0.115596511	0.232344856	0.004834245	0.160218508	0.091000026	0.031850009	45.57446097	0
Fresno	2022	LHDT2	Aggregate	55	Gasoline	2710.755402	2710.755402	0	0.193973819	0.000724393	0.000787843	669.5417863	0.002908241	0.011528473	0.014129593	0.020617868	0.637743351	0.006619102	0.044974059	0.091000026	0.031850009	70.60234479	0
Fresno	2022	LHDT2	Aggregate	55	Diesel	13796.29277	13796.29277	0	1.74392791	0.021040426	0.021991781	511.0035023	0.004332734	0.08050881	0.093281204	0.106194449	0.228908604	0.004842018	0.160218508	0.091000026	0.031850009	45.64774044	0
Fresno	2022	MCY	Aggregate	5	Gasoline	2.008417731	2.008417731	0	0.910218487	0.010502505	0.011215266	481.434955	1.165537238	0.06295824	7.729126747	9.215190511	38.44299222	0.004759475	0.008517287	0.012000003	0.004200001	50.76671447	0
Fresno	2022	MCY	Aggregate	10	Gasoline	10.04313992	10.04313992	0	0.843422416	0.00677631	0.007233621	385.4959819	0.764080284	0.057740144	5.110698101	6.074333299	30.49017283	0.00381102	0.008517287	0.012000003	0.004200001	40.65006963	0
Fresno	2022	MCY	Aggregate	15	Gasoline	16.66817304	16.66817304	0	0.769708618	0.004611096	0.004920598	312.710671	0.52197842	0.052193847	3.504278447	4.15954457	24.84825596	0.003091463	0.008517287	0.012000003	0.004200001	32.97494953	0
Fresno	2022	MCY	Aggregate	20	Gasoline	4329.027851	4329.027851	0	0.729227716	0.003307998	0.003528886	259.3065387	0.378162454	0.048965245	2.554013184	3.025083636	21.07162779	0.002563509	0.008517287	0.012000003	0.004200001	27.34355051	0
Fresno	2022	MCY	Aggregate	25	Gasoline	590.7975873	590.7975873	0	0.696704923	0.002501024	0.002667214	221.5378644	0.288163732	0.046357336	1.955489277	2.312226328	18.460267	0.002190127	0.008517287	0.012000003	0.004200001	23.360891	0
Fresno	2022	MCY	Aggregate	30	Gasoline	1790.819602	1790.819602	0	0.674122186	0.00199208	0.002123856	196.3340966	0.231012907	0.044482571	1.57416213	1.85859672	16.59017482	0.001940962	0.008517287	0.012000003	0.004200001	20.70318518	0
Fresno	2022	MCY	Aggregate	35	Gasoline	3587.90637	3587.90637	0	0.661304945	0.001671044	0.001781133	181.4306551	0.19505281	0.043314245	1.334242522	1.573177701	15.30179763	0.001793627	0.008517287	0.012000003	0.004200001	19.13163588	0
Fresno	2022	MCY	Aggregate	40	Gasoline	9441.832818	9441.832818	0	0.657763581	0.001475798	0.001572674	174.6948854	0.173387501	0.04280637	1.190355986	1.401718288	14.44976449	0.001727037	0.008517287	0.012000003	0.004200001	18.42135739	0
Fresno	2022	MCY	Aggregate	45	Gasoline	7584.374126	7584.374126	0	0.659168809	0.001371839	0.00146161	174.2514974	0.161948589	0.042676291	1.114967822	1.311634569	14.0102749	0.001722653	0.008517287	0.012000003	0.004200001	18.37460268	0
Fresno	2022	MCY	Aggregate	50	Gasoline	16300.54825	16300.54825	0	0.667345078	0.001341875	0.001429458	178.5265767	0.159119873	0.043034945	1.098155631	1.290749947	14.00144021	0.001764917	0.008517287	0.012000003	0.004200001	18.82540445	0
Fresno	2022	MCY	Aggregate	55	Gasoline	15834.97865	15834.97865	0	0.680156363	0.001380913	0.001470861	185.6748729	0.164190962	0.043745609	1.135077973	1.333350893	14.47764832	0.001835585	0.008517287	0.012000003	0.004200001	19.57918335	0
Fresno	2022	MCY	Aggregate	60	Gasoline	8995.917496	8995.917496	0	0.698534551	0.001494846	0.001592074	194.2403589	0.178017156	0.04486828	1.232048709	1.446687205	15.60455267	0.001920264	0.008517287	0.012000003	0.004200001	20.48240315	0
Fresno	2022	MCY	Aggregate	65	Gasoline	10428.10266	10428.10266	0	0.724469725	0.00170198	0.001812584	203.1953778	0.202999105	0.046531293	1.406123575	1.650601484	17.6844487	0.002008793	0.008517287	0.012000003	0.004200001	21.4266987	0
Fresno	2022	MCY	Aggregate	70	Gasoline	7951.170412	7951.170412	0	0.738870102	0.001850735	0.00197098	207.6590399	0.220746626	0.047480188	1.529181929	1.795004728	19.23930161	0.002052921	0.008517287	0.012000003	0.004200001	21.89738629	0
Fresno	2022	MDV	Aggregate	5	Gasoline	107.5692692	107.5692692	0	0.28070733	0.009619252	0.010461305	1104.728667	0.038951597	0.019313809	0.167596829	0.244377192	2.923652628	0.010921368	0.033127996	0.008542925	0.002990024	116.4922576	0
Fresno	2022	MDV	Aggregate	5	Diesel	1.665841806	1.665841806	0	0.198526728	0.026687327	0.02789401	1012.819745	0.010655882	0.159570163	0.229414861	0.261173566	4.083535268	0.009596982	0.0031	0.008284189	0.002899466	90.47478661	0
Fresno	2022	MDV	Aggregate	5	Electricity	264.5873396	0	264.5873	0	0	0	0	0	0	0	0	0	0	0	0.001320581	0.000462203	0	630004.1988
Fresno	2022	MDV	Aggregate	5	Plug-in Hybrid	158.7259405	0.293635593	158.4323	4.70142E-05	2.04276E-05	2.22169E-05	1.588866727	1.61356E-05	8.7793E-06	5.02487E-05	7.33228E-05	0.004330941	1.57076E-05	7.7698E-05	0.001326975	0.000464441	0.167544011	471895.4453
Fresno	2022	MDV	Aggregate	10	Gasoline	537.9026509	537.9026509	0	0.247813052	0.006081868	0.006614232	887.7383599	0.024505379	0.017095157	0.105677315	0.154078643	2.496511499	0.008776197	0.033127996	0.010628866	0.003720103	93.61090084	0
Fresno	2022	MDV	Aggregate	10	Diesel	8.330080983	8.330080983	0	0.178702442	0.020575502	0.021505835	860.1305017	0.00790969	0.135513911	0.170290967	0.193864944	3.050127645	0.008150174	0.0031	0.010306954	0.003607434	76.835117	0
Fresno	2022	MDV	Aggregate	10	Electricity	423.2907563	0	423.2908	0	0	0	0	0	0	0	0	0	0	0	0.002336667	0.000817834	0	425185.0569
Fresno	2022	MDV	Aggregate	10	Plug-in Hybrid	634.9433344	1.468331662	633.475	3.86252E-05	1.6067E-05	1.74743E-05	1.375396194	9.53893E-06	7.21276E-06	2.97057E-05	4.33465E-05	0.003106104	1.35972E-05	9.71267E-05	0.002347981	0.000821793	0.14503381	334507.6066
Fresno	2022	MDV	Aggregate	15	Gasoline	892.7341981	892.7341981	0	0.212568665	0.004055909	0.004410913	732.7595447	0.016612694	0.014690636	0.071783405	0.104654606	2.357938051	0.007244074	0.033127996	0.01272529	0.004453851	77.26857843	0
Fresno	2022	MDV	Aggregate	15	Diesel	13.82508183	13.82508183	0	0.143664489	0.016095169	0.016822921	729.4484258	0.004076474	0.114924897	0.087764089	0.09991358	1.521934214	0.006911895	0.0031	0.012339884	0.00431896	65.16133892	0
Fresno	2022	MDV	Aggregate	15	Electricity	942.7047422	0	942.7047	0	0	0	0	0	0	0	0	0	0	0	0.003352754	0.001173464	0	357684.5769
Fresno	2022	MDV	Aggregate	15	Plug-in Hybrid	1552.857318	2.436927736	1550.42	1.97682E-05	7.23731E-06	7.87124E-06	0.768915996	4.24961E-06	3.69147E-06	1.3234E-05	1.9311E-05	0.001638323	7.60152E-06	6.59114E-05	0.003368985	0.001179145	0.081081231	289719.65
Fresno	2022	MDV	Aggregate	20	Gasoline	231859.3165	231859.3165	0	0.191046368	0.002852442	0.003102094	605.5255996	0.011667256	0.013217388	0.050505282	0.073628342	2.074557107	0.005986237	0.033127996	0.014811231	0.005183931	63.85191789	0
Fresno	2022	MDV	Aggregate	20	Diesel	3590.625329	3590.625329	0	0.12071035	0.012881262	0.013463695	605.8040296	0.001827645	0.095444672	0.03934813	0.04479523	0.629170838	0.005740301	0.0031	0.01436265	0.005026927	54.11623399	0
Fresno	2022	MDV	Aggregate	20	Electricity	1384.425179	0	1384.425	0	0	0	0	0	0	0	0	0	0	0	0.004372149	0.001530252	0	334944.5347
Fresno	2022	MDV	Aggregate	20	Plug-in Hybrid	2888.35809	632.9144782	2255.444	0.002309391	0.000707648	0.000769632	91.93785605	0.000434014	0.000431249	0.00135159	0.001972237	0.179566476	0.000908899	0.009203294	0.004393753	0.001537814	9.694732047	212345.0023
Fresno	2022	MDV	Aggregate	25	Gasoline	31642.65269	31642.65269	0	0.173561211	0.002115166	0.002300279	518.0585471	0.008699518	0.012013369	0.037720195	0.054986193	1.902148583	0.005121536	0.033127996	0.015670765	0.005484768	54.62862649	0
Fresno	2022	MDV	Aggregate	25	Diesel	490.0252099	490.0252099	0	0.111875154	0.010617078	0.011097136	512.2696433	0.001194899	0.080708291	0.025725482	0.02928675	0.394630382	0.004854015	0.0031	0.015196151	0.005318653	45.76084431	0
Fresno	2022	MDV	Aggregate	25	Electricity	1512.074385	0	1512.074	0	0	0	0	0	0	0	0	0	0	0	0.00497452	0.001741082	0	331465.6743
Fresno	2022	MDV	Aggregate	25	Plug-in Hybrid	2344.256343	86.37605475	2257.88	0.000336135	8.7903E-05	9.56025E-05	13.81238304	5.76076E-05	6.27689E-05	0.000179399	0.000261779	0.025747086	0.000136549	0.001547525	0.004998684	0.001749539	1.456498533	251443.5961
Fresno	2022	MDV	Aggregate	30	Gasoline	95914.88509	95914.88509	0	0.160262016	0.00165349	0.00179819	460.0889433	0.006831162	0.011092141	0.029658416	0.043231591	1.752126051	0.004548448	0.033127996	0.015293408	0.005352693	48.5158042	0

Fresno	2022	MDV	Aggregate	30	Diesel	1485.359403	1485.359403	0	0.108817809	0.009114946	0.009527084	442.441441	0.000933969	0.069706829	0.020107812	0.022891407	0.305346771	0.004192358	0.0031	0.014830223	0.005190578	39.52311866	0
Fresno	2022	MDV	Aggregate	30	Electricity	1515.939538	0	1515.94	0	0	0	0	0	0	0	0	0	0	0	0.005163174	0.001807111	0	331846.1361
Fresno	2022	MDV	Aggregate	30	Plug-in Hybrid	2065.741646	261.8222134	1803.919	0.001025689	0.000235652	0.000256293	43.34754416	0.000163384	0.000191534	0.000508804	0.000742445	0.077803615	0.000428535	0.005323286	0.005188468	0.001815964	4.57094437	224200.9794
Fresno	2022	MDV	Aggregate	35	Gasoline	192165.4346	192165.4346	0	0.151011837	0.001362494	0.001481722	426.7366791	0.005646587	0.01044626	0.024540689	0.035769516	1.621284411	0.004218727	0.033127996	0.014916052	0.005220618	44.99884962	0
Fresno	2022	MDV	Aggregate	35	Diesel	2975.91698	2975.91698	0	0.107969383	0.00809584	0.008461897	401.4544247	0.000768501	0.063249308	0.016545383	0.018835818	0.249487385	0.003803985	0.0031	0.014464296	0.005062504	35.86176473	0
Fresno	2022	MDV	Aggregate	35	Electricity	1424.744986	0	1424.745	0	0	0	0	0	0	0	0	0	0	0	0.005355138	0.001874298	0	333403.3612
Fresno	2022	MDV	Aggregate	35	Plug-in Hybrid	1819.190631	524.5607018	1294.63	0.002112854	0.000440777	0.000479385	91.25955157	0.000315736	0.000394548	0.000983252	0.001434758	0.158735436	0.000902194	0.012110633	0.00538177	0.001883619	9.623205687	180689.7768
Fresno	2022	MDV	Aggregate	40	Gasoline	505697.1169	505697.1169	0	0.145276616	0.00118333	0.001286875	412.1033285	0.004897304	0.010039593	0.021297936	0.031041288	1.485002472	0.004074061	0.033127996	0.013165539	0.004607939	43.45578108	0
Fresno	2022	MDV	Aggregate	40	Diesel	7831.338867	7831.338867	0	0.108411191	0.007413317	0.007748515	375.5053939	0.000659371	0.059161028	0.01419588	0.016161065	0.212788054	0.003558104	0.0031	0.0127668	0.00446838	33.54374809	0
Fresno	2022	MDV	Aggregate	40	Electricity	1240.663288	0	1240.663	0	0	0	0	0	0	0	0	0	0	0	0.004944732	0.001730656	0	337996.5411
Fresno	2022	MDV	Aggregate	40	Plug-in Hybrid	2254.330861	1380.419091	873.9118	0.004128962	0.000811877	0.00088299	180.5403355	0.000580402	0.00077103	0.001807464	0.002637448	0.302512475	0.001784825	0.02571832	0.004970059	0.001739521	19.0377528	102995.9039
Fresno	2022	MDV	Aggregate	45	Gasoline	406213.0947	406213.0947	0	0.141827214	0.001083174	0.001177951	413.3598324	0.004480763	0.009787534	0.019492143	0.028407883	1.381134176	0.004086483	0.033127996	0.010041868	0.003514654	43.58827784	0
Fresno	2022	MDV	Aggregate	45	Diesel	6290.707007	6290.707007	0	0.109632647	0.006985776	0.007301642	361.3697168	0.000587189	0.056933946	0.012641838	0.014391892	0.188446071	0.003424162	0.0031	0.009737734	0.003408207	32.28101365	0
Fresno	2022	MDV	Aggregate	45	Electricity	917.1087806	0	917.1088	0	0	0	0	0	0	0	0	0	0	0	0.003928646	0.001375026	0	344877.5501
Fresno	2022	MDV	Aggregate	45	Plug-in Hybrid	1631.957867	1108.854079	523.1038	0.004245936	0.000824314	0.000896516	188.6685944	0.000568203	0.000792874	0.001769475	0.002582014	0.307963797	0.001865181	0.028537423	0.003948889	0.001382111	19.89486755	86876.14595
Fresno	2022	MDV	Aggregate	50	Gasoline	873044.5045	873044.5045	0	0.141166479	0.001045002	0.001136435	425.1201948	0.004313302	0.009724211	0.018762643	0.027343347	1.28865747	0.004202746	0.033127996	0.006918197	0.002421369	44.82839337	0
Fresno	2022	MDV	Aggregate	50	Diesel	13520.16282	13520.16282	0	0.111413442	0.006772238	0.007078449	363.1805305	0.000541884	0.05721924	0.011666434	0.013281459	0.173094014	0.00344132	0.0031	0.006708669	0.002348034	32.44277292	0
Fresno	2022	MDV	Aggregate	50	Electricity	523.697008	0	523.697	0	0	0	0	0	0	0	0	0	0	0	0.00291587	0.001020554	0	355019.4389
Fresno	2022	MDV	Aggregate	50	Plug-in Hybrid	2634.611579	2383.180091	251.4315	0.005288384	0.001059333	0.001152121	237.9354413	0.000675982	0.000987538	0.002105115	0.003071779	0.378958092	0.002352234	0.037991773	0.002931196	0.001025919	25.08999499	26542.95733
Fresno	2022	MDV	Aggregate	55	Gasoline	848108.9641	848108.9641	0	0.142707268	0.001062645	0.001155618	442.5349157	0.004374457	0.009808047	0.019020705	0.027718263	1.213238672	0.004374908	0.033127996	0.004811292	0.001683952	46.66475393	0
Fresno	2022	MDV	Aggregate	55	Diesel	13134.00546	13134.00546	0	0.113539998	0.006761761	0.007067498	383.2823326	0.00051858	0.060386288	0.011164714	0.012710285	0.165284015	0.003631795	0.0031	0.004665574	0.001632951	34.23845895	0
Fresno	2022	MDV	Aggregate	55	Electricity	207.2245943	0	207.2246	0	0	0	0	0	0	0	0	0	0	0	0.002151323	0.000752963	0	368986.6923
Fresno	2022	MDV	Aggregate	55	Plug-in Hybrid	2400.393812	2315.112675	85.28114	0.00529605	0.001150223	0.001250972	241.8066692	0.000651569	0.000988969	0.00202909	0.002960843	0.377560925	0.002390505	0.040507825	0.00216269	0.000756941	25.49821113	10772.84342
Fresno	2022	MDV	Aggregate	60	Gasoline	481814.2441	481814.2441	0	0.146863933	0.001139078	0.001238737	460.5809537	0.004672701	0.010065601	0.020302483	0.029585119	1.150924729	0.004553312	0.033127996	0.003721151	0.001302403	48.56768609	0
Fresno	2022	MDV	Aggregate	60	Diesel	7461.483346	7461.483346	0	0.116503054	0.00704682	0.007365446	415.01764	0.000529202	0.065386198	0.011393418	0.012970649	0.170489567	0.003932503	0.0031	0.003608451	0.001262958	37.07336138	0
Fresno	2022	MDV	Aggregate	60	Electricity	53.06321956	0	53.06322	0	0	0	0	0	0	0	0	0	0	0	0.001635005	0.000572252	0	386630.2541
Fresno	2022	MDV	Aggregate	60	Plug-in Hybrid	1331.71518	1315.225178	16.49	0.005118104	0.001265363	0.001376198	237.0885161	0.00060868	0.00095574	0.001895526	0.002765947	0.36389838	0.002343861	0.041479934	0.001643661	0.000575281	25.00068779	3950.821482
Fresno	2022	MDV	Aggregate	65	Gasoline	558520.9517	558520.9517	0	0.154418875	0.001287278	0.0013999	474.1962329	0.005249788	0.010547235	0.022786677	0.03320421	1.093549446	0.004687913	0.033127996	0.002631011	0.000920854	50.00340026	0
Fresno	2022	MDV	Aggregate	65	Diesel	8649.380608	8649.380608	0	0.120116909	0.007661464	0.008007882	466.0066398	0.000571805	0.073419536	0.012310632	0.014014837	0.188509227	0.00441565	0.0031	0.002551327	0.000892964	41.62818853	0
Fresno	2022	MDV	Aggregate	65	Electricity	7.745583714	0	7.745584	0	0	0	0	0	0	0	0	0	0	0	0.001121997	0.000392699	0	404777.6705
Fresno	2022	MDV	Aggregate	65	Plug-in Hybrid	1526.381212	1524.614158	1.767054	0.004919487	0.001450417	0.001577461	229.9956783	0.000564952	0.000918651	0.00175935	0.002567239	0.345911685	0.002273741	0.041951378	0.001127943	0.00039478	24.2527569	405.6154428
Fresno	2022	MDV	Aggregate	70	Gasoline	425858.4145	425858.4145	0	0.15925788	0.001395915	0.001518042	479.0428989	0.005684204	0.010856216	0.024658088	0.035930715	1.078255322	0.004735827	0.033127996	0.002631011	0.000920854	50.51447514	0
Fresno	2022	MDV	Aggregate	70	Diesel	6594.938831	6594.938831	0	0.121904274	0.008090006	0.0084558	501.6639175	0.000601509	0.079037355	0.012950132	0.014742864	0.201122021	0.004753521	0.0031	0.002551327	0.000892964	44.81343903	0
Fresno	2022	MDV	Aggregate	70	Electricity	1.256266997	0	1.256267	0	0	0	0	0	0	0	0	0	0	0	0.001121997	0.000392699	0	449707.4317
Fresno	2022	MDV	Aggregate	70	Plug-in Hybrid	1162.586842	1162.480595	0.106247	0.00468955	0.001577082	0.00171522	222.0682713	0.000523352	0.000875713	0.001629802	0.002378203	0.329995826	0.002195371	0.041996162	0.001127944	0.00039478	23.41682174	31.94671583
Fresno	2022	MH	Aggregate	5	Gasoline	387.9157604	387.9157604	0	0.806133125	0.008916375	0.009697372	4219.103168	0.093474852	0.04845278	0.416397389	0.607606092	5.405393932	0.04171013	0.044632355	0.061495877	0.021523557	444.8991574	0
Fresno	2022	MH	Aggregate	5	Diesel	174.324328	174.324328	0	15.07158735	0.310603015	0.324647105	2148.755686	0.050853351	0.338537333	1.094842697	1.24640562	2.453019843	0.020360552	0.119635239	0.061495877	0.021523557	191.9474943	0
Fresno	2022	MH	Aggregate	10	Gasoline	688.3325274	688.3325274	0	0.714885145	0.005680232	0.006177771	3424.397755	0.060533988	0.042629543	0.27174215	0.396525508	4.198203573	0.033853658	0.044632355	0.061495877	0.021523557	361.0984646	0
Fresno	2022	MH	Aggregate	10	Diesel	262.766674	262.766674	0	12.52688036	0.264047377	0.275986428	1951.079399	0.038360861	0.307393354	0.825886754	0.940217161	1.966481574	0.018487469	0.119635239	0.061495877	0.021523557	174.2891498	0
Fresno	2022	MH	Aggregate	15	Gasoline	516.4889549	516.4889549	0	0.645194514	0.003817548	0.004151932	2800.229923	0.041328294	0.038153742	0.186884235	0.272701037	3.408764481	0.027683124	0.044632355	0.061495877	0.021523557	295.2807466	0
Fresno	2022	MH	Aggregate	15	Diesel	225.49813	225.49813	0	8.642530683	0.187671081	0.196156735	1602.005316	0.019402804	0.25239659	0.417730947	0.475558911	1.204633203	0.015179815	0.119635239	0.061495877	0.021523557	143.1065002	0
Fresno	2022	MH	Aggregate	20	Gasoline	540.8126357	540.8126357	0	0.591946113	0.002706202	0.002943241	2327.593322	0.029767288	0.034707304	0.135536621	0.19777472	2.877187223	0.02301063	0.044632355	0.060630201	0.02122057	245.4418075	0
Fresno	2022	MH	Aggregate	20	Diesel	238.2722002	238.2722002	0	6.321247037	0.13360809	0.139649255	1314.635887	0.008480643	0.207121419	0.182583244	0.207858885	0.724422392	0.012456843	0.119635239	0.060630201	0.02122057	117.435903	0
Fresno	2022	MH	Aggregate	25	Gasoline	640.5209406	640.5209406	0	0.551694375	0.002023045	0.002200246	1989.502504	0.022597666	0.032074459	0.103550612	0.15110081	2.509498083	0.019668258	0.044632355	0.049809241	0.017433234	209.7905532	0
Fresno	2022	MH	Aggregate	25	Diesel	274.7830115	274.7830115	0	5.48984205	0.110958531	0.115975583	1179.174959	0.005851189	0.185779495	0.125972654	0.143411491	0.558793848	0.011173282	0.119635239	0.049809241	0.017433234	105.335232	0
Fresno	2022	MH	Aggregate	30	Gasoline	762.2771605	762.2771605	0	0.522979451	0.001594526	0.001734192	1765.332623	0.018044409	0.030157463	0.083159716	0.121346463	2.250101436	0.01745211	0.044632355	0.044398761	0.015539566	186.1521194	0
Fresno	2022	MH	Aggregate	30	Diesel	321.0680449	321.0680449	0	5.039597476	0.098899351	0.103371141	1106.834006	0.004703788	0.174382148	0.101269796	0.11528893	0.47167529	0.010487815	0.119635239	0.044398761	0.015539566	98.87304332	0
Fresno	2022	MH	Aggregate	35	Gasoline	843.7014174	843.7014174	0	0.503149555	0.001324811	0.001440853	1636.385439	0.015172889	0.02879496	0.070284314	0.102558706	2.072879233	0.016177336	0.044632355	0.041585311	0.014554859	172.5548	0
Fresno	2022	MH	Aggregate	35	Diesel	359.8112025	359.8112025	0	4.717633453	0.091837684	0.095990176	1046.799983	0.003857283	0.164923764	0.083045034	0.094541249	0.404469189	0.009918962	0.119635239	0.041585311	0.014554859	93.51022784	0
Fresno	2022	MH	Aggregate	40	Gasoline	891.2168148	891.2168148	0	0.490929384	0.001160084	0.001261698	1583.985419	0.0134292	0.027907069	0.06248604	0.091179483	1.961560023	0.015659308	0.044632355	0.041585311	0.014554859	167.0292833	0
Fresno	2022	MH	Aggregate	40	Diesel	383.0372115	383.0372115	0	4.485909663	0.089678924	0.093733807	999.0728919	0.00325317	0.157404341	0.07003883	0.079734552	0.353619882	0.009466723	0.119635239	0.041585311	0.014554859	89.24678567	0
Fresno	2022	MH	Aggregate	45	Gasoline	836.4517216	836.4517216	0	0.484459152	0.001070439	0.001164201	1589.479555	0.012515066	0.027384268	0.058456631	0.085299779	1.910995804	0.015713624	0.044632355	0.041585311	0.014554859	167.6086331	0
Fresno	2022	MH	Aggregate	45	Diesel	361.6348631	361.6348631	0	4.323065603	0.092369645	0.09654619	963.6527321	0.002863139	0.15182388	0.061641703	0.07017498	0.317406795	0.009131099	0.119635239	0.041585311	0.014554859	86.08271683	0
Fresno	2022	MH	Aggregate	50	Gasoline	899.1677343	899.1677343	0	0.486272255	0.001040648	0.0011318	1636.08253	0.012233874	0.02736333	0.057313719	0.083632044	1.917254897	0.016174341	0.044632355	0.041585311	0.014554859	172.5228586	0
Fresno	2022	MH	Aggregate	50	Diesel	420.2665435	420.2665435	0	4.225768628	0.099877161	0.104393163	940.5395023	0.002671981	0.148182382	0.057526174	0.065489725	0.294905463	0.00891209	0.119635239	0.041585311	0.014554859	84.01802117	0
Fresno	2022	MH	Aggregate	55	Gasoline	1477.28841	1477.28841	0	0.492997317	0.001065754	0.001159104	1703.321769	0.012599417	0.027656966	0.059168449	0.086338462	1.999280603	0.01683907	0.044632355	0.041585311	0.014554859	179.6131523	0
Fresno	2022	MH	Aggregate	55	Diesel	741.9096948	741.9096948	0	4.184334635	0.112180236	0.117252529	929.7332027	0.002670858	0.146479845	0.057502006	0.065462211	0.285578843	0.008809695	0.119635239	0.041585311	0.014554859	83.0526987	0
Fresno	2022	MH	Aggregate	60	Gasoline	2832.076998	2832.076998	0	0.504522993	0.001149671	0.001250372	1772.595089	0.013657648	0.028259696	0.064251194	0.093755191	2.179770271	0.017523907	0.044632355	0.041585311	0.014554859	186.9179373	0
Fresno	2022	MH	Aggregate	60	Diesel	1334.685478	1334.685478	0	4.21248338	0.129404957	0.135256075	931.2338345	0.002878179	0.14671627	0.06196549	0.070543591	0.290545665	0.008823914	0.119635239	0.041585311	0.014554859	83.18674955	0
Fresno	2022	MH	Aggregate	65	Gasoline	2796.895173	2796.895173	0	0.520966996	0.001306236	0.001420651	1827.20536	0.015596633	0.029181876	0.073460659	0.107193621	2.505528917	0.018063785	0.044632355	0.041585311	0.014554859	192.6765222	0
Fresno	2022	MH	Aggregate	65	Diesel	1261.658925	1261.658925	0	4.304802352	0.151513703	0.158364481	945.0413978	0.003283661	0.148891657	0.070695281	0.080481877	0.309181071	0.008954748	0.119635239	0.041585311	0.014554859	84.42017371	0
Fresno	2022	MH	Aggregate	70	Gasoline	125.0683204	125.0683204	0	0.534733813	0.001419668	0.001544018	1844.375852	0.016938194	0.029967647	0.079794673	0.116436199	2.737388346	0.018233533	0.044632355	0.041585311	0.014554859	194.4871291	0
Fresno	2022	MH	Aggregate	70	Diesel	42.74426997	42.74426997	0	4.440338578	0.178355308	0.186419744	971.1558912	0.003860696	0.153006006	0.083118507	0.094624895	0.339867847	0.009202196	0.119635239	0.041585311	0.014554859	86.75297106	0
Fresno	2022	MH	Aggregate	75	Gasoline	37.10902945	37.10902945	0	0.54211987	0.001419668	0.001544018	1844.338553	0.016798601	0.030372479	0.079097539	0.115418944	2.715776836	0.018233164	0.044632355	0.041585311	0.014554859	194.483196	0
Fresno	2022	MH	Aggregate	75	Diesel	13.54196105	13.54196105	0	4.446028772	0.178355308	0.186419744	971.1558912	0.003860696	0.153006006	0.083118507	0.094624895	0.339867847	0.009202196	0.119635239	0.041585311	0.014554859	86.75297106	0
Fresno	2022	MHDT	Aggregate	5	Gasoline	1473.580065	1473.580065	0	1.108412838	0.007182961	0.007812126	3997.553906	0.117515421	0.051353852	0.601445387	0.877627696	5.607636393	0.03951989	0.044779043	0.061495877	0.021523557	421.5370646	0
Fresno	2022	MHDT	Aggregate	5	Diesel	918.1579427	918.1579427	0	11.60731307	0.086544494	0.090457652	2409.489584	0.018824957	0.379616065	0.405296156	0.461398822	0.628726793	0.022816426	0.13483826	0.061495877	0.021523557	215.2387501	0
Fresno	2022	MHDT	Aggregate	5	Natural Gas	80.81747924	80.81747924	0	0.484004223	0.003938701	0.004283697	2571.589746	3.777324668	0.524235392	0.053970516	3.855036881	8.095840474	0	1.06	0.061495877	0.021523557	297.2365528	0
Fresno	2022	MHDT	Aggregate	10	Gasoline	2614.776697	2614.776697	0	0.973022957	0.004557643	0.004956853	3244.922371	0.07524421	0.044953146	0.386411933	0.563851385	4.694777625	0.032079361	0.044779043	0.061495877	0.021523557	342.1730096	0
Fresno	2022	MHDT	Aggregate	10	Diesel	9268.677612	9268.677612	0	4.588331143	0.054905037	0.057387599	2025.987802	0.012065427	0.319195203	0.259765326	0.29572305	0.551469653	0.019184893	0.190028262	0.061495877	0.021523557	180.9806878	0
Fresno	2022	MHDT	Aggregate	10	Natural Gas	193.8993758	193.8993758	0	0.292553519	0.003711982	0.00403712	2071.236264	2.542880329	0.422235062	0.036332742	2.595195889	7.623732085	0	1.06	0.061495877	0.021523557	239.4033216	0
Fresno	2022	MHDT	Aggregate	15	Gasoline	1961.992539	1961.992539	0	0.868788311	0.003050917	0.003318151	2653.741309	0.050812449	0.040015445	0.261808386	0.382030182	4.044927824	0.026234935	0.044779043	0.061495877	0.021523557	279.8337053	0
Fresno	2022	MHDT	Aggregate	15	Diesel	16164.76126	16164.76126	0	2.83318093	0.03463225	0.036198167	1599.17853	0.00643459	0.251951229	0.138534968	0.157711515	0.369496978	0.015143264	0.196973761	0.061495877	0.021523557	142.8539846	0
Fresno	2022	MHDT	Aggregate	15	Natural Gas	200.9133876	200.9133876	0	0.167559377	0.003119138	0.003392348	1575.209394	1.563089131	0.32111674	0.022333459	1.595247107	6.558957248	0	1.06	0.061495877	0.021523557	182.0701809	0
Fresno	2022	MHDT	Aggregate	20	Gasoline	2054.391185	2054.391185	0	0.788369135	0.002154354	0.002343057	2206.036181	0.036214812	0.036196628	0.18719281	0.273151309	3.565495323	0.021808914	0.044779043	0.060630201	0.02122057	232.6237589	0
Fresno	2022	MHDT	Aggregate	20	Diesel	21401.75532	21401.75532	0	2.136591607	0.022121985	0.023122243	1362.512835	0.003411043	0.214664452	0.073438825	0.083604512	0.266863484	0.012902182	0.199440282	0.060630201	0.02122057	121.7127318	0
Fresno	2022	MHDT	Aggregate	20	Natural Gas	199.5564677	199.5564677	0	0.115598295	0.002564077	0.002788668	1317.089694	1.141978499	0.26849735	0.016316619	1.165472819	5.544186943	0	1.06	0.060630201	0.02122057	152.2354804	0
Fresno	2022	MHDT	Aggregate	25	Gasoline	2433.154271	2433.154271	0	0.726771735	0.001604499	0.001745039	1885.735953	0.027220551	0.033262076	0.141129374	0.205935651	3.19928261	0.01864242	0.044779043	0.049809241	0.017433234	198.8485001	0
Fresno	2022	MHDT	Aggregate	25	Diesel	29091.94645	29091.94645	0	1.834579278	0.017409117	0.01819628	1226.600175	0.002457939	0.193251357	0.052918749	0.060243967	0.210613677	0.01161517	0.199237734	0.049809241	0.017433234	109.5717078	0
Fresno	2022	MHDT	Aggregate	25	Natural Gas	278.1419445	278.1419445	0	0.095991519	0.002016714	0.002193361	1148.449158	0.901537028	0.234118874	0.012881185	0.920084662	4.55873663	0	1.06	0.049809241	0.017433234	132.7432066	0
Fresno	2022	MHDT	Aggregate	30	Gasoline	2895.671026	2895.671026	0	0.681688352	0.001260184	0.001370565	1673.315117	0.021540894	0.031101163	0.111993439	0.163420564	2.910384443	0.016542423	0.044779043	0.044398761	0.015539566	176.4489883	0
Fresno	2022	MHDT	Aggregate	30	Diesel	40217.8599	40217.8599	0	1.581374656	0.014675319	0.015338872	1126.676682	0.001908903	0.17750837	0.041098156	0.046787122	0.169514593	0.010668954	0.199260689	0.044398761	0.015539566	100.6455817	0
Fresno	2022	MHDT	Aggregate	30	Natural Gas	387.1409919	387.1409919	0	0.082642628	0.001567945	0.001705283	1029.593627	0.746762928	0.209889396	0.010669769	0.762126341	3.685656729	0	1.06	0.044398761	0.015539566	119.0053199	0
Fresno	2022	MHDT	Aggregate	35	Gasoline	3204.978288	3204.978288	0	0.649421514	0.001043618	0.00113503	1551.070187	0.017965463	0.029541776	0.093641779	0.136641864	2.683732283	0.015333908	0.044779043	0.041585311	0.014554859	163.5584131	0
Fresno	2022	MHDT	Aggregate	35	Diesel	49222.92485	49222.92485	0	1.39072646	0.012864552	0.01344623	1051.750079	0.001495574	0.165703653	0.03219929	0.036656441	0.135941448	0.009959444	0.199221507	0.041585311	0.014554859	93.95241789	0
Fresno	2022	MHDT	Aggregate	35	Natural Gas	483.8811358	483.8811358	0	0.073530368	0.001211907	0.001318059	939.7534583	0.638065336	0.19157489	0.009116695	0.651192476	2.921663599	0	1.06	0.041585311	0.014554859	108.6211667	0
Fresno	2022	MHDT	Aggregate	40	Gasoline	3385.475575	3385.475575	0	0.628122753	0.000911176	0.000990987	1501.31471	0.015786012	0.028497057	0.082468023	0.120337146	2.50808927	0.014842024	0.044779043	0.041585311	0.014554859	158.3117603	0
Fresno	2022	MHDT	Aggregate	40	Diesel	39536.59724	39536.59724	0	1.32248027	0.012143513	0.012692589	1002.597849	0.001214784	0.157959699	0.026153962	0.029774295	0.109640783	0.009494002	0.197803315	0.041585311	0.014554859	89.56166871	0
Fresno	2022	MHDT	Aggregate	40	Natural Gas	461.2733176	461.2733176	0	0.06968137	0.000937133	0.001019217	866.7161106	0.554360549	0.176685749	0.007920718	0.565765601	2.277034023	0	1.06	0.041585311	0.014554859	100.1791633	0
Fresno	2022	MHDT	Aggregate	45	Gasoline	3177.438785	3177.438785	0	0.615305414	0.00083861	0.000912064	1506.380942	0.014619043	0.027852611	0.076522139	0.111660926	2.379504351	0.014892109	0.044779043	0.041585311	0.014554859	158.8459882	0
Fresno	2022	MHDT	Aggregate	45	Diesel	22093.71682	22093.71682	0	1.387325893	0.012433247	0.012995423	978.529664	0.0010452	0.154167747	0.022502868	0.025617803	0.089575976	0.009266091	0.194855513	0.041585311	0.014554859	87.41166726	0
Fresno	2022	MHDT	Aggregate	45	Natural Gas	346.4998078	346.4998078	0	0.067604969	0.000758122	0.000824527	806.1452616	0.488102697	0.164337985	0.006974024	0.498144604	1.768975036	0	1.06	0.041585311	0.014554859	93.17809693	0
Fresno	2022	MHDT	Aggregate	50	Gasoline	3415.678824	3415.678824	0	0.613978623	0.000813514	0.000884771	1550.365269	0.01422102	0.027742192	0.074554978	0.108790449	2.291377729	0.015326939	0.044779043	0.041585311	0.014554859	163.4840805	0
Fresno	2022	MHDT	Aggregate	50	Diesel	14130.44587	14130.44587	0	1.387058793	0.013131036	0.013724763	975.2315936	0.0009519	0.153648135	0.020494139	0.023331017	0.074938402	0.00923486	0.19441055	0.041585311	0.014554859	87.11705193	0
Fresno	2022	MHDT	Aggregate	50	Natural Gas	236.7325755	236.7325755	0	0.063272901	0.000687712	0.000747949	757.7533474	0.438007577	0.154472977	0.006258264	0.447018859	1.369094838	0	1.06	0.041585311	0.014554859	87.58472972	0
Fresno	2022	MHDT	Aggregate	55	Gasoline	5611.79249	5611.79249	0	0.619981534	0.000831715	0.000904566	1613.870653	0.014587514	0.027978583	0.076573275	0.111735543	2.257132687	0.015954754	0.044779043	0.041585311	0.014554859	170.1806439	0
Fresno	2022	MHDT	Aggregate	55	Diesel	16982.78583	16982.78583	0	1.39219094	0.014631751	0.015293334	995.8957558	0.000954546	0.156903782	0.020551118	0.023395883	0.066945661	0.009430537	0.194994699	0.041585311	0.014554859	88.96297336	0
Fresno	2022	MHDT	Aggregate	55	Natural Gas	277.5693007	277.5693007	0	0.058869847	0.000712488	0.000774896	717.4040635	0.398160323	0.146247511	0.005688925	0.406351813	1.072197372	0	1.06	0.041585311	0.014554859	82.92096791	0
Fresno	2022	MHDT	Aggregate	60	Gasoline	10758.2435	10758.2435	0	0.633193464	0.000896092	0.000974582	1679.262651	0.015766016	0.028556679	0.082836637	0.120875026	2.287794322	0.016601221	0.044779043	0.041585311	0.014554859	177.0761484	0
Fresno	2022	MHDT	Aggregate	60	Diesel	27460.18125	27460.18125	0	1.289565312	0.015378979	0.016074348	1038.18227	0.000943294	0.163566039	0.020308866	0.023120098	0.062112702	0.009830965	0.198848508	0.041585311	0.014554859	92.74041093	0
Fresno	2022	MHDT	Aggregate	60	Natural Gas	342.3902824	342.3902824	0	0.05749834	0.000720174	0.000783254	718.5367915	0.399995089	0.146478425	0.005715141	0.408224327	1.050556792	0	1.06	0.041585311	0.014554859	83.05189399	0
Fresno	2022	MHDT	Aggregate	65	Gasoline	10624.5979	10624.5979	0	0.653878347	0.001017363	0.001106475	1730.699705	0.017967308	0.02948989	0.094461407	0.137837863	2.409439588	0.017109729	0.044779043	0.041585311	0.014554859	182.5001215	0
Fresno	2022	MHDT	Aggregate	65	Diesel	36629.14058	36629.14058	0	1.154585392	0.015758052	0.016470561	1106.539414	0.000922991	0.174335735	0.019871753	0.022622479	0.060832682	0.010478267	0.204435357	0.041585311	0.014554859	98.84672751	0
Fresno	2022	MHDT	Aggregate	65	Natural Gas	235.1216286	235.1216286	0	0.051103855	0.000755663	0.000821852	724.4093484	0.408484894	0.147675585	0.005836443	0.416888796	0.949711648	0	1.06	0.041585311	0.014554859	83.730672	0
Fresno	2022	MHDT	Aggregate	70	Gasoline	475.0984686	475.0984686	0	0.671575092	0.001105504	0.001202337	1746.782418	0.01950694	0.030294156	0.102566851	0.149665308	2.510264252	0.017268723	0.044779043	0.041585311	0.014554859	184.1960234	0
Fresno	2022	MHDT	Aggregate	70	Diesel	34046.3945	34046.3945	0	1.014286307	0.014288095	0.014934139	1103.143704	0.000815859	0.17380074	0.017565229	0.019996676	0.055341532	0.010446111	0.206996816	0.041585311	0.014554859	98.54339006	0
Fresno	2022	MHDT	Aggregate	70	Natural Gas	143.1223253	143.1223253	0	0.048048411	0.000772621	0.000840296	727.3041495	0.412544731	0.148265709	0.00589445	0.421032157	0.901368963	0	1.06	0.041585311	0.014554859	84.06526685	0
Fresno	2022	MHDT	Aggregate	75	Gasoline	140.9664974	140.9664974	0	0.680530722	0.001105504	0.001202337	1746.752036	0.019365635	0.030694829	0.101800778	0.148547456	2.493199675	0.017268422	0.044779043	0.041585311	0.014554859	184.1928197	0
Fresno	2022	MHDT	Aggregate	75	Diesel	4769.092682	4769.092682	0	0.979143097	0.013282998	0.013883597	1100.172025	0.000738433	0.173332551	0.015898263	0.018098962	0.051466543	0.010417971	0.207363551	0.041585311	0.014554859	98.27793115	0
Fresno	2022	MHDT	Aggregate	75	Natural Gas	21.12311471	21.12311471	0	0.052700323	0.00074742	0.000812887	722.9813261	0.406511553	0.147384473	0.005808248	0.414874857	0.973210401	0	1.06	0.041585311	0.014554859	83.5656144	0
Fresno	2022	MHDT	Aggregate	80	Diesel	174.8193815	174.8193815	0	0.846267085	0.012242704	0.012796265	1098.154185	0.000666246	0.173014639	0.014344094	0.016329659	0.047917022	0.010398863	0.209966403	0.041585311	0.014554859	98.09767832	0
Fresno	2022	MHDT	Aggregate	80	Natural Gas	0.325057493	0.325057493	0	0.041090181	0.000811416	0.000882489	733.9353161	0.421832166	0.149617515	0.006027149	0.430510666	0.790772684	0	1.06	0.041585311	0.014554859	84.83172857	0
Fresno	2022	MHDT	Aggregate	85	Diesel	13.83003451	13.83003451	0	0.647233819	0.009143925	0.009557372	1089.974247	0.00043253	0.171725886	0.009312262	0.010601302	0.035934791	0.010321404	0.2131091	0.041585311	0.014554859	97.36696771	0
Fresno	2022	MHDT	Aggregate	90	Diesel	0.017372606	0.017372606	0	0.64313863	0.009143925	0.009557372	1089.974247	0.000434471	0.171725886	0.009354046	0.01064887	0.036372794	0.010321404	0.2131091	0.041585311	0.014554859	97.36696771	0
Fresno	2022	OBUS	Aggregate	5	Gasoline	179.7514732	179.7514732	0	1.207784586	0.005001239	0.005439304	4088.935998	0.118386933	0.055935145	0.589299663	0.859904685	5.233531375	0.040423295	0.044780196	0.061495877	0.021523557	431.1731919	0
Fresno	2022	OBUS	Aggregate	5	Diesel	85.24739203	85.24739203	0	7.510708912	0.218819469	0.228713514	2420.874003	0.056580395	0.381409685	1.218160389	1.386782875	1.950284524	0.022924229	0.18942247	0.061495877	0.021523557	216.2557157	0
Fresno	2022	OBUS	Aggregate	5	Natural Gas	0.99106666	0.99106666	0	0.63183088	0.00369148	0.004014821	2632.68857	3.79973364	0.536690787	0.054290696	3.87790688	7.875947208	0	1.06	0.061495877	0.021523557	304.298645	0
Fresno	2022	OBUS	Aggregate	10	Gasoline	596.8722354	596.8722354	0	1.062395385	0.003177384	0.003455695	3319.172367	0.075619665	0.04896587	0.377596332	0.550987681	4.430984276	0.032813398	0.044780196	0.061495877	0.021523557	350.0025789	0
Fresno	2022	OBUS	Aggregate	10	Diesel	288.1246534	288.1246534	0	6.295363809	0.165104738	0.172570042	2145.986332	0.03921756	0.33810102	0.844343316	0.961220593	1.491900828	0.020321207	0.19166931	0.069649222	0.024377228	191.7001089	0
Fresno	2022	OBUS	Aggregate	10	Natural Gas	2.996105892	2.996105892	0	0.420966112	0.003348481	0.003641779	2108.610444	2.547280882	0.429854033	0.036395618	2.599686977	7.291771623	0	1.06	0.061495877	0.021523557	243.7232069	0
Fresno	2022	OBUS	Aggregate	15	Gasoline	709.6036795	709.6036795	0	0.947170325	0.002129672	0.002316212	2714.511894	0.051059867	0.043432325	0.255760361	0.373204918	3.857586081	0.026835714	0.044780196	0.061495877	0.021523557	286.2418875	0
Fresno	2022	OBUS	Aggregate	15	Diesel	376.8484851	376.8484851	0	4.705016243	0.100036706	0.104559922	1823.37297	0.019222343	0.287273154	0.413851773	0.471138741	0.969603865	0.017266252	0.194151176	0.078246177	0.027386162	162.8811851	0
Fresno	2022	OBUS	Aggregate	15	Natural Gas	3.407900189	3.407900189	0	0.254918155	0.002723262	0.002961796	1594.223378	1.542418153	0.324992865	0.022038112	1.574150857	6.201688236	0	1.06	0.061495877	0.021523557	184.2679074	0
Fresno	2022	OBUS	Aggregate	20	Gasoline	807.0056952	807.0056952	0	0.86225297	0.001505709	0.001637596	2256.562663	0.036278442	0.039328094	0.182259115	0.265952072	3.417527281	0.022308419	0.044780196	0.060630201	0.02122057	237.9517133	0
Fresno	2022	OBUS	Aggregate	20	Diesel	444.5688706	444.5688706	0	3.777851593	0.0679889	0.071063056	1577.71284	0.009696712	0.2485693	0.20876754	0.237665953	0.695810213	0.014939997	0.19440788	0.077796639	0.027228824	140.936463	0
Fresno	2022	OBUS	Aggregate	20	Natural Gas	3.957977441	3.957977441	0	0.184457387	0.002179079	0.002369947	1326.04375	1.109793417	0.270322693	0.015856758	1.132625582	5.215961891	0	1.06	0.060630201	0.02122057	153.2704327	0
Fresno	2022	OBUS	Aggregate	25	Gasoline	879.3688203	879.3688203	0	0.797891852	0.001122755	0.001221099	1928.925829	0.027176627	0.036197455	0.13691712	0.19978914	3.074759315	0.019069396	0.044780196	0.049809241	0.017433234	203.4028185	0
Fresno	2022	OBUS	Aggregate	25	Diesel	508.493211	508.493211	0	3.154200029	0.058554252	0.061201816	1378.894294	0.007287133	0.217245358	0.156889984	0.178607305	0.570665264	0.013057304	0.193374296	0.064873963	0.022705887	123.1760811	0
Fresno	2022	OBUS	Aggregate	25	Natural Gas	4.814136994	4.814136994	0	0.145484994	0.001715933	0.001866234	1155.616035	0.868442211	0.235579888	0.012408326	0.886308974	4.334592591	0	1.06	0.049809241	0.017433234	133.5715882	0
Fresno	2022	OBUS	Aggregate	30	Gasoline	1064.025751	1064.025751	0	0.750599149	0.000882823	0.00096015	1711.640968	0.02144911	0.033873756	0.108343431	0.158094481	2.80119173	0.016921314	0.044780196	0.044398761	0.015539566	180.4904014	0
Fresno	2022	OBUS	Aggregate	30	Diesel	659.3242306	659.3242306	0	2.673987414	0.053335259	0.055746843	1229.551169	0.006089192	0.193716287	0.131098628	0.149245808	0.48181751	0.011643114	0.192478962	0.056562739	0.019796959	109.8353189	0
Fresno	2022	OBUS	Aggregate	30	Natural Gas	6.564527657	6.564527657	0	0.120690202	0.001333825	0.001450656	1035.404136	0.714278625	0.211073907	0.010205632	0.728973728	3.557580334	0	1.06	0.044398761	0.015539566	119.6769262	0
Fresno	2022	OBUS	Aggregate	35	Gasoline	1664.661971	1664.661971	0	0.715900507	0.000731877	0.000795983	1586.601821	0.017860102	0.032149411	0.090432731	0.131959228	2.584671528	0.015685174	0.044780196	0.041585311	0.014554859	167.3051796	0
Fresno	2022	OBUS	Aggregate	35	Diesel	1146.002411	1146.002411	0	2.329804338	0.050314712	0.05258972	1106.065901	0.005183229	0.174261133	0.111593488	0.127040692	0.411337741	0.010473783	0.191417089	0.047927641	0.016774674	98.8044288	0
Fresno	2022	OBUS	Aggregate	35	Natural Gas	12.07473608	12.07473608	0	0.103414417	0.001032753	0.001123213	944.9274048	0.607187814	0.192629633	0.008675516	0.6196797	2.88492512	0	1.06	0.041585311	0.014554859	109.219196	0
Fresno	2022	OBUS	Aggregate	40	Gasoline	1982.310593	1982.310593	0	0.693869928	0.000639604	0.000695628	1535.709476	0.015657039	0.031022268	0.079446661	0.115928382	2.411236192	0.015182052	0.044780196	0.041585311	0.014554859	161.9386454	0
Fresno	2022	OBUS	Aggregate	40	Diesel	1381.49527	1381.49527	0	2.089585748	0.046824933	0.048942149	1055.789037	0.004320181	0.166339993	0.093012313	0.105887438	0.342766508	0.009997691	0.191682901	0.047245958	0.016536085	94.31321645	0
Fresno	2022	OBUS	Aggregate	40	Natural Gas	14.35542407	14.35542407	0	0.090756977	0.000812717	0.000883904	873.7388915	0.528411438	0.178117389	0.007549957	0.53928263	2.316626951	0	1.06	0.041585311	0.014554859	100.9908896	0
Fresno	2022	OBUS	Aggregate	45	Gasoline	1428.943271	1428.943271	0	0.680279616	0.000589157	0.000640762	1540.896272	0.014480874	0.030300806	0.073617509	0.107422496	2.281258336	0.015233328	0.044780196	0.041585311	0.014554859	162.4855866	0
Fresno	2022	OBUS	Aggregate	45	Diesel	942.9882556	942.9882556	0	1.920034928	0.044202865	0.046201522	1065.751238	0.003612738	0.167909542	0.077781261	0.088548045	0.280967043	0.010092027	0.19304209	0.048204684	0.016871639	95.20313588	0
Fresno	2022	OBUS	Aggregate	45	Natural Gas	9.098791988	9.098791988	0	0.081050998	0.000673719	0.000732731	815.8857551	0.467999124	0.166323649	0.006686784	0.477627433	1.852685824	0	1.06	0.041585311	0.014554859	94.30394942	0
Fresno	2022	OBUS	Aggregate	50	Gasoline	949.515488	949.515488	0	0.680841943	0.000571926	0.000622022	1585.884027	0.014052998	0.030234665	0.071545884	0.104399586	2.183657547	0.015678078	0.044780196	0.041585311	0.014554859	167.2294891	0
Fresno	2022	OBUS	Aggregate	50	Diesel	428.8010286	428.8010286	0	1.706973153	0.036427258	0.038074337	1251.298847	0.002518759	0.197142643	0.054228201	0.061734679	0.191696688	0.011849052	0.199238951	0.054762938	0.019167028	111.7780303	0
Fresno	2022	OBUS	Aggregate	50	Natural Gas	2.686196683	2.686196683	0	0.073390959	0.000615757	0.000669692	767.6980736	0.420179328	0.156500274	0.006003534	0.428823824	1.493101741	0	1.06	0.041585311	0.014554859	88.73418839	0
Fresno	2022	OBUS	Aggregate	55	Gasoline	1246.71194	1246.71194	0	0.691353689	0.000585048	0.000636293	1650.824006	0.014360355	0.030636994	0.073192056	0.106801676	2.129854451	0.016320076	0.044780196	0.041585311	0.014554859	174.0773288	0
Fresno	2022	OBUS	Aggregate	55	Diesel	371.7016518	371.7016518	0	1.5524289	0.027395304	0.028633999	1526.460137	0.00131232	0.240494416	0.028253895	0.032164909	0.100876825	0.014454665	0.207433074	0.065762716	0.02301695	136.3580793	0
Fresno	2022	OBUS	Aggregate	55	Natural Gas	0.665034484	0.665034484	0	0.067259157	0.000638833	0.000694789	726.775686	0.381372807	0.148157978	0.005449065	0.389218923	1.237874702	0	1.06	0.041585311	0.014554859	84.00418453	0
Fresno	2022	OBUS	Aggregate	60	Gasoline	2341.302241	2341.302241	0	0.70528311	0.000630587	0.000685821	1717.688134	0.015524006	0.031221849	0.079196516	0.11556337	2.13862006	0.016981096	0.044780196	0.041585311	0.014554859	181.1280676	0
Fresno	2022	OBUS	Aggregate	60	Diesel	1005.153683	1005.153683	0	1.718441374	0.027222255	0.028453125	1682.553829	0.000878727	0.265087041	0.018918745	0.021537551	0.068941575	0.015932779	0.210619994	0.070040832	0.024514291	150.301867	0
Fresno	2022	OBUS	Aggregate	60	Natural Gas	0.048855422	0.048855422	0	0.06723327	0.000638833	0.000694789	726.775686	0.381372807	0.148157978	0.005449065	0.389218923	1.237874702	0	1.06	0.041585311	0.014554859	84.00418453	0
Fresno	2022	OBUS	Aggregate	65	Gasoline	2834.420395	2834.420395	0	0.726095899	0.000716101	0.000778825	1770.250967	0.017714715	0.032144221	0.090433371	0.131960163	2.22592635	0.017500733	0.044780196	0.041585311	0.014554859	186.6707526	0
Fresno	2022	OBUS	Aggregate	65	Diesel	1913.597247	1913.597247	0	2.144290584	0.033086787	0.034582825	1778.33672	0.000986865	0.280177674	0.021246935	0.024188018	0.076014802	0.016839785	0.210708966	0.070160268	0.024556094	158.8581148	0
Fresno	2022	OBUS	Aggregate	65	Natural Gas	2.32631E-05	2.32631E-05	0	0.067232457	0.000638833	0.000694789	726.775686	0.381372807	0.148157978	0.005449065	0.389218923	1.237874702	0	1.06	0.041585311	0.014554859	84.00418453	0

Fresno	2022	OBUS	Aggregate	70	Gasoline	32.16899916	32.16899916	0	0.732230438	0.000778189	0.000846351	1786.700212	0.019438643	0.032432952	0.099281626	0.144871515	2.324556212	0.017663351	0.044780196	0.041585311	0.014554859	188.4053049	0
Fresno	2022	OBUS	Aggregate	70	Diesel	2556.703043	2556.703043	0	2.143532922	0.033086754	0.03458279	1778.337452	0.000989622	0.28017779	0.021306284	0.024255582	0.07657415	0.016839792	0.210708989	0.070160298	0.024556104	158.8581801	0
Fresno	2022	OBUS	Aggregate	75	Gasoline	0.012040914	0.012040914	0	0.731577991	0.000778189	0.000846351	1786.702186	0.019448275	0.032404305	0.099332509	0.144945763	2.325661847	0.01766337	0.044780196	0.041585311	0.014554859	188.4055131	0
Fresno	2022	OBUS	Aggregate	75	Diesel	446.0185775	446.0185775	0	2.144633939	0.033086754	0.03458279	1778.337452	0.000993062	0.28017779	0.021380352	0.024339903	0.077340727	0.016839792	0.210708989	0.070160298	0.024556104	158.8581801	0
Fresno	2022	OBUS	Aggregate	80	Diesel	18.90048338	18.90048338	0	2.144417648	0.033086754	0.03458279	1778.337452	0.000997183	0.28017779	0.021469066	0.024440897	0.07831433	0.016839792	0.210708989	0.070160298	0.024556104	158.8581801	0
Fresno	2022	OBUS	Aggregate	85	Diesel	2.225856708	2.225856708	0	2.143812855	0.033086754	0.03458279	1778.337452	0.001001983	0.28017779	0.021572425	0.024558564	0.079494958	0.016839792	0.210708989	0.070160298	0.024556104	158.8581801	0
Fresno	2022	OBUS	Aggregate	90	Diesel	0.002796011	0.002796011	0	2.130248485	0.033086754	0.03458279	1778.337452	0.001007464	0.28017779	0.02169043	0.024692903	0.080882611	0.016839792	0.210708989	0.070160298	0.024556104	158.8581801	0
Fresno	2022	SBUS	Aggregate	5	Gasoline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	2022	SBUS	Aggregate	10	Gasoline	314.7301751	314.7301751	0	0.674918364	0.004279434	0.004654274	1542.083314	0.040465243	0.038133156	0.193846449	0.282860283	1.937678609	0.015245064	0.045	0.061495877	0.021523557	162.6107587	0
Fresno	2022	SBUS	Aggregate	10	Diesel	330.2572518	330.2572518	0	10.00678977	0.073545547	0.07687095	2075.909041	0.018687693	0.327060315	0.402340903	0.458034491	0.751374516	0.019657617	0.142701611	0.061495877	0.021523557	185.4401323	0
Fresno	2022	SBUS	Aggregate	10	Natural Gas	65.105652	65.105652	0	3.252973814	0.01022027	0.011115476	5695.818288	15.79429432	1.161129819	0.225669302	16.11923583	55.82312856	0	1.06	0.061495877	0.021523557	658.3497216	0
Fresno	2022	SBUS	Aggregate	15	Gasoline	751.0849666	751.0849666	0	0.59565129	0.002840586	0.003089396	1261.257762	0.026865588	0.033654535	0.128698074	0.187795927	1.769792461	0.012468817	0.045	0.061495877	0.021523557	132.9980551	0
Fresno	2022	SBUS	Aggregate	15	Diesel	788.1394176	788.1394176	0	7.028641892	0.048989169	0.051204242	1668.370371	0.010130364	0.262852431	0.218103952	0.248294747	0.501730378	0.01579847	0.142701611	0.061495877	0.021523557	149.0348644	0
Fresno	2022	SBUS	Aggregate	15	Natural Gas	155.3707916	155.3707916	0	1.490569516	0.008311964	0.009040019	3232.570811	8.551409299	0.658980707	0.122182766	8.727340414	29.07160101	0	1.06	0.061495877	0.021523557	373.6358827	0
Fresno	2022	SBUS	Aggregate	20	Gasoline	1190.831261	1190.831261	0	0.53485938	0.001989139	0.002163371	1048.546891	0.018805573	0.030219768	0.090087028	0.131454779	1.619887217	0.010365954	0.045	0.060630201	0.02122057	110.5679595	0
Fresno	2022	SBUS	Aggregate	20	Diesel	1249.580405	1249.580405	0	5.499377541	0.032254374	0.033712774	1409.719507	0.005255381	0.222101882	0.113146919	0.128809155	0.35367635	0.013349201	0.142701611	0.060630201	0.02122057	125.9296851	0
Fresno	2022	SBUS	Aggregate	20	Natural Gas	246.3375037	246.3375037	0	0.891648318	0.006650998	0.007233567	2225.905223	5.708517148	0.453765341	0.081563446	5.825960455	18.91621416	0	1.06	0.060630201	0.02122057	257.2806943	0
Fresno	2022	SBUS	Aggregate	25	Gasoline	1530.659336	1530.659336	0	0.487799962	0.001469458	0.001598169	896.3471862	0.013889856	0.027560892	0.066538566	0.097092919	1.486966186	0.008861304	0.045	0.049809241	0.017433234	94.51869082	0
Fresno	2022	SBUS	Aggregate	25	Diesel	1606.17375	1606.17375	0	5.002303851	0.02555586	0.026711383	1263.728802	0.003797222	0.199100987	0.081753155	0.093069744	0.278434388	0.011966756	0.142701611	0.049809241	0.017433234	112.8883933	0
Fresno	2022	SBUS	Aggregate	25	Natural Gas	316.6349524	316.6349524	0	0.607424357	0.005237371	0.005696118	1684.520757	4.22114128	0.343400576	0.06031178	4.307984286	13.72255267	0	1.06	0.049809241	0.017433234	194.7049072	0
Fresno	2022	SBUS	Aggregate	30	Gasoline	1969.78792	1969.78792	0	0.451684474	0.001145202	0.001245512	795.3983166	0.010827284	0.025520353	0.051867488	0.075684917	1.369187565	0.007863322	0.045	0.044398761	0.015539566	83.87375865	0
Fresno	2022	SBUS	Aggregate	30	Diesel	2066.966552	2066.966552	0	4.675330402	0.021846694	0.022834505	1164.23504	0.002985024	0.183425705	0.064266746	0.073162798	0.227190201	0.01102461	0.142701611	0.044398761	0.015539566	104.0006549	0
Fresno	2022	SBUS	Aggregate	30	Natural Gas	407.4738838	407.4738838	0	0.447030975	0.004071083	0.004427674	1348.452137	3.317063699	0.274890789	0.047394295	3.385306803	10.62005343	0	1.06	0.044398761	0.015539566	155.8605005	0
Fresno	2022	SBUS	Aggregate	35	Gasoline	2398.919811	2398.919811	0	0.425040915	0.000941549	0.00102402	737.2899981	0.008903207	0.024014981	0.042650305	0.062235225	1.264061554	0.007288862	0.045	0.041585311	0.014554859	77.74630908	0
Fresno	2022	SBUS	Aggregate	35	Diesel	2517.26948	2517.26948	0	4.428083123	0.019456166	0.020335887	1087.436581	0.002371185	0.171326076	0.05105097	0.058117644	0.186351535	0.010297374	0.142701611	0.041585311	0.014554859	97.14027899	0
Fresno	2022	SBUS	Aggregate	35	Natural Gas	496.2448814	496.2448814	0	0.346329926	0.003152135	0.003428235	1120.428382	2.714021009	0.228406655	0.038778005	2.769857506	8.579559491	0	1.06	0.041585311	0.014554859	129.5044322	0
Fresno	2022	SBUS	Aggregate	40	Gasoline	2611.373798	2611.373798	0	0.406670496	0.000816655	0.000888187	713.6195989	0.00772081	0.022977045	0.036986101	0.053970032	1.169778836	0.007054856	0.045	0.041585311	0.014554859	75.25029506	0
Fresno	2022	SBUS	Aggregate	40	Diesel	2740.204792	2740.204792	0	4.258635171	0.018377018	0.019207945	1032.56779	0.001936726	0.162681476	0.041697182	0.047469068	0.15489827	0.0097778	0.142701611	0.041585311	0.014554859	92.23887167	0
Fresno	2022	SBUS	Aggregate	40	Natural Gas	540.1934965	540.1934965	0	0.278333631	0.002480527	0.002697799	956.0228841	2.285427006	0.194891519	0.032654242	2.33244589	7.146438861	0	1.06	0.041585311	0.014554859	110.5016642	0
Fresno	2022	SBUS	Aggregate	45	Gasoline	2372.89587	2372.89587	0	0.39594642	0.000747255	0.000812708	715.9883661	0.00705831	0.02237113	0.033812433	0.049339023	1.084693645	0.007078274	0.045	0.041585311	0.014554859	75.5000786	0
Fresno	2022	SBUS	Aggregate	45	Diesel	2489.961658	2489.961658	0	4.166306638	0.018607314	0.019448654	999.1797913	0.001667349	0.157421183	0.035897557	0.040866637	0.13208689	0.009461635	0.142701611	0.041585311	0.014554859	89.25633495	0
Fresno	2022	SBUS	Aggregate	45	Natural Gas	490.8615218	490.8615218	0	0.229953045	0.002056258	0.002236368	832.1298021	1.966429432	0.169635104	0.028096397	2.006885468	6.090656073	0	1.06	0.041585311	0.014554859	96.18151349	0
Fresno	2022	SBUS	Aggregate	50	Gasoline	1662.349555	1662.349555	0	0.391151018	0.00072133	0.000784512	736.8424444	0.006812279	0.022100188	0.032633834	0.047619215	1.009236848	0.007284438	0.045	0.041585311	0.014554859	77.6991151	0
Fresno	2022	SBUS	Aggregate	50	Diesel	1744.360849	1744.360849	0	4.148513467	0.020148978	0.021060026	986.9905829	0.001552127	0.155500768	0.033416859	0.03804255	0.117379762	0.009346211	0.142701611	0.041585311	0.014554859	88.16747779	0
Fresno	2022	SBUS	Aggregate	50	Natural Gas	343.8766289	343.8766289	0	0.194029914	0.001879329	0.002043941	735.5734026	1.720519568	0.14995145	0.02458283	1.755916415	5.284079455	0	1.06	0.041585311	0.014554859	85.02106639	0
Fresno	2022	SBUS	Aggregate	55	Gasoline	1228.288596	1228.288596	0	0.393011224	0.000734571	0.000798913	766.9465417	0.006933136	0.022205291	0.033212792	0.048464028	0.941167433	0.007582047	0.045	0.041585311	0.014554859	80.87355454	0
Fresno	2022	SBUS	Aggregate	55	Diesel	1288.885682	1288.885682	0	4.20637551	0.023007083	0.024047362	995.8145652	0.001582539	0.15689099	0.034071625	0.038787952	0.11039301	0.009429768	0.142701611	0.041585311	0.014554859	88.95572063	0
Fresno	2022	SBUS	Aggregate	55	Natural Gas	254.0859957	254.0859957	0	0.166557099	0.001949739	0.002120519	658.3046287	1.525643178	0.134199705	0.021798431	1.557030765	4.650021436	0	1.06	0.041585311	0.014554859	76.08997462	0
Fresno	2022	SBUS	Aggregate	60	Gasoline	1518.943958	1518.943958	0	0.400757266	0.000789166	0.00085829	797.9095276	0.00744702	0.022642945	0.035674526	0.052056184	0.880412784	0.007888148	0.045	0.041585311	0.014554859	84.13856272	0
Fresno	2022	SBUS	Aggregate	60	Diesel	1593.880399	1593.880399	0	4.303924354	0.025503155	0.026656294	1026.184221	0.00167332	0.161675742	0.036026116	0.041012991	0.110459595	0.009717351	0.142701611	0.041585311	0.014554859	91.66862995	0
Fresno	2022	SBUS	Aggregate	60	Natural Gas	314.2114882	314.2114882	0	0.166536632	0.001949739	0.002120519	658.3046287	1.525643178	0.134199705	0.021798431	1.557030765	4.650021436	0	1.06	0.041585311	0.014554859	76.08997462	0
Fresno	2022	SBUS	Aggregate	65	Gasoline	818.1254301	818.1254301	0	0.415059903	0.000894412	0.000972755	822.1796454	0.008442785	0.02345105	0.040444679	0.059016781	0.826220389	0.008128083	0.045	0.041585311	0.014554859	86.69781632	0
Fresno	2022	SBUS	Aggregate	65	Diesel	858.4872932	858.4872932	0	4.420821989	0.026812909	0.028025269	1074.606646	0.001728594	0.169304715	0.037216148	0.042367752	0.113726911	0.010175882	0.142701611	0.041585311	0.014554859	95.99418603	0
Fresno	2022	SBUS	Aggregate	65	Natural Gas	169.2389029	169.2389029	0	0.166534719	0.001949739	0.002120519	658.3046287	1.525643178	0.134199705	0.021798431	1.557030765	4.650021436	0	1.06	0.041585311	0.014554859	76.08997462	0
Fresno	2022	SBUS	Aggregate	70	Gasoline	220.8624108	220.8624108	0	0.425364752	0.000971484	0.001056577	829.7066246	0.009166633	0.024033278	0.043912236	0.064076632	0.800764938	0.008202495	0.045	0.041585311	0.014554859	87.49152687	0
Fresno	2022	SBUS	Aggregate	70	Diesel	231.7585621	231.7585621	0	4.421211292	0.026812909	0.028025269	1074.606646	0.001729223	0.169304715	0.037229698	0.042383178	0.113840652	0.010175882	0.142701611	0.041585311	0.014554859	95.99418603	0
Fresno	2022	SBUS	Aggregate	70	Natural Gas	45.68799688	45.68799688	0	0.166549385	0.001949739	0.002120519	658.3046287	1.525643178	0.134199705	0.021798431	1.557030765	4.650021436	0	1.06	0.041585311	0.014554859	76.08997462	0
Fresno	2022	SBUS	Aggregate	75	Gasoline	28.58801746	28.58801746	0	0.42169923	0.000971484	0.001056577	829.7127519	0.009205967	0.023826174	0.04410066	0.064351579	0.804114114	0.008202555	0.045	0.041585311	0.014554859	87.49217299	0
Fresno	2022	SBUS	Aggregate	75	Diesel	29.99839489	29.99839489	0	4.415398057	0.026812909	0.028025269	1074.606646	0.001730008	0.169304715	0.037246588	0.042402405	0.113996476	0.010175882	0.142701611	0.041585311	0.014554859	95.99418603	0
Fresno	2022	SBUS	Aggregate	75	Natural Gas	5.913768882	5.913768882	0	0.166330397	0.001949739	0.002120519	658.3046287	1.525643178	0.134199705	0.021798431	1.557030765	4.650021436	0	1.06	0.041585311	0.014554859	76.08997462	0
Fresno	2022	SBUS	Aggregate	80	Gasoline	0.032000795	0.032000795	0	0.424206986	0.000971484	0.001056577	829.7068676	0.009168805	0.023967864	0.043922639	0.064091812	0.800889766	0.008202497	0.045	0.041585311	0.014554859	87.49155249	0
Fresno	2022	SBUS	Aggregate	80	Diesel	0.03357954	0.03357954	0	4.416070329	0.026812909	0.028025269	1074.606646	0.001730947	0.169304715	0.037266818	0.042425435	0.114194381	0.010175882	0.142701611	0.041585311	0.014554859	95.99418603	0
Fresno	2022	SBUS	Aggregate	80	Natural Gas	0.006619742	0.006619742	0	0.166355722	0.001949739	0.002120519	658.3046287	1.525643178	0.134199705	0.021798431	1.557030765	4.650021436	0	1.06	0.041585311	0.014554859	76.08997462	0
Fresno	2022	SBUS	Aggregate	85	Gasoline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	2022	SBUS	Aggregate	90	Gasoline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	2022	UBUS	Aggregate	5	Gasoline	5.991241952	5.991241952	0	0.044986842	0.001248152	0.001357479	1704.41287	0.004966278	0.004284401	0.017483832	0.025512367	1.354365905	0.016849856	0.045	0.091000026	0.031850009	179.7282075	0
Fresno	2022	UBUS	Aggregate	5	Diesel	0.01334726	0.01334726	0	0.415649308	0.015336272	0.01602971	1151.282712	0.006269042	0.18138506	0.134968778	0.15365298	0.268001651	0.010908989	0.22	0.091000026	0.031850009	102.8436286	0
Fresno	2022	UBUS	Aggregate	5	Natural Gas	2.34061287	2.34061287	0	1.520004536	0.034525713	0.036086812	1631.444381	0.00740464	0.33258061	0.15941754	0.18148627	0.566011645	0	0.97	0.091000026	0.031850009	188.5700877	0
Fresno	2022	UBUS	Aggregate	10	Gasoline	76.78587153	76.78587153	0	0.309892534	0.002676651	0.002911103	3017.531815	0.011819289	0.026552415	0.039949405	0.058294078	0.589654193	0.029831374	0.045	0.106088525	0.037130984	318.1949595	0
Fresno	2022	UBUS	Aggregate	10	Diesel	22.59434663	22.59434663	0	1.239836764	0.004491429	0.004694512	1965.077204	0.006510891	0.309598714	0.14017769	0.159581632	0.20330607	0.018620105	0.22	0.109970417	0.038489646	175.5395682	0
Fresno	2022	UBUS	Aggregate	10	Electricity	0.76137264	0	0.761373	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	2539112.571
Fresno	2022	UBUS	Aggregate	10	Natural Gas	284.1353014	284.1353014	0	2.058925421	0.001112903	0.001163223	6677.396302	4.400168517	1.361230918	0.066015221	4.494128821	67.52728177	0	0.97	0.109587067	0.038355473	771.805169	0
Fresno	2022	UBUS	Aggregate	15	Gasoline	207.7250946	207.7250946	0	0.284115964	0.001856118	0.002018698	2532.016299	0.008143258	0.02433126	0.027520165	0.040157359	0.494326727	0.025031559	0.045	0.10672578	0.037354023	266.997955	0
Fresno	2022	UBUS	Aggregate	15	Diesel	63.68535905	63.68535905	0	0.790272336	0.003875587	0.004050823	1567.294196	0.004658303	0.246927839	0.10029199	0.114174798	0.129351897	0.014850909	0.22	0.109976239	0.038491684	140.0057697	0
Fresno	2022	UBUS	Aggregate	15	Electricity	2.146694996	0	2.146695	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	2116551.356
Fresno	2022	UBUS	Aggregate	15	Natural Gas	797.6938565	797.6938565	0	1.04427588	0.000832661	0.00087031	3587.017394	2.957195652	0.731236961	0.04454561	3.020538589	45.57407271	0	0.97	0.109666929	0.038383425	414.6045016	0
Fresno	2022	UBUS	Aggregate	20	Gasoline	320.9661851	320.9661851	0	0.267972962	0.001355752	0.001474504	2170.482394	0.005930053	0.022931883	0.020025429	0.02922106	0.417887172	0.021457428	0.045	0.107648057	0.03767682	228.8746565	0
Fresno	2022	UBUS	Aggregate	20	Diesel	104.1325417	104.1325417	0	0.587460148	0.003565268	0.003726473	1350.418473	0.003735805	0.21275898	0.080430851	0.091564403	0.096003173	0.012795901	0.22	0.109983881	0.038494358	120.6323472	0
Fresno	2022	UBUS	Aggregate	20	Electricity	3.511495151	0	3.511495	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1879250.754
Fresno	2022	UBUS	Aggregate	20	Natural Gas	1297.488172	1297.488172	0	0.667118031	0.000571386	0.000597221	2385.574409	2.342673131	0.486314949	0.034878404	2.392405014	35.93278855	0	0.97	0.109772731	0.038420456	275.7360169	0
Fresno	2022	UBUS	Aggregate	25	Gasoline	473.1030142	473.1030142	0	0.25762543	0.001034655	0.001125282	1912.542298	0.004540896	0.02202867	0.015318509	0.022352733	0.363757206	0.018907428	0.045	0.108677277	0.038037047	201.6751957	0
Fresno	2022	UBUS	Aggregate	25	Diesel	162.9150058	162.9150058	0	0.447548422	0.003561484	0.003722518	1214.320162	0.003167715	0.191316636	0.06820003	0.077640543	0.076822201	0.011506301	0.22	0.109991474	0.038497016	108.4747391	0
Fresno	2022	UBUS	Aggregate	25	Electricity	5.495919431	0	5.495919	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1723528.244
Fresno	2022	UBUS	Aggregate	25	Natural Gas	2019.301182	2019.301182	0	0.476154021	0.00036237	0.000378755	1759.090313	2.001069833	0.358602068	0.02926019	2.042968758	30.46701157	0	0.97	0.109878959	0.038457636	203.3240106	0
Fresno	2022	UBUS	Aggregate	30	Gasoline	683.42753	683.42753	0	0.244533485	0.000816929	0.000888485	1719.409065	0.003590544	0.02090178	0.012106279	0.017665453	0.328492096	0.016998109	0.045	0.109155245	0.038204336	181.3095376	0
Fresno	2022	UBUS	Aggregate	30	Diesel	241.6632519	241.6632519	0	0.328551523	0.003865179	0.004039945	1107.275361	0.00277681	0.174451684	0.059783966	0.068059495	0.064301344	0.010491997	0.22	0.109994709	0.038498148	98.91246937	0
Fresno	2022	UBUS	Aggregate	30	Electricity	8.153871446	0	8.153871	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1382100.339
Fresno	2022	UBUS	Aggregate	30	Natural Gas	2988.662106	2988.662106	0	0.363722636	0.000252209	0.000263613	1377.249559	1.777720208	0.280761332	0.025769717	1.814697378	26.84908143	0	0.97	0.109924561	0.038473596	159.1890432	0
Fresno	2022	UBUS	Aggregate	35	Gasoline	783.5732806	783.5732806	0	0.236983824	0.000678673	0.000738119	1620.845809	0.003012181	0.020247219	0.0101511	0.014812462	0.301578057	0.016023711	0.045	0.109746348	0.038411222	170.9161654	0
Fresno	2022	UBUS	Aggregate	35	Diesel	286.039543	286.039543	0	0.234349962	0.004474873	0.004677207	1023.282289	0.002488384	0.161218541	0.053574228	0.060990181	0.055449347	0.00969612	0.22	0.109998483	0.038499469	91.40940154	0
Fresno	2022	UBUS	Aggregate	35	Electricity	9.653073315	0	9.653073	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1405896.108
Fresno	2022	UBUS	Aggregate	35	Natural Gas	3528.202135	3528.202135	0	0.290439763	0.000160923	0.0001682	1123.523235	1.622870278	0.229037561	0.023282381	1.656361614	24.31467205	0	0.97	0.109978021	0.038492307	129.86215	0
Fresno	2022	UBUS	Aggregate	40	Gasoline	627.6314397	627.6314397	0	0.228924657	0.000590179	0.000641873	1577.733484	0.002629803	0.019555732	0.008861388	0.012930517	0.279139982	0.015597502	0.045	0.109933851	0.038476848	166.3700245	0
Fresno	2022	UBUS	Aggregate	40	Diesel	231.3913837	231.3913837	0	0.164939044	0.005390807	0.005634555	962.2600501	0.002265343	0.151604463	0.04877222	0.055523459	0.048845745	0.009117903	0.22	0.109999632	0.038499871	85.95830909	0
Fresno	2022	UBUS	Aggregate	40	Electricity	7.809315347	0	7.809315	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1489082.383
Fresno	2022	UBUS	Aggregate	40	Natural Gas	2851.855363	2851.855363	0	0.239757036	0.000117333	0.000122639	943.0489547	1.505783157	0.192246699	0.021536002	1.536785446	22.38802232	0	0.97	0.109994341	0.03849802	109.0020758	0
Fresno	2022	UBUS	Aggregate	45	Gasoline	357.4677946	357.4677946	0	0.221389363	0.000539655	0.000586924	1576.236679	0.002390716	0.018914308	0.008055968	0.01175525	0.258981174	0.015582704	0.045	0.109806826	0.038432389	166.2121884	0
Fresno	2022	UBUS	Aggregate	45	Diesel	130.9102624	130.9102624	0	0.12034325	0.006612337	0.006911318	924.2329122	0.002086758	0.145613272	0.044927323	0.051146338	0.043718459	0.008757577	0.22	0.109998856	0.0384996	82.56135993	0
Fresno	2022	UBUS	Aggregate	45	Electricity	4.417959655	0	4.41796	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1581084.759
Fresno	2022	UBUS	Aggregate	45	Natural Gas	1614.315472	1614.315472	0	0.202946506	0.000103834	0.000108529	808.8191623	1.413439763	0.164883077	0.020249212	1.442577846	20.86377282	0	0.97	0.109983318	0.038494161	93.48715907	0
Fresno	2022	UBUS	Aggregate	50	Gasoline	200.4204659	200.4204659	0	0.198874659	0.000517194	0.000562495	1505.566897	0.002083723	0.017027879	0.007024777	0.010250538	0.24751739	0.014884062	0.045	0.107796028	0.03772861	158.7601481	0
Fresno	2022	UBUS	Aggregate	50	Diesel	65.59730824	65.59730824	0	0.100567093	0.008136718	0.008504624	908.909662	0.001939968	0.143199087	0.041766983	0.047548531	0.039606992	0.008612381	0.22	0.10998503	0.03849476	81.19254006	0
Fresno	2022	UBUS	Aggregate	50	Electricity	2.212166932	0	2.212167	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1582715.644
Fresno	2022	UBUS	Aggregate	50	Natural Gas	816.6938976	816.6938976	0	0.204410387	0.00020449	0.000213737	806.4785216	1.398975607	0.164405922	0.020567892	1.428389662	20.65049288	0	0.97	0.109788728	0.038426055	93.2166167	0
Fresno	2022	UBUS	Aggregate	55	Gasoline	106.3971043	106.3971043	0	0.211996208	0.000530747	0.000577236	1640.672891	0.002264168	0.018128371	0.007631019	0.011135165	0.232708604	0.016219722	0.045	0.109034564	0.038162098	173.0069064	0
Fresno	2022	UBUS	Aggregate	55	Diesel	37.37401983	37.37401983	0	0.105619201	0.009970503	0.010421324	917.2254614	0.001816558	0.144509245	0.039110006	0.044523765	0.036249795	0.008691177	0.22	0.109993908	0.038497868	81.93538713	0
Fresno	2022	UBUS	Aggregate	55	Electricity	1.260969981	0	1.26097	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1627272.893
Fresno	2022	UBUS	Aggregate	55	Natural Gas	462.4632749	462.4632749	0	0.203541209	0.000136561	0.000142735	807.9571312	1.408229845	0.164707347	0.020319599	1.437418859	20.78690116	0	0.97	0.109913255	0.038469639	93.38752142	0
Fresno	2022	UBUS	Aggregate	60	Gasoline	86.5555654	86.5555654	0	0.226237428	0.000570685	0.000620672	1769.229917	0.00254519	0.019325066	0.008576042	0.01251414	0.210304996	0.017490639	0.045	0.110000032	0.038500011	186.5630841	0
Fresno	2022	UBUS	Aggregate	60	Diesel	32.02165071	32.02165071	0	0.135493409	0.012110667	0.012658258	948.5212065	0.001711338	0.149439902	0.036844645	0.041944824	0.033447346	0.00898772	0.22	0.110000032	0.038500011	84.73102364	0
Fresno	2022	UBUS	Aggregate	60	Electricity	1.080733551	0	1.080734	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1624380.749
Fresno	2022	UBUS	Aggregate	60	Natural Gas	394.5509452	394.5509452	0	0.202806128	9.41791E-05	9.84374E-05	808.9970045	1.414681727	0.164919332	0.020213011	1.443786465	20.88207021	0	0.97	0.110000032	0.038500011	93.50771491	0
Fresno	2022	UBUS	Aggregate	65	Gasoline	92.92495433	92.92495433	0	0.235575487	0.000646794	0.000703448	1823.267029	0.002877604	0.020122717	0.009696116	0.014148549	0.196832107	0.018024851	0.045	0.110000032	0.038500011	192.26123	0
Fresno	2022	UBUS	Aggregate	65	Diesel	34.378037	34.378037	0	0.190188245	0.014554512	0.015212602	1002.699937	0.001620232	0.157975783	0.034883143	0.039711803	0.031065589	0.009501091	0.22	0.110000032	0.038500011	89.57078817	0
Fresno	2022	UBUS	Aggregate	65	Electricity	1.160261797	0	1.160262	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1712542.525
Fresno	2022	UBUS	Aggregate	65	Natural Gas	423.5848775	423.5848775	0	0.202806128	9.41791E-05	9.84374E-05	808.9970045	1.414681727	0.164919332	0.020213011	1.443786465	20.88207021	0	0.97	0.110000032	0.038500011	93.50771491	0
Fresno	2022	UBUS	Aggregate	70	Gasoline	83.74172845	83.74172845	0	0.241120938	0.000702528	0.000764064	1840.036537	0.003126803	0.020596406	0.010535793	0.015373804	0.190915574	0.018190634	0.045	0.110000032	0.038500011	194.0295538	0
Fresno	2022	UBUS	Aggregate	70	Diesel	30.98065809	30.98065809	0	0.190188245	0.014554512	0.015212602	1002.699937	0.001620232	0.157975783	0.034883143	0.039711803	0.031065589	0.009501091	0.22	0.110000032	0.038500011	89.57078817	0
Fresno	2022	UBUS	Aggregate	70	Electricity	1.045599958	0	1.0456	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1637653.768
Fresno	2022	UBUS	Aggregate	70	Natural Gas	381.7244791	381.7244791	0	0.202806128	9.41791E-05	9.84374E-05	808.9970045	1.414681727	0.164919332	0.020213011	1.443786465	20.88207021	0	0.97	0.110000032	0.038500011	93.50771491	0
Fresno	2022	UBUS	Aggregate	75	Gasoline	28.31062436	28.31062436	0	0.240430473	0.000702528	0.000764064	1840.037082	0.003131803	0.020537427	0.01055264	0.015398387	0.191213067	0.01819064	0.045	0.110000032	0.038500011	194.0296112	0
Fresno	2022	UBUS	Aggregate	75	Diesel	10.47365262	10.47365262	0	0.190188245	0.014554512	0.015212602	1002.699937	0.001620232	0.157975783	0.034883143	0.039711803	0.031065589	0.009501091	0.22	0.110000032	0.038500011	89.57078817	0
Fresno	2022	UBUS	Aggregate	75	Electricity	0.353486705	0	0.353487	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1637653.768
Fresno	2022	UBUS	Aggregate	75	Natural Gas	129.0498601	129.0498601	0	0.202806128	9.41791E-05	9.84374E-05	808.9970045	1.414681727	0.164919332	0.020213011	1.443786465	20.88207021	0	0.97	0.110000032	0.038500011	93.50771491	0
Fresno	2022	UBUS	Aggregate	80	Gasoline	0.876779066	0.876779066	0	0.234537815	0.000702528	0.000764064	1840.041439	0.003171608	0.02003408	0.010686762	0.015594098	0.193594257	0.018190683	0.045	0.110000032	0.038500011	194.0300707	0
Fresno	2022	UBUS	Aggregate	80	Diesel	0.324368663	0.324368663	0	0.190188245	0.014554512	0.015212602	1002.699937	0.001620232	0.157975783	0.034883143	0.039711803	0.031065589	0.009501091	0.22	0.110000032	0.038500011	89.57078817	0
Fresno	2022	UBUS	Aggregate	80	Electricity	0.010947471	0	0.010947	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1637653.768
Fresno	2022	UBUS	Aggregate	80	Natural Gas	3.996669743	3.996669743	0	0.202806128	9.41791E-05	9.84374E-05	808.9970045	1.414681727	0.164919332	0.020213011	1.443786465	20.88207021	0	0.97	0.110000032	0.038500011	93.50771491	0
Fresno	2022	UBUS	Aggregate	85	Gasoline	0.078967268	0.078967268	0	0.23364733	0.000702528	0.000764064	1840.04214	0.00317801	0.019958015	0.010708337	0.01562558	0.193977375	0.01819069	0.045	0.110000032	0.038500011	194.0301446	0
Fresno	2022	UBUS	Aggregate	85	Diesel	0.029214323	0.029214323	0	0.190188245	0.014554512	0.015212602	1002.699937	0.001620232	0.157975783	0.034883143	0.039711803	0.031065589	0.009501091	0.22	0.110000032	0.038500011	89.57078817	0
Fresno	2022	UBUS	Aggregate	85	Electricity	0.000985986	0	0.000986	0	0	0	0	0	0	0	0	0	0	0	0.055000016	0.019250006	0	1637653.768
Fresno	2022	UBUS	Aggregate	85	Natural Gas	0.359960797	0.359960797	0	0.202806128	9.41791E-05	9.84374E-05	808.9970045	1.414681727	0.164919332	0.020213011	1.443786465	20.88207021	0	0.97	0.110000032	0.038500011	93.50771491	0
Fresno	2022	UBUS	Aggregate	90	Gasoline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	2022	UBUS	Aggregate	90	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	2022	UBUS	Aggregate	90	Natural Gas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: FRESNO
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN. Note 'day' in the unit is operation day.

Region	Calendar Ye	Vehicle Cat	Model Year	Speed	Fuel	Population	VMT	Trips	NOx_RUNE	NOx_IDLEX	NOx_STREX	PM2.5_RUI	PM2.5_IDLI	PM2.5_STR	PM2.5_PM	PM2.5_PM	PM10_RUN	PM10_IDLE	PM10_STRI	PM10_PM1	PM10_PMI	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	N2O_RUNE	N2O_IDLEX	N2O_STREX	ROG_RUNE	ROG_IDLEX	ROG_STREX	ROG_HOTS	ROG_RUNL	ROG_RESTI	ROG_DIURI	TOG_RUNE	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNL	TOG_RESTL	TOG_DIURI	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNEX	SOx_IDLEX	SOx_STREX
FRESNO	2022	HHDT	Aggregated	Aggregated	DSL	16686.85	2302316	192966.5	3.015235	75.63203	2.072195	0.032777	0.035827	0	0.008941	0.026287	0.034259	0.037447	0	0.035764	0.061335	1403.737	14690.23	0	0.00273	0.273417	0	0.220648	2.309099	0	0.058783	5.886584	0	0	0	0	0	0.06692	6.701428	0	0	0	0	0	0.289022	82.01959	0	0.013262	0.138786	0
FRESNO	2022	LHDT1	Aggregated	Aggregated	DSL	10563	361877.2	132869.2	2.480866	2.32483	0	0.029456	0.026649	0	0.003	0.03276	0.030787	0.027854	0	0.012	0.07644	565.9064	137.8972	0	0.008391	0.005098	0	0.088953	0.021676	0	0.180652	0.10976	0	0	0	0	0	0.20566	0.124954	0	0	0	0	0	0.842791	0.909745	0	0.00535	0.001304	0
FRESNO	2022	LHDT2	Aggregated	Aggregated	DSL	3640.727	126379.6	45795.76	2.055033	2.296398	0	0.027333	0.026567	0	0.003	0.03822	0.028568	0.027768	0	0.012	0.08918	632.5731	220.5499	0	0.007861	0.005098	0	0.099432	0.034667	0	0.169253	0.10976	0	0	0	0	0	0.192684	0.124954	0	0	0	0	0	0.781622	0.909745	0	0.00598	0.002085	0
FRESNO	2022	MDV	Aggregated	Aggregated	DSL	2257.042	90386.49	10845.06	0.058641	0	0	0.005147	0	0	0.002	0.01575	0.00538	0	0	0.008	0.03675	366.7976	0	0	0.000483	0	0	0.057655	0	0	0.010403	0	0	0	0	0	0	0.011843	0	0	0	0	0	0	0.17317	0	0	0.003468	0	0
FRESNO	2022	MHDT	Aggregated	Aggregated	DSL	9785.05	670211.9	89846.78	2.265639	6.439362	1.736045	0.037316	0.014669	0	0.003	0.05586	0.039004	0.015332	0	0.012	0.13034	1058.691	796.9348	0	0.004529	0.004242	0	0.166411	0.125267	0	0.097513	0.091327	0	0	0	0	0	0.111011	0.103969	0	0	0	0	0	0.321809	2.294769	0	0.010002	0.007529	0

APPENDIX E

BIOLOGICAL EVALUATION

This page intentionally left blank

LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

BIOLOGICAL EVALUATION
NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT
FRESNO COUNTY, CALIFORNIA

Prepared by:

Live Oak Associates, Inc.

Austin Pearson (Director of Ecological Services)
Jeff Gurule (Senior Project Manager)

Prepared for:

Jake Kurth
Scannell Properties
294 Grove Lane East, Suite 140
Wayzata, Minnesota 55391

April 13, 2021 File No. 2557-01

Oakhurst: P.O. Box 2697 • 39930 Sierra Way, Suite B • Oakhurst, CA 93644 • Phone: (559) 642-4880 • Fax: (559) 642-4883
San Jose: 6840 Via Del Oro, Suite 220 • San Jose, CA 95119 • Phone: (408) 224-8300 • Fax: (408) 224-2411
Truckee: P.O. Box 8810 • Truckee, CA 96161 • Phone: (530) 214-8947

www.loainc.com

EXECUTIVE SUMMARY

Pursuant to the California Environmental Quality Act (CEQA), Live Oak Associates, Inc. (LOA) investigated potential impacts to biological resources associated with the proposed development of the Nielsen Avenue Office/Warehouse Project ("project") on an approximately 48-acre property ("project site") in the City of Fresno. Current zoning of the site is for heavy industrial uses. The proposed project entails the construction of three office/warehouse buildings that will function as an industrial warehouse and distribution business center. The entire project site was once utilized for similar industrial purposes, but the previous facility was decommissioned and demolished.

On March 18, 2021, LOA ecologist Jeff Gurule surveyed the project site for its biotic habitats, the plants and animals occurring in those habitats, and significant habitat values that may be protected by state and federal law. At the time of the field survey, the project site was entirely ruderal in nature, consisting primarily of hardscape with herbaceous weedy vegetation growing in hardscape cracks. A small portion of the site contained open ground supporting similar herbaceous weeds. A few small trees and shrubs occurred on the site. Lands within the vicinity of the project site are utilized primarily for industrial, commercial, and residential purposes.

The disturbed nature of the site, predominance of hardscape, and proximity to urban development has created habitat conditions that are unsuitable for most native plants and wildlife. However, the project has the potential to result in construction-related mortality or disturbance of urban-adapted, native nesting birds that are protected under the Federal Migratory Bird Treaty Act, California Migratory Bird Protection Act, and California Fish and Game Code. This potential impact would be considered significant under CEQA. Project construction outside the nesting season and avoidance of active nests identified during preconstruction surveys will reduce the magnitude of potential impacts to nesting birds to a less than significant level.

No other biological resources would be significantly affected by the project as defined by CEQA. The project will have no effect on all locally occurring special status plant species, an insignificant effect, or no effect, on 22 locally occurring special status animal species, and no effect on designated critical habitat, sensitive habitats, wildlife movement corridors, and waters of the U.S. or California. The project also appears to be consistent with local plans and ordinances. No Habitat Conservation Plans or Natural Community Conservation Plans are known to apply to the project.

TABLE OF CONTENTS

EXECUTIVE SUMMARY ii
1.0 INTRODUCTION 1
1.1 PROJECT DESCRIPTION **1**
1.2 REPORT OBJECTIVES **1**
1.3 STUDY METHODOLOGY **4**
2.0 EXISTING CONDITIONS 5
2.1 BIOTIC HABITATS/LAND USES **6**
2.2 SPECIAL STATUS PLANTS AND ANIMALS **8**
2.3 JURISDICTIONAL WATERS **13**
2.4 SENSITIVE NATURAL COMMUNITIES **14**
2.5 WILDLIFE MOVEMENT CORRIDORS **14**
2.6 DESIGNATED CRITICAL HABITAT **14**
3.0 IMPACTS AND MITIGATIONS 15
3.1 RELEVANT GOALS, POLICIES, AND LAWS **16**
3.1.1 City of Fresno General Plan Policies 16
3.1.2 Habitat Conservation Plans and Natural Community Conservation Plans 17
3.1.3 Threatened and Endangered Species 17
3.1.4 California Fully Protected Species 18
3.1.5 Migratory Birds 18
3.1.6 Birds of Prey 18
3.1.7 Nesting Birds 19
3.1.8 Wetlands and Other Jurisdictional Waters 19
4.0 IMPACT ANALYSIS 24
4.1 POTENTIALLY SIGNIFICANT PROJECT IMPACTS/MITIGATION **24**
4.1.1 Project-Related Mortality/Disturbance of Other Nesting Birds 24
4.2 LESS THAN SIGNIFICANT PROJECT IMPACTS **25**
4.2.1 Special Status Plants 25
4.2.2 Special Status Animal Species Absent from or Unlikely to Occur on the Project Site 25
4.2.3 Special Status Animal Species that May Occur within the Project Site as Occasional or Regular Foragers but Breed or Roost Elsewhere 25
4.2.4 Wildlife Movement Corridors 26
4.2.5 Waters of the United States and California. 26
4.2.6 Designated Critical Habitat and Sensitive Natural Communities 26
4.2.7 Local Policies or Habitat Conservation Plans 26
5.0 LITERATURE REFERENCED 28
APPENDIX A: VASCULAR PLANT LIST 29
APPENDIX B: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR WITHIN THE PROJECT SITE 31
APPENDIX C: PHOTOS 34

1.0 INTRODUCTION

This report, prepared by Live Oak Associates, Inc. (LOA) in compliance with the California Environmental Quality Act (CEQA), describes the biotic resources associated with the proposed Nielsen Avenue Office/Warehouse Project ("project") and assesses potential project-related impacts to those resources. The project site occupies an approximately 48-acre property ("project site") at 2740 W. Nielsen Avenue in the City of Fresno, California (Figure 1). The project site is within a portion of the city zoned for heavy industrial uses. The site can be found primarily in the Fresno South 7.5" U.S. Geological Survey (USGS) 7.5-minute quadrangle; Section 6 of Township 14 South, Range 20 East, Mount Diablo Base and Meridian (Figure 2).

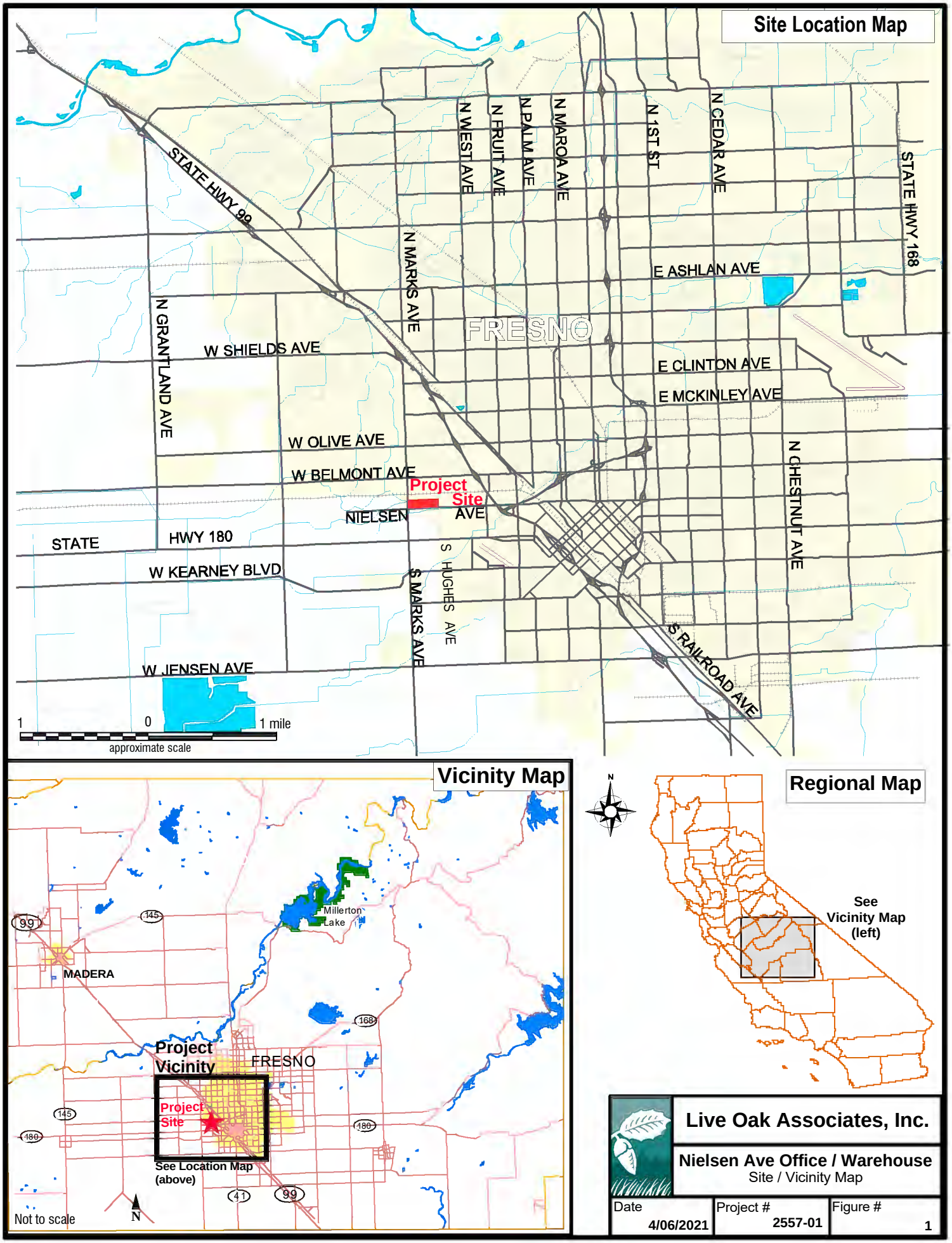
1.1 PROJECT DESCRIPTION

The project is the construction of three office/warehouse buildings that will function as an industrial warehouse and distribution business center. One building will encompass approximately 407,680 square feet and the other two buildings 225,576 square feet each. The proposed hours of operations of the facilities are 24 hours a day, 7 days a week.

1.2 REPORT OBJECTIVES

This report addresses issues related to: 1) sensitive biotic resources occurring on the project site; 2) the federal, state, and local laws regulating such resources; and 3) mitigation measures that may be required to reduce the magnitude of anticipated project-related impacts and/or comply with permit requirements of state and federal resource agencies. As such, the objectives of this report are to:

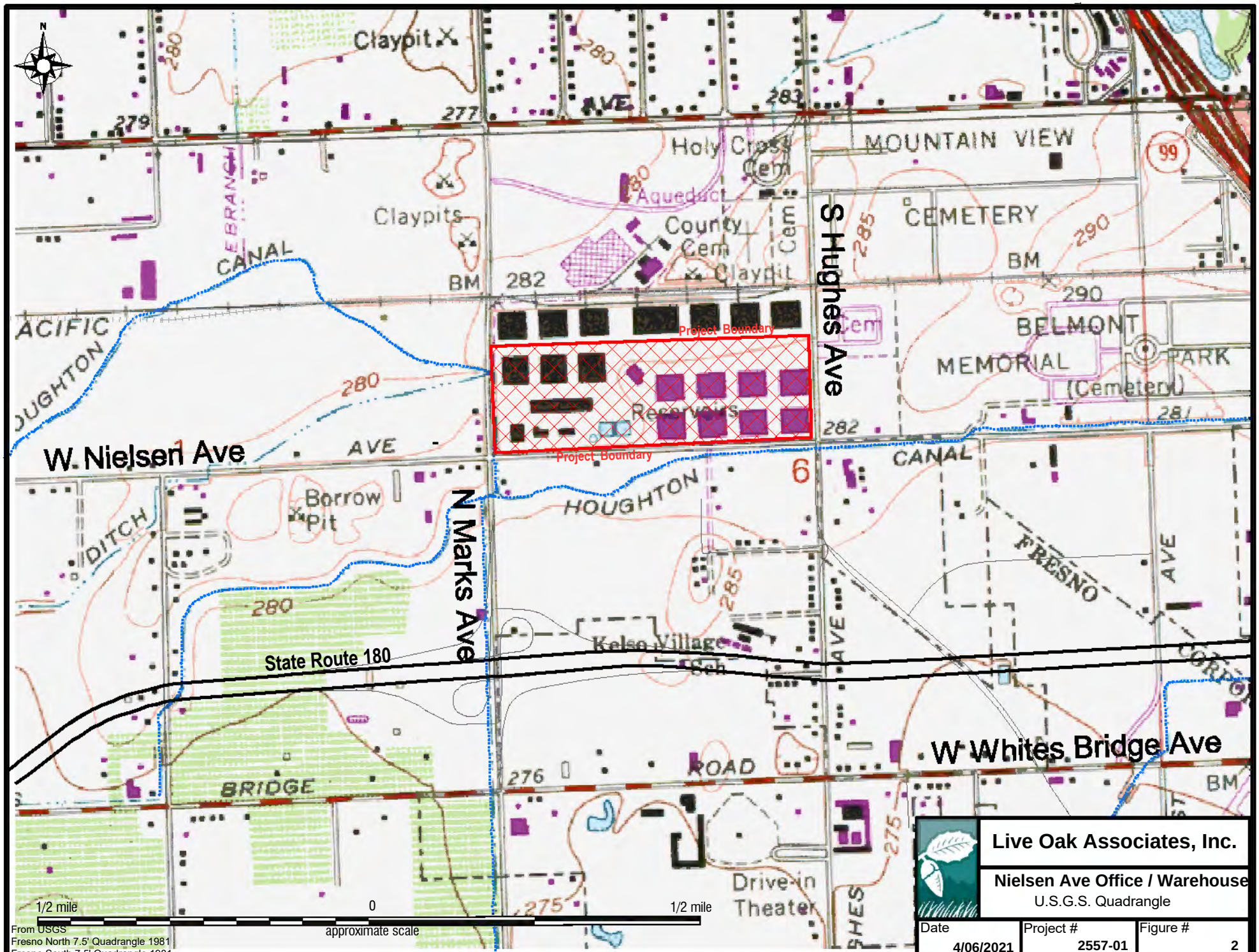
- Summarize all site-specific information related to existing biological resources;
- Make reasonable inferences about the biological resources that could occur on site based on habitat suitability and the proximity of the site to a species' known range;
- Summarize all state and federal natural resource protection laws that may be relevant to future site development;
- Identify and discuss project impacts to biological resources likely to occur on the site within the context of CEQA and state or federal laws;



Live Oak Associates, Inc.

Nielsen Ave Office / Warehouse
Site / Vicinity Map

Date	Project #	Figure #
4/06/2021	2557-01	1



Live Oak Associates, Inc.

Nielsen Ave Office / Warehouse

U.S.G.S. Quadrangle

Date	Project #	Figure #
4/06/2021	2557-01	2

- Identify avoidance, minimization, and/or mitigation measures that would reduce the magnitude of project impacts in a manner consistent with the requirements of CEQA and that are generally consistent with the requirements of the resource agencies regulating affected biological resources

1.3 STUDY METHODOLOGY

A reconnaissance-level field survey was conducted on March 18, 2021 by LOA biologist Jeff Gurule. The survey consisted of systematically walking across the project site while identifying principal land uses and biotic habitats, identifying plant and animal species encountered, and assessing the suitability of the habitats within the project site for special status species.

LOA conducted an analysis of potential project impacts to biological resources based on the known and potential biotic resources of the project site and vicinity. Sources of information used in the preparation of this analysis included: (1) the *California Natural Diversity Data Base* (CDFW 2021), (2) the *Online Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2021), and (3) manuals, reports, and references related to plants and animals of the San Joaquin Valley region.

LOA's field investigation did not include focused surveys for special status species. The field survey was sufficient to assess the possible biological impacts associated with development of the site.

2.0 EXISTING CONDITIONS

The geographical and biological setting of the project provides the context for analyzing potential impacts to biological resources from future site development. The project site is located within a region of Fresno that was historically utilized for agricultural uses. This region of the city is currently zoned for heavy industrial uses and is increasingly utilized for commercial and industrial purposes. Some agricultural rural residential uses remain in the area surrounding the project site.

Like most of California, the project vicinity experiences a Mediterranean climate. Warm dry summers are followed by cool moist winters. Summer temperatures commonly exceed 90 degrees Fahrenheit, and the relative humidity is generally very low. Winter temperatures rarely rise much above 70 degrees Fahrenheit, with daytime highs often below 60 degrees Fahrenheit. Annual precipitation within the project site is about 11 inches, almost 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain. Stormwater runoff appears to collect in a cement ditch along the southern edge of the site. This ditch leads to an underground pipe that heads south toward Nielsen Avenue, likely to a stormwater drainage piping system beneath Nielsen Avenue.

Natural drainages are absent from the project vicinity. The nearby Houghton Canal appears to source water from Redbank Slough and the Kings River and distribute water to farmland to the west of the project site.

The site itself consists of a former industrial warehouse site that has been demolished. The site's topography is relatively flat, with a median elevation of approximately 288 feet National Geodetic Vertical Datum (NGVD).

Soils of the site have been mostly paved over. A few areas of exposed soils occur on the site; however, the soils here have been significantly disturbed through decades of industrial and agricultural activity and are unlikely to exhibit their native soil characteristics.

2.1 BIOTIC HABITATS/LAND USES

At the time of LOA's field survey, the site consisted of a vacant urban lot surrounded by chain link fencing and supported a single biotic habitat/land use type characterized as ruderal (Figure 3). Lists of the vascular plant species observed within the project site and the terrestrial vertebrates using, or potentially using, the site are provided in Appendices A and B, respectively. Representative photos of the site are presented in Appendix C.

The site was mostly barren of vegetation at the time of the survey. However, vegetation did occur in pavement cracks and in unpaved areas. Where vegetation was present, it consisted of non-native herbaceous weed species such as red brome (*Bromus madritensis ssp. rubens*), telegraphweed (*Heterotheca grandiflora*), red-stemmed filaree (*Erodium cicutarium*), prickly lettuce (*Lactuca serriola*), and common and small-flowered fiddleneck (*Amsinckia intermedia* and *menziesii*), among others. A few non-native trees and shrubs occurred on the site including Mexican fan palm (*Washingtonia robusta*), oleander (*Nerium oleander*), and red gum (*Eucalyptus camaldulensis*), among others.

Due to the site's extensive hardscape, paucity of vegetation, and perimeter fencing, it provides limited habitat value for native wildlife species. Amphibians are expected to be absent from the site due to the absence of aquatic habitats on the site. A limited number of reptile species would be expected to forage on the site. Two lizard species were observed during the field survey of the site: the western fence lizard (*Sceloporus occidentalis*) and common side-blotched lizard (*Uta stansburiana*). Few, if any, other reptile species are expected to occur on the site.

The few shrubs and trees on the site, as well as the ground, provide possible nesting habitat for a few urban adapted avian species. Birds potentially nesting on the site include mourning doves (*Zenaida macroura*), killdeer (*Charadrius vociferus*), and northern mockingbird (*Mimus polyglottos*). The likelihood of nesting is diminished by the limited foraging opportunity on the site, however. At the time of the field survey, the only bird species actually observed utilizing the site was the killdeer.

Although small mammal burrows were scarce on the site at the time of the field survey, a few small mammal species would be expected to occasionally occur in earthen areas of the site.

Aerial photograph courtesy of Google Earth
Photo Date 5/2020

Live Oak Associates, Inc.

Nielsen Ave Office / Warehouse
Project Site

Date	Project #	Figure #
4/06/2021	2557-01	3

These include California ground squirrels (*Otospermophilus beecheyi*), deer mice (*Peromyscus maniculatus*), house mice (*Mus musculus*), and Botta's pocket gophers (*Thomomys bottae*).

Mammalian predators potentially occurring on the site would be limited by the surrounding fence. Possible species that may occasionally occur on the site include the raccoon (*Procyon lotor*) and feral cat (*Felis catus*).

2.2 SPECIAL STATUS PLANTS AND ANIMALS

A number of species of plants and animals within the state of California have low populations and/or limited distributions. Such species may be considered "rare" and are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described more fully in Section 3.1, state and federal laws have provided the CDFW and the USFWS with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists (i.e., California Rare Plant Ranks, or CRPR) of native plants considered rare, threatened, or endangered (CNPS 2021). Collectively, these plants and animals are referred to as "special status species."

The California Natural Diversity Data Base (CNDDB) was queried for special status species occurrences in the nine U.S.G.S. 7.5-minute quadrangles containing and surrounding the project site. These quads included Fresno South, Malaga, Conejo, Caruthers, Raisin, Kearney Park, Herndon, Fresno North, and Clovis. These species, and their potential to occur on the project site, are listed in Table 1 on the following pages. Other sources of information for this table included *California's Wildlife, Volumes I, II, and III* (Zeiner et. al 1988-1990), *The Jepson Manual: Vascular Plants of California, second edition* (Baldwin et al 2012), the *California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2021), *Calflora.org,* and *eBird.org*.

Special status species occurrences within 3.1 miles of the project site are depicted in Figure 4.

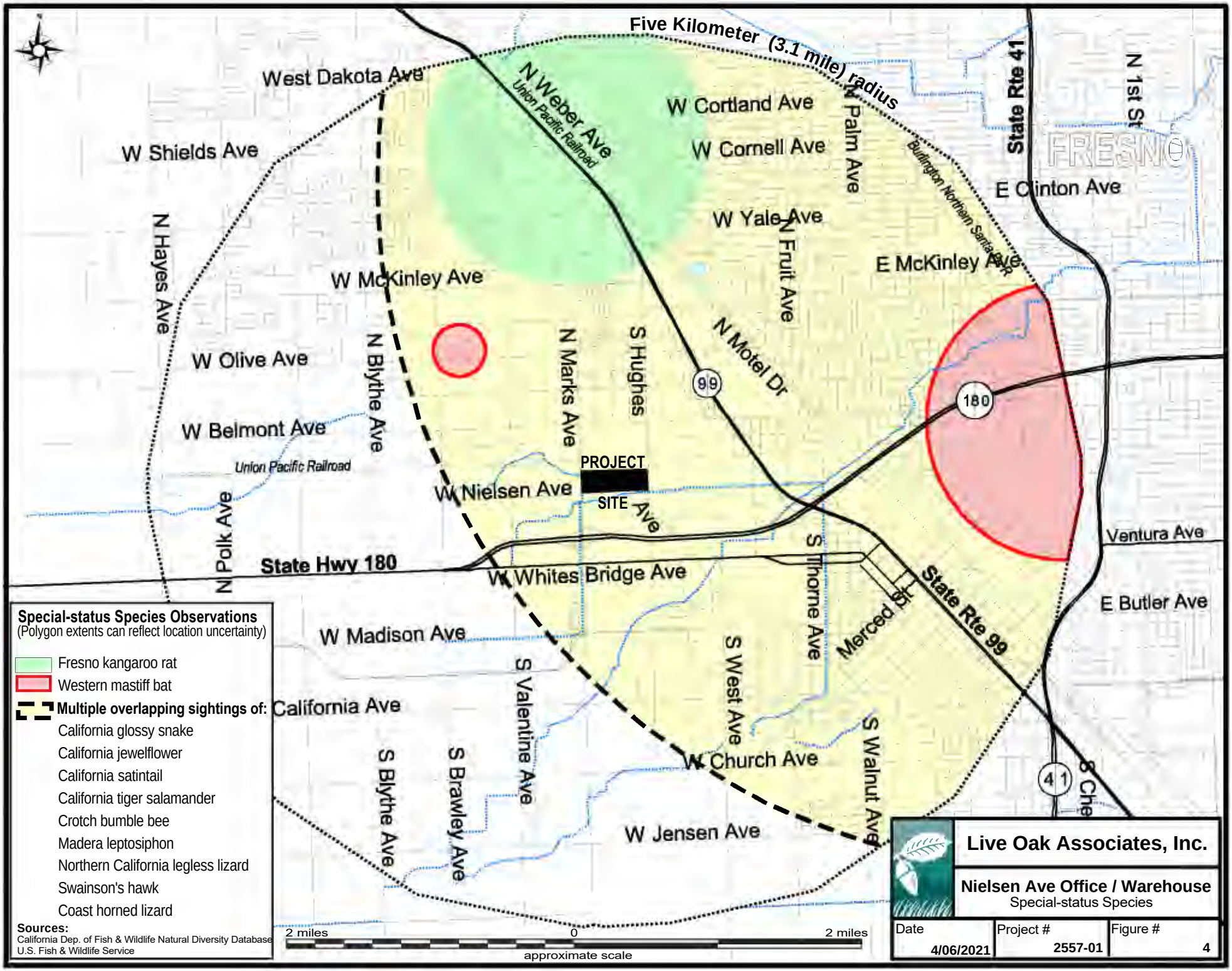

Five Kilometer (3.1 mile) radius
West Dakota Ave
W Shields Ave
N Weber Ave
Union Pacific Railroad
W Cortland Ave
W Cornell Ave
N Palm Ave
Burlington Northern Santa Fe
State Rte 41
N 1st St
FRESNO
E Clinton Ave
W Yale Ave
N Fruit Ave
E McKinley Ave
W McKinley Ave
N Hayes Ave
W Olive Ave
N Blythe Ave
N Marks Ave
S Hughes
N Motel Dr
99
180
W Belmont Ave
Union Pacific Railroad
PROJECT SITE
W Nielsen Ave
Ventura Ave
N Polk Ave
State Hwy 180
W Whites Bridge Ave
S Thorne Ave
Merced St
State Rte 99
E Butler Ave
W Madison Ave
California Ave
S Valentine Ave
S West Ave
S Walnut Ave
S Blythe Ave
S Brawley Ave
W Church Ave
W Jensen Ave
41
Special-status Species Observations
(Polygon extents can reflect location uncertainty)
Fresno kangaroo rat
Western mastiff bat
Multiple overlapping sightings of:
California glossy snake
California jewelflower
California satintail
California tiger salamander
Crotch bumble bee
Madera leptosiphon
Northern California legless lizard
Swainson's hawk
Coast horned lizard
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service
2 miles
0
2 miles
approximate scale
Live Oak Associates, Inc.
Nielsen Ave Office / Warehouse
Special-status Species
Date
4/06/2021
Project #
2557-01
Figure #
4

TABLE 1. LIST OF SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN HABITATS OF THE PROJECT SITE

PLANTS: Adapted from the California Natural Diversity Base (CDFW 2021) and the Inventory of Rare and Endangered Vascular Plant Species of California (CNPS 2021)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat/Range	*Occurrence within the Project Site
Succulent Owl's Clover (*Castilleja campestris* ssp. *succulenta*)	FT, CE CRPR 1B	Occurs in vernal pools and swales in valley foothills and grasslands of the San Joaquin and Sacramento Valleys from Fresno Co. on the south to Solano County on the north; blooms April to May.	**Absent**. Vernal pool habitat required by this species is absent from the project site.
California Jewel-flower (*Caulanthus californicus)*	FT, CT, CRPR 1B	Chenopod scrub, pinyon juniper woodland, valley and foothill scrub. Blooms February-May.	**Absent.** Suitable habitat for this species is absent from the project site.
San Joaquin Valley Orcutt Grass (*Orcuttia ineaqualis*)	FT, CE CRPR 1B	Occurs in deep vernal pools of California's San Joaquin Valley; blooms April to September.	**Absent**. Vernal pool habitat required by this species is absent from the project site.
Hairy Orcutt Grass (*Orcuttia pilosa*)	FE, CE CRPR 1B	Occurs in vernal pools of California's Central Valley. Requires deep pools with prolonged periods of inundation; blooms May to September.	**Absent**. Vernal pool habitat required by this species is absent from the project site.
Greene's Tuctoria (*Tuctoria greenei*)	FE CRPR 1B	Occurs in vernal pools of California's Central Valley from Shasta Co. on the north to Tulare Co. on the south; blooms May to September.	**Absent**. Vernal pool habitat required by this species is absent from the project site.

CNPS-listed Species

Lesser Saltscale (*Atriplex minuscula*)	CRPR 1B	Occurs in sandy, alkaline soils of alkali sinks and grasslands. Blooms May to October.	**Absent.** Habitat and soils required by this species are absent from the project site. No Atriplex species were observed during the field survey.
California Satintail (*Imperata brevifolia*)	CRPR 2B	This perennial grass is found in scrubland and chaparral habitats where water is available. Blooms September-May.	**Absent.** Suitable habitat for this species is absent from the project site.
Alkali-Sink Goldfields (*Lasthenia chrysantha*)	CRPR 1B	Occurs in alkaline vernal pools. Blooms February to June.	**Absent**. Suitable habitat in the form of vernal pools is absent from the project site.
Madera Leptosiphon (*Leptosiphon serrulatus*)	CRPR 1B	Occurs in cismontane woodland, lower montane coniferous forests, and annual grasslands of the Sierra foothills from Madera Co. on the north to Kern Co. on the south. This species prefers dry slopes, often on decomposed granite in woodland. Blooms April to May.	**Absent.** Suitable habitat for this species is absent from the project site.
Sanford's Arrowhead (*Sagittaria sanfordii*)	CRPR 1B	Occurs in freshwater marshes, pond margins, sloughs, canals of California's Central Valley and low Sierra Foothills. Blooms May to October.	**Absent.** Suitable habitat for this species is absent from the project site.

TABLE 1. LIST OF SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN HABITATS OF THE PROJECT SITE

ANIMALS (adapted from CDFW 2021)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence within the Project Site
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	FT	Primarily found in vernal pools of California's Central Valley.	**Absent**. Vernal pool habitat required by this species is absent from the project site.
Crotch Bumble Bee (*Bombus crotchii*)	CCE	Inhabits open grassland and scrub habitats of the southern 2/3 of California. Historically in, but largely extirpated from the Central Valley. Flight period for queens is late February to late October peaking in April and July; flight period for males and workers is March through September peaking in early July. Constructs nests underground in animal burrows. Overwintering sites are likely in soft soils or in debris or leaf litter. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.*	**Absent.** Suitable habitat for this species is absent from the project site.
Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)	FT	Lives in mature elderberry shrubs of California's Central Valley and Sierra foothills.	**Absent.** Blue elderberry shrubs required by this species are absent from the project site. Furthermore, the current opinion of the USFWS is that Fresno County is outside the range of this subspecies.
California Tiger Salamander (*Ambystoma californiense*)	FT, CT	Found primarily in annual grasslands; requires vernal pools for breeding and rodent burrows for refuge.	**Absent.** Suitable breeding habitat in the form of large vernal pools within grassland habitat is absent from the project site and surrounding lands.
Giant Garter Snake (*Thamnophis gigas)*	FT, CT	Requires permanent or summer water with vegetative cover and a dense prey population at higher elevation uplands not prone to flooding.	**Absent.** Suitable habitat for this species is absent from the project site and surrounding lands.
Least Bell's Vireo (*Vireo bellii pusillus*)	FE, CE	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms. Typically nests in willow, *Baccharis*, or mesquite shrubs.	**Absent.** The project site provides no breeding or foraging habitat for this species. Moreover, this species has been extirpated from the project vicinity.
Swainson's Hawk *(Buteo swainsoni*)	CT	Summer migrant in the Central Valley. Forages in grasslands and fields close to riparian areas.	**Unlikely.** Suitable nesting habitat is absent from the project site. Foraging habitat is absent to extremely marginal on the site due to the predominance of paved surfaces on the site. At most, this species may occasionally pass over the site during migration.
Tricolored Blackbird (*Agelaius tricolor*)	CT	Breeds colonially near fresh water in dense bulrush, cattails, or thickets of willows or shrubs. Occasionally nests in wheat fields. Forages in a wide variety of habitats.	**Unlikely.** This species is unlikely to occur in the urban environment in which the project is situated. Furthermore, suitable nesting habitat is absent from the project site and surrounding lands.
Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)	CE	Frequents valley foothill and desert riparian habitats in scattered locations in California	**Absent.** The project site provides no breeding or foraging habitat for this species. Furthermore, this species has been extirpated from the project vicinity.

TABLE 1. LIST OF SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN HABITATS OF THE PROJECT SITE

ANIMALS (adapted from CDFW 2021)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act (cont.)

Species	Status	Habitat	*Occurrence within the Project Site
Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*)	FE, CE	Inhabits grassland on gentle slopes of generally less than 10°, with friable, sandy-loam soils.	**Absent.** Suitable habitat for this species is absent from the project site and surrounding lands. Furthermore, this species is currently only known to occur in Kings County (ESRP 2020).
San Joaquin Kit Fox (*Vulpes macrotis mutica*)	FE, CT	Occurs in desert alkali scrub and annual grasslands of California's San Joaquin Valley and Tulare Basin, extending west into San Luis Obispo County. This species may forage in adjacent agricultural habitats.	**Absent.** Suitable habitat for this species is absent to extremely marginal. While this species has adapted to urban environments in the Bakersfield area, no urban adapted populations of San Joaquin kit fox are known to occur in the Fresno metropolitan area.

State Species of Special Concern

Western Spadefoot (*Spea hammondii*)	CSC	Primarily occurs in grasslands, but also occurs in valley and foothill hardwood woodlands. Requires vernal pools or other temporary wetlands for breeding.	**Absent.** Suitable breeding habitat in the form of vernal pools is absent from the project site and surrounding lands.
Western Pond Turtle (*Emys marmorata*)	CSC	Occurs in ponds and slow-moving rivers and streams of the Sierra foothills and Central Valley.	**Absent.** Suitable aquatic habitat required by this species is absent from the project site and surrounding lands.
Coast Horned Lizard (*Phrynosoma blainvillii*)	CSC	Occurs in a wide variety of natural habitats. Most common in lowlands along sandy washes with scattered low bushes where there are open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	**Absent.** Suitable habitat for this species is absent from the project site and surrounding lands.
Northern California Legless Lizard (*Anniella pulchra*)	CSC	Moist sandy or loose loamy soils under sparse vegetation.	**Absent.** Suitably loose and moist soils are absent from the project site. Furthermore, the only documented occurrence in the region is an 1880s specimen collection.
California Glossy Snake (*Arizona elegans occidentalis*)	CSC	Occurs in arid scrub, rocky washes, grasslands, and chaparral from the eastern San Francisco Bay Area south to northwestern Baja, excluding coastal areas in Central California. Known from up to 7,200 ft. in elevation.	**Absent.** Ruderal habitat found on the project site provides unsuitable habitat for this species.
Burrowing Owl (*Athene cunicularia hypugaea*)	CSC	Found in open, dry grasslands, deserts, and ruderal areas; requires ground squirrel burrows for cover and nesting.	**Unlikely.** The site's urban setting and preponderance of paved surfaces are generally incompatible with burrowing owl ecology. No evidence of burrowing owl occupation such as cough pellets, whitewash, or feathers was observed during the field survey. The nearest documented occurrence is approx. 6.5 miles to the northeast at the Fresno International Airport (CDFW 2021).

TABLE 1. LIST OF SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN HABITATS OF THE PROJECT SITE

ANIMALS (adapted from CDFW 2021)

State Species of Special Concern (cont.)

Species	Status	Habitat	*Occurrence within the Project Site
Western Mastiff Bat (*Eumops perotis* ssp. *californicus*)	CSC	Frequents open, semi-arid to arid habitats, including conifer, and deciduous woodlands, coastal scrub, grasslands, palm oasis, chaparral and urban. Roosts in cliff faces, high buildings, and tunnels.	**Possible.** The project site provides possible foraging habitat for this species. Roosting and breeding habitat is absent from the site.
Pallid Bat (*Antrozous pallidus*)	CSC	Grasslands, chaparral, woodlands, and forests of California; most common in dry rocky open areas providing roosting opportunities.	**Possible.** The site could be used for foraging; roosting and breeding habitat is absent.
American Badger (*Taxidea taxus*)	CSC	This species inhabits open and dry sections of grasslands, shrub, and forest habitats with friable soil.	**Absent.** The site provides unsuitable habitat conditions for this species based on its urban setting and predominance of paved surfaces.

* Explanation of Occurrence, Designations, and Status Codes

Present: Species observed on the Site at time of field surveys or during recent past.
Likely: Species not observed on the Site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the Site, but it could occur there from time to time.
Unlikely: Species not observed on the Site, and would not be expected to occur there except, perhaps, as a transient
Absent: Species not observed on the Site and precluded from occurring there because habitat requirements not met.

STATUS CODES

FE Federally Endangered
FT Federally Threatened
FPT Federally Proposed Threatened
FC Federal Candidate
FPD Federally (Proposed) Delisted

CE California Endangered
CT California Threatened
CSC California Species of Special Concern
CNPS California Native Plant Society Listing
CFP California Fully Protected
CCE California Candidate Endangered

2.3 JURISDICTIONAL WATERS

As will be discussed in greater detail in Section 3.1.8, the U.S. Army Corps of Engineers (USACE) has regulatory authority over certain rivers, creeks, lakes, ponds, reservoirs, wetlands, and in some cases irrigation canals ("waters of the U.S."). The CDFW asserts jurisdiction over waters in California that have a defined bed and bank, including engineered channels that replace, and/or connect to, natural drainages. The State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) assert jurisdiction over California's oceans, lakes, and rivers, and some, but not all, of California's wetland features.

Hydrologic features under the jurisdiction of the USCAE, CDFW, or RWQCB are absent from the site.

2.4 SENSITIVE NATURAL COMMUNITIES

Sensitive Natural Communities are those that are of limited distribution, distinguished by significant biological diversity, home to special status plant and animal species, of importance in maintaining water quality or sustaining flows, etc. Examples of sensitive natural communities include various types of wetlands, riparian habitat, and valley scrub habitats. CDFW has assigned State Ranks to California's natural communities that reflect the condition and imperilment of that community throughout its range within the state. State Ranks are represented with a letter and number score. Older ranks, which need to be updated in the CNDDB, may still contain a decimal "threat" rank of .1, .2, or .3, where .1 indicates very threatened status, .2 indicates moderate threat, and .3 indicates few or no current known threats.

The project site supports no sensitive natural communities.

2.5 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and inter-population movements. Movement corridors in California are typically associated with valleys, rivers and creeks supporting riparian vegetation, and ridgelines.

The project site does not contain features that would function as a wildlife movement corridor and the perimeter fencing would greatly inhibit wildlife movement on or off the site.

2.6 DESIGNATED CRITICAL HABITAT

The USFWS often designates areas of "critical habitat" when it lists species as threatened or endangered. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Designated critical habitat is absent from the project site and immediately surrounding lands.

3.0 IMPACTS AND MITIGATIONS

In California, any project carried out or approved by a public agency that will result in a direct or reasonably foreseeable indirect physical change in the environment must comply with CEQA. The purpose of CEQA is to ensure that a project's potential impacts on the environment are evaluated, and methods for avoiding or reducing these impacts are considered, before the project is allowed to move forward. A secondary aim of CEQA is to provide justification to the public for the approval of any projects involving significant impacts on the environment.

According to Section 15382 of the CEQA Guidelines, a significant effect on the environment means a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest." Although the lead agency may set its own CEQA significance thresholds, project impacts to biological resources are generally considered to be significant if they would meet any of the following criteria established in Appendix G of the CEQA Guidelines:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS.

- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery site.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Furthermore, CEQA Guidelines Section 15065(a) requires the lead agency to make "mandatory findings of significance" if there is substantial evidence that a project may:

- Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare or threatened species.

- Achieve short-term environmental goals to the detriment of long-term environmental goals.

- Produce environmental effects that are individually limited but cumulatively considerable, meaning that the incremental effects of the project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects.

3.1 RELEVANT GOALS, POLICIES, AND LAWS

3.1.1 City of Fresno General Plan Policies

In compliance with CEQA, the lead agency must consider project conformance with applicable goals and policies of the relevant general plan policies. The City of Fresno General Plan includes goals and policies designed to protect significant biotic resources of the Planning Area. Resource elements addressed by this plan include a number of policy goals pertaining to the preservation and enhancement of natural resources such as wetland and riparian areas, fish and wildlife habitat, vegetation, and open space. Public and private development projects within the city must be consistent with these general plan policies.

3.1.2 Habitat Conservation Plans and Natural Community Conservation Plans

Section 10 of the federal Endangered Species Act establishes a process by which non-federal projects can obtain authorization to incidentally take listed species, provided take is minimized and thoroughly mitigated. A Habitat Conservation Plan (HCP) developed by the project applicant in collaboration with the USFWS and/or NMFS, ensures that such minimization and mitigation will occur, and is a prerequisite to the issuance of a federal incidental take permit. Similarly, a Natural Community Conservation Plan (NCCP) developed by the project applicant in collaboration with CDFW, provides for the conservation of biodiversity within a project area, and permits limited incidental take of state-listed species.

3.1.3 Threatened and Endangered Species

In California, imperiled plants and animals may be afforded special legal protections under the California Endangered Species Act (CESA) and/or Federal Endangered Species Act (FESA). Species may be listed as "threatened" or "endangered" under one or both Acts, and/or as "rare" under CESA. Under both Acts, "endangered" means a species is in danger of extinction throughout all or a significant portion of its range, and "threatened" means a species is likely to become endangered within the foreseeable future. Under CESA, "rare" means a species may become endangered if their present environment worsens. Both Acts prohibit "take" of listed species, defined under CESA as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86), and more broadly defined under FESA to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3).

When state and federally listed species have the potential to be impacted by a project, the USFWS and CDFW must be included in the CEQA process. These agencies review the environmental document to determine the adequacy of its treatment of endangered species issues and to make project-specific recommendations for the protection of listed species. Projects that may result in the "take" of listed species must generally enter into consultation with the USFWS and/or CDFW pursuant to FESA and CESA, respectively. In some cases, incidental take authorization(s) from these agencies may be required before the project can be implemented.

3.1.4 California Fully Protected Species

The classification of certain animal species as "fully protected" was the State of California's initial effort in the 1960s, prior to the passage of the California Endangered Species Act, to identify and provide additional protection to those species that were rare or faced possible extinction. Following CESA enactment in 1970, many fully protected species were also listed as California threatened or endangered. The list of fully protected species are identified, and their protections stipulated, in California Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and fish (5515). Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except in conjunction with necessary scientific research and protection of livestock.

3.1.5 Migratory Birds

The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703-712) prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it actually covers almost all birds native to the United States, even those that are non-migratory. The FMBTA encompasses whole birds, parts of birds, and bird nests and eggs.

Native birds are also protected under California state law. The California Fish and Game Code makes it unlawful to take or possess any non-game bird covered by the FMBTA (Section 3513), as well as any other native non-game bird (Section 3800), even if incidental to lawful activities. Moreover, the California Migratory Bird Protection Act, enacted in September 2019, clarifies native bird protection and increases protections where California law previously deferred to federal law.

3.1.6 Birds of Prey

Birds of prey are protected in California under provisions of the Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the federal Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs.

3.1.7 Nesting Birds

In California, protection is afforded to the nests and eggs of all birds. California Fish and Game Code (Section 3503) states that it is "unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Breeding-season disturbance that causes nest abandonment and/or loss of reproductive effort is considered a form of "take" by the CDFW.

3.1.8 Wetlands and Other Jurisdictional Waters

The USACE regulates the filling or grading of waters of the U.S. under the authority of Section 404 of the Clean Water Act (CWA). Drainage channels and adjacent wetlands may be considered "waters of the United States" or "jurisdictional waters" subject to the jurisdiction of the USACE.

Waters of the U.S. are defined by the Navigable Waters Protection Rule. The new rule was published in the Federal Register on April 21, 2020, and took effect on June 22, 2020.

The Navigable Waters Protection Rule (33 CFR Part 328) identifies four categories of Waters of the U.S.: (1) territorial seas and traditional navigable waters, (2) tributaries, (3) lakes, ponds, and impoundments of jurisdictional waters, and (4) adjacent wetlands. These categories are defined as follows:

<u>Territorial Seas and Traditional Navigable Waters (TNWs)</u>

- The territorial seas and traditional navigable waters include large rivers and lakes and tidally-influenced waterbodies used in interstate or foreign commerce.

<u>Tributaries</u>

- Tributaries include perennial and intermittent rivers and streams that contribute surface flow to traditional navigable waters in a typical year. These naturally occurring surface water channels must flow more often than just after a single precipitation event—that is, tributaries must be perennial or intermittent.
- Tributaries can connect to a traditional navigable water or territorial sea in a typical year either directly or through other "waters of the United States," through channelized non-

jurisdictional surface waters, through artificial features (including culverts and spillways), or through natural features (including debris piles and boulder fields).

- Ditches are to be considered tributaries only where they satisfy the flow conditions of the perennial and intermittent tributary definition and either were constructed in or relocate a tributary or were constructed in an adjacent wetland and contribute perennial or intermittent flow to a traditional navigable water in a typical year.

Lakes, Ponds, and Impoundments of Jurisdictional Waters

- Lakes, ponds, and impoundments of jurisdictional waters are jurisdictional where they contribute surface water flow to a traditional navigable water or territorial sea in a typical year either directly or through other "waters of the United States," through channelized non-jurisdictional surface waters, through artificial features (including culverts and spillways), or through natural features (including debris piles and boulder fields).

- Lakes, ponds, and impoundments of jurisdictional waters are also jurisdictional where they are flooded by a "water of the United States" in a typical year, such as certain oxbow lakes that lie along the Mississippi River.

Adjacent Wetlands

- Wetlands that physically touch other jurisdictional waters are "adjacent wetlands,"

- Wetlands separated from a "water of the United States" by only a natural berm, bank or dune are also "adjacent."

- Wetlands inundated by flooding from a "water of the United States" in a typical year are "adjacent."

- Wetlands that are physically separated from a jurisdictional water by an artificial dike, barrier, or similar artificial structure are "adjacent" so long as that structure allows for a direct hydrologic surface connection between the wetlands and the jurisdictional water in a typical year, such as through a culvert, flood or tide gate, pump, or similar artificial feature.

- An adjacent wetland is jurisdictional in its entirety when a road or similar artificial structure divides the wetland, as long as the structure allows for a direct hydrologic surface connection through or over that structure in a typical year.

The final rule also outlines what are not "waters of the United States." The following waters/features are not jurisdictional under the rule:

- Waterbodies that are not included in the four categories of "waters of the United States" listed above.

- Groundwater, including groundwater drained through subsurface drainage systems, such as drains in agricultural lands.

- Ephemeral features, including ephemeral streams, swales, gullies, rills, and pools.

- Diffuse stormwater run-off and directional sheet flow over upland.

- Many farm and roadside ditches.

- Prior converted cropland retains its longstanding exclusion, but is defined for the first time in the final rule. The agencies are clarifying that this exclusion will cease to apply when cropland is abandoned (i.e., not used for, or in support of, agricultural purposes in the immediately preceding five years) and has reverted to wetlands.

- Artificially irrigated areas, including fields flooded for agricultural production, that would revert to upland should application of irrigation water to that area cease.

- Artificial lakes and ponds, including water storage reservoirs and farm, irrigation, stock watering, and log cleaning ponds, constructed or excavated in upland or in non-jurisdictional waters.

- Water-filled depressions constructed or excavated in upland or in non-jurisdictional waters incidental to mining or construction activity, and pits excavated in upland or in non-jurisdictional waters for the purpose of obtaining fill, sand, or gravel.

- Stormwater control features excavated or constructed in upland or in non-jurisdictional waters to convey, treat, infiltrate, or store stormwater run-off.

- Groundwater recharge, water reuse, and wastewater recycling structures, including detention, retention and infiltration basins and ponds, that are constructed in upland or in non-jurisdictional waters.

- Waste treatment systems have been excluded from the definition of "waters of the United States" since 1979 and will continue to be excluded under the final rule. Waste treatment systems include all components, including lagoons and treatment ponds (such as settling or cooling ponds), designed to either convey or retain, concentrate, settle, reduce, or remove pollutants, either actively or passively, from wastewater or stormwater prior to discharge (or eliminating any such discharge).

All activities that involve the discharge of dredge or fill material into waters of the U.S. are subject to the permit requirements of the USACE. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the RWQCB issues a Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards.

Under the Porter-Cologne Water Quality Control Act of 1969, the State Water Resources Control Board has regulatory authority to protect the water quality of all surface water and groundwater in the State of California ("Waters of the State"). Nine RWQCBs oversee water quality at the local and regional level. The RWQCB for a given region regulates discharges of fill or pollutants into waters of the State through the issuance of various permits and orders. Discharges into waters of the State that are also waters of the U.S. require a Section 401 Water Quality Certification from the RWQCB as a prerequisite to obtaining certain federal permits, such as a Section 404 Clean Water Act permit. Discharges into all Waters of the State, even those that are not also waters of the U.S., require Waste Discharge Requirements (WDRs), or waivers of WDRs, from the RWQCB. The RWQCB also administers the Construction Storm Water Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one or more acres of soil must obtain a Construction General

Permit under the Construction Storm Water Program. A prerequisite for this permit is the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, storm water, or other pollutants into a water of the U.S. may require a NPDES permit.

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a Notification of Lake or Streambed Alteration. If CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

4.0 IMPACT ANALYSIS

The following analysis is based upon project elements described in Section 1.1. It is assumed that ground disturbance will occur across the entire site.

4.1 POTENTIALLY SIGNIFICANT PROJECT IMPACTS/MITIGATION

4.1.1 Project-Related Mortality/Disturbance of Other Nesting Birds

Potential Impacts. The project site has the potential to be used for nesting by a few urban adapted native avian species. Onsite trees and shrubs have the potential to support nesting birds such as the northern mockingbird and mourning dove. The site also has the potential to support the disturbance-tolerant, ground-nesting killdeer. Nearly all native birds are protected by the Federal Migratory Bird Treaty Act, California Migratory Bird Protection Act, and California Fish and Game Code. If construction occurs during the nesting season, birds nesting on the site could be injured or killed by construction activities. Project activities that adversely affect the nesting success or result in mortality of nesting birds would violate federal and state laws (see Sections 3.1.5, 3.1.6, and 3.1.7) and would be considered a significant impact under CEQA.

Mitigation. The applicant will implement the following measures to avoid and minimize the potential for project-related mortality/disturbance of nesting birds, as necessary.

> ***Mitigation 4.1.1a* (*Avoidance*).** If feasible, the project will be constructed outside the avian nesting season, typically defined as February 1-August 31.
>
> ***Mitigation 4.1.1b* (*Pre-construction Surveys*).** If the project must be constructed between February 1 and August 31, a qualified biologist will conduct pre-construction surveys for active migratory bird nests at the project site within 14 days of the onset of these activities.
>
> ***Mitigation 4.1.1c* (*Establish Buffers*).** Should any active nests be discovered in or near proposed construction zones, the biologist will identify a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged.

Compliance with the above mitigation measures would reduce impacts to nesting birds to a less than significant level under CEQA and ensure compliance with state and federal laws protecting these species.

4.2 LESS THAN SIGNIFICANT PROJECT IMPACTS

4.2.1 Special Status Plants

Potential Impacts. Ten special status vascular plant species are known to occur in the region (see Table 1). Due to the absence of suitable habitat and/or the site being situated outside of the species' known distribution, none of these species are expected to occur on site. Therefore, the project would not adversely affect any of these 10 plant species and impacts would be less than significant as defined by CEQA.

Mitigation. Mitigation is not warranted.

4.2.2 Special Status Animal Species Absent from or Unlikely to Occur on the Project Site

Potential Impacts. Of the 20 special status animal species that potentially occur in the project vicinity, 18 are considered absent or unlikely to occur on site due to past and ongoing disturbance of the site and surrounding lands, the absence of suitable habitat, and/or the sitebeing situated outside of the species' known distribution. These comprise the vernal pool fairy shrimp, Crotch bumble bee, valley elderberry longhorn beetle, California tiger salamander, giant garter snake, least Bell's vireo, Swainson's hawk, tricolored blackbird, western yellow-billed cuckoo, Fresno kangaroo rat, San Joaquin kit fox, western spadefoot, western pond turtle, coast horned lizard, northern California legless lizard, California glossy snake, burrowing owl, and American badger.

The project does not have the potential to impact these species through project-related mortality or loss of habitat because there is little or no likelihood that they are present or would be present during construction activity.

Mitigation. Mitigation is not warranted.

4.2.3 Special Status Animal Species that May Occur within the Project Site as Occasional or Regular Foragers but Breed or Roost Elsewhere

Potential Impacts. Two special status animals, the western mastiff bat and pallid bat, have the potential to forage over the project site from time to time but would not roost on the site (see Table 1). These species would not be vulnerable to construction-related injury or mortality

while foraging because they are highly mobile during foraging and would be expected to simply avoid active construction zones.

These species also would not be adversely affected from project-related loss of habitat. Potential foraging habitat on the project site is not uniquely important for these species and similar or higher quality foraging habitat is abundant in the region.

Mitigation. Mitigation is not warranted.

4.2.4 Wildlife Movement Corridors

Potential Impacts. The project site does not contain features that would function as a wildlife movement corridor. Furthermore, the perimeter fence would inhibit the movements of native wildlife land movements. As a result, project impacts to wildlife movement and wildlife movement corridors are considered less than significant under CEQA.

Mitigation. No mitigation is warranted.

4.2.5 Waters of the United States and California.

Potential Impacts. Waters of the U.S. and California are absent from the project site. As a result, the project will have no effect on such waters.

Mitigation. Mitigations are not warranted.

4.2.6 Designated Critical Habitat and Sensitive Natural Communities

Potential Impacts. Designated critical habitat, sensitive natural communities, and other sensitive habitats are absent from the project site and adjacent lands. The project will have no impact on such habitats.

Mitigation. No mitigation is warranted.

4.2.7 Local Policies or Habitat Conservation Plans

Potential Impacts. The project appears to be consistent with the goals and policies of the City of Fresno General Plan pertaining to biological resources and would not conflict with any other

local policies or ordinances protecting biological resources. The project is not subject to any Habitat Conservation Plans or Natural Community Conservation Plans.

Mitigation. No mitigation is warranted.

5.0 LITERATURE REFERENCED

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D. G. Wilken, editors. 2012. The Jepson Manual: Vascular Plants of California, second edition. University of California Press, Berkeley.

Calflora. 2021. Calflora: An online database of plant identification and distribution [web application]. Calflora, Berkeley, California. Available: http://www.calflora.org.

California Department of Fish and Game (CDFG). 2012. Staff report on Burrowing owl mitigation. Natural Resources Agency, Sacramento, CA.

_____. 2002. California Fish and Game Code. Gould Publications. Binghamton, NY.

California Department of Fish and Wildlife (CDFW). 2021. California Natural Diversity Database. The Resources Agency, Sacramento, CA.

California Native Plant Society. 2021. Inventory of Rare and Endangered Vascular Plants of California. Available online at: http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi.

California Soil Resource Lab. 2008. Streaming, seamless interface to USDA-NCSS SSURGO and STATSGO Soil Survey Products.

eBird. 2021. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: http://www.ebird.org.

Remy, Michael H., Tina A. Thomas, James G. Moose and Whitman F. Manley. 1996. Guide to the California Environmental Quality Act. Solano Press Books, Point Arena, CA.

U. S. Fish and Wildlife Service (USFWS). 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, Oregon.

Zeiner, David C., William F. Laudenslayer, Kenneth E. Mayer and Marshal White. Ed. 1988. California's wildlife, volume I, amphibians and reptiles, volume II, birds, and volume III, mammals. Department of Fish and Game. Sacramento, CA. (Online: http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx).

APPENDIX A: VASCULAR PLANT LIST

APPENDIX A
VASCULAR PLANTS OF THE SITE

The plants species listed below were observed on the Nielsen Avenue Office/Warehouse Project site during a field survey conducted by Live Oak Associates, Inc. on March 18, 2021. The U.S. Fish and Wildlife Service wetland indicator status of each plant has been shown following its common name.

OBL - Obligate
FACW - Facultative Wetland
FAC - Facultative
FACU - Facultative Upland
UPL - Upland

APOCYNACEAE – Dogbane Family		
Nerium oleander	Oleander	UPL
ARECACEAE—Palm Family		
Washingtonia robusta	Mexican Fan Palm	FACW
ASTERACEAE – Sunflower Family		
Ambrosia acanthicarpa	Annual Bursage	UPL
Heterotheca grandiflora	Telegraphweed	UPL
Erigeron canadensis	Canada Horseweed	FACU
Lactuca serriola	Prickly Lettuce	FACU
BORAGINACEAE – Borage Family		
Amsinckia intermedia	Common Fiddleneck	UPL
Amsinckia menziesii	Small Flowered Fiddleneck	UPL
BRASSICACEAE – Mustard Family		
Hirschfeldia incana	Mustard	UPL
Sisymbrium orientale	Indian Hedge Mustard	UPL
CHENOPODIACEAE – Goosefoot Family		
Salsola tragus	Russian Thistle	FACU
FABACEAE - Legume Family		
Medicago lupulina	Black Medic	FAC
Medicago polymorpha	Burclover	FACU
GERANIACEAE - Geranium Family		
Erodium cicutarium	Red-stem Filaree	UPL
MYRTACEAE – Bottlebrush Family		
Eucalyptus camaldulensis	Red Gum	FAC
POACEAE - Grass Family		
Avena sp.	Wild Oats	UPL
Bromus madritensis ssp. *rubens*	Red Brome	FACU
Festuca myuros	Rattail Fescue	FACU

APPENDIX B: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR WITHIN THE PROJECT SITE

APPENDIX B: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR WITHIN THE PROJECT SITE

The species listed below are those that may reasonably be expected to use the project site routinely or from time to time. The list was not intended to include birds that are vagrants or occasional transients. Terrestrial vertebrate species observed on the project site during a survey conducted by Live Oak Associates, Inc. on March 18, 2021 have been noted with an asterisk.

CLASS: REPTILIA
ORDER: SQUAMATA (Lizards and Snakes)
SUBORDER: SAURIA (Lizards)
FAMILY: PHRYNOSOMATIDAE
*Western Fence Lizard (*Sceloporus occidentalis*)
*Side Blotched Lizard (*Uta stansburiana*)
SUBORDER: SERPENTES (Snakes)
FAMILY: COLUBRIDAE (Colubrids)
Gopher Snake *(Pituophis melanoleucus)*

CLASS: AVES
ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)
FAMILY: ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)
Red-tailed Hawk *(Buteo jamaicensis)*
FAMILY: FALCONIDAE (Caracaras and Falcons)
American Kestrel (*Falco sparverius*)
ORDER: CHARADRIIFORMES (Shorebirds, Gulls, and relatives)
FAMILY: CHARADRIIDAE (Plovers and relatives)
*Killdeer (*Charadrius vociferus*)
ORDER: COLUMBIFORMES (Pigeons and Doves)
FAMILY: COLUMBIDAE (Pigeons and Doves)
Rock Pigeon (*Columba livia*)
Mourning Dove (*Zenaida macroura*)
Eurasian Collared-dove (*Streptopelia decaocto*)
ORDER: APODIFORMES (Swifts and Hummingbirds)
FAMILY: TROCHILIDAE (Hummingbirds)
Anna's Hummingbird (*Calypte anna*)
ORDER: PASSERIFORMES (Perching Birds)
FAMILY: TYRANNIDAE (Tyrant Flycatchers)
Black Phoebe (*Sayornis nigricans*)
Western Kingbird (*Tyrannus verticalis*)
FAMILY: CORVIDAE (Jays, Magpies, and Crows)
American Crow (*Corvus brachyrhynchos*)
Common Raven (*Corvus corax*)
FAMILY: ALAUDIDAE (Larks)
Horned Lark (*Eremophila alpestris*)
FAMILY: HIRUNDINIDAE (Swallows)
Cliff Swallow (*Petrochelidon pyrrhonota*)
Barn Swallow (*Hirundo rustica*)

FAMILY: TURDIDAE (Thrushes)
American Robin (*Turdus migratorius*)
FAMILY: MIMIDAE (Mockingbirds and Thrashers)
*Northern Mockingbird (*Mimus polyglottos*)
FAMILY: STURNIDAE (Starlings and Allies)
*****European Starling (*Sturnus vulgaris*)
FAMILY: PARULIDAE (Wood Warblers and Relatives)
Yellow-rumped Warbler (*Dendroica coronata*)
FAMILY: EMBERIZIDAE (Emberizines)
Savannah Sparrow (*Passerculus sandwichensis*)
*White-crowned Sparrow (*Zonotrichia leucophrys*)
FAMILY: ICTERIDAE (Blackbirds, Orioles and Allies)
Brewer's Blackbird (*Euphagus cyanocephalus*)
FAMILY: FRINGILLIDAE (Finches)
*House Finch (*Carpodacus mexicanus*)
Lesser Goldfinch (*Carduelis psaltria*)
FAMILY: PASSERIDAE (Old World Sparrows)
House Sparrow (*Passer domesticus*)

CLASS: MAMMALIA
ORDER: CHIROPTERA (Bats)
FAMILY: VESPERTILIONIDAE (Vespertilionid Bats)
Little Brown Myotis *(Myotis lucifugus)*
Yuma Myotis *(Myotis yumanensis)*
California Myotis *(Myotis californicus)*
Small-footed Myotis *(Myolis leibii)*
Western Pipistrelle *(Pipislrellus ffesperus)*
Big Brown Bat *(Eptesicus fuscus)*
Pallid Bat (*Antrozous pallidus*)
FAMILY: MOLOSSIDAE (Free-tailed Bat)
Brazilian Free-tailed Bat *(Tadarida brasiliensis)*
Western Mastiff Bat *(Eumops perolis)*
ORDER: RODENTIA (Rodents)
FAMILY: GEOMYIDAE (Pocket Gophers)
Botta's Pocket Gopher (*Thomomys bottae*)
FAMILY: MURIDAE (Mice, Rats and Voles)
Western Harvest Mouse (*Reithrodontomys megalotis*)
Norway Rat (*Rattus norvegicus*)
Deer Mouse (*Peromyscus maniculatus*)
House Mouse (*Mus musculus*)
ORDER: CARNIVORA (Carnivores)
FAMILY: PROCYONIDAE (Raccoons and Relatives)
Raccoon (*Procyon lotor*)
FAMILY: FELIDAE (Cats)
Feral Cat (*Felis cattus*)

APPENDIX C: PHOTOS

Photo 1: Overview of southwest end of project site.

Photo 2: Northeast end of project site. Adjacent industrial site in upper left.

Photo 3: Onsite oleander shrubs at east end of site.

Photo 4: Open ground on site in foreground; onsite eucalyptus trees in background.

Photo 5: Open ground on site in foreground; onsite palm trees in background.

Photo 6: Example of the few California ground squirrel burrows (in lower right) that were found in areas of open ground on the site.

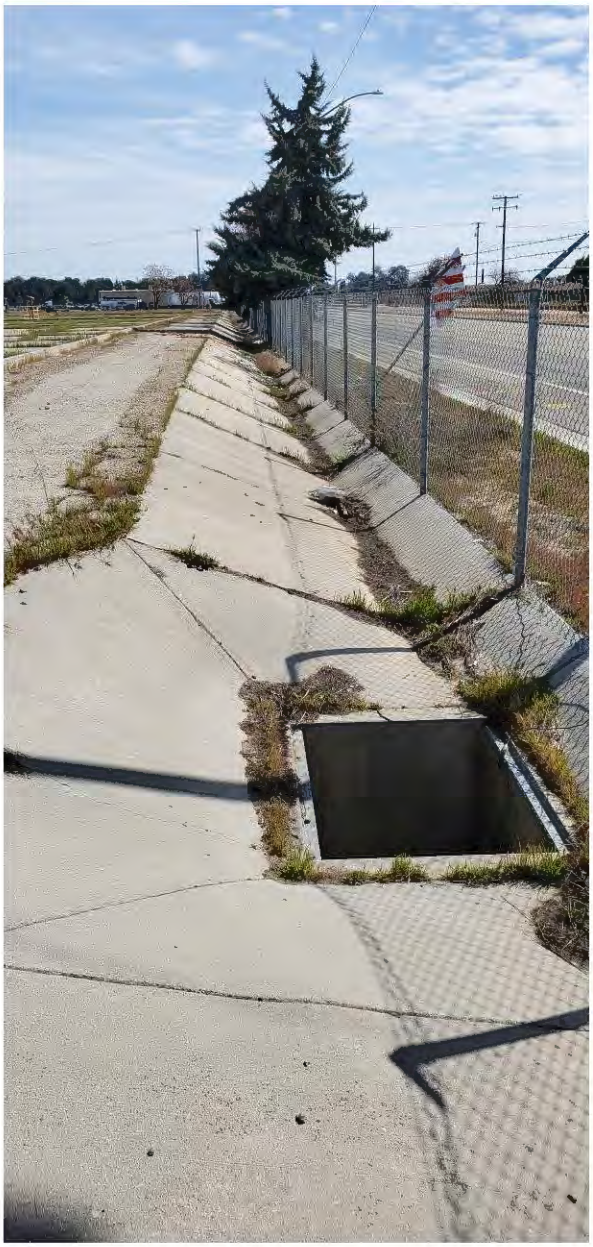


Photo 7: Onsite drainage ditch along southern side of site leading to drain inlet in foreground.

APPENDIX F

PHASE I CULTURAL RESOURCES SURVEY

This page intentionally left blank

CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

August 3, 2021

Jake Kurth
Scannell Properties
8801 River Crossing Boulevard, Suite 300
Indianapolis, IN 46420

Subject: Phase I Cultural Resources Survey for the 2740 West Nielsen Avenue Office/Warehouse Project in Fresno, Fresno County, California (LSA Project No. SNN2102)

Dear Mr. Kurth:

LSA conducted a Phase I Cultural Resources Survey (study) for the proposed 2740 West Nielsen Avenue Office/Warehouse Project (project) in Fresno, Fresno County, California. The proposed project includes the development of four office/warehouse buildings on a currently vacant parcel. All cultural resources study work was completed per the requirements of the California Environmental Quality Act of 1970 (CEQA).

This study has the following purposes: (1) identify archaeological deposits that may meet the CEQA definition of a historical resource (California Public Resources Code [PRC] §21084.1) or a unique archaeological resource (PRC §21083.2) and that may be impacted by the proposed project; (2) assess the potential for human remains; and (3) recommend procedures for avoiding or mitigating impacts to such deposits, if warranted. The study consisted of background research and a field survey and was conducted by LSA Associate/Senior Archaeologist Kerrie Collison, M.A., Registered Professional Archaeologist (RPA) No. 28731436.

PROJECT LOCATION AND CHARACTERISTICS

The project site, which is also the Phase I study site, is depicted on the United States Geological Survey (USGS) *Fresno South, California* 7.5-minute topographic quadrangle map in Section 06 of Township 14 South, Range 20 East, Mount Diablo Baseline and Meridian (USGS 1981; Figure 1; all references are in Attachment A, and all figures are in Attachment B). The project site is located on the north side of West Nielsen Avenue between North Marks Avenue and North Hughes Avenue (Figure 2).

The project site is relatively flat and is at an elevation of 290 feet (ft). The nearest current water source is a man-made ditch, and the nearest natural freshwater source (the San Joaquin River) is 7.5 miles (mi) north of the project site. Subsurface sediments of the project site consist of Quaternary marine and nonmarine alluvium, lake, playa, and terrace deposits that date to the Pleistocene and Holocene (ranging from 2.58 million years ago to the present).[1]

[1] California Geological Survey. 2015. Geologic Map of California. Website: https://maps.conservation.ca.gov/cgs/gmc/ (accessed July 30, 2021).

BACKGROUND RESEARCH

Southern San Joaquin Valley Information Center

A record search of the project site and a 0.5 mi search radius was conducted on May 10, 2021, by staff members at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS) at California State University, Bakersfield (SSJVIC Records Search File No. 21-161). The SSJVIC, an affiliate of the California Office of Historic Preservation (OHP), is the official repository of cultural resources records and reports for Fresno County. Background research also included a review of the following State and federal inventories:

- Built Environment Resources Directory (BERD)[1]
- California Historical Landmarks (OHP 1996)
- California Points of Historical Interest (OHP 1992)
- *Five Views: An Ethnic Historic Site Survey for California* (OHP 1988)
- California Inventory of Historic Resources (OHP 1976)

The record search results (Attachment C) indicate that no previous cultural resources studies have included the project site and that four previous studies have included a portion of the area within a 0.5 mi radius of the project site. All four previous studies were field surveys. No cultural resources have been previously recorded in the project site, and one cultural resource (P-10-003930, the historic-period Southern Pacific Railroad) has been recorded within 0.5 mi of the project site. No resources listed in the BERD are within the project site.

Native American Heritage Commission

LSA submitted a request to the Native American Heritage Commission (NAHC) to request a review of the Sacred Lands File (SLF) for the presence of Native American cultural resources that might be impacted by the proposed project. The NAHC maintains the SLF database and is the official State repository of Native American sacred-site location records in California.

Nancy Gonzalez-Lopez, NAHC Cultural Resources Analyst, responded to the SLF search request on May 18, 2021, stating that the results were negative and that no Native American cultural resources were known in the area (Attachment D). The NAHC also provided a suggested list of Native American individuals to contact for information regarding the project site.

Aerial Photographs and Historic Maps

Additional background research included a review of aerial photographs and historic-period maps that include the project site.[2] The purpose of this review was to assess the potential for historic-period archaeological deposits in the project site. The oldest available aerial photograph that

---

1 California Office of Historic Preservation. Built Environment Resources Directory (BERD). n.d. Website: https://ohp.parks.ca.gov/?page_id=30338 (accessed July 31, 2021).

2 National Environmental Title Research. n.d. Historic Aerials. Website: http://www.historicaerials.com (accessed July 31, 2021).

includes the project site dates to 1962, at which time the project site was already disturbed with buildings on the western portion and cleared land on the eastern portion. By 1972, the square buildings on the eastern portion of the project site were constructed. The rectangular buildings on the eastern portion of the project site were constructed by 1998. All buildings were demolished by 2014.

The earliest available topographic quadrangle reviewed by LSA dates to 1923 and depicts the roads along the borders of the project site but depicts no buildings on the project site itself. Buildings in the southwestern corner of the project site are depicted on a 1947 map, and the remainder of the buildings on the western portion of the project site are depicted on a 1964 map along with two reservoirs just west of the center of the southern edge of the project site. The map dating to 1974 depicts the square buildings on the eastern portion of the project site (which were visible on the 1972 aerial photograph).

FIELD SURVEY

On June 11, 2021, LSA Archaeologist Kerrie Collison, RPA, conducted a pedestrian survey of the project site by spot-checking areas of exposed sediment (Attachment E). Areas not surveyed were covered with concrete or asphalt. In surveyed areas, Ms. Collison walked transects spaced less than 5 meters (16.4 ft) apart. A trowel was used to periodically expose native soil to obtain a better view of the ground surface. Rodent burrowing holes and backdirt piles were examined for indications of archaeological deposits and/or human remains.

Field Survey Results

The field survey did not identify any cultural resources in the project site. Observed sediments consisted of a light-brown loam and were recently disturbed by mechanical equipment. Much of the project site was covered by concrete (building foundations) or asphalt (driving areas).

SUMMARY AND RECOMMENDATIONS

This study, consisting of background research and a field survey, did not identify surficial archaeological deposits or human remains in the project site. The remaining building foundations within the project site are not 50 years old and as such do not meet the age threshold for evaluation per CEQA. Based on the examined aerial photographs and maps, the buildings that previously stood within the project site served a business purpose and were not occupied for residential purposes. While subsurface sediments of the project site date to a time period that includes human occupation of the region, the project site is 7.5 mi south of what would have been a reliable freshwater source during precontact occupation of the area.

For the above reasons, it is unlikely that ground-disturbing work associated with project implementation will impact subsurface cultural resources, and no additional cultural resources studies are recommended for this proposed project. However, there is always the potential that construction activities could uncover unanticipated subsurface cultural resources. A qualified professional archaeologist should be contacted in the event that construction personnel encounter any archaeological deposits and/or human remains during construction activities. If any such resources are discovered, contractors should stop work in the immediate area of the find and

contact the archaeologist to assess the nature of the find. Upon completion of any monitoring activities, the archaeologist should prepare a report to document the methods and results of monitoring activities. This report should be submitted to the SSJVIC.

If human remains are encountered during project work, the regulatory process outlined in Health and Safety Code Section 7050.5 must be followed, which involves coordination with the NAHC and a Native American Most Likely Descendant.

Please contact me at kerrie.collison@lsa.net if you have any questions regarding this study. Thank you for using the services of LSA.

Sincerely,

LSA Associates, Inc.

Kerrie Collison, RPA
Associate/Senior Archaeologist

Attachments: A—References
B—Figures 1 and 2
C—Record Search Results
D—Sacred Lands File Search Results
E—Survey Photographs

ATTACHMENT A

REFERENCES

PUBLISHED RESOURCES

California Office of Historic Preservation (OHP)

1976 California Inventory of Historic Resources. California Department of Parks and Recreation, Sacramento.

1988 *Five Views: An Ethnic Historic Site Survey for California.* California Department of Parks and Recreation, Sacramento.

1992 California Points of Historical Interest. California Department of Parks and Recreation, Sacramento.

1996 California Historical Landmarks. California Department of Parks and Recreation, Sacramento.

United States Geological Survey (USGS)

1981 *Fresno South, California* 7.5-minute topographic quadrangle. Published 1963, photorevised 1981. USGS, Denver, Colorado.

ONLINE RESOURCES

California Geological Survey

2015 Geologic Map of California. Website: https://maps.conservation.ca.gov/cgs/gmc/ (accessed July 30, 2021).

California Office of Historic Preservation

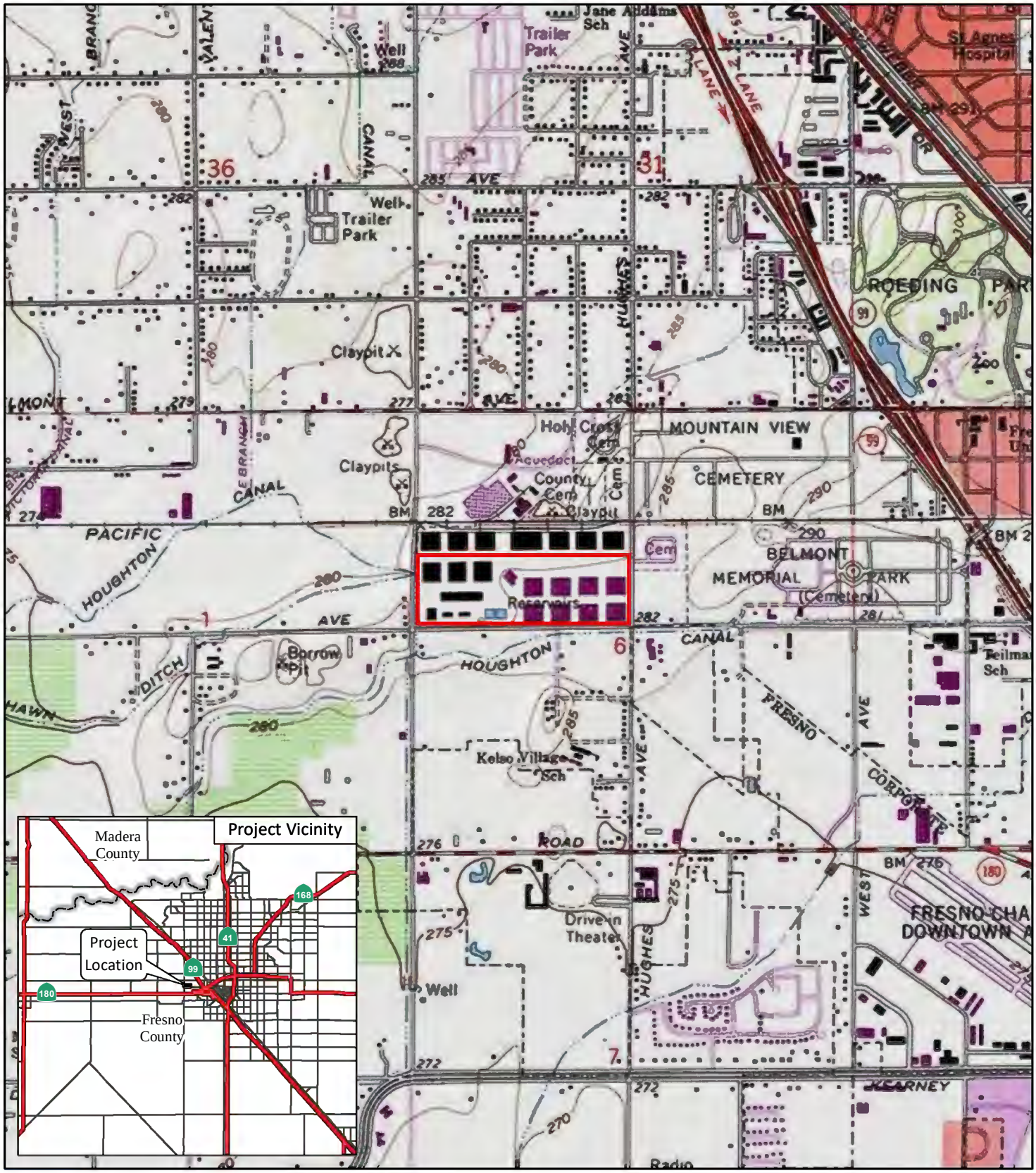
n.d. Built Environment Resources Directory (BERD). Website: https://ohp.parks.ca.gov/?page_id=30338 (accessed July 31, 2021).

National Environmental Title Research (NETR)

n.d. Historic Aerials. Website: http://www.historicaerials.com (accessed July 31, 2021).

ATTACHMENT B

FIGURES 1 AND 2



LSA

LEGEND

Project Site

FIGURE 1

N

0 1000 2000

FEET

2740 West Nielsen Avenue Office/Warehouse Project

Project Location and Vicinity

SOURCE: USGS 7.5' Quad.- *Fresno South, CA* (1981)

I:\SNN2102\GIS\MXD\Figure 1_ProjectVicnity.mxd (4/22/2021)

LSA

LEGEND

Project Site

FIGURE 2

N

0 375 750

FEET

SOURCE: Bing Maps, 2021

2740 West Nielsen Avenue Office/Warehouse Project

Project Site

I:\SNN2102\GIS\MXD\Figure 2_ProjectSite.mxd (4/22/2021)

ATTACHMENT C

RECORD SEARCH RESULTS

California Historical Resources Information System

Fresno
Kern
Kings
Madera
Tulare

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic

5/10/2021

Kerrie Collison
LSA Associates, Inc.
285 South Street, Suite P
San Luis Obispo, CA 93401

Re: 2740 W. Nielsen Ave. (SNN2102)
Records Search File No.: 21-161

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Fresno South USGS 7.5' quad. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☒ custom GIS maps ☐ GIS data

Resources within project area:	None
Archaeological resources within 0.5 mile radius:	P-10-003930
Reports within project area:	None
Reports within 0.5 mile radius:	FR-00249, 00250, 02232, 02722

Resource Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☐ enclosed	☒ not requested	☐ nothing listed
OHP Built Environment Resources Directory:	☐ enclosed	☒ not requested	☐ nothing listed
Archaeological Determinations of Eligibility:	☒ enclosed	☐ not requested	☐ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☐ not requested	☒ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see https://dot.ca.gov/programs/environmental-analysis/cultural-studies/california-historical-bridges-tunnels

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see http://historicalmaps.arcgis.com/usgs/

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see http://www.glorecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1 and/or http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items

Shipwreck Inventory: Not available at SSJVIC; please see https://www.slc.ca.gov/shipwrecks/

Soil Survey Maps: Not available at SSJVIC; please see http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Digitally signed by Celeste M. Thomson
Date: 2021.05.10 11:45:38 -07'00'

Celeste M. Thomson
Coordinator

ATTACHMENT D

SACRED LANDS FILE SEARCH RESULTS

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
Russell Attebery
Karuk

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

May 18, 2021

Kerrie Collison

LSA

Via Email to: kerrie.collison@lsa.net

Re: 2740 West Nielsen Avenue Office/Warehouse Project, Fresno County

Dear Ms. Collison:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Nancy.Gonzalez-Lopez@nahc.ca.gov.

Sincerely,

Nancy Gonzalez-Lopez
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contacts List
May 18, 2021

Big Sandy Rancheria of Western Mono Indians
Elizabeth D. Kipp, Chairperson
PO. Box 337
Auberry ,CA 93602
lkipp@bsrnation.com
(559) 374-0066
(559) 374-0055
Western Mono

Chicken Ranch Rancheria of Me-Wuk Indians
Lloyd Mathiesen, Chairperson
P.O. Box 1159
Jamestown ,CA 95327
lmathiesen@crtribal.com
(209) 984-9066
(209) 984-9269
Miwok - Me-wuk

Cold Springs Rancheria
Carol Bill, Chairperson
P.O. Box 209
Tollhouse ,CA 93667
coldsprgstribe@netptc.net
(559) 855-5043
(559) 855-4445 Fax
Mono

Dumna Wo-Wah Tribal Goverment
Robert Ledger Sr., Chairperson
2191 West Pico Ave.
Fresno ,CA 93705
ledgerrobert@ymail.com
(559) 540-6346
Dumna/Foothill Yokuts
Mono

Dunlap Band of Mono Indians
Benjamin Charley Jr., Tribal Chair
P.O. Box 14
Dunlap ,CA 93621
ben.charley@yahoo.com
(760) 258-5244
Mono

Dunlap Band of Mono Indians
Dirk Charley, Tribal Secretary
5509 E. McKenzie Avenue
Fresno ,CA 93727
dcharley2016@gmail.com
(559) 554-5433
Mono

Kings River Choinumni Farm Tribe
Stan Alec
3515 East Fedora Avenue
Fresno ,CA 93726
(559) 647-3227 Cell
Foothill Yokuts
Choinumni

Nashville Enterprise Miwok-Maidu-Nishinam Tribe
Cosme A. Valdez, Chairperson
P.O. Box 580986
Elk Grove ,CA 95758-001
valdezcome@comcast.net
(916) 429-8047 Voice/Fax
(916) 396-1173 Cell
Miwok

North Fork Mono Tribe
Ron Goode, Chairperson
13396 Tollhouse Road
Clovis ,CA 93619
rwgoode911@hotmail.com
(559) 299-3729 Home
(559) 355-1774 - cell
Mono

North Valley Yokuts Tribe
Katherine Erolinda Perez, Chairperson
P.O. Box 717
Linden ,CA 95236
canutes@verizon.net
(209) 887-3415
(209) 649-8972 (cell)
Ohlone/Costanoan
Northern Valley Yokuts
Bay Miwok

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code,Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans Tribes for the proposed:
2740 West Nielsen Avenue Office/Warehouse Project, Fresno County.

Native American Heritage Commission
Native American Contacts List
May 18, 2021

North Valley Yokuts Tribe
Timothy Perez, MLD Contact
P.O. Box 717
Linden ,CA 95236
huskanam@gmail.com
(209) 662-2788

Ohlone/Costanoan
Northern Valley Yokuts
Bay Miwok

Traditional Choinumni Tribe
David Alvarez, Chairperson
2415 E. Houston Avenue
Fresno ,CA 93720
davealvarez@sbcglobal.net
(559) 217-0396 Cell

Choinumni

Picayune Rancheria of Chukchansi Indians
Claudia Gonzales, Chairwoman
P.O. Box 2226
Oakhurst ,CA 93644
cgonzales@chukchansitribe.net
(559) 412-5590

Chukchansi / Yokut

Traditional Choinumni Tribe
Rick Osborne, Cultural Resources
2415 E. Houston Avenue
Fresno ,CA 93720
(559) 324-8764
lemek@att.net

Choinumni

Santa Rosa Rancheria Tachi Yokut Tribe
Leo Sisco, Chairperson
P.O. Box 8
Lemoore ,CA 93245
(559) 924-1278
(559) 924-3583 Fax

Tache
Tachi
Yokut

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589
Porterville ,CA 93258
neil.peyron@tulerivertribe-nsn.gov
(559) 781-4271
(559) 781-4610 Fax

Yokuts

Table Mountain Rancheria
Brenda D. Lavell, Chairperson
P.O. Box 410
Friant ,CA 93626
rpennell@tmr.org
(559) 822-2587
(559) 822-2693 Fax

Yokuts

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas ,CA 93906
kwood8934@aol.com
(831) 443-9702

Foothill Yokuts
Mono
Wuksache

Table Mountain Rancheria
Bob Pennell, Cultural Resources Director
P.O. Box 410
Friant ,CA 93626
rpennell@tmr.org
(559) 325-0351
(559) 325-0394 Fax

Yokuts

Xolon-Salinan Tribe
Karen White, Chairperson
P.O. Box 7045
Spreckels ,CA 93962
xolon.salinan.heritage@gmail.com
831-238-1488

Salinan

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code,Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans Tribes for the proposed:
2740 West Nielsen Avenue Office/Warehouse Project, Fresno County.

ATTACHMENT E

SURVEY PHOTOGRAPHS

Survey Photographs: 2740 West Nielsen Avenue Office/Warehouse Project
Fresno, Fresno County, California

Example of concrete and asphalt that covers most of project site.
View to north. June 11, 2021.

Combination of asphalt and sandy loam sediment in middle of project site.
View to west. June 11, 2021.

APPENDIX G

ENERGY CALCULATIONS

This page intentionally left blank

Construction Off-Road Equipment										
Phase	**Off-Road Equipment Type**	**Amount**	**Usage Hour/Day**	**Total Usage Days**	**Total Usage Hours/Equipment**	**Horsepower**	**Load Factor**	**Total Usage Hours/ Equipment**	**Horsepower-Hour**	**Fuel Usage (gallons)**
Site Preparation	Rubber Tired Dozers	3	8	40	960	247	0.4	960	94848	4856.2176
	Tractors/Loaders/Backhoes	4	8	40	1280	97	0.37	1280	45939.2	2352.08704
Grading	Excavators	2	8	40	640	158	0.38	640	38425.6	1967.39072
	Graders	1	8	40	320	187	0.41	320	24534.4	1256.16128
	Rubber Tired Dozers	1	8	40	320	247	0.4	320	31616	1618.7392
	Scrapers	2	8	40	640	367	0.48	640	112742.4	5772.41088
	Tractors/Loaders/Backhoes	2	8	40	640	97	0.37	640	22969.6	1176.04352
Building Construction	Cranes	1	7	385	2695	231	0.29	2695	180538.05	9243.54816
	Forklifts	3	8	385	9240	89	0.2	9240	164472	8420.9664
	Generator Sets	1	8	385	3080	84	0.74	3080	191452.8	9802.38336
	Tractors/Loaders/Backhoes	3	7	385	8085	97	0.37	8085	290170.65	14856.73728
	Welders	1	8	385	3080	46	0.45	3080	63756	3264.3072
Paving	Pavers	2	8	30	480	130	0.42	480	26208	1341.8496
	Paving Equipment	2	8	30	480	132	0.36	480	22809.6	1167.85152
	Rollers	2	8	30	480	80	0.38	480	14592	747.1104
Architectural Coating	Air Compressors	1	6	30	180	78	0.48	180	6739.2	345.04704
									Total	**68188.8512** Diesel

Construction Truck and Construction Worker Vehicle Fuel Efficiency				
		EMFAC 2021 Outputs		
Vehicle Type	Vehicle Class	Fuel Consumption (1,000 gallons/day)	VMT (miles/ day)	Fuel Efficency (miles/gallon)
Construction Truck	MHDT	42.8	368647.4	8.6
	HHDT	338.9	2012068	5.9
	HHDT/MHDT	-	-	7.3
Construction Worker Vehicle	LDA	415.9	12057532.0	29.0
	LDT1	42.2	1013826	24.0
	LDT2	236.0	5488159	23.3
	Worker Mix	-	-	26.3

Notes:

[1] For construction trucks assumes 50 percent HHDT and 50 percent MHDT vehicles, consistent with assumptions in CalEEMod for hauling trucks. For construction worker vehicles assumes 50 percent LDA, 25 percent LDT1, and 25 percent LDT2 vehicles, consistent with assumptions in CalEEMod for worker vehicles.

[2] EMFAC2021 was run for Fresno County for the construction year 2023. Data was aggregated over all vehicle model years and speed bins.

[3] The fuel efficiency was calculated by dividing the VMT (miles/day) by the fuel consumption (gallons/day).

Construction Vehicle Fuel Use - Diesel Vehicles						
Phase	Trip Type	Total Trips	Trip Length (miles)	Total VMT	Diesel Fuel Effiency (miles/gallon)	Fuel Usage (gallons/year)
Building Construction	Vendor	143990	7.3	1051127	7.3	143990.0
					Total	**143990.0** Diesel

[1] Assumes 100 percent HHDT vehicles for haul trucks and 50 percent HHDT/50 percent MHDT vehicles for MHDT, consistent with assumptions in CalEEMod.

[2] EMFAC2021 was run for Fresno County for the construction year 2023. Data was aggregated over all vehicle model years and speed bins.

[3] The fuel efficiency was calculated by dividing the VMT (miles/day) by the fuel consumption (gallons/day).

Construction Worker Vehicle Fuel Use - Gasoline Vehicles							
Phase	Total One-Way Trips/Day	Total Days	Total Trips	Trip Length (miles)	Total VMT	Gasoline Fuel Effiency (miles/gallon)	Fuel Usage (gallons/year)
Site Preparation	18	40	1440	10.8	15552	26.3	591.3
Grading	20	40	1600	10.8	17280	26.3	657.0
Building Construction	478	385	368060	10.8	3975048	26.3	151142.5
Paving	15	30	900	10.8	9720	26.3	369.6
Architectural Coating	96	30	5760	10.8	62208	26.3	2365.3
						Total	**155125.8** Gas

Total Construction Gasoline Usage	155125.8
Total Construction Diesel Usage	212178.9

Proposed Project Operational Trips			
Vehicle Class	CalEEMod	Total Project Trips	Total Trips per Vehicle Class
LDA	0.421355	1920	809.0
LDT1	0.20026	1920	384.5
LDT2	0.20026	1920	384.5
MDV	0	1920	0.0
LHD1	0	1920	0.0
LHD2	0.076042	1920	146.0
MHD	0	1920	0.0
HHD	0.102083	1920	196.0
OBUS	0	1920	0.0
UBUS	0	1920	0.0
MCY	0	1920	0.0
SBUS	0	1920	0.0
MH	0	1920	0.0

Proposed Project Operational Trips – Fuel Efficiency						
Fuel	Vehicle Class	EMFAC2021 Outputs1				
		Fleet Mix (%)2	Consumption (1,000 gallons/day)	VMT (miles/day)	Fuel Efficiency3 (miles/gallon)	
Gas	LDA	51%	402.2	12,141,533.0	30.2	15.3
	LDT1	4%	38.9	969,835.6	24.9	1.0
	LDT2	24%	236.6	5,788,459.0	24.5	5.9
	MDV	19%	229.0	4,501,806.0	19.7	3.7
	LHD1	2%	45.3	436,975.9	9.7	0.2
	MCY	0%	2.1	85,788.1	41.4	0.1
	MH	0%	2.9	12,598.5	4.4	0.0
	Fleet Mix	–	–	–	26.3	26.3
Diesel	LHD2	6%	11.1	146,655.6	13.2	0.7
	MHDT	15%	43.5	379,793.7	8.7	1.3
	HHDT	80%	340.0	2,079,806.0	6.1	4.9
	Fleet Mix	–	–	–	6.9	6.9

Notes:

[1] EMFAC2021 was run for Fresno County for the operational year 2025. Data was aggregated over all vehicle model years and speed bins.

[2] Fleet mix is based on assumptions made in CalEEMod for the proposed project.

[3] The fuel efficiency was calculated by dividing the VMT (miles/day) by the fuel consumption (gallons/day).

Proposed Project Operational Trips – Fuel Usage						
Land Use	Total Annual VMT2 (miles/year)	Fuel Type	Portion of Fleet3 (%)	VMT by Fuel Type (miles/year)	Fleet Mix Efficiency4 (miles/gallon)	Fuel Usage (gallons/ year)
Warehouse	5,605,658.00	Gas	82%	4607150	26.3	175434.7
		Diesel	18%	998508	6.9	144777.4
					Total Gasoline/year	**175434.7**
					Total Diesel/year	**144777.4**

Notes:

[1] Calculated for operational year 2025 only. Future years will likely use less fuel due to more efficient cars.

[2] Total VMT is based on project's trip generation and trip lengths.

[3] Fleet distribution is based on EMFAC2021 output and CalEEMod assumptions.

[4] Fuel efficiency is based on fuel consumption and VMT data from EMFAC2021 for Fresno County and total VMT.

Electricity Usage	
Electricity by Land Use	**kWh/year**
Unrefrigerated Warehouse	8,365,340
City Park	0
Parking Lot	83,160
Total	**8,448,500**

Natural Gas Usage			
Natural Gas by Land Use	**kBTU/year**	**BTU/year**	**therms/year**
unrefrigerated warehouse	16,144,800	16,144,800,000	161,487
City Park	0	0	0
Parking Lot	0	0	0
Total	**16,144,800**	**16,144,800,000**	**161,487**

APPENDIX H

GREENHOUSE GAS REDUCTION PLAN UPDATE CONSISTENCY CHECKLIST

This page intentionally left blank

Fresno Greenhouse Gas (GHG) Reduction Plan Update – CEQA Project Consistency Checklist

INTRODUCTION

The City of Fresno updated its 2014 Greenhouse Gas (GHG) Reduction Plan (the Plan) in the year 2021 to conform with existing applicable State climate change policies and regulations. The GHG Plan Update outlines strategies that the City will undertake to achieve its proportional share of GHG emission reductions. The purpose of this GHG Reduction Plan Update Consistency Checklist (Checklist) is to help the City provide a streamlined review process for new development projects that are subject to discretionary review pursuant to the California Environmental Quality Act (CEQA) Guidelines Section 15183.5.

This Checklist has been developed as part of the GHG Plan Update implementation and monitoring process and will support the achievement of individual GHG reduction strategies as well as the City's overall GHG reduction goals. In addition, this Checklist will further the City's sustainability goals and policies that encourage sustainable development and aim to conserve and reduce the consumption of resources, such as energy and water. Projects that meet the requirements of this Checklist will be deemed to be consistent with the Fresno GHG Reduction Plan Update and will be found to have a less than significant contribution to cumulative GHG (i.e., the project's incremental contribution to cumulative GHG effects is not cumulatively considerable), pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b). Projects that do not meet the requirements in this Checklist will be deemed to be inconsistent with the Fresno GHG Reduction Plan Update and must prepare a project-specific analysis of GHG emissions, including quantification of existing and projected GHG emissions and incorporation of the measures in this Checklist to the extent feasible. This GHG Checklist can be updated to reflect adoption of new GHG reduction strategies or to comply with any changes and updates in the Plan or local, State or federal regulations. Note that not all the measures in the checklist are applicable to all projects. The projects should comply with applicable measures from the checklist.

1. Project Information

Contact Information	
Project No./Name:	2740 West Nielsen Office/Warehouse Project
Address:	2740 West Nielsen
Applicant Name/Co:	Scannell Properties
Contact Information:	8801 River Crossing Boulevard, Suite 300
	Indianapolis, Indiana, 46240

Project Information	
1. What is the Site acreage of the Project?	48.03
2. Identify all Applicable Proposed Land uses:	Warehouse/Office
a. Residential (Indicate number of single-family units)	
b. Residential (Indicate number of multi-family units)	
c. Commercial (total square footage)	
d. Industrial (total square footage)	901,438 square feet
e. Other (describe)	201 loading dock doors and 594 parking spaces
3. Is the project or a portion of the project located in a transit priority area? (Y/N)	No
4. Provide a brief description of the project proposed:	The project would result in the construction of a four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. Vehicular access to the site would be provided by North Hughes Avenue, West Nielsen Avenue, and North Marks Avenue. A total of 594 on-site parking spaces would be provided for vehicles and trucks.

2. Determining Land Use Consistency		
Checklist Item		
As the first step in determining the consistency with the GHG Reduction Plan for discretionary development projects, this section allows the City to determine the project's consistency with the land use assumptions used in the GHG Reduction Plan.		
	Yes	**No**
1. Is the proposed project consistent with the approved General Plan, Specific Plan, and Community Plan planned land use and zoning designations? If the answer is **Yes**, then proceed to the GHG Plan Update Consistency Checklist. If the answer is **No**, then proceed to question 2.	X	
2. If the proposed project is not consistent with the approved planned land use and zoning designation(s), then provide estimated GHG project emissions under both existing and proposed designation(s) for comparison. Compare the maximum buildout of the existing designation with the maximum buildout of the proposed designation. If the estimated project emissions at maximum buildout of the proposed designation(s) **is equivalent to or less than** the estimated project emissions at maximum buildout of the existing designation(s), then in accordance with the City's Significance Determination Thresholds, the project's GHG impact is less than significant. If there is a proposed development project associated with this plan amendment and or rezone then complete the GHG Plan Update Consistency Checklist and incorporate applicable measures, otherwise there is no further step required. If the estimated project emission at maximum buildout of the proposed designation(s) is **greater than** the estimated project emissions at maximum buildout of the existing designation(s), then in accordance with the City's Significance Determination Thresholds, the project's GHG impact is significant. The project must either show consistency with applicable GP objectives and policies (provide applicable GP objectives and policies here) or provide analysis and measures to incorporate into the project to bring the GHG emissions to a level that is less than or equal to the estimated project emission at maximum buildout of the existing designation(s) unless the decision-maker finds that a measure is infeasible in accordance with CEQA Guidelines Section 15091. If there is a proposed development project associated with this plan amendment and or rezone then complete the GHG Plan Update Consistency Checklist and incorporate applicable measures, otherwise there is no further step required.		

3. Greenhouse Gas (GHG) Reduction Plan Update - CEQA Project Consistency Checklist

GHG Reduction Plan Update consistency review involves the evaluation of project consistency with the applicable strategies of the GHG Reduction Plan Update. The GHG reduction strategies identified in the GHG Reduction Plan Update relies upon the General Plan and additional local measures as the basis of the development related strategies to reduce GHG emissions. This checklist is developed based on the key local GHG reduction strategies and actions identified in the GHG Reduction Plan Update that are applicable to proposed development projects. Note that not all strategies listed below will apply to all projects. For example, not all projects will meet mixed-use related policies of the General Plan, because not all projects are required to be mixed use.

Checklist Item (Check the appropriate box and provide an explanation for your answer)	Relevant General Plan Policy	Yes	No	Not Applicable (NA)	Explanation
1: Land Use and Transportation Demand Strategies					
a. Does the project include mixed-use, development? For GHG Reduction Plan consistency, mixed-use development is defined as pedestrian-friendly development that blends two or more residential, commercial, cultural, or institutional, uses, one of which must be residential	Policy UF-1-c, LU-3-b, Objective-UF 12, UF-12-a, UF-12-b, UF-12-d, Policy RC-2-a			X	The proposed project does not include mixed-use development and does not include residential uses.
b. Is the project high density? For GHG Reduction Plan consistency, is the project developed at 12 units per acre or higher?	LU-5-f			X	The proposed project does not include residential uses.
c. Is the project infill development, pursuant to the General Plan definition of location within the City limits as of December 31, 2012?	LU-2-a, Objective-12, UF-12-a, UF-12-b, UF-12-d	X			The project site consists of a former industrial warehouse site and is in a heavy industrial district.
d. Does the project implement pedestrian bicycle, and transit linkages with surrounding land uses and neighborhoods? For GHG Reduction Plan consistency, the project must include all sidewalks, paths, trails, and facilities required by the General Plan and Active Transportation Plan, as implemented through the Fresno Municipal Code and project conditions of approval.	Policy UF-1-c, UF-12-e, Policy RC-2-a, Objective MT-4,5,6, Policy MT-4-c, Policy MT-6-a, Policy POSS-7-h Objective MT 8, Policies MT-8-a, MT-8-b	X			The project would provide complete streets for all roadway improvements.
e. If the project includes mixed-use or high density development, is it located within ½ mile of a High Quality Transit Area as defined in the City's CEQA Guidelines for Vehicle Miles Traveled? Or, is the project located within 500 feet of an existing or planned transit stop?	Policy UF-12-a, UF-12-b, LU-3-b, Objective MT 8, Policies MT-8-a, MT-8-b			X	The proposed project does not include mixed-use or high density development.
f. Will the project accommodate a large employer (over 100 employees) and will it implement trip reduction programs such as increasing transit use, carpooling, vanpooling, bicycling, or other measures to reduce vehicle miles traveled pursuant to San Joaquin Valley Air Pollution Control District Rule 9410? See the SJVAPCD website for details: https://www.valleyair.org/rules/currntrules/r9410.pdf	Policy MT-8-b, Objective MT-9, Policy MT-10-c, San Joaquin Valley Air Pollution Control District Rule 9410	X			The project would have over 100 employees and would be required to comply with SJVAPCD Rule 9410.

Checklist Item (Check the appropriate box and provide an explanation for your answer)	Relevant General Plan Policy	Yes	No	Not Applicable (NA)	Explanation
g. If the project includes modifications to the transportation network, do those improvements meet the requirements of the City of Fresno's Complete Streets Policy, adopted in October 2019? According to the policy, a complete street is a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users - including bicyclists, pedestrians, transit vehicles, trucks, and motorists - appropriate to the function and context of the facility while connecting to a larger transportation network. See City of Fresno website for details: https://www.fresno.gov/publicworks/wp-content/uploads/sites/17/2019/10/Complete-Streets-091119.pdf	MT-1-g, MT-1-h	X			The project would provide complete streets for all roadway improvements.
h. Does the project have a less than significant VMT impact, either through satisfying screening criteria or mitigating VMT impacts, pursuant to the City's adopted VMT thresholds? See City of Fresno website for details: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2021/01/CEQA-Guidelines-for-Vehicle-Miles-Traveled-Final-Adopted-Version.pdf	MT-2-b, MT-2-c	X			The proposed project has a less than significant VMT impact.
2: Electric Vehicle Strategies					
a. For new multi-family dwelling units with parking, does the project provide EV charging spaces capable of supporting future EV supply equipment (EV capable) at 10% of the parking spaces per 2019 California Green Building Standards Code (CALGREEN, Title 24, Part 11), Section 4.106.4	Policy RC-8-j			X	The proposed project would not include multi-family residential uses.
b. For new commercial buildings, does project provide EV charging spaces capable of supporting EV capable spaces at 4% to 10% of the parking spaces per 2019 California Green Building Standards Code (CALGREEN, Title 24, Part 11), Section 5.106.5.3	Policy RC-8-j			X	The proposed project would not include commercial uses.
3: Energy Conservation Strategies					
a. Does the project meet or exceed mandatory state building energy codes? If yes, does the project follow any other GreenPoint ratings such as LEED, Energy Star or others? If yes, indicate level of certification-Silver, gold, platinum if applicable?	Policy RC-5-c, Objective RC-8, Policy RC 8-a	X			The project would meet the latest CalGreen standards and include cool roof materials but would not follow other GreenPoint ratings.
b. For commercial projects, does the project achieve net zero emissions electricity? Mark NA if project will be permitted before 2030. Mark Yes if voluntary. Add source and capacity in explanation.	Additional Recommended GHG Plan Measure, supports Objective RC-8			X	The project does not include commercial uses and would be permitted before 2030.

Checklist Item (Check the appropriate box and provide an explanation for your answer)	Relevant General Plan Policy	Yes	No	Not Applicable (NA)	Explanation
4: Water Conservation Strategies					
a. Does the project meet or exceed the mandatory outdoor water use measures of the 2019 California Green Building Standards Code (CALGREEN, Title 24, Part 11), Section 4.304? If the project exceeds CalGreen Code mandatory measures provide methods in excess of requirements in the explanation. Examples include outdoor water conservation measures such as; drought tolerant landscaping plants, compliant irrigation systems, xeriscape, replacing turf etc. Provide the conservation measure that the project will include in the explanation.	Objective RC-7, Policy RC-7-a, RC-7-h	X			The project would meet the latest CalGreen standards. The project would also include a vegetative plan that includes the planning of trees and other landscaping materials throughout the perimeter of the project site.
b. Does the project meet or exceed the mandatory indoor water use measures of the 2019 California Green Building Standards Code (CALGREEN, Title 24, Part 11), Section 4.303? If the project exceeds CalGreen Code, mandatory measures provide methods in excess of requirements in the explanation. Examples may include water conserving devices and systems such as water leak detection system, hot water pipe insulation, pressure reducing valves, energy efficient appliances such as Energy Star Certified dishwashers, washing machines, dual flush toilets, point of use and/or tankless water heaters.	Objective RC-7, Policy RC-7-a, RC-7-e	X			The project would meet the latest CalGreen standards.
5: Waste Diversion and Recycling Strategies					
a. Does the project implement techniques of solid waste segregation, disposal and reduction, such as recycling, composting, waste to energy technology, and/or waste separation, to reduce the volume of solid wastes that must be sent to landfill facilities?	Policy PU-9-a, RC-11-a	X			The proposed project would be consistent with the CalRecycle Waste Diversion and Recycling Mandate.
b. During construction will the project recycle construction and demolition waste?	Policy RC-11-a	X			The proposed project would recycle construction waste.
c. Does the project provide recycling canisters in public areas where trashcans are also provided?	Policy RC-11-a	X			The proposed project would provide recycling canisters.

Note: The GHG reduction strategies included in this checklist are based on the GHG reduction strategies identified in the Chapter 5 of the GHG Reduction Plan Update.

APPENDIX I

PHASE I ENVIRONMENTAL SITE ASSESSMENT

SALEM
engineering group, inc.

4729 W. Jacquelyn Avenue
Fresno, California 93723
(559) 271-9700 Office
(559) 275-0827 Fax

January 29, 2021

Project No. 1-420-1016

Mr. Jake Kurth
Development Assistant
Scannell Properties
294 Grove Lane East, Suite 140
Wayzata, MN 55391

Mobile: (612) 280-4088
Email: JakeK@scannellproperties.com

SUBJECT: **PHASE I ENVIRONMENTAL SITE ASSESSMENT**
FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSEN AVENUE
FRESNO, CA

Dear Mr. Kurth:

At your request and authorization, SALEM Engineering Group, Inc., (SALEM) has conducted this Phase I Environmental Site Assessment (ESA) of the Former California Compress Facility located 2740 West Nielsen Avenue in Fresno, California (subject property). During the course of this assessment, SALEM identified SALEM identified the following evidence of Recognized Environmental Conditions (RECs) in connection with the subject property as defined by ASTM E1527-13:

- At least three known septic systems were associated with the former structures on the subject property, two of which were visually identified during SALEM's November 19, 2020 site reconnaissance as remaining at the subject property. The former septic systems may have acted as a conduit for contaminants to enter on-site soil from potential past unauthorized disposal of hazardous substances and/or petroleum products utilized for vehicle maintenance into drains, sinks and toilets. SALEM recommends conducting a Limited Soil Assessment (LSA) in the vicinity of the septic systems to determine if on-site soils have been impacted by unauthorized releases of the constituents of concern into the septic systems.

- Historic operations at the subject property included the handling and storage of cotton which required an extensive fire suppression system. Two water basins were historically located in the southern portion of the subject property. SALEM personnel located upwards of 25 features across the subject property indicative of a fire suppression system including stand pipes, traffic bollards, and fire hydrants. The system reportedly included diesel-powered water pumps supplied from an aboveground storage tank (AST) historically located in the south-central portion of the subject property. The former diesel AST location was identifiable by concrete footings and a fire extinguisher. Additional concrete footings indicative of propane ASTs were observed in the north-central portion of the subject property. No staining or signs of leakage were observed in the vicinity of the former ASTs. However, SALEM recommends conducting a LSA to assess on-site shallow soils for potential petroleum hydrocarbon impacts in the vicinity of the former diesel AST.

- A soil mound was observed in the southern portion of the subject property and was reported to have been excavation dirt and asphalt produced when the floor of a warehouse was switched from asphalt to concrete to accommodate heavy machinery. No obvious visual evidence of hazardous substances

and/or petroleum products or staining was observed on the surface of the stockpile. Based upon the absence of documentation regarding the source of the stockpiled soil, SALEM recommends collecting samples of the stockpiled soil in order to determine if the soil has been impacted by constituents of concern prior to either transporting the soil off-site for disposal or utilizing the soil on-site as clean-fill if needed during the redevelopment of the subject property.

The following Historical Recognized Environmental Condition (HREC) was identified:

- The former California Compress facility operated four underground storage tanks (USTs) consisting of a 10,000-gallon fuel oil UST historically located on what is now the north adjacent property; a 4,000-gallon double-walled steel diesel UST; a 4,000-gallon single-walled steel diesel UST; and a 1,000-gallon single-walled steel regular unleaded gasoline UST historically located in the southwest portion of the subject property. Records indicate all UST were properly permitted and removed under the regulatory agency oversight of Fresno County Environmental Health Division (FCEHD). A record of a "Hazardous Material Release" was recorded on June 5, 1995 indicating soil contamination from petroleum products discovered during removal of a UST. California Regional Water Quality Control Board (RWQCB) records indicate that FCEHD issued a "case closed" designation for the California Compress leaking underground storage tank (LUST) site on July 3, 1996.

Additionally, the following Site Development issue was identified:

During SALEM's site reconnaissance, two water wells were observed on the subject property. No information regarding analytical testing or construction specifications of the on-site wells was found during the course of this assessment. If the water wells are not to be used in any planned redevelopment of the subject property, SALEM recommends properly destroying the wells in accordance with all applicable state and local guidelines.

We appreciate the opportunity to assist you with this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (559) 271-9700.

Respectfully submitted,

SALEM Engineering Group, Inc.

Shannon Lodge, PG
Senior Project Manager

GEOTECHNICAL • ENVIRONMENTAL • GEOLOGY • MATERIALS TESTING & INSPECTION • FORENSIC • LABORATORY

SALEM
engineering group, inc.

PHASE I ENVIRONMENTAL SITE ASSESSMENT

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSEN AVENUE
FRESNO, CALIFORNIA

SALEM PROJECT NO. 1-420-1016
JANUARY 29, 2021

PREPARED FOR:

MR. JAKE KURTH
SCANNELL PROPERTIES
294 GROVE LANE EAST, SUITE 140
WAYZATA, MN 55391

PREPARED BY:

SALEM ENGINEERING GROUP, INC.
4729 W. JACQUELYN AVENUE
FRESNO, CA 93722
P: (559) 271-9700
F: (559) 275-0827
www.salem.net

TABLE OF CONTENTS

Job No. 1-420-1016

1.0 EXECUTIVE SUMMARY 1
2.0 PURPOSE AND SCOPE OF ASSESSMENT 2
2.1 Purpose 2
2.2 Scope of Work 3
3.0 SITE DESCRIPTION 4
4.0 PHYSIOGRAPHY AND HYDROGEOLOGIC CONDITIONS 4
5.0 SITE RECONNAISSANCE 5
5.1 Observations 5
5.2 Adjacent Streets and Property Usage 6
5.3 Potable Water Source 7
5.4 Sewage Disposal System 7
5.5 Heating and Cooling Source 7
6.0 USER-PROVIDED INFORMATION 7
6.1 Title Report 7
6.2 Phase I Environmental Site Assessment User Questionnaire 8
7.0 SITE USAGE SURVEY 8
7.1 Phase I Environmental Site Assessment Owner Questionnaire 8
7.2 Historical Aerial Photograph Review 9
7.3 Building Department Records Review 12
7.4 City Directories 12
7.5 Sanborn Fire Insurance Maps 12
7.6 Agricultural Chemicals 12
7.7 Phase I Environmental Site Assessment Interview - Previous Owner 13
7.8 Previous Environmental Reports 13
8.0 REGULATORY AGENCY RECORDS REVIEW 13
8.1 Standard Environmental Record Sources 15
9.0 POTENTIAL VAPOR ENCROACHMENT CONDITION 20
9.1 Vapor Encroachment Screening 20
10.0 BUSINESS ENVIRONMENTAL RISKS 21
10.1 Asbestos-Containing Building Materials 21
10.2 Lead-Based Paint 22
10.3 Radon 22
10.4 Mold 22
11.0 DISCUSSION OF FINDINGS 23
11.1 Evaluation of Data Gaps/Data Failure 24
12.0 SUMMARY AND CONCLUSIONS 25
13.0 LIMITATIONS 26
14.0 QUALIFICATIONS 27
15.0 REFERENCES 27

TABLE OF CONTENTS (cont'd)

Job No. 1-420-1016

PHOTOGRAPHS

Following the Text of the Report

FIGURES

Topographic Map 1
Aerial Photograph 2
Site Map 3

APPENDICES

Commitment for Title Insurance ..... .A
Phase I ESA All Appropriate Inquiry (AAI) User Questionnaire ..... B
Phase I ESA All Appropriate Inquiry (AAI) Owner Questionnaire C
Aerial Photographs ..... .D
City of Fresno Building Department Records ..... E
City Directory Abstract Report ..... F
Sanborn Fire Insurance Maps No Coverage Certification ..... .G
Previous Environmental Report ..... H
California Regional Water Quality Control Board Records I
Fresno County Environmental Health Division Records ..... J
EDR Radius Map Report ..... K
Professional Resumes L

SALEM engineering group, inc.

4729 W. Jacquelyn Avenue
Fresno, California 93723
(559) 271-9700 Office
(559) 275-0827 Fax

January 29, 2021 **Project No. 1-420-1016**

PHASE I ENVIRONMENTAL SITE ASSESSMENT

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSEN AVENUE
FRESNO, CALIFORNIA

1.0 EXECUTIVE SUMMARY

SALEM Engineering Group, Inc. (SALEM) has conducted a Phase I Environmental Site Assessment (ESA) of the Former California Compress Facility 2740 West Nielsen Avenue in Fresno, California (subject property). The approximately 44.95-acre rectangular-shaped subject property consists of two parcels identified as Fresno County Assessor's Parcel Numbers (APNs) 458-020-71 and 458-020-72. SALEM conducted this Phase I ESA of the subject property in conformance with the American Society for Testing and Materials (ASTM) E1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.* The U.S. Environmental Protection Agency (USEPA) has determined that the ASTM E1527-13 Standard is consistent with the requirements for conducting an "All Appropriate Inquiry" under 40 C.F.R. Part 312. Thus, this Phase I ESA constitutes All Appropriate Inquiry (AAI) designed to identify Recognized Environmental Conditions (RECs) in connection with the previous ownership and uses of the subject property as defined by ASTM E1527-13 and 40 C.F.R. Part 312.

ASTM E1527-13 Section 1.1.1 *Recognized Environmental Conditions* – The term *recognized environmental conditions* is defined as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment." The term as further defined by ASTM "is not intended to include de minimis conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies." Conditions determined to be *de minimis* are not *recognized environmental conditions*.

During the course of this assessment, SALEM identified SALEM identified the following evidence of RECs in connection with the subject property as defined by ASTM E1527-13:

- At least three known septic systems were associated with the former structures on the subject property, two of which were visually identified during SALEM's November 19, 2020 site reconnaissance as remaining at the subject property. The former septic systems may have acted as a conduit for contaminants to enter on-site soil from potential past unauthorized disposal of hazardous substances and/or petroleum products utilized for vehicle maintenance into drains, sinks and toilets. SALEM recommends conducting a Limited Soil Assessment (LSA) in the vicinity of the septic systems to determine if on-site soils have been impacted by unauthorized releases of the constituents of concern into the septic systems.

- Historic operations at the subject property included the handling and storage of cotton which required an extensive fire suppression system. Two water basins were historically located in the southern portion of the subject property. SALEM personnel located upwards of 25 features across the subject property indicative of a fire suppression system including stand pipes, traffic bollards,

and fire hydrants. The system reportedly included diesel-powered water pumps supplied from an aboveground storage tank (AST) historically located in the south-central portion of the subject property. The former diesel AST location was identifiable by concrete footings and a fire extinguisher. Additional concrete footings indicative of propane ASTs were observed in the north-central portion of the subject property. No staining or signs of leakage were observed in the vicinity of the former ASTs. However, SALEM recommends conducting a LSA to assess on-site shallow soils for potential petroleum hydrocarbon impacts in the vicinity of the former diesel AST.

- A soil mound was observed in the southern portion of the subject property and was reported to have been excavation dirt and asphalt produced when the floor of a warehouse was switched from asphalt to concrete to accommodate heavy machinery. No obvious visual evidence of hazardous substances and/or petroleum products or staining was observed on the surface of the stockpile. Based upon the absence of documentation regarding the source of the stockpiled soil, SALEM recommends collecting samples of the stockpiled soil in order to determine if the soil has been impacted by constituents of concern prior to either transporting the soil off-site for disposal or utilizing the soil on-site as clean-fill if needed during the redevelopment of the subject property.

The following Historical Recognized Environmental Condition (HREC) was identified:

- The former California Compress facility operated four underground storage tanks (USTs) consisting of a 10,000-gallon fuel oil UST historically located on what is now the north adjacent property; a 4,000-gallon double-walled steel diesel UST; a 4,000-gallon single-walled steel diesel UST; and a 1,000-gallon single-walled steel regular unleaded gasoline UST historically located in the southwest portion of the subject property. Records indicate all UST were properly permitted and removed under the regulatory agency oversight of Fresno County Environmental Health Division (FCEHD). A record of a "Hazardous Material Release" was recorded on June 5, 1995 indicating soil contamination from petroleum products discovered during removal of a UST. California Regional Water Quality Control Board (RWQCB) records indicate that FCEHD issued a "case closed" designation for the California Compress leaking underground storage tank (LUST) site on July 3, 1996.

Additionally, the following Site Development issue was identified:

- During SALEM's site reconnaissance, two water wells were observed on the subject property. No information regarding analytical testing or construction specifications of the on-site wells was found during the course of this assessment. If the water wells are not to be used in any planned redevelopment of the subject property, SALEM recommends properly destroying the wells in accordance with all applicable state and local guidelines.

2.0 PURPOSE AND SCOPE OF ASSESSMENT

2.1 Purpose

According to ASTM E1527-13, the purpose of this practice is to define good commercial and customary practice in the United States of America for conducting an *environmental site assessment* of a parcel of *commercial real estate* with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) and *petroleum products.* As such, this practice is intended to permit a *user* to satisfy one of the requirements to qualify for the *innocent landowner*, *contiguous property owner*, or *bona fide prospective purchaser* limitation on

CERCLA liability (hereinafter, the *"landowner liability protections,"* or *"LLPs"*): that is, the practice that constitutes *"all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35) (B).

The Phase I ESA was conducted to identify 'Recognized Environmental Conditions' (RECs), 'Controlled Recognized Environmental Conditions' (CRECs) and 'Historical RECs' (HRECs) as defined by the American Society for Testing and Materials (ASTM) *Designation E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.* Section 1.1.1 of the ASTM *Designation E1527-13* defines an REC as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment." The term as further defined by ASTM "is not intended to include de minimis conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies." Section 3.2.18 defines a CREC as a "recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls)." Section 3.2.42 defines HREC as a "past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and land use limitations, institutional controls, or engineering controls)."

2.2 Scope of Work

The objective of the SALEM Phase I ESA scope of work is to provide an evaluation of RECs at the subject property and potential off-site sources. The scope of work for this Phase I ESA conforms to ASTM E1527-13. SALEM was provided authorization to conduct the Phase I ESA by Mr. Jake Kurth with Scannell Properties on November 11, 2020 in accordance with SALEM's proposal P1-420-1558. In fulfillment of the SALEM scope of work for this Phase I ESA, SALEM was retained to perform the following tasks:

- Acquire readily available information regarding land-use history and property development by reviewing historical aerial photographs, pertinent building permit records, historic city directories, as well as reviewing recent and historic topographic land-use maps of the subject property and surrounding area.

- Reviewing readily available local, state and federal regulatory agency databases listed in ASTM E1527-13 and compiled by Environmental Data Resources, Inc. (EDR), including but not limited to CERCLA and NPL lists for sites within one mile of the subject property. State databases, including but not limited to CALSITES, Hazardous Substance Account Act, Cortese, SWIS, SWAT, Well Investigation Program (AB1803), and LUFT, were reviewed for sites within one mile of the subject property.

- Performing a reconnaissance of the subject property and surrounding areas (up to one-half mile beyond site boundary), with regard to potential off-site sources of degradation to the subject property, which included photograph documentation of subject property conditions, and identification of potential environmental concerns. Interviews with persons knowledgeable of the previous and current ownership and uses of the subject property.

- Identifying aboveground storage tanks and/or indications of underground storage tanks on-site.

- In addition to ASTM E1527-13, SALEM recognizes ASTM *Standard Guide for Vapor Encroachment Screening (VES) on Property Involved in Real Estate Transactions* (ASTM E2600-15) as an industry-accepted guideline to determine if a Vapor Encroachment Condition (VEC) exists at the target property. A VES consists of reviewing the Phase I ESA data combined with the application of professional judgment. SALEM evaluates the regulatory agency databases to determine if there are known or suspect contaminated sites within a minimum search distance of the target property. In addition, SALEM attempted to determine whether soil and/or groundwater have been impacted within the critical distances outlined in ASTM E2600-15.

- Preparing this report of SALEM's findings and recommendations if warranted.

3.0 SITE DESCRIPTION

The approximately 44.95-acre rectangular-shaped subject property consists of two parcels (Fresno County APNs 458-020-71 and 458-020-72) located at 2740 West Nielsen Avenue in Fresno, California. At the time of SALEM's November 19, 2020 site reconnaissance, the subject property was observed to be vacant land mostly covered in asphalt and concrete with areas of grass and remnants of former landscaping. A total of fifteen former building footprints, two water wells, two former suspect AST locations, and several fire hydrants and standpipes were observed throughout the property. The subject property is located in within Section 6, Township 14 South, Range 20 East, Mount Diablo Base and Meridian, Fresno South, California, 7.5-minute United States Geological Survey (USGS) topographic map, dated 2012.

4.0 PHYSIOGRAPHY AND HYDROGEOLOGIC CONDITIONS

The subject property is located within the San Joaquin Valley. The San Joaquin Valley, which includes the Fresno area, is a topographic and structural basin that is bounded on the east by the Sierra Nevada and on the west by the Coast Ranges. The Sierra Nevada, a fault block dipping gently southwestward, is composed of igneous and metamorphic rocks of pre-Tertiary age that form the basement complex beneath the San Joaquin Valley. The Coast Ranges contain folded and faulted sedimentary rocks of Mesozoic and Cenozoic age, which are similar to those rocks that underlie the Valley at depth and non-conformably overlie the basement complex; gently dipping to nearly horizontal sedimentary rocks of Tertiary and Quaternary age overlie the older rocks. These younger rocks are mostly of continental origin and in the Fresno area they were derived from the Sierra Nevada. The Coast Ranges evolved as a result of folding, faulting and accretion of diverse geologic terrains. They are broken by numerous faults, the San Andreas Fault being the most notable feature.

The San Joaquin Valley represents the southern portion of the Central Valley of California, also referred to as the Great Valley geomorphic province. The most extensive geomorphic units in the province include dissected uplands, low alluvial plains and fans, river floodplains and channels, and overflow lands and lake bottoms. The valley represents the alluvial, flood, and delta plains of two major rivers (the Sacramento and San Joaquin rivers) and their tributaries. The high alluvial fans are the largest geomorphic features in the Fresno area. These fans lie from 10 to 90 feet above the channels of the present day rivers and are not subject to inundation by the rivers. The Merced area alluvial fans form part of a continuum of fans along the eastern margin of the San Joaquin Valley structural trough. The sediments are derived from the Sierra Nevada to the east — most of the sediment is of probable glacial origin. The east side fans are formed by meandering or braided stream floodplain processes that contain more well-sorted, fine-grained material and have gentler slopes than the semiarid fans on the west side of the San Joaquin Valley. The east side fans have low relief with very gentle gradients.

According to RWQCB records for the Fresno Drum, Eastern Parcel facility, located at 733 South Hughes Avenue, approximately 0.65-miles south of the subject property, groundwater in the vicinity of the subject property was reported at a depth of approximately 65 to 80 feet below ground surface (bgs) with a general direction of flow toward the northeast. However, local groundwater level and flow direction may vary due to seasonal fluctuations in precipitation, usage demands, geology, and/or surface topography.

5.0 SITE RECONNAISSANCE

A site reconnaissance, which included a visual observation of the subject property and properties within the subject area, was conducted by SALEM's environmental assessor on November 19, 2020. The objective of the site reconnaissance is to identify RECs, including the storage and handling of hazardous substances and petroleum products on or in the vicinity of the subject property which have the potential to environmentally impact on-site soils, surface water and groundwater.

5.1 Observations

Table I summarizes the visual observations made during our site reconnaissance. A discussion of the physical observations follows Table I. Refer to the Site Map (Figure 1) and color photographs following the text for the locations of the features discussed in this section of the report.

TABLE I
Summary of Observations during Site Reconnaissance

FEATURE	OBSERVED	NOT OBSERVED
Structures (existing)		X
Evidence of past uses	X	
Hazardous substances and/or petroleum products (including containers)		X
Aboveground storage tanks (ASTs)		X
Underground storage tanks (USTs) or evidence of USTs		X
Strong, pungent, or noxious odors		X
Pools of liquid likely to be hazardous materials or petroleum products		X
Drums		X
Unidentified substance containers		X
Pad-mounted/Pole-mounted transformers/capacitors/other PCB-containing equipment		X
Subsurface hydraulic equipment		X
Heating/ventilation/air conditioning (HVAC)		X
Stains or corrosion on floors, walls, or ceilings		X
Floor drains and sumps		X
Pits, ponds, or lagoons		X
Stained soil and/or pavement		X
Stressed vegetation		X
Waste or wastewater discharges to surface or surface waters on subject property (including stormwater)		X
Wells (irrigation, domestic, dry, injection, abandoned, monitoring wells)	X	
Septic Systems		X

The approximately 44.95-acre rectangular-shaped subject property consists of two parcels (Fresno County APNs 458-020-71 and 458-020-72) at 2740 West Nielsen Avenue, located on the north side of West Nielsen Avenue between North Marks Avenue and South Hughes Avenue in Fresno, California. At the time of SALEM's site reconnaissance, the subject property was observed to be vacant land mostly covered in asphalt and concrete with areas of grass and remnants of former landscaping.

- An approximately 900 cubic foot pile of soil, asphalt and concrete debris was observed on the south central portion of the subject property. No hazardous waste or petroleum products were observed in the debris pile. No surface staining was observed on or around the pile.

- Approximately 22 standpipes, some with protective traffic bollards, were observed throughout the subject property. Several of these had associated fire hydrants. The stand pipes were in various conditions but appeared to all be out of service. Additionally, an area within a ring of protective traffic bollards was observed in the south central portion of the subject property. Stand pipes and evidence of subsurface water lines were observed located near the traffic bollards. This feature is a suspected former water system component location.

- A concrete stand and additional standpipes indicative of a former suspected AST area were observed located centrally on the subject property. Additionally, a fire extinguisher and evidence of concrete footings indicative of either an AST or fuel dispenser location was observed approximately 150 feet south of the concrete AST stand.

- Eighteen square and rectangular-shaped former building pads were observed across the subject property. Eight pads measured approximately 220 feet by 195 feet; two pads measured approximately 130 feet by 500 feet; three pads measured approximately 200 feet by 220 feet; one pad measured approximately 140 feet by 500 feet; one pad measured approximately 40 feet by 100 feet and appeared to have been an office type structure with restrooms and a small garage/bay; one pad was L-shaped and measured approximately 7,900 square feet and had an approximately 10 foot by 20 foot patch of newer asphalt within a concrete paved area indicative of a suspect former UST location and appeared to have had a mechanical system mounted on tracks to access the former building interiors. An additional pad measuring approximately 100 feet by 155 feet was observed near the former AST stand observed in the north central portion of the subject property and a recently disked dirt patch approximately 120 feet by 190 feet and slightly elevated was observed in the southeast corner of the subject property.

- Two storm drains were observed along the south property boundary, a concrete-lined stormwater ditch was additionally observed along the south property boundary. An area exhibiting soil erosion from stormwater runoff was observed at the northwest corner of the property. All storm drains exhibited no evidence of surface staining.

- Two water pumps were observed, one was located along the south property boundary and one was located along the west property boundary. The pumps appear to be connected to water wells and not in operating condition.

- During the visual observations of the subject property, no hazardous substances or petroleum products were observed to be stored or handled on the subject property. Exposed surface soils did not exhibit obvious signs of discoloration. No standing water or major depressions were observed on the subject property.

5.2 Adjacent Streets and Property Usage

Table II summarizes the adjacent streets and properties uses observed during the SALEM's site reconnaissance.

TABLE II
Adjacent Streets and Property Use

DIRECTION	ADJACENT STREET	ADJACENT PROPERTY USE
North	None	Vacant Lot with Pads of Former Structures and Brenntag (175 N. Hughes Ave.)
East	North Hughes Avenue	Masis Ararat Armenian Cemetery (250 N. Hughes Ave.), Trench Shoring Co. (88 N. Hughes Ave.), Reimer Transport (2002 W. Nielsen Ave.)
South	West Nielsen Avenue	Vacant Land, Single-Family Residential
West	North Marks Avenue	Cole Ditch/Houghton Canal, Elaison Lumber (3040 W. Nielsen Ave.), Vacant/Agricultural Land

Based on the observed uses of the properties located immediately adjacent to the subject property, it is unlikely that significant quantities of hazardous substances or petroleum products are currently stored or handled at the adjoining properties.

5.3 Potable Water Source

SALEM's research indicates that no potable water has been historically supplied to the subject property. Additionally, during SALEM's site reconnaissance, two water wells were observed on the subject property. No information regarding analytical testing or construction specifications of the on-site wells were found during the course of this assessment. If the on-site water well**s** are not to be used in any planned redevelopment of the subject property, they should be properly destroyed in accordance with all state and local guidelines. Water sampling was not conducted to verify productivity or water quality.

5.4 Sewage Disposal System

SALEM's review of historical aerial photographs, previous environmental reports, and regulatory agency records indicates three septic systems were associated with the former structures at the subject property. During SALEM's site reconnaissance, two of the reported septic tanks were identified as remaining on the subject property. The third septic system is suspected to be located under the slightly elevated disked dirt pad at the southwest corner of the subject property. The septic systems identified should be properly abandoned/closed or destroyed in accordance with state and local guidelines. The former septic systems may have acted as a conduit for contaminants to enter on-site soil from potential past unauthorized disposal of hazardous substances and/or petroleum products into drains, sinks and toilets. The former septic systems present a REC to the subject property and additional investigation is recommended to determine if on-site soils have been impacted by past unauthorized releases of petroleum hydrocarbons into the septic systems.

5.5 Heating and Cooling Source

No structures are currently located on the subject property. Therefore, no heating or cooling sources exist at the subject property. Documentation of fuel oil use was identified to have been heating oil historically stored in a 10,000-gallon UST located on what is now considered for the purpose of SALEM's Phase I ESA, the north adjoining property. The heating oil UST was removed under regulatory agency oversight of the FCEHD in 1995. FCEHD records indicate that during UST removal activities the UST was reported to have been in fair condition upon removal with no evidence of leakage. Additionally, the subject property was not listed on any government databases of known or reported releases of heating oil to the subsurface. Therefore, the historic use of heating oil at the subject property and associated historic UST on the north adjoining property does not present an REC to the subject property.

6.0 USER-PROVIDED INFORMATION

A review of a User-provided title documentation and a Phase I ESA User Questionnaire was conducted in order to help identify pertinent information regarding potential environmental impacts associated with the subject property.

6.1 Title Report

An ALTA Commitment for Title Insurance for the subject property, prepared by First American Title Insurance Company, dated September 30, 2020 was provided to SALEM for review. The ALTA Commitment for Title Insurance was reviewed to identify potential deed restrictions, environmental liens or activity and use limitations (AULs) which may have occurred on or exist in connection with the subject property as indicated by the ALTA Commitment for Title Insurance. SALEM's review of the ALTA Commitment for Title Insurance indicated no deed restrictions, environmental liens or AULs for the subject

property. However, it is important to note that this document is not a written representation as to the condition of title and may not list all liens, defects and encumbrances affecting title to the land. Therefore, SALEM recommends that at the close of the real estate, and upon the issuance of the Final Title Report, that the Final Title Report be reviewed and any information deviating from that presented in the ALTA Commitment for Title Insurance reviewed herein revealing evidence of RECs. Please refer to Appendix A for a copy of the ALTA Commitment for Title Insurance.

6.2 Phase I Environmental Site Assessment User Questionnaire

On November 11, 2020, SALEM received a Phase I ESA User Questionnaire completed by Mr. Jake Kurth with Scannell Properties. Please refer to Appendix B for a copy of the completed Phase I ESA User Questionnaire.

In order to quality for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "*Brownfields Amendments"*), the *user* must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that *"all appropriate inquiry"* is not complete. The user is asked to provide information or knowledge of the following:

- Environmental cleanup liens that are filed or recorded against the site.
- Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry.
- Specialized knowledge or experience of the person seeking to quality for the LLPs.
- Relationship of the purchase price to the fair market value of the *property* if it were not contaminated.
- Commonly known or *reasonably ascertainable* information about the *property*.
- The degree of obviousness of the presence or likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation.

According to Mr. Kurth, to the best of his knowledge as the user of this Phase I ESA, no environmental cleanup liens and no activity or land use limitations that have been filed or recorded against the subject property. Mr. Kurth indicated that the subject property was previously utilized for cotton storage and that he has no specialized knowledge or experience of the prior nature of the business or chemical utilization on the subject property. Mr. Kurth indicated that he has no knowledge of the past or current presence of specific chemicals or hazardous materials, unauthorized spills or chemical releases or of any environmental cleanup liens in connection with the subject property. Mr. Kurth indicated that the purchase price of the subject property reasonably reflects fair market value.

7.0 SITE USAGE SURVEY

In order to assess the subject property's history, SALEM reviewed a Phase I ESA Owner Questionnaire, historical aerial photographs, building department records, city directories, planning department records and SFIMs.

7.1 Phase I Environmental Site Assessment Owner Questionnaire

On November 12, 2020, a Phase I ESA Owner Questionnaire was completed by Mr. Kirk Daoudian, the current owner of the subject property. The Phase I ESA Owner Questionnaire is designed to provide pertinent information regarding potential environmental and historical impacts associated with the subject property. Mr. Daoudian reported that he has been familiar with the subject property since 2008 and that the subject property is currently vacant land. Mr. Daoudian indicated that the subject property was historically utilized for cotton storage.

According to Mr. Daoudian, to the best of his knowledge, no on-site treatment or discharge of waste; no on-site leach fields, or sumps; no use, storage or disposal of hazardous substances and/or petroleum products; no hazardous material spills; no buried materials; or any additional items of environmental concern were associated with the subject property. Mr. Daoudian indicated knowledge of previous storage tanks located on the subject property, no additional information as to size, location, number, or substances stored was given. Additionally, Mr. Daoudian that he was unsure of the possible presence of any wells or disposal ponds located on the subject property. Please refer to Appendix C for a copy of the Phase I ESA Owner Questionnaire.

7.2 Historical Aerial Photograph Review

Historical aerial photographs of the subject property and vicinity dated 1937, 1946, 1950, 1957, 1962, 1967, 1973, 1979, 1984, 1987, 1998, 2006, 2009, 2012, and 2016 were reviewed to evaluate changes in land-use for the subject property. The historical aerial photographs were supplied by EDR. Refer to Appendix D for a copy of the EDR-provided aerial photographs. A summary of the aerial photography is provided below:

- **1937 Aerial Photograph**

  The subject property is primarily utilized for agricultural purposes for the cultivation of row crops. A northeast-southwest trending irrigation canal (Cole Ditch) transects the northwestern portion of the subject property. What appears to be a grouping of trees is apparent located centrally in the eastern half of the subject property. No obvious structures are apparent on the subject property. Vacant land, agricultural land utilized for the cultivation of row crops, and rural residential structures are apparent adjoining the subject property to the north. A paved road (North Hughes Avenue) is observed along the eastern property boundary, beyond which is agricultural land and vacant land. A paved road (West Nielsen Avenue) is observed along the south property boundary, beyond which is rural residential, agricultural land utilized for the cultivation of row crops, and a canal. A paved road (North Marks Avenue) is observed along the west property boundary, beyond which is rural residential and agricultural land utilized for the cultivation of row crops.

- **1946 Aerial Photograph**

  The western half of the subject property is primarily vacant land with a group of structures apparent near the southwest corner. The eastern half of the subject property is primarily utilized for agricultural purposes for the cultivation of row crops. The northeast portion of the subject property appears to be vacant land utilized for grazing. A northeast-southwest trending irrigation canal (Cole Ditch) transects the northwestern portion of the subject property. What appears to be a grouping of trees is apparent located centrally in the eastern half of the subject property. Vacant land, agricultural land, and a group of long structures are apparent adjoining the subject property to the north. North Hughes Avenue adjoins the subject property to the east, beyond which is agricultural land and vacant land. West Nielsen Avenue adjoins the subject property to the south, beyond which is rural residential, agricultural land utilized for the cultivation of row crops, and a canal. North Marks Avenue adjoins the subject property to the west, beyond which is rural residential development, a canal (Houghton Canal) and agricultural land.

- **1950 Aerial Photograph**

  The southwest portion of the subject property is developed with a group of structures. The eastern half of the subject property is primarily utilized for agricultural purposes for the cultivation of row crops. What appears to be a grouping of trees is apparent located centrally in the eastern half of the subject property. The northeast-southwest trending irrigation canal, Cole Ditch, is no longer apparent on the northwestern portion of the subject property. Vacant land, agricultural land and rural residential development are apparent adjoining the subject property to the north. North Hughes Avenue adjoins the subject property to the east, beyond which is agricultural land. West

Nielsen Avenue adjoins the subject property to the south, beyond which is rural residential development, agricultural land, and the Houghton Canal. The Houghton Canal is apparent along the west subject property boundary, beyond which is North Marks Avenue, followed by rural residential development and agricultural land.

- **1957 Aerial Photograph**

  The majority of the subject property is agricultural land utilized for the cultivation of row crops. The southwest portion of the subject property is developed with a group of structures. Two additional structures are apparent centrally located in the northern portion of the subject property. A ponding basin is apparent centrally located in the southern portion of the subject property. Agricultural land and a large industrial structure are apparent adjoining the subject property to the north. North Hughes Avenue adjoins the subject property to the east, beyond which is agricultural land. West Nielsen Avenue adjoins the subject property to the south, beyond which is rural residential development, agricultural land, and the Houghton Canal. The Houghton Canal is apparent along the west subject property boundary, beyond which is North Marks Avenue, followed by rural residential development and agricultural land.

- **1962 Aerial Photograph**

  The west half of the subject property appears to be developed with light industrial buildings. Three large square structures, one long rectangular structure, and a grouping of smaller buildings is apparent. Two additional structures are apparent centrally located in the northern portion of the subject property. Two ponding basins are apparent centrally located in the southern portion of the subject property. The eastern half of the subject property appears to be agricultural land utilized for the cultivation of row crops. The north adjoining property appears to be developed for light industrial use with six structures roughly matching the large square structures on the subject property and a larger rectangular structure located centrally. North Hughes Avenue adjoins the subject property to the east, beyond which is agricultural land. West Nielsen Avenue adjoins the subject property to the south, beyond which is rural residential development, agricultural land, and the Houghton Canal. The Houghton Canal is apparent along the west subject property boundary, beyond which is North Marks Avenue, followed by rural residential development and agricultural land.

- **1967 Aerial Photograph**

  The conditions on the subject property and adjoining properties are similar to the 1962 aerial photograph, with the exception of the northeast adjoining property which appears to be developed with a paved square access road. Increased development is apparent in the subject property vicinity.

- **1973 Aerial Photograph**

  The subject property appears to be developed as light industrial. Eleven large square-shaped structures, one long rectangular-shaped structure, and a grouping of smaller buildings in the southwest portion of the subject property are apparent. Two additional smaller structures are apparent centrally located in the northern portion of the subject property. Two ponding basins are apparent centrally located in the southern portion of the subject property. The north adjoining property appears to be developed as light industrial with six structures roughly matching the large square structures on the subject property and a larger rectangular structure located centrally. North Hughes Avenue adjoins the subject property to the east, beyond which is agricultural land and what appears to be the Masis Ararat Armenian Cemetery observed during SALEM's site reconnaissance. West Nielsen Avenue adjoins the subject property to the south, beyond which is rural residential development, agricultural land, and the Houghton Canal. The Houghton Canal is apparent along the west subject property boundary, beyond which is North Marks Avenue, followed by rural residential development and vacant land.

- **1979 Aerial Photograph**
  The conditions on the subject property and adjoining properties are similar to the 1973 aerial photograph, with the exception of two additional large rectangular structures added to the northeast portion of the subject property.

  1984 Aerial Photograph
  The conditions on the subject property and adjoining properties are similar to the 1979 aerial photograph.

- **1987 Aerial Photograph**
  The conditions on the subject property and adjoining properties are similar to the 1984 aerial photograph. Increased development is apparent in the subject property vicinity.

- **1998 Aerial Photograph**
  The conditions on the subject property and adjoining properties are similar to the 1987 aerial photograph, with the exception of the adjoining property to the west, which appears to be vacant land. Increased development is apparent in the subject property vicinity.

- **2006 Aerial Photograph**
  The conditions of the subject property and all adjoining properties are similar to the 1998 aerial photograph, with the exception of the east and west adjoining properties. The east adjoining properties located east of North Hughes Avenue, appear to be developed as light industrial. The Houghton Canal, formerly observed located along the west subject property boundary, appears to have been realigned to be located on the strip of vacant land previously identified west of North Marks Avenue, which appears to have been widened with a center median.

- **2009 Aerial Photograph**
  The conditions of the subject property and all adjoining properties are similar to the 2006 aerial photograph. Increased development is apparent to the south of the subject property.

- **2012 Aerial Photograph**
  The subject property appears to be developed as light industrial with nine large square-shaped structures and three long rectangular-shaped structures. Additionally, a grouping of smaller buildings is apparent in the southwest portion of the subject property as are two additional smaller structures centrally located in the northern portion of the subject property. Two dry ponding basins are apparent centrally located in the southern portion of the subject property. Two square-shaped structures indicative of former building foundations are apparent on the northwest portion of the subject property. The north adjoining property appears to be developed as light industrial with six apparent former building pads, one large square-shaped structure, one small square-shaped structure, and one large piece of equipment similar in appearance to the large cotton press observed during SALEM's site reconnaissance. North Hughes Avenue adjoins the subject property to the east, beyond which is the Masis Ararat Armenian Cemetery and light industrial development. West Nielsen Avenue adjoins the subject property to the south, beyond which is rural residential development, vacant land, and the Houghton Canal. North Marks Avenue adjoins the subject property to the west, beyond which is the Houghton Canal and light industrial development.

- **2016 Aerial Photograph**
  The subject property appears to be vacant land. The majority of the subject property appears paved and approximately 18 former building pads are identifiable. The central portion of the subject property, and a square section near the southwest corner of the subject property, appear to be unpaved. The north adjoining property appears to be developed with the remnant frame of one of the former

square-shaped structures and the pads of two additional former structures. A large soil stockpile and what appears to be the historic cotton compress are apparent centrally located on the north adjoining property. The north-northeast adjoining property appears to be developed as the Brenntag facility observed during SALEM's site reconnaissance. North Hughes Avenue adjoins the subject property to the east, beyond which is the Masis Ararat Armenian Cemetery and light industrial development. West Nielsen Avenue adjoins the subject property to the south, beyond which is rural residential development, vacant land, and the Houghton Canal. North Marks Avenue adjoins the subject property to the west, beyond which is the Houghton Canal and light industrial development.

7.3 Building Department Records Review

On November 25, 2020, a records request was made to the City of Fresno Building Department (FBD) for the subject property APNs 458-020-71 and 458-020-72 and historic address of 2470 West Nielsen Avenue. According to a representative of the FBD, the commercial demolition of the historic industrial facility was permitted on August 31, 2017. Additional records provided by FBD included multiple violations regarding illegal dumping on the subject property spanning from 1999 through 2017. A previous environmental report (see Section 7.8 herein) stated, "Starting in 1958 building and addition permits were identified, as well as electrical and plumbing permits. Buildings added to the Site ranged from a warehouse to a guard house. A permit for a 1,500 gallon septic pit was identified dated May 5, 1979. A UST removal and grading permit was issued on May 5, 1995. Roof and repair permit was issued on March 27, 2003." However, the City of Fresno withheld those documents from SALEM's review as they were protected by third party right to privacy privilege. Please refer to Appendix E for copies of select records that the FBD was able to provide for review.

7.4 City Directories

On November 16, 2020, SALEM contracted with EDR to provide a City Directory Abstract Report dated 1922 through 2014 for the subject property. The subject property was listed on the EDR provided City Directory Abstract Report as Hohenberg Bros./California Compress from 1994 through 2004. The subject property address was not listed in any other years. Please refer to Appendix F for a copy of the EDR-provided City Directory Abstract Report.

7.5 Sanborn Fire Insurance Maps

SALEM reviews SFIMs to evaluate prior land use at the subject property and adjacent properties. SFIMs typically exist for cities with populations of 2,000 or more, the coverage dependent on the location of the property. On November 16, 2020, SALEM contracted with EDR to provide a Fire Insurance Map Abstract indicating the availability of historic SFIMs for the subject property and adjacent properties as far back as 1867. EDR's search of collections at the Library of Congress, University Publications of America, and various public and local sources revealed no coverage for the subject property and adjoining properties. Refer to Appendix G for a copy of the SFIM No Coverage Certification.

7.6 Agricultural Chemicals

Review of historical aerial photographs dating to 1937 reveals that the subject property was utilized for agricultural purposes for the cultivation of row crops from at least 1937. Portions of the subject property continued to be utilized to grow crops through at least 1967. Based upon the length of time since the subject property was last used for agricultural purposes, as well as the grading activities conducted on the subject property in preparation for different stages of development through the 1960s, which likely disturbed and mixed shallow on-site soils, it is not anticipated that elevated concentrations of environmentally persistent pesticides would be found in the near-surface soils of the subject property. Generally, SALEM's sampling and analysis of surface soils from properties with similar histories has typically yielded non-detectable concentrations of environmentally persistent pesticides. The potential for elevated concentrations of environmentally persistent pesticides to exist in the near-surface soils of the subject property, which would require regulatory action, is low. Therefore, the historical agricultural use of the subject property does not present an REC to the subject property.

7.7 Phase I Environmental Site Assessment Interview - Previous Owner

SALEM attempted to interview the previous owner of the subject property to provide pertinent information regarding potential environmental and historical impacts associated with the subject property. However, a Phase I ESA interview with the previous owner of the subject property was not reasonable ascertainable.

7.8 Previous Environmental Reports

According to The Twining Laboratories, Inc. (Twining's) report titled, *Phase I Environmental Site Assessment, 66 acre Property Located in the Northwestern Corner of Nielsen and Hughes Avenues, APN 458-020-09, Fresno, California*, dated November 18, 2005, the subject site (the subject property of this investigation and the north adjoining property) was an industrial developed lot at the time of Twining's October 28, 2005 site reconnaissance. Twining reportedly observed 26 structures consisting of a 16,200 square-foot office building; a 4,000 square-foot office building; a 1,200 square-foot building identified as a "Receiving Office"; two approximately 43,200 square-foot warehouses; 13 approximately 45,000 square-foot warehouses; one approximately 72,000 square-foot building historically used as a press house, but converted to a warehouse; two 66,500 square-foot warehouses; a 12,000 square-foot warehouse; and a 4,800 square-foot machine shop. A soil mound was observed in the southern portion of the subject site and was reported to have been excavation dirt and asphalt produced when the floor of a warehouse was switched from asphalt to concrete to accommodate heavy machinery. Additionally, Twinning reported the presence of nine pole-mounted transformers; four septic tanks; three water wells; two propane ASTs; and two diesel ASTs. The diesel ASTs were reported to be 100 gallons and 150 gallons in size and connected to pumps on a fire suppression system which additionally included two water basins located on the southern portion of the subject site. Twining identified the soil mound as a potential REC and recommended it be sampled for constituents of concern. Twining identified the water wells as potential RECs and recommended they be abandoned in accordance with all state and local regulations. Twining identified the septic tanks as potential RECs and recommended they be abandoned in accordance with all state and local regulations. Twinning identified the pole-mounted transformers as a potential REC but did not provide a recommendation to address them. Twining identified potential asbestos containing building materials as a potential REC and recommended an asbestos survey of the structures prior to any repair, renovation, or demolition. Twining identified the fire prevention basins as a potential REC and recommended soil sampling within the basins for possible constituents of concern. Twining observed two 35-gallon drums and "other small containers" within the machine shop which exhibited surface staining, these were identified as a potential REC and were recommended to be removed for recycling. Additionally, Twining identified two historic 4,000-gallon diesel USTs; and 1,000-gallon motor oil UST; and one 10,000-gallon heating oil UST removed in April 1995 as a HREC which was granted "case closure" by the FCEHD on July 3, 1996. Please refer to Appendix H for a copy of the Twining Phase I ESA report.

8.0 REGULATORY AGENCY RECORDS REVIEW

SALEM conducted a review of regulatory agency records for the purpose of determining if hazardous materials/hazardous wastes have been stored or handled on the subject property and area properties of environmental concern. The most current records available were reviewed.

California Environmental Protection Agency, Department of Toxic Substances Control

SALEM's November 5, 2020 review of the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) Envirostor California cleanup sites database available via the DTSC Internet Website which tracks federal superfund sites, state response sites, voluntary cleanup sites, and school cleanup sites, indicated that no records of cleanup sites are on file with the DTSC for the subject property or adjacent properties. However, the following information was available regarding the subject property:

The subject property address of 2740 West Nielsen Avenue was listed on the DTSC website. California Compress was listed as having had an EPA generator identification number. The EPA generator identification number (ID# CAL000122762), was activate from 1994 through 2008 and is currently inactive. Approximately 24.818 tons of non-RCRA waste was reportedly generated under this EPA number categorized as "off-spec, aged, or surplus inorganics," "asbestos-containing waste," "other inorganic solids," "waste oil and mixed oil," and "unspecified oil-containing waste." No Notices of Violation (NOV) regarding hazardous material storage or handling practices were reported in the DTSC records for this EPA number.

California Regional Water Quality Control Board
SALEM's November 5, 2020 review of the RWQCB GeoTracker leaking underground fuel tank (LUFT) database available via the RWQCB Internet Website indicated the following records of LUFTs on file with the RWQCB for the subject property:

According to RWQCB records, the California Compress Facility at 2740 West Nielsen Avenue, was listed on the LUST database as having had an unauthorized release of gasoline impacting "soil only" beneath the former location of USTs. The FCEHD issued a "case closed" designation on July 3, 1996 stating that "approximately 2.7 cubic yards of soil impacted by gasoline constituents exists at the subject location…" The California Compress LUST site presents a HREC to the subject property. Please refer to Appendix I for copies of pertinent RWQCB records.

California Division of Oil, Gas, and Geothermal Resources
SALEM reviewed the California Division of Oil, Gas, and Geothermal Resources (DOGGR) website (http://maps.conservation.ca.gov/doms/index.html) to evaluate the potential for existing/former oil, gas, or geothermal wells on the subject property or adjoining properties. The subject property is located within DOGGR Inland District. The subject property vicinity is not located within an oil, gas, or geothermal field. The review of DOGGR information does not indicate that an oil, gas, or geothermal well has been drilled on the subject or adjacent properties.

Fresno County Environmental Health Division
On November 30, 2020, the FCDEH was contacted regarding records of USTs, historical hazardous/flammable permits, hazardous materials handling, and unauthorized releases of hazardous substances and petroleum products for the subject property address of 2740 West Nielsen Avenue and APNs 458-020-71 and 458-020-72. Records on file with the FCDEH include several hazardous materials inventories, business plans, and inspections as well as permits for UST which included a 10,000-gallon fuel oil UST historically located on what is now the north adjoining property; a 4,000-gallon double wall steel diesel UST; a 4,000-gallon single wall steel diesel UST; and a 1,000-gallon single wall steel regular unleaded gasoline UST historically located in the southwest portion of the subject property. Records indicate all UST were properly permitted and removed under the regulatory agency oversight of FCEHD. A record of a "Hazardous Material Release" was recorded on June 5, 1995 indicating soil contamination from petroleum products discovered during removal of a UST. A Work Plan for further site assessment in regard to the petroleum hydrocarbon contaminated soil dated July 18, 1995 was additionally available in FCDEH records. Additional documentation regarding if that Work Plan was approved, if the work entailed therein was conducted, or analytical data of the assessment was not identified in the FCDEH public records. However, records retained by the RWQCB indicate that FCEHD issued a "case closed" designation for the California Compress LUST site on July 3, 1996. The California Compress LUST site presents a HREC to the subject property. Please refer to Appendix J for copies of pertinent FCEHD records.

City of Fresno Fire Department
On October 30, 2020, the City of Fresno Fire Department, (FFD) was contacted regarding records of historical hazardous/flammable permits, hazardous materials handling, hazardous/flammable incidents, and/or USTs for the subject property address of 2740 West Nielsen Avenue and APNs 458-020-71 and 458-

020-72. According to a representative of the FFD, records of historical hazardous/flammable permits, hazardous materials handling, registered USTs or unauthorized releases of hazardous substances or petroleum products are under the jurisdiction of FCDEH.

Local Area Tribal Records
According to the EDR Radius Map Report, no tribal records are listed for the subject property or the adjoining properties.

8.1 Standard Environmental Record Sources

EDR performed a search of federal, state, and local regulatory agency databases for the subject property and surrounding area. The various search distances as required by ASTM E1527-13 extended up to one mile from the subject property. Several agencies have published documents that list businesses or properties which have handled hazardous materials or hazardous waste, or may have had a documented release of hazardous substances or petroleum products. The databases consulted in the course of this assessment were compiled by EDR on November 16, 2020 and represent reasonably ascertainable current listings. SALEM did not verify the locations and distances of every site listed by EDR. SALEM verified locations and distances of the sites SALEM deemed as having a potential to environmentally impact the subject property. The actual location of the off-site properties identified may differ from the EDR listing. Table III summarizes the listed properties located within the specified ASTM Search Radii. The EDR Radius Map report is included in Appendix K.

TABLE III
EDR Radius Map Summary

DATABASE	TYPE OF RECORDS	SUBJECT PROPERTY	<⅛ MILE	⅛ - ¼ MILE	¼ - ½ MILE	½ - 1 MILE
STANDARD ENVIRONMENTAL RECORDS						
Federal NPL Site List						
NPL	National Priorities List	0	0	0	0	0
Proposed NPL	Proposed National Priorities List	0	0	0	0	0
NPL LIENS	Federal Superfund Liens	0	0	---	---	---
Federal Delisted NPL Site List						
Delisted NPL	National Priority List Deletions	0	0	0	0	0
Federal CERCLIS List						
SEMS	Superfund Enterprise Management System	0	0	0	0	---
Federal Facility	Federal Facility	0	0	0	0	---
Federal CERCLIS NFRAP Site List						
SEMS-ARCHIVE	Superfund Enterprise Management System Archive	0	0	0	0	---
Federal RCRA CORRACTS Facilities List						
CORRACTS	Corrective Action Report	0	0	0	0	0
Federal RCRA non-CORRACTS TSD Facilities List						
RCRA-TSDF	Transporters, Storage, and Disposal	0	0	0	0	---
Federal RCRA Generators List						
RCRA – LQG	RCRA – Large Quantity Generators	0	1	0	---	---
RCRA – SQG	RCRA – Small Quantity Generators	0	1	1	---	---
RCRA – VSQG	Conditionally Exempt SQG	0	0	0	---	---
Federal Institutional Controls/Engineering Controls Registries						
US ENG CONTROLS	Engineering Controls Sites List	0	0	0	0	---
US INST CONTROL	Sites with Institutional Controls	0	0	0	0	---
LUCIS	Land Use Institutional Control Sites	0	0	0	0	---
Federal ERNS List						
ERNS	Emergency Response Notification System	0	0	---	---	---
State and Tribal Equivalent NPL						
RESPONSE	State Response Sites	0	0	0	0	0
State and Tribal Equivalent CERCLIS						

TABLE III (cont'd)
EDR Radius Map Summary

DATABASE	TYPE OF RECORDS	SUBJECT PROPERTY	<⅛ MILE	⅛ - ¼ MILE	¼ - ½ MILE	½ - 1 MILE
ENVIROSTOR	Envirostor Database	0	0	0	0	0
State and Tribal Landfill and/or Solid Waste Disposal Site List						
SWF/LF	Solid Waste Information System	0	1	1	2	---
State and Tribal Leaking Storage Tank Lists						
LUST	Leaking Underground Storage Tanks	**X**	2	0	3	---
CPS-SLIC	Statewide SLIC Cases	0	1	0	0	---
INDIAN LUST	LUST on Indian Land	0	0	0	0	---
State and Tribal Registered Storage Tank Lists						
UST	Active UST Facilities	0	0	0	---	---
AST	Aboveground Storage Tank Facilities	0	0	0	---	---
INDIAN UST	USTS on Indian Land	0	0	0	---	---
FEMA UST	USTs	0	0	0	---	---
State and Tribal Voluntary Cleanup Sites						
INDIAN VCP	Voluntary Cleanup on Indian Land	0	0	0	0	---
VCP	Voluntary Cleanup Program Properties	0	0	0	0	---
ADDITIONAL ENVIRONMENTAL RECORDS						
Local Brownfield Lists						
BROWNFIELDS	Brownfield Sites	0	0	0	0	---
Local Lists of Landfill/Solid Waste Disposal Sites						
ODI	Open Dump Inventory	0	0	0	0	---
DEBRIS REGION 9	Illegal Dump Site Locations	0	0	0	0	---
SWRCY	Recycler Database	0	0	0	0	---
HAULERS	Registered Waste Tire Haulers Lists	0	0	---	---	---
INDIAN ODI	Report on Open Dumps on Indian Land	0	0	0	0	---
WMUDS/SWAT	Waste Management Unit Database	0	1	0	0	---
IHS OPEN DUMPS	Open Dump	0	0	0	0	---
Local Lists of Hazardous Waste/Contaminated Sites						
US CDL	Clandestine Drug Labs	0	0	---	---	---
HIST Cal-Sites	Cal sites Database	0	0	0	0	0
SCH	School Property Evaluation Program	0	0	0	---	---
Toxic Pits	Toxic Pits Cleanup Act Sites	0	0	0	0	0
CERS HAZ WASTE	CalEPA Regulated Site Portal	0	3	2	---	---
PFAS	Polyfluoroalkyl Substances Sites	0	0	0	0	---
CDL	Clandestine Drug Labs	0	0	---	---	---
US HIST CDL	Historic Clandestine Drug Labs	0	0	---	---	---
Local Lists of Registered Storage Tanks						
CA FID UST	Facility Inventory Database	**X**	7	2	---	---
HIST UST	Historical UST	**X**	8	2	---	---
CERS TANKS	California Environmental Reporting System Tanks	0	2	0	---	---
SWEEPS UST	SWEEPS UST Lists	**X**	7	2	---	---
Local Land Records						
LIENS 2	CERCLA Lien Information	0	0	---	---	---
LIENS	Environmental Liens Listing	0	0	---	---	---
DEED	Deed Restriction Listing	0	0	0	0	---
Records of Emergency Release Reports						
HMIRS	Hazardous Materials Information System	0	0	---	---	---
CHMIRS	CA Hazardous Material Information System	**X**	0	---	---	---
LDS	Land Disposal Sites Listing	0	0	---	---	---
MCS	Military Cleanup Sites Listing	0	0	---	---	---
SPILLS 90	List of Industrial Site Cleanups	0	0	---	---	---
Other Ascertainable Records						
RCRA Non-Gen/NLR	Non-Generators	0	5	2	---	---

TABLE III (cont'd)
EDR Radius Map Summary

DATABASE	TYPE OF RECORDS	SUBJECT PROPERTY	<⅛ MILE	⅛ - ¼ MILE	¼ - ½ MILE	½ - 1 MILE
DOT OPS	Incident and Accident Data	0	0	---	---	---
DOD	Department of Defense Sites	0	0	0	0	0
FUDS	Formerly Used Defense Sites	0	0	0	0	0
CONSENT	Superfund Consent Decrees	0	0	0	0	0
ROD	Records of Decision	0	0	0	0	0
UMTRA	Uranium Mill Tailings Sites	0	0	0	0	---
US MINES	Mines Master Index File	0	0	1	---	---
TRIS	Toxic Chemical Release Inventory System	0	0	---	---	---
TSCA	Toxic Substances Control Act	0	0	---	---	---
FTTS	FIFRA/TSCA Tracking System	0	0	---	---	---
HIST FTTS	FIFRA/TSCA Tracking System	0	0	---	---	---
SSTS	Section 7 Tracking Systems	0	0	---	---	---
ICIS	Integrated Compliance Information System	0	0	---	---	---
PADS	PCB Activity Database System	0	0	---	---	---
MLTS	Material Licensing Tracking System	0	0	---	---	---
RADINFO	Radiation Information Database	0	0	---	---	---
FINDS	Facility Index System	**X**	0	---	---	---
RAATS	RCRA Administrative Action Tracking	0	0	---	---	---
RMP	Risk Management Plans	0	0	---	---	---
CA BOND EXP. PLAN	Bond Expenditure Plan	0	0	0	0	0
UIC	UIC Listing	0	0	---	---	---
NPDES	National Pollutants Discharge Elimination	**X**	0	---	---	---
Cortese	Cortese Hazardous Waste & Substance Sites	**X**	2	0	2	---
HIST CORTESE	Historical Cortese sites.	**X**	1	0	2	---
CUPA Listings	CUPA Listing	**X**	11	7	---	---
Notify 65	Proposition 65 Records	0	0	0	0	0
DRYCLEANERS	Cleaner Facilities	0	0	0	---	---
WIP	Well Investigation Program Case List	0	0	0	---	---
ENF	Enforcement Action Listing	0	0	---	---	---
HAZNET	Facility and Manifest Data	**X**	1	---	---	---
EMI	Emissions Inventory Data	0	0	---	---	---
INDIAN RESERV	Indian Reservations	0	0	0	0	0
SCRD DRYCLEANER	State Coalition for Remediation of Cleaners	0	0	0	0	---
WDS	Waste Discharge System	0	0	---	---	---
FINANCIAL ASSURANCE	Financial Assurance	0	0	---	---	---
PROC	Certified Processors Database	0	0	0	0	---
HWP	Envirostor Permitted Facilities Listing	0	0	0	0	0
MWMP	Medical Waste Management Program	0	0	0	---	---
LEAD SMELTERS	Lead smelters	0	0	---	---	---
US AIRS	Coal Combustion Residues Surface List	0	0	---	---	---
COAL ASH EPA	Coal Combustion Residues Surface List	0	0	0	0	---
EPA WATCH LIST	EPA watch List	0	0	---	---	---
US FIN ASSUR	Financial Assurance	0	0	---	---	---
PCB TRANSFORMER	PCB Transformer	0	0	---	---	---
2020 COR ACTION	2020 corrective action	0	0	0	---	---
PRP	Potential Responsible Party	0	0	---	---	---
COAL ASH DOE	Steam-Electric Plan Operation Data	0	0	---	---	---
PEST LIC	Pesticide Regulation Licenses Listing	0	0	---	---	---
PROC	Certified Processors Database	0	0	0	0	---
WASTEWATER PITS	Oil Wastewater Pits Listing	0	0	0	0	---
ECHO	Enforcement & Compliance History Information	0	0	---	---	---
FUELS PROGRAM	EPA Fuels Program Registered Listings	0	0	0	---	---

TABLE III (cont'd)
EDR Radius Map Summary

DATABASE	TYPE OF RECORDS	SUBJECT PROPERTY	<⅛ MILE	⅛ - ¼ MILE	¼ - ½ MILE	½ - 1 MILE
ABANDONED MINES	Abandoned Mines	0	0	---	---	---
ICE	Permitted Facilities with Inspections/Enforcements	0	0	---	---	---
FUSRAP	Formerly Utilized Sites Remedial Action Program	0	0	0	0	0
DOCKET HWC	Hazardous Waste Compliance Docket Listing	0	0	---	---	---
UXO	Unexploded Ordnance Listing	0	0	0	0	0
MINES	Mine Site Location Listing	0	0	0	---	---
UIC GEO	UIC GEO	0	0	---	---	---
CIWQS	CA Integrated Water Quality System	**X**	0	---	---	---
CERS	CERS	**X**	0	---	---	---
NON-CASE INFO	Non-Case Info	0	0	---	---	---
OTHER OIL GAS	Oil & Gas Site	0	0	---	---	---
PROD WATER PONDS	Prod Water Ponds	0	0	---	---	---
SAMPLING POINT	Sampling Point	0	0	---	---	---
WELL STIM PROJECT	Well Stimulation Project	0	0	---	---	---
HWTS	Hazardous Waste Tracking System	**X**	---	---	---	---
EDR HIGH RISK HISTORICAL RECORDS						
EDR Exclusive Records						
EDR MGP	Manufactured Gas Plants	0	0	0	0	0
EDR Hist Auto	EDR Historical Auto Stations	0	0	---	---	---
EDR Hist Cleaners	EDR Historical Cleaners	0	1	---	---	---
EDR RECOVERED GOVERNMENT ARCHIVES						
Exclusive recovered Government Archives						
RGA LUST	Recovered Government Archive Solid Waste Facilities List	0	---	---	---	---
RGA LF	Recovered Government Archive Leaking Underground Storage Tank	0	---	---	---	---

0 = No sites in radius identified
--- = Not Searched

The former California Compress (George Daoudian) facility at the subject property address of 2740 West Avenue was identified in the EDR-provided government database report on the RGA LUST, FINDS, SWEEPS UST, CA FID UST, CUPA Listings, HIST UST, Cortese, HIST CORTESE, CERS HAZNET, HWQS, NPDES, CIWQS, HAZNET, HWTS, CHMIRS, and LUST databases. The subject property was identified as having had four USTs including a 10,000-gallon fuel oil UST historically located on what is now the north adjoining property; a 4,000-gallon double- walled steel diesel UST; a 4,000-gallon single-walled steel diesel UST; and a 1,000-gallon single-walled steel regular unleaded gasoline UST historically located in the southwest portion of the subject property. The USTs were removed under the regulatory oversight of FCDEH in June 1995. During tank removal activities petroleum hydrocarbon-impacted soil was discovered around those USTs removed from the southwest portion of the subject property. The California Compress LUST site was remediated under the regulatory agency supervision of the FCEHD. The FCEHD issued a "case closed" designation on July 3, 1996. The California Compress LUST site presents a HREC to the subject property.

The following sites with reported releases of hazardous substances or petroleum products to the subsurface were reported within a one-eighth-mile radius of the subject property:

- The Fresno Irrigation District facility is listed at "Marks [N. Marks Avenue] & Nielson [W. Nielsen Avenue]" identified by EDR as being located approximately 133 feet west-southwest and up-gradient of the subject property is listed on the CPS-SLIC and CERS database listing. SALEM's research determined that this listing refers to the Cleanup Program Site at 3205 West Nielsen Avenue. Cleanup

and remediation of the Cleanup Program Site was filed under the subject property address of 3075 West Nielson Avenue located approximately 366 feet west-southwest of the subject property and additionally historically associated with Fresno Irrigation District. These properties were historically connected. Additional listings filed under the 3205 West Neilson Avenue address include LUST, SWEEPS UST, CA FID UST, Cortese, CUPA Listings, HIST CORTESE, CERS, WMUDS/SWAT, SWF/LF, HWTS and HAZNET listings. The LUST listing refers to property identified as having had an unauthorized release of other solvent or non-petroleum hydrocarbon in August 1995 during replacement of the first generation USTs. In February 1997 additional assessment began to further identify impacted soil at the subject property. In December 1998 the FCEHD issued a "case closed" designation for the site. The SWEEPS UST listing refers to a 1,000-gallon waste oil tank. The HIST UST listing refers to six reported fuel tanks at the subject property. The CUPA Listings refers to the removal/closure of two USTs. The SLIC database listing refers to the cleanup and remediation of the Cleanup Program Site for the presence of metals/heavy metals and petroleum/fuels/soils related to construction debris. Soils were remediated via a combination of spreading and removal/disposal. On September 13, 2013 the RWQCB deemed sampling and spreading activities completed and issued a case Closure Letter for the Cleanup Program Site. Based upon various influencing factors including; the distance of the Fresno Irrigation properties from the subject property; media impacted ("soil only"); identification of a RP for assessment and remediation costs; and the current regulatory agency status ("case closed"); the Fresno Irrigation Cleanup Program and LUST sites are deemed to have a low potential to environmentally impact the subject property and therefore, do not present an REC to the subject property.

- Reimer Transport (Weldon Trucking, Inc.) at 2002 West Nielson Avenue, identified by EDR as being located approximately 529 feet east and cross-gradient of the subject property was identified in the EDR-provided Radius Map Report on the CERS, CERS TANKS, CERS HAZ WASTE, CA FID UST, RCRA NonGen/NLR, CIWQS, WDS, CUPA Listings, Cortese, SWEEPS UST, and LUST databases as having had an unauthorized release of diesel fuel discovered during dispenser upgrades on December 23, 2003. The Reimer Transport LUST site was remediated under the regulatory oversight of FCEHD and was granted "completed-case closed" status on April 19, 2004. Based upon various influencing factors including; the distance of the Reimer Transport LUST site from the subject property; media impacted ("soil only"); identification of a RP for assessment and remediation costs; and the current regulatory agency status ("case closed"); the F Reimer Transport LUST site is deemed to have a low potential to environmentally impact the subject property and therefore, does not present an REC to the subject property.

In general, only hazardous substances or petroleum products released from facilities located approximately up-gradient and within a few hundred feet of the subject property, or in a cross-gradient direction close to the subject property, are judged to have a reasonable potential of migrating to the subject property. This opinion is based on the assumption that materials generally do not migrate large distances laterally within the soil, but rather tend to migrate with groundwater in the general direction of groundwater flow.

Two orphan sites were identified in the EDR-provided government database report. Based upon SALEM's visual observations made during our site reconnaissance, as well as various influencing factors including approximate distance from the subject property, the orphan sites are deemed to have a low potential to environmentally impact the subject property.

No engineering control sites, sites with institutional controls, or sites with deed restrictions were listed for the subject property, adjoining or vicinity properties in the EDR-provided government database report. No Indian reservations or LUSTs on Indian land were reported on the subject property, adjoining or vicinity properties in the EDR-provided government database report.

The remaining properties identified by EDR within the specified search radius of the subject property, which appeared on local, state, or federally published lists of sites that have had releases of hazardous substances or petroleum products, were determined through SALEM's field observations to be of sufficient distance and/or situated hydraulically cross/down-gradient of the subject property, such that impacts to the subject property are not likely.

9.0 POTENTIAL VAPOR ENCROACHMENT CONDITION

Vapor intrusion is a way by which chemicals in soil and groundwater can migrate into indoor air. Chemical vapors moving up through soil and into a building are a potential source of indoor air contamination and may pose a risk to human health. In evaluating the potential for a vapor encroachment condition (VEC) on the subject property, SALEM attempted to determine if there was information indicating that chemicals of concern were located within the "critical distance", defined as the lineal distance between the nearest edge of a contaminated plume and the nearest target property boundary. Based on ASTM E 2600-15 *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*, the "critical distance" is equal to 100 feet, with the exception of dissolved petroleum hydrocarbons, which have a "critical distance" of 30 feet. If non-aqueous phase petroleum hydrocarbons are present, the 100-foot "critical distance" is utilized.

9.1 Vapor Encroachment Screening

SALEM has performed a Vapor Encroachment Screening (Tier 1) in general accordance with the scope and limitations of ASTM Standard Practice E2600-15 for the subject property. The purpose of this Vapor Encroachment Screening (Tier 1) is to identify the existing or potential Vapor Encroachment Conditions (VEC), as defined by ASTM E2600-15, affecting the subject property. As part of the screening, SALEM has completed the following questionnaire, as duplicated from Section X3 of ASTM E2600-15.

TABLE V
Vapor Encroachment Questionnaire

QUESTION	RESPONSE	COMMENTS
1. Property Type?	Vacant	
2. Are there buildings/structures on the subject property?	No	
3. Will buildings/structures be constructed on the subject property in the future?	Yes	
4. If buildings exist or are proposed, do/will they have elevators?	Unknown	
5. Type of level below grade (existing or proposed)?	Unknown	
6. Is there ventilation below grade?	N/A	
7. Sump pumps, floor drains, or trenches (existing or proposed)?	Unknown	
8. Radon or methane mitigation system installed?	No	
9. Heating system type (existing or proposed)?	None	
10. Type of fuel energy (existing or proposed)?	None	
11. Have there ever been any environmental problems at the subject property?	Yes	See below
12. Does/will a gas station operate anywhere on the subject property?	No	
13. Do any tenants use hazardous chemicals in relatively large quantities on the subject property?	No	
14. Have any tenants ever complained about odors in the building or experience health-related problems that may have been associated with the building?	Unknown	
15. Are the operations (or proposed operations to be performed) on the subject property OSHA regulated?	Unknown	
16. Are there any existing or proposed under-ground storage tanks (USTs) or above-ground storage tanks (ASTs) located on the subject property?	No	
17. Are there any sensitive receptors (children, elderly, people in poor health, etc.) that occupy or will occupy the subject property?	No	

TABLE VI
Additional VEC Criteria

QUESTION	RESPONSE	COMMENTS
1. Is the subject property known to have current or past contamination?	Yes	
2. Is contamination of the subject property suspected?	Yes	See below
3. Is an adjacent property known to have current or past contamination which may have impacted the subject property?	No	
4. Is a nearby property known to have current or past contamination which may have impacted the subject property?	No	
5. Is regional groundwater contamination known to exist beneath the subject property?	No	
6. Are you aware of other conditions which may result in vapor intrusion at the subject property?	No	

The southwestern portion of the subject property was historically occupied by structures from at least 1946 until 2017. Structures included a "shop" building with three associated USTs and at least three know septic tanks (two observed during SALEM's November 19, 2020 site reconnaissance). The USTs were removed under FCEHD permit in June 1995, the disposition of suspected septic tanks and other sub-grade structures of environmental concern is unknown at this time due to the absence of government agency records. During tank removal activities petroleum hydrocarbon-impacted soil was discovered around the USTs removed from the southwest portion of the subject property. The California Compress LUST site was remediated under the regulatory agency supervision of the FCEHD. The FCEHD issued a "case closed" designation on July 3, 1996 and reported that, at the time of closure, approximately 2.7 cubic yards of petroleum hydrocarbon-impacted soil remained beneath the former UST location. It is SALEM's opinion that due to the potential of contaminates introduced to the subsurface through the septic tanks, as well as the reported hydrocarbon impacted soil remaining beneath the former UST location, a potential vapor intrusion condition "cannot be ruled out" at the subject property. Chemical vapors moving up through soil and into a building are a potential source of indoor air contamination and may pose a risk to human health. Vapor intrusion is a way by which chemicals in soil and groundwater can migrate into indoor air.

10.0 BUSINESS ENVIRONMENTAL RISKS

10.1 Asbestos-Containing Building Materials

Asbestos is the name given to a number of naturally occurring, fibrous silicate minerals mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. Asbestos is commonly used as an acoustic insulator, thermal insulation, fire proofing and in other building materials. Friable asbestos-containing material (ACM), when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable ACM can be crumbled, pulverized, or reduced to powder during machining, cutting, drilling, or other abrasive procedures. Friable ACM is more likely to release fibers when disturbed or damaged than non-friable ACM. Exposure to airborne friable asbestos may result in a potential health risk because persons breathing the air may breathe in asbestos fibers. Continued exposure can increase the amount of fibers that remain in the lung. Fibers embedded in lung tissue over time may cause serious lung diseases including: asbestosis, lung cancer, or mesothelioma. The Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1926.1101 requires certain construction materials to be *presumed* to contain asbestos, for purposes of this regulation. All thermal system insulation (TSI), surfacing material, and asphalt/vinyl flooring that are present in a building constructed prior to 1981 and have not been appropriately tested are "presumed asbestos-containing material" (PACM).

During SALEM's site reconnaissance, no structures were observed on the subject property. Therefore, ACMs are not considered an on-site environmental concern at this time.

10.2 Lead-Based Paint

Lead is a highly toxic metal that affects virtually every system of the body. While adults can suffer from excessive lead exposures, the groups most at risk are fetuses, infants and children under 6. The Consumer Product Safety Commission banned the use of lead in paint in 1978. Most manufactures, however, had ceased using lead well before this time. Paint applied after 1978 is not considered suspect LBP. Congress passed the Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as "Title X," to protect families from exposure to lead from paint, dust, and soil. Section 1018 of this law directed the Housing and Urban Development (HUD) and the US EPA to require the disclosure of known information on lead-based paint (LBP) and LBP hazards before the sale or lease of most housing built before 1978. Sellers, landlords, and their agents are responsible for providing this information to the buyer or renter before sale or lease.

According to Section 1017 of Title X, "LBP hazard is any condition that causes exposure to lead from lead-contaminated dust; bare, lead-contaminated soil; or LBP that is deteriorated or intact LBP present on accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects." Therefore, under Title X intact lead-based paint on most walls and ceilings is not considered a "hazard," although the condition of the paint should be monitored and maintained to ensure that it does not become deteriorated. LBP is defined as any paint, varnish, stain, or other applied coating that has 1.0 mg/cm^2 (or 5,000 µg/g by weight) or more of lead.

During SALEM's site reconnaissance, no structures were observed on the subject property. Therefore, LBP is not considered an on-site environmental concern at this time.

10.3 Radon

Radon is a naturally occurring gaseous substance resulting from the radioactive decay of uranium to radium and then to radon. Uranium is a common element found in many geologic formations and substrates, particularly igneous and metamorphic rocks. Radon has a half-life of only 3.8 days and decays to its daughter elements (polonium 218, polonium 214, bismuth 214, and lead 214). It is these daughter elements that represent the health hazard commonly associated with radon. Radon gas can enter a building through cracks in the foundation and walls and become attached to dust particles and inhaled which could cause damage to human lung tissue. Radon is measured in picocuries per liter of air (pCi/L). The EPA has an established safe radon level of 4 pCi/L.

Based on the EPA Radon Zone Map of California, the subject property is located within **EPA Zone 2**, which has a predicted indoor radon screening between 2 pCi/L and 4 pCi/L. The EDR-provided radon data cites Fresno County has 100% of 1st floor spaces with <4 pCi/L. However, radon levels may vary from one area to another and the only way to accurately assess radon gas levels on the subject property is to conduct a radon gas survey, which is beyond the scope of this assessment.

10.4 Mold

Molds are microscopic organisms found virtually everywhere, indoors and outdoors. Mold will grow and multiply under the right conditions, needing only sufficient moisture (e.g.in the form of very high humidity, condensation, or water from a leaking pipe, etc.) and organic material (e.g., ceiling tile, drywall, paper, or natural fiber carpet padding). Mold growths often appear as discoloration, staining, or fuzzy growth on building materials or furnishings and are varied colors of white, gray, brown, black, yellow, and green. In large quantities, molds can cause allergic symptoms when inhaled or through the toxins the molds emit.

During SALEM's site reconnaissance, no structures were observed on the subject property. Therefore, mold is not considered an on-site environmental concern at this time.

11.0 DISCUSSION OF FINDINGS

Historical Uses

The approximately 44.95-acre rectangular-shaped subject property consists of two parcels (Fresno County APNs 458-020-71 and 458-020-72) 2740 West Nielsen Avenue, located on the north side of West Neilson Avenue between North Marks Avenue and North Hughes Avenue in Fresno, California.

SALEM's review of historical aerial photographs indicates that the subject property was historically utilized for agricultural purposes for the cultivation of row crops from at least 1937. Portions of the subject property continued to be utilized to grow crops through at least 1967. Based upon the length of time since the subject property was last used for agricultural purposes, as well as the grading activities conducted on the subject property in preparation for different stages of development through the 1960s which likely disturbed and mixed shallow on-site soils, it is not anticipated that elevated concentrations of environmentally persistent pesticides would be found in the near-surface soils of the subject property. Generally, SALEM's sampling and analysis of surface soils from properties with similar histories has typically yielded non-detectable concentrations of environmentally persistent pesticides. The potential for elevated concentrations of environmentally persistent pesticides to exist in the near-surface soils of the subject property, which would require regulatory action, is low. Therefore, the historical agricultural use of the subject property does not present an REC to the subject property.

Three structures were located near the southwest corner of the subject property from at least 1946 through 2017. Additional structures were built in the north-central portion of the subject property sometime prior to 1957. The subject property was developed as light industrial circa 1957. Four warehouse structures were built in the northwest portion of the subject property sometime prior to 1962 and eight additional warehouse structures were built on the east portion of the subject property sometime prior to 1973. Two additional warehouse structures were built in the northeast portion of the subject property sometime prior to 1979. By 2005 development of the subject property included 18 structures consisting of a 16,200 square-foot office building; a 4,000 square-foot office building; a 1,200 square-foot building identified as a "Receiving Office"; three approximately 56,250 square-foot warehouses; eight approximately 43,000 square-foot warehouses; two 66,500 square-foot warehouses; an approximately 70,000 square-foot warehouse; and a 4,800 square-foot machine shop. Two warehouse structures located in the northwest portion of the subject property were demolished sometime prior to 2012, the remaining subject buildings were demolished sometime prior to 2016.

At least three known septic systems were associated with the former structures on the subject property, two of which were identified during SALEM's November 19, 2020 site reconnaissance as remaining at the subject property. The former septic systems may have acted as a conduit for contaminants to enter on-site soil from potential past unauthorized disposal of hazardous substances and/or petroleum products utilized for vehicle maintenance into drains, sinks and toilets. The suspected former septic systems present an REC to the subject property and additional investigation is recommended to determine if on-site soils have been impacted by past unauthorized releases of petroleum hydrocarbons into the septic system.

Historic operations at the subject property included the handling and storage of cotton which required an extensive fire suppression system. Two water basins were historically located in the southern portion of the subject property. SALEM personnel located upwards of 25 features across the subject property indicative of a fire suppression system including stand pipes, traffic bollards, and fire hydrants. The system reportedly included diesel-powered water pumps supplied from an AST historically located in the south-central portion of the subject property. The former diesel AST location was identifiable by concrete footings and a fire extinguisher. Additional concrete footings indicative of propane ASTs were observed in the north-central portion of the subject property. No staining or signs of leakage were observed in the vicinity of the former ASTs.

The historic California Compress facility at the subject property operated four USTs consisting of a 10,000-gallon fuel oil UST historically located on what is now the north adjoining property; a 4,000-gallon double-walled steel diesel UST; a 4,000-gallon single-walled steel diesel UST; and a 1,000-gallon single-walled steel regular unleaded gasoline UST historically located in the southwest portion of the subject property. Records indicate all UST were properly permitted and removed under the regulatory agency oversight of FCEHD. A record of a "Hazardous Material Release" was recorded on June 5, 1995 indicating soil contamination from petroleum products discovered during removal of a UST. Records retained by the RWQCB indicate that FCEHD issued a "case closed" designation for the California Compress LUST site on July 3, 1996. The California Compress LUST site presents a HREC to the subject property.

Current Uses

At the time of SALEM's November 19, 2020 site reconnaissance, the subject property was observed to be vacant land mostly covered in asphalt and concrete with areas of grass and remnants of former landscaping.

During SALEM's site reconnaissance, two water wells were observed on the subject property. No information regarding analytical testing or construction specifications of the on-site wells were found during the course of this assessment. If the water wells are not to be used in any planned redevelopment of the subject property, SALEM recommends properly destroying the wells in accordance with all applicable state and local guidelines.

A soil mound was observed in the southern portion of the subject property and was reported to have been excavation dirt and asphalt produced when the floor of a warehouse was switched from asphalt to concrete to accommodate heavy machinery. No obvious visual evidence of hazardous substances and/or petroleum products or staining was observed on the surface of the stockpile. Based upon the absence of documentation regarding the source of the stockpiled soil SALEM recommends collecting samples of the stockpiled soil in order to determine if the soil has been impacted by constituents of concern prior to either transporting the soil off-site for disposal or utilizing the soil on-site as clean-fill if needed during the redevelopment of the subject property.

During the visual observations of the subject property, no hazardous substances or petroleum products were observed to be stored or handled on the subject property. No standing water or major depressions were observed on the subject property. Based on SALEM's, field observations, and contacts with state and local regulatory agencies, the potential for adverse environmental impacts to the subject property associated with current site use appears to be low and therefore, there is a low potential for RECs to exist in connection with the current use of the subject property.

Adjacent Properties

Based on SALEM's field observations, review of the EDR Radius Map Report and consultation with state and local regulatory agencies, there does not appear to be RECs in connection with the subject property from adjoining property uses.

11.1 Evaluation of Data Gaps/Data Failure

In accordance with ASTM E1527-13 guidance, data gaps represent a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice. Data failure represents the failure to achieve the historical research objects of this practice even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap. The following is a summary of data gaps encountered in the process of preparing this report including an observation as the presumed significance of that data gap to the conclusions of this assessment.

- Some of the intervals between documented sources exceeded five years.

However, taken in consideration with the available information obtained in the course of preparing this report in conjunction with professional experience, there is no evidence to suggest that this data gap might alter the conclusions of this assessment.

12.0 SUMMARY AND CONCLUSIONS

We have performed a *Phase I Environmental Site Assessment* in conformance with the scope and limitations of ASTM Practice E1527-13 of the Former California Compress Facility site 2740 West Nielsen Avenue, located approximately 880 feet west of South Hughes Avenue in Fresno, California, (Fresno County APNs 458-020-71 and 458-020-72), the *property*. Any exceptions to, or deletions from, this practice are described in Section 13 of this *report*. During the course of this assessment, SALEM identified the following evidence of RECs in connection with the subject property as defined by ASTM E1527-13:

- At least three known septic systems were associated with the former structures on the subject property, two of which were visually identified during SALEM's November 19, 2020 site reconnaissance as remaining at the subject property. The former septic systems may have acted as a conduit for contaminants to enter on-site soil from potential past unauthorized disposal of hazardous substances and/or petroleum products utilized for vehicle maintenance into drains, sinks and toilets. SALEM recommends conducting a LSA in the vicinity of the septic systems to determine if on-site soils have been impacted by unauthorized releases of the constituents of concern into the septic systems.

- Historic operations at the subject property included the handling and storage of cotton which required an extensive fire suppression system. Two water basins were historically located in the southern portion of the subject property. SALEM personnel located upwards of 25 features across the subject property indicative of a fire suppression system including stand pipes, traffic bollards, and fire hydrants. The system reportedly included diesel-powered water pumps supplied from an AST historically located in the south-central portion of the subject property. The former diesel AST location was identifiable by concrete footings and a fire extinguisher. Additional concrete footings indicative of propane ASTs were observed in the north-central portion of the subject property. No staining or signs of leakage were observed in the vicinity of the former ASTs. However, SALEM recommends conducting a LSA to assess on-site shallow soils for potential petroleum hydrocarbon impacts in the vicinity of the former diesel AST.

- A soil mound was observed in the southern portion of the subject property and was reported to have been excavation dirt and asphalt produced when the floor of a warehouse was switched from asphalt to concrete to accommodate heavy machinery. No obvious visual evidence of hazardous substances and/or petroleum products or staining was observed on the surface of the stockpile. Based upon the absence of documentation regarding the source of the stockpiled soil, SALEM recommends collecting samples of the stockpiled soil in order to determine if the soil has been impacted by constituents of concern prior to either transporting the soil off-site for disposal or utilizing the soil on-site as clean-fill if needed during the redevelopment of the subject property.

The following HREC was identified:

- The former California Compress facility operated four USTs consisting of a 10,000-gallon fuel oil UST historically located on what is now the north adjacent property; a 4,000-gallon double-walled steel diesel UST; a 4,000-gallon single-walled steel diesel UST; and a 1,000-gallon single-walled steel regular unleaded gasoline UST historically located in the southwest portion of the subject

property. Records indicate all UST were properly permitted and removed under the regulatory agency oversight of FCEHD. A record of a "Hazardous Material Release" was recorded on June 5, 1995 indicating soil contamination from petroleum products discovered during removal of a UST. RWQCB records indicate that FCEHD issued a "case closed" designation for the California Compress LUST site on July 3, 1996.

Additionally, the following Site Development issue was identified:

- During SALEM's site reconnaissance, two water wells were observed on the subject property. No information regarding analytical testing or construction specifications of the on-site wells was found during the course of this assessment. If the water wells are not to be used in any planned redevelopment of the subject property, SALEM recommends properly destroying the wells in accordance with all applicable state and local guidelines.

13.0 LIMITATIONS

This Phase I ESA Report has been prepared for the exclusive use of **Scannell Properties** and its subsidiaries and affiliates. Unauthorized use of or reliance on the information contained in this report, unless given express written consent by SALEM and **Scannell Properties** is strictly prohibited. The following limitations and exceptions apply:

- The scope of work completed was designed solely to meet the needs of SALEM's client. SALEM shall not be liable for any unintended usage of this report by another party. In addition, based on the ASTM guidelines, the ESA is only valid if completed within 180 days of an acquisition or the transaction necessitating the ESA.

- No ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. This ESA was designed to reduce, but not eliminate the potential for RECs at the subject property, within reasonable limits of time and cost. The ESA is not intended to be exhaustive or all-inclusive and does not represent a guarantee of the identification of all possible environmental risk.

- An ESA is intended to be a non-intrusive investigation and generally does not include sampling or testing of air, soil, water or building materials. No destructive testing was completed and concealed areas, such as behind walls or within machinery, were not accessed. Testing, if any, is designed solely to meet the needs of the ESA, not to meet any local, state or federal regulations and should not be utilized as such.

- Information in this report is based on personal interviews, government records, published resources, and various historical documents. Accuracy and completeness of information varies among information sources and is often inaccurate or incomplete. The information utilized in this ESA is from sources deemed to be reliable; however, no representation or warranty is made as to the accuracy thereof. SALEM will have no ongoing obligation to obtain and include information that was not reasonably ascertainable, practically reviewable or provided to SALEM in a reasonable timeframe to formulate an opinion and complete the assessment by the agreed upon due date.

- Unless specifically identified in the scope of work, the ESA excludes consideration of non-ASTM scope issues including, but not limited to, lead in drinking water, asbestos, lead-based paint, industrial hygiene, health and safety, endangered species, wetlands, indoor air quality, vapor intrusion, electromagnetic fields, biological agents or mold.

- The ESA includes some information that may be relevant to regulatory compliance, but is not intended and shall not be construed as a compliance audit and cannot be considered a verification of regulatory compliance. While the general environmental setting of the subject property is described, this assessment is not intended to be a formal flood plain or wetland determination, and no warranty is made thereof. Depending on its past, present or future intended use, the property under review may or may not be subject to regulation and permitting under environmental and health and safety laws, such as, but not limited to, the Clean Air Act, the Clean Water Act, the Solid Waste Disposal Act, the Occupational Safety and Health Act, and other federal, state and local regulations. SALEM assumes no responsibility or liability respecting regulatory permitting or compliance issues.

- Client is advised that if the ESA is obtained with the intent of qualifying the purchaser as an innocent landowner, contiguous property owner, or bona fide prospective purchaser under CERCLA, there will be continuing obligations of due care and responsiveness and additional legal requirements that likely apply to such status. SALEM accepts and undertakes no responsibility as to such requirements and advises that counsel be separately consulted with respect to such requirements.

- The findings and conclusions presented in this Phase I ESA Report are based on field review and observations and on data obtained from the sources listed in the report. The findings of this report are valid as of the present. The passage of time, natural processes or human intervention on the subject property or adjacent properties and changes in the regulations can cause changed conditions which can invalidate the findings and conclusions presented in this report.

14.0 QUALIFICATIONS

This Phase I ESA was conducted under the supervision or responsible charge of SALEM's undersigned environmental professional with oversight from the undersigned registered professional. The work was conducted in accordance with ASTM E1527-13, generally accepted industry standards for environmental due diligence in place at the time of the preparation of this report, and SALEM's quality-control policies.

We declare that, to the best of our professional knowledge and belief, we meet the definition of environmental professional as defined in §312.10 of 40 CFR 312 and we have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

15.0 REFERENCES

The following list summarizes the references utilized in preparing this report:

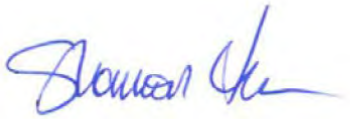
- Aerial photographs provided by Environmental Data Resources, Inc.
- Cal-EPA Voluntary Cleanup Program records.
- California EPA, Department of Toxic Substances Control records.
- California Department of Conservation – Division of Oil, Gas, and Geothermal Resources records.
- California Regional Water Quality Control Board records.
- California Statewide Radon Survey Screening results.
- City Directory Abstract Report compiled by EDR.
- City of Fresno Building Department records.

- City of Fresno Fire Department records.
- City of Fresno, Public Utilities, Water Division records.
- City of Fresno, Public Utilities, Wastewater Division records.
- Federal and State regulatory agency lists compiled by EDR.
- Fresno County Assessor's Office records.
- Fresno County Environmental Health Division records.
- Pipeline and Hazardous Materials Safety Administration, National Pipeline Mapping System.
- Regional Water Quality Control Board records.
- Sanborn Fire Insurance Maps for Fresno, California (EDR).
- U.S. Fish and Wildlife Service National Wetlands Mapper.
- U.S. Geological Survey, 7.5 minute Fresno South, California topographic quadrangle map, dated 2012.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (559) 271-9700.

Respectfully submitted,

SALEM Engineering Group, Inc.



Shannon Lodge, PG
Senior Project Manager

Clarence Jiang, PE, GE
Project Engineer
RCE No. 50233/ RGE No. 2477

Photo 1: View of subject property from the north facing south.

Photo 2: View of subject property from the north facing southeast.

PHOTOGRAPHS	PROJECT NO. 1-420-1016	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DATE: January 2021	
	PAGE: Page 1 of 17	

Photo 3: View of subject property from the north facing southwest.

Photo 4: View of subject property from the northeast facing south.

Photo 5: View of subject property from the northeast corner facing west.

Photo 6: View of subject property from the east corner facing west.

Photo 7: View of subject property from the southeast facing northwest.

Photo 8: View of subject property from the southeast facing west.

Photo 9: View of storm drain along the southern boundary.

Photo 10: View of pump near the southern boundary.

Photo 11: View of pipes and traffic ballards near the southern boundary.

Photo 12: View of pile asphalt rubble.

Photo 13: View of old building pad near the southwest corner with apparent restrooms.

Photo 14: View of subject property from the southwest facing east.

Photo 15: View of subject property from the southwest facing northeast.

Photo 16: View of subject property from the southwest facing north.

Photo 17: View of pad with apparent old pump near the southwest corner.

Photo 18: View of dirt patch near the southwest corner.

Photo 19: View of culvert along the western boundary.

Photo 20: View of erosion along the western boundary.

Photo 21: View of subject property from the northwest facing east.

Photo 22: View of subject property from the northwest facing south.

Photo 23: View of old building pad west-central with trolley rail system.

Photo 24: View of example of old building pad.

Photo 25: View of apparent old fire hydrants near the northern boundary.

Photo 26: View of northern central old AST stand pipes and pad.

Photo 27: View of adjoining property to the north-northwest.

Photo 28: View of adjoining property to the north.

Photo 29: View of adjoining property to the north-northeast.

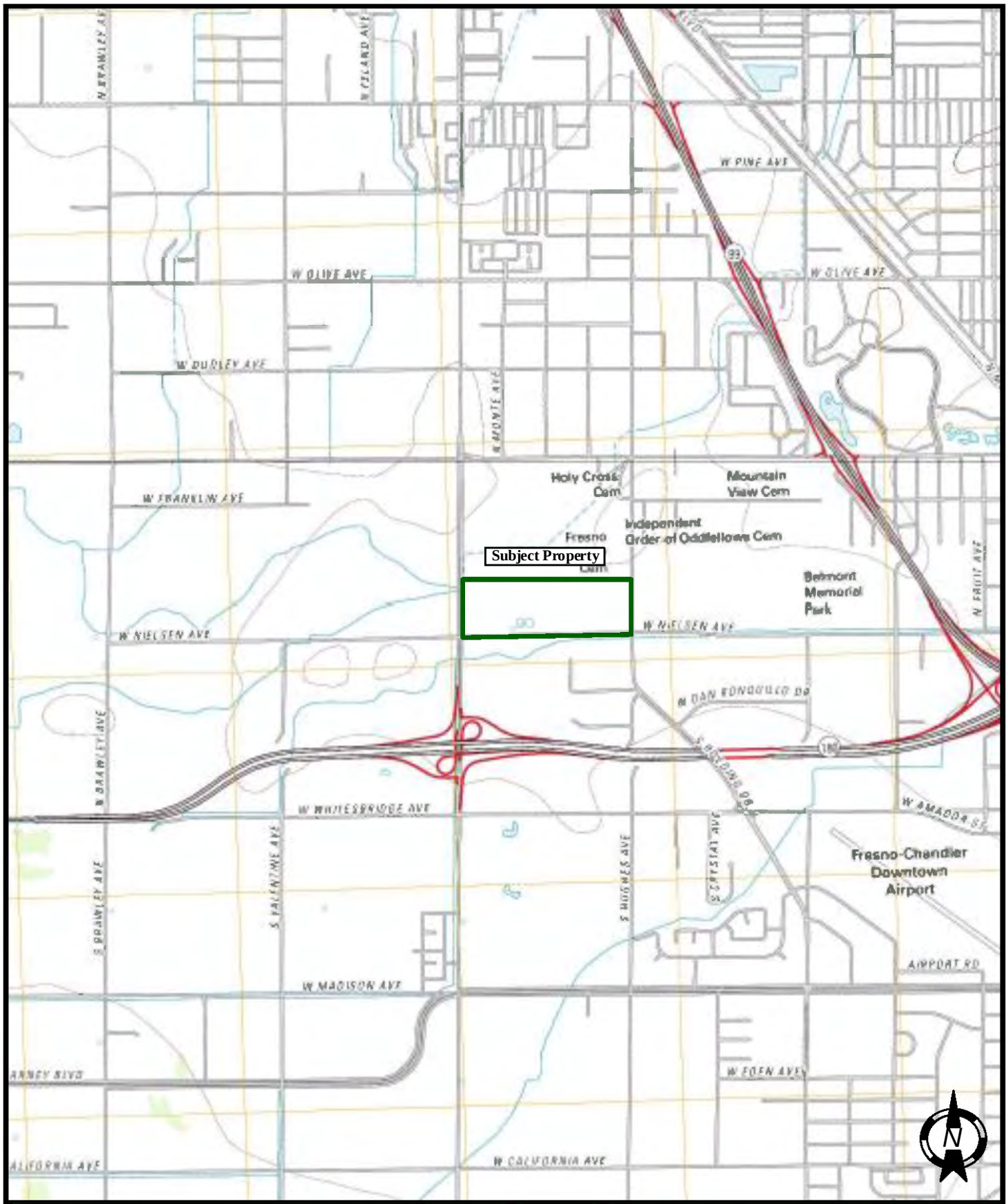
Photo 30: View of adjoining property to the east.

Photo 31: View of adjoining property to the south-southwest.

Photo 32: View of adjoining property to the south.

Photo 33: View of adjoining property to the west-southwest.

Photo 34: View of adjoining property to the west.



TOPOGRAPHIC MAP (2012)	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	FIGURE NO.: 1	

AERIAL PHOTOGRAPH (2016)	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	FIGURE NO.: 2	

SITE MAP	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	FIGURE NO.: 3	

APPENDIX

A

First American

Commitment

ALTA Commitment for Title Insurance

ISSUED BY

First American Title Insurance Company

File No: NCS-1034411-CHI2

COMMITMENT FOR TITLE INSURANCE

Issued By

FIRST AMERICAN TITLE INSURANCE COMPANY

NOTICE

IMPORTANT-READ CAREFULLY: THIS COMMITMENT IS AN OFFER TO ISSUE ONE OR MORE TITLE INSURANCE POLICIES. ALL CLAIMS OR REMEDIES SOUGHT AGAINST THE COMPANY INVOLVING THE CONTENT OF THIS COMMITMENT OR THE POLICY MUST BE BASED SOLELY IN CONTRACT.

THIS COMMITMENT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACONTRACTUAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

THE COMPANY'S OBLIGATION UNDER THIS COMMITMENT IS TO ISSUE A POLICY TO A PROPOSED INSURED IDENTIFIED IN SCHEDULE A IN ACCORDANCE WITH THE TERMS AND PROVISIONS OF THIS COMMITMENT. THE COMPANY HAS NO LIABILITY OR OBLIGATION INVOLVING THE CONTENT OF THIS COMMITMENT TO ANY OTHER PERSON.

COMMITMENT TO ISSUE POLICY

Subject to the Notice; Schedule B, Part I-Requirements; Schedule B, Part II-Exceptions; and the Commitment Conditions, ***First American Title Insurance Company***, a Nebraska Corporation (the "Company"), commits to issue the Policy according to the terms and provisions of this Commitment. This Commitment is effective as of the Commitment Date shown in Schedule A for each Policy described in Schedule A, only when the Company has entered in Schedule A both the specified dollar amount as the Proposed Policy Amount and the name of the Proposed Insured.

If all of the Schedule B, Part I-Requirements have not been met within six months after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

First American Title Insurance Company

Dennis J. Gilmore, President

Greg L. Smith, Secretary

If this jacket was created electronically, it constitutes an original document.

This page is only a part of a 2016 ALTA® Commitment for Title Insurance issued by First American Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I-Requirements; Schedule B, Part II-Exceptions.

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

COMMITMENT CONDITIONS

1. DEFINITIONS

(a) "Knowledge" or "Known": Actual or imputed knowledge, but not constructive notice imparted by the Public Records.
(b) "Land": The land described in Schedule A and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is to be insured by the Policy.
(c) "Mortgage": A mortgage, deed of trust, or other security instrument, including one evidenced by electronic means authorized by law.
(d) "Policy": Each contract of title insurance, in a form adopted by the American Land Title Association, issued or to be issued by the Company pursuant to this Commitment.
(e) "Proposed Insured": Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.
(f) "Proposed Policy Amount": Each dollar amount specified in Schedule A as the Proposed Policy Amount of each Policy to be issued pursuant to this Commitment.
(g) "Public Records": Records established under state statutes at the Commitment Date for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge.
(h) "Title": The estate or interest described in Schedule A.

2. If all of the Schedule B, Part I—Requirements have not been met within the time period specified in the Commitment to Issue Policy, this Commitment terminates and the Company's liability and obligation end.

3. The Company's liability and obligation is limited by and this Commitment is not valid without:
(a) the Notice;
(b) the Commitment to Issue Policy;
(c) the Commitment Conditions;
(d) Schedule A;
(e) Schedule B, Part I—Requirements; and
(f) Schedule B, Part II—Exceptions.

4. COMPANY'S RIGHT TO AMEND

The Company may amend this Commitment at any time. If the Company amends this Commitment to add a defect, lien, encumbrance, adverse claim, or other matter recorded in the Public Records prior to the Commitment Date, any liability of the Company is limited by Commitment Condition 5. The Company shall not be liable for any other amendment to this Commitment.

5. LIMITATIONS OF LIABILITY

(a) The Company's liability under Commitment Condition 4 is limited to the Proposed Insured's actual expense incurred in the interval between the Company's delivery to the Proposed Insured of the Commitment and the delivery of the amended Commitment, resulting from the Proposed Insured's good faith reliance to:
  (i) comply with the Schedule B, Part I—Requirements;
  (ii) eliminate, with the Company's written consent, any Schedule B, Part II—Exceptions; or
  (iii) acquire the Title or create the Mortgage covered by this Commitment.
(b) The Company shall not be liable under Commitment Condition 5(a) if the Proposed Insured requested the amendment or had Knowledge of the matter and did not notify the Company about it in writing.
(c) The Company will only have liability under Commitment Condition 4 if the Proposed Insured would not have incurred the expense had the Commitment included the added matter when the Commitment was first delivered to the Proposed Insured.
(d) The Company's liability shall not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Conditions 5(a)(i) through 5(a)(iii) or the Proposed Policy Amount.
(e) The Company shall not be liable for the content of the Transaction Identification Data, if any.
(f) In no event shall the Company be obligated to issue the Policy referred to in this Commitment unless all of the Schedule B, Part I—Requirements have been met to the satisfaction of the Company.
(g) In any event, the Company's liability is limited by the terms and provisions of the Policy.

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

6. LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT

(a) Only a Proposed Insured identified in Schedule A, and no other person, may make a claim under this Commitment.
(b) Any claim must be based in contract and must be restricted solely to the terms and provisions of this Commitment.
(c) Until the Policy is issued, this Commitment, as last revised, is the exclusive and entire agreement between the parties with respect to the subject matter of this Commitment and supersedes all prior commitment negotiations, representations, and proposals of any kind, whether written or oral, express or implied, relating to the subject matter of this Commitment.
(d) The deletion or modification of any Schedule B, Part II—Exception does not constitute an agreement or obligation to provide coverage beyond the terms and provisions of this Commitment or the Policy.
(e) Any amendment or endorsement to this Commitment must be in writing and authenticated by a person authorized by the Company.
(f) When the Policy is issued, all liability and obligation under this Commitment will end and the Company's only liability will be under the Policy.

7. IF THIS COMMITMENT HAS BEEN ISSUED BY AN ISSUING AGENT

The issuing agent is the Company's agent only for the limited purpose of issuing title insurance commitments and policies. The issuing agent is not the Company's agent for the purpose of providing closing or settlement services.

8. PRO-FORMA POLICY

The Company may provide, at the request of a Proposed Insured, a pro-forma policy illustrating the coverage that the Company may provide. A pro-forma policy neither reflects the status of Title at the time that the pro-forma policy is delivered to a Proposed Insured, nor is it a commitment to insure.

9. ARBITRATION

Arbitration provision intentionally removed.

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

Transaction Identification Data for reference only:

Issuing Agent: First American Title Insurance Company National Commercial Services
Commitment No.: NCS-1034411-CHI2
Property Address: 2740 West Nielsen Avenue, Fresno, CA
Revision No.:

Issuing Office: 30 North La Salle, Suite 2700, Chicago, IL 60602-3847
Issuing Office File No.: NCS-1034411-CHI2
Escrow Officer/Assistant: /Juanita Chandler
Phone: /(312)917-7219
Email: /JChandler@firstam.com
Title Officer/Assistant: Patricia Rogers/
Phone: (312)553-0471/
Email: progers@firstam.com/

SCHEDULE A

1. Commitment Date: September 30, 2020 at 7:30 AM
2. Policy to be issued:

   (a) ☒ 2006 ALTA® Extended Owner Policy
   Proposed Insured: Scannell Properties, LLC, an Indiana limited liability company
   Proposed Policy Amount: $ 135,036.00

   (b) ☒ 2006 ALTA® Extended Loan Policy
   Proposed Insured: To Be Determined
   Proposed Policy Amount: $ To Be Determined

   (c) ☐ 2006 ALTA® Policy
   Proposed Insured:
   Proposed Policy Amount: $

3. The estate or interest in the Land described or referred to in this Commitment is

   Fee

4. The Title is, at the Commitment Date, vested in:

   Daoudian Investments, LLC, a California Limited Liability Company

5. The Land is described as follows:

   See Exhibit "A" attached hereto and made a part hereof

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

Commitment No.: NCS-1034411-CHI2

SCHEDULE B, PART I

Requirements

All of the following Requirements must be met:

A. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.

B. Pay the agreed amount for the estate or interest to be insured.

C. Pay the premiums, fees, and charges for the Policy to the Company.

D. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.

E. Releases(s) or Reconveyance(s) of Item(s): 14

F. Other: None

G. You must give us the following information:
   a. Any off record leases, surveys, etc.
   b. Statement(s) of Identity, all parties.
   c. Other: None

The following additional requirements, as indicated by "X", must be met:

[X] H. Provide information regarding any off-record matters, which may include, but are not limited to: leases, recent works of improvement, or commitment statements in effect under the Environmental Responsibility Acceptance Act, Civil Code Section 850, et seq.

The Company's Owner's Affidavit form (as provided by the company) must be completed and submitted prior to close in order to satisfy this requirement. This Commitment will then be subject to such further exceptions and/or requirements as may be deemed necessary.

[X] I. An ALTA/NSPS survey of recent date, which complies with the current minimum standard detail requirements for ALTA/NSPS land title surveys, must be submitted to the Company for review. This Commitment will then be subject to such further exceptions and/or requirements as may be deemed necessary.

This page is only a part of a 2016 ALTA® Commitment for Title Insurance issued by First American Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I-Requirements; Schedule B, Part II-Exceptions.

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

[X] J. The following LLC documentation is required from:

(i) a copy of the Articles of Organization
(ii) a copy of the Operating Agreement, if applicable
(iii) a Certificate of Good Standing and/or other evidence of current Authority to Conduct Business within the State
(iv) express Company Consent to the current transaction

[] K. The following partnership documentation is required **:**

(i) a copy of the partnership agreement, including all applicable amendments thereto
(ii) a Certificate of Good Standing and/or other evidence of current Authority to Conduct Business within the State
(iii) express Partnership Consent to the current transaction

[] L. The following corporation documentation is required:

(i) a copy of the Articles of Incorporation
(ii) a copy of the Bylaws, including all applicable Amendments thereto
(iii) a Certificate of Good Standing and/or other evidence of current Authority to Conduct Business within the State
(iv) express Corporate Resolution consenting to the current transaction

[X] M. Based upon the Company's review of that certain partnership/operating agreement dated **Not disclosed** for the proposed insured herein, the following requirements must be met:
Any further amendments to said agreement must be submitted to the Company, together with an affidavit from one of the general partners or members stating that it is a true copy, that said partnership or limited liability company is in full force and effect, and that there have been no further amendments to the agreement. This Commitment will then be subject to such further requirements as may be deemed necessary.

[] N. A copy of the complete lease, as referenced in Schedule A, #3 herein, together with any amendments and/or assignments thereto, must be submitted to the Company for review, along with an affidavit executed by the present lessee stating that it is a true copy, that the lease is in full force and effect, and that there have been no further amendments to the lease. This Commitment will then be subject to such further requirements as may be deemed necessary.

[X] O. Approval from the Company's Underwriting Department must be obtained for issuance of the policy contemplated herein and any endorsements requested thereunder. This Commitment will then be subject to such further requirements as may be required to obtain such approval.

[X] P. Potential additional requirements, if ALTA Extended coverage is contemplated hereunder, and work on the land has commenced prior to close, some or all of the following requirements, and any other requirements which may be deemed necessary, may need to be met:

[X] Q. The Company's "Indemnity Agreement I" must be executed by the appropriate parties.

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

[X] R. Financial statements from the appropriate parties must be submitted to the Company for review.

[X] S. A copy of the construction contract must be submitted to the Company for review.

[X] T. An inspection of the Land must be performed by the Company for verification of the phase of construction.

[X] U. The Company's "Mechanic's Lien Risk Addendum" form must be completed by a Company employee, based upon information furnished by the appropriate parties involved.

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

Commitment No.: NCS-1034411-CHI2

SCHEDULE B, PART II

Exceptions

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

The Policy will not insure against loss or damage resulting from the terms and provisions of any lease or easement identified in Schedule A, and will include the following Exceptions unless cleared to the satisfaction of the Company:

1. Any defect, lien, encumbrance, adverse claim, or other matter that appears for the first time in the Public Records or is created, attaches, or is disclosed between the Commitment Date and the date on which all of the Schedule B, Part I-Requirements are met.

2. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.

3. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

4. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.

5. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.

6. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

7. General and special taxes and assessments for the fiscal year 2020-2021, a lien not yet due or payable.

8. The lien of supplemental taxes, if any, assessed pursuant to Chapter 3.5 commencing with Section 75 of the California Revenue and Taxation Code.

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

9. An easement for A Ditch About 10 Feet in Width, with Necessary Embankments and incidental purposes in the document recorded in Book 70 of Deeds, Page 348.

   The location of the easement cannot be determined from record information.

10. An easement for DITCH AND RIGHTS and incidental purposes in the document recorded as Book 17 Page 73 of Record of Surveys.

11. An Easement for Cole Ditch and Rights Incidental Thereto as Shown On The Recorded Map of Said Tract, and as Disclosed By an Agreement between Vagim Packing Co., Et Al, and Fresno Irrigation District, Dated October 1, 1946 and Recorded February 14, 1947 in Book 2494 Page 185 as Instrument No. 9004 of Official Records.

12. Right of Way over The West 30 Feet of Lot 24 for Marks Avenue, as Shown On The Survey Recorded March 14, 1955, in Book 17 Page 73 of Record of Surveys, Fresno County Records.

    Any Easement for The Installation and Maintenance of A Sewer Line over The Westerly Portion of Said Property, in Favor of The City of Fresno, AS Disclosed By The Agreement.

13. A Right of Way and Easement to Flow and Conduct Water in and Through an Irrigation Canal, now known as Houghton Canal and The Rights Incidental Thereto, as Disclosed By an Agreement Dated October 1, 1962, between City of Fresno and Fresno Irrigation District, Recorded October 1, 1962, in Book 4769 Page 561 as Instrument No. 75512 of Official Records.

14. A claim of lien recorded February 15, 1985 as Instrument No. 85-15161 of Official Records.

Lien claimant:	Bruno Electric Service, Inc
Amount:	$7,097.65

    Notice of pendency of action recorded May 17, 1985 as Instrument No. 85-49056 of Official Records.

Court:	Municipal Court of the State of California in and for the County of Fresno
Case No.:	101822-5
Plaintiff:	Bruno Electric Service, Inc., a Corporation
Defendant:	Dean Steinbach, Dean Steinbach dba South Sierra Milling, South Sierra Milling, California Compress Co., Inc., a California Corporation, Busch Electrical Services, Inc., Fowler Crane Service, Inc., and Does I through XXX, inclusive
Purpose:	Foreclosure of a mechanics' lien.

15. The effect of an instrument entitled "Before the Board of Directors of the Fresno Metropolitan Flood Control District Resolution Providing for the Recordation of a Map Identifying Areas Subject to Payment of Drainage Fees and/or Requirements to Construct Planned Local Drainage Facilities", executed by Fresno Metropolitan Flood Control District and City of Fresno, recorded July 31, 1995 as Instrument No. 95092128 of Official Records.

16. The fact that the land lies within the boundaries of the Roeding Business Park Redevelopment Project Area, as disclosed by the document recorded August 15, 1996 as Instrument No. 96-107262 of Official Records.

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

17. An easement for Public Street and incidental purposes, recorded March 09, 2001 as Instrument No. 01-31534 of official records.

In Favor of:	Redevelopment Agency of The City of Fresno, A Public Body Corporate and Politic
Affects:	as described therein

above mention easement Quitclaim Deed recorded June 27, 2006 as Instrument No. 2006-0133466 of Official Records.

18. An easement for Public Street and incidental purposes, recorded January 26, 2004 as Instrument No. 04-17844 of official records.

In Favor of:	City of Fresno, A Municipal Corporation
Affects:	as described therein

19. The terms, provisions and easement(s) contained in the document entitled "Storm Water Easement Agreement" recorded July 26, 2013 as Instrument No. 2013-0104886-00 of Official Records.

(Affects Parcel 1)

20. The effect of a deed dated December 26, 2018, executed by Daoudian Investments, LLC, a California Limited Liability Company, as Grantor, to DI Nielsen Marks, LLC, as Grantee, recorded December 28, 2018, as Instrument No. 2018-0154302 of Official Records.

NOTE: The Company will require an Affidavit of Execution and Delivery of Deed executed by the grantor in the presence of a First American notary or other satisfactory proof that the deed was valid prior to removing this exception or insuring the contemplated transaction.

21. Any statutory lien for labor or materials arising by reason of a work of improvement now in progress or recently completed.

22. Additional matters, if any, following review by the Company's Waterways and Boundaries Underwriters.

23. Any facts, rights, interests or claims which would be disclosed by a correct ALTA/NSPS survey.

24. Water rights, claims or title to water, whether or not shown by the Public Records.

25. We find no outstanding voluntary liens of record affecting subject property. An inquiry should be made concerning the existence of any unrecorded lien or other indebtedness which could give rise to any security interest in the subject property.

26. Rights of parties in possession.

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

ALERT - CA Senate Bill 2 imposes an additional fee of $75 up to $225 at the time of recording on certain transactions effective January 1, 2018. Please contact your First American Title representative for more information on how this may affect your closing.

1. Taxes for proration purposes only for the fiscal year 2019-2020.

First Installment:	$5,831.06, PAID
Second Installment:	$1,659.72, PAID
Tax Rate Area:	005-989
APN:	458-020-71

   (Affects Parcel 1)

2. Taxes for proration purposes only for the fiscal year 2019-2020.

First Installment:	$6,729.74, PAID
Second Installment:	$1,757.28, PAID
Tax Rate Area:	005-989
APN:	458-020-72

   (Affects Parcel 2)

3. Supplemental taxes for the year 2018-2019 assessed pursuant to Chapter 3.5 commencing with Section 75 of the California Revenue and Taxation Code.

First Installment:	$1,068.76, PAID
Penalty:	$0.00
Second Installment:	$0.00, NO TAX DUE
Penalty:	$0.00
Tax Rate Area:	005-989
A. P. No.:	458-020-71-YY

   (Affects Parcel 1)

4. Supplemental taxes for the year 2018-2019 assessed pursuant to Chapter 3.5 commencing with Section 75 of the California Revenue and Taxation Code.

First Installment:	$1,273.80, PAID
Penalty:	$0.00
Second Installment:	$0.00, NO TAX DUE
Penalty:	$0.00
Tax Rate Area:	005-989
A. P. No.:	458-020-72-XX

   (Affects Parcel 2)

5. The property covered by this report is vacant land.

6. According to the public records, there has been no conveyance of the land within a period of twenty four months prior to the date of this report, except as follows:

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

A document recorded December 28, 2018 as Instrument No. 2018-0154302 of Official Records
From: Daoudian Investments, LLC, A California Limited Liability Company
To: Di Nielsen Marks, LLC

7. This preliminary report/commitment was prepared based upon an application for a policy of title insurance that identified land by street address or assessor's parcel number only. It is the responsibility of the applicant to determine whether the land referred to herein is in fact the land that is to be described in the policy or policies to be issued.

The map attached, if any, may or may not be a survey of the land depicted thereon. First American Title Insurance Company expressly disclaims any liability for loss or damage which may result from reliance on this map except to the extent coverage for such loss or damage is expressly provided by the terms and provisions of this Commitment or the Policy, if any, to which the map is attached.

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

Exhibit A

File No.: NCS-1034411-CHI2

The Land referred to herein below is situated in the City of Fresno, County of Fresno, State of California, and is described as follows:

PARCEL 1:

PARCEL C AS SHOWN ON LOT LINE ADJUSTMENT NO. 2013-06, AS EVIDENCED BY DOCUMENT RECORDED JUNE 11, 2013 AS INSTRUMENT NO. 2013-0082690 OF OFFICIAL RECORDS OF FRESNO COUNTY, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THAT PORTION OF VOLUNTARY PARCEL MERGER NO. 2013-03, AS DOCUMENT NO. 2013-0082689, OF OFFICIAL RECORDS OF FRESNO COUNTY, DESCRIBED AS FOLLOWS:

THAT PORTION OF LOTS 20 TO 29, INCLUSIVE, OF WEST FRESNO, IN THE CITY OF FRESNO, COUNTY OF FRESNO, STATE OF CALIFORNIA, ACCORDING TO THE MAP THEREOF RECORDED IN VOLUME 2 OF PLATS, PAGE 50, LYING SOUTH OF A LINE THAT IS PARALLEL WITH AND 358.71 FEET SOUTH OF THE SOUTH LINE OF THAT CERTAIN STRIP OF LAND 100 FEET WIDE GRANTED TO THE SOUTHERN PACIFIC RAILROAD COMPANY BY DEED DATED MAY 13, 1982 RECORDED IN BOOK 145, PAGE 390 OF DEEDS, AND WEST OF A LINE THAT IS PARALLEL WITH AND 1169.00 FEET EAST OF THE WEST LINE OF SAID LOTS 24 AND 25.

EXCEPTING THEREFROM THAT PORTION THEREOF GRANTED TO FRESNO IRRIGATION DISTRICT BY AGREEMENT DATED OCTOBER 1, 1946 RECORDED FEBRUARY 14, 1947 IN BOOK 2494 PAGE 185 OF OFFICIAL RECORDS.

PARCEL 2:

PARCEL D AS SHOWN ON LOT LINE ADJUSTMENT NO. 2013-06, AS EVIDENCED BY DOCUMENT RECORDED JUNE 11, 2013 AS INSTRUMENT NO. 2013-0082690 OF OFFICIAL RECORDS OF FRESNO COUNTY, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THAT PORTION OF VOLUNTARY PARCEL MERGER NO. 2013-03, AS DOCUMENT NO. 2013-0082689 OF OFFICIAL RECORDS OF FRESNO COUNTY, AND LOTS 17 TO 19 OF WEST FRESNO, IN THE CITY OF FRESNO, COUNTY OF FRESNO, STATE OF CALIFORNIA, ACCORDING TO THE MAP THEREOF RECORDED IN VOLUME 2 OF PLATS, PAGE 50, FRESNO COUNTY RECORDS, DESCRIBED AS FOLLOWS:

THAT PORTION OF LOTS 17 TO 32, INCLUSIVE, OF SAID WEST FRESNO LYING SOUTH OF A LINE THAT IS PARALLEL WITH AND 358.71 FEET SOUTH OF THE SOUTH LINE OF THAT CERTAIN STRIP OF LAND 100 FEET WIDE GRANTED TO THE SOUTHERN PACIFIC RAILROAD COMPANY BY DEED DATED MAY 13, 1982 RECORDED IN BOOK 145, PAGE 390 OF DEEDS, AND EAST OF A LINE THAT IS PARALLEL WITH AND 1169.00 FEET EAST OF THE WEST LINE OF SAID LOTS 24 AND 25.

For conveyancing purposes only: APN 458-020-71 (Affects Parcel 1) 458-020-72 (Affects Parcel 2)

Copyright 2006-2016 American Land Title Association. All rights reserved.

The use of this Form (or any derivative thereof) is restricted to ALTA licensees and ALTA members in good standing as of the date of use. All other uses are prohibited. Reprinted under license from the American Land Title Association.

APPENDIX

B

SALEM engineering group, inc.

4729 W. Jacquelyn Avenue
Fresno, California 93722
(559) 271-9700 Office
(559) 275-0827 Fax

PHASE I ESA (ASTM E1527-13)
USER QUESTIONNAIRE

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NEILSEN AVENUE
FRESNO, CALIFORNIA

Date: 11/11/2020 Site Address: 2740 West Neilsen Ave Fresno, CA

Respondent Name: Jake Kurth **Phone No. (required):** 612-280 4088

Company Name & Address: Scannell Properties 294 Grove Lane E Suite 140 Wayzata, MN

Introduction

"In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfield Revitalization Act of 2001 (the 'Brownfields Amendments'), the user must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that 'all appropriate inquiry' is not completed" - American Society for Testing and Materials (ASTM) E1527-13 Appendix X3: User Questionnaire

1. Are you aware of any environmental cleanup liens against the subject property that are filed or recorded under federal, tribal, state, or local law?

NO

2. Are you aware of any activity use limitations (AULs) such as engineering controls, land use restrictions, or institutional controls that are in place at the subject property and/or have been filed or recorded in a registry under federal, tribal, state, or local law?

NO

3. As the user of the Phase I Environmental Site Assessment (ESA), do you have any specialized knowledge or experience related to the subject property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the subject property or an adjacent property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

NO

4. Does the purchase price being paid for the subject property reasonably reflect the fair market value of the subject property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the subject property?

yes

5. Are you aware of commonly known or reasonably ascertainable information about the subject property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example:

A. Do you know the past uses of the subject property?

Cotton Storage

B. Do you know of specific chemicals that are present or once were present at the subject property?

NO

C. Do you know of spills or other chemical releases that have taken place at the subject property?

NO

D. Do you know of any environmental cleanups that have taken place at the subject property?

NO

6. As the user of the Phase I ESA, based on your knowledge and experience related to the subject property, are there any obvious indicators that point to the presence or likely presence of contamination at the subject property?

NO

I, the user of this Phase I ESA (or authorized representative of the User), do hereby attest that I have carefully considered the questions herein and have presented answers to the best of my knowledge and ability based upon the Responsibilities of the User as required within ASTM E1527-13 guidance.

Name Jake Kurth **Date** 11/11/2020
(Please Print)

Signature

APPENDIX

C

SALEM
engineering group, inc.

4729 W. Jacquelyn Avenue
Fresno, California 93722
(559) 271-9700 Office
(559) 275-0827 Fax

PHASE I ESA (ASTM E1527-13)
OWNER QUESTIONNAIRE

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NEILSEN AVENUE
FRESNO, CALIFORNIA

Date: 11/12/2020 Site Address: _____

Owner Name: D & Nielsen Marks, LLC **Owner Phone No. (required):** 559-275-3842

Provide Name of Previous Owner(s) and Phone Number if known: Cal Compress / Cargill

How long have you owned the subject property? Since 2008 (Related Entity)

Have any previous investigations been conducted on the subject property? Yes

What is the subject property currently used for? ~~Vacant~~ Open Land

Former Uses/Occupants of the subject property? Cotton Storage

Age of onsite structure(s), if known? None

Do you have any knowledge of existing or previous underground or aboveground storage tanks being located on the subject property? Yes

Do you know of any chemical or hazardous materials, persistent pesticides/herbicides being used, stored or discharged on the subject property? No

Do you know of any Environmental Cleanup Liens or slurry walls or vapor barriers filed or recorded against the subject property? No

Do you know of any buried materials such as garbage dumps or burn pits on the subject property? No

Are there currently or were there historically any septic systems and/or water wells located on the subject property? Yes

Any dry wells/monitoring wells? Not Sure / Maybe

Are there any drainage or disposal ponds located on the subject property? Unknown

Is the subject property connected to municipal water and sewer systems? Not Aware

Do you have any commonly known, reasonably ascertainable, or specialized knowledge or experience related to the subject property or nearby properties? Yes

Are you aware of any contamination on the subject property? No

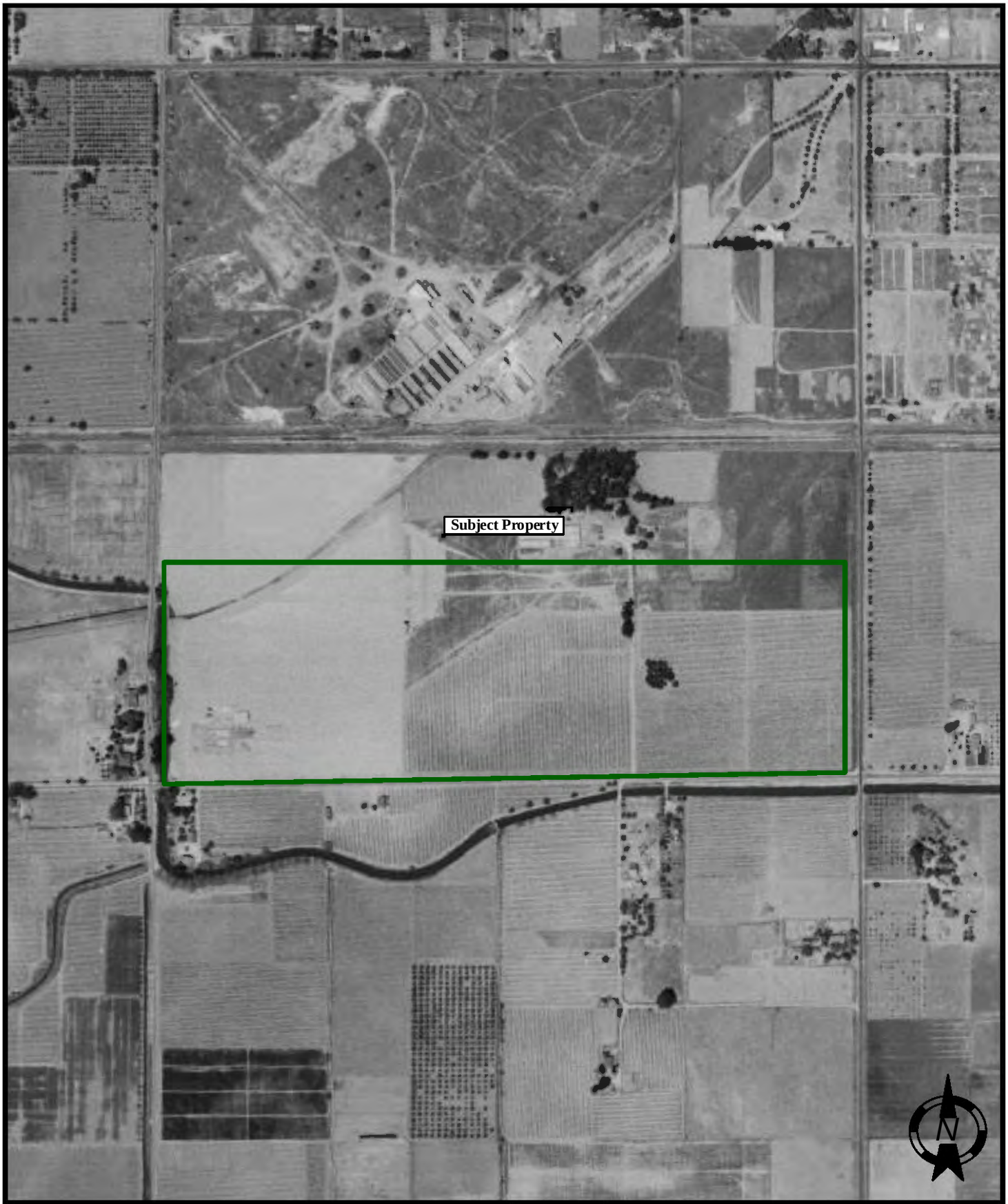
Name: Kirk Dagdian (Please Print) Date: 11/12/2020

Signature:

APPENDIX

D

AERIAL PHOTOGRAPHS	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	YEAR: 1937	



AERIAL PHOTOGRAPHS

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSEN AVENUE
FRESNO, CALIFORNIA

SCALE:	DATE:
NTS	Jan. 2021
DRAWN BY:	**APPROVED BY:**
BR	SL
PROJECT NO.:	**YEAR:**
1-420-1016	1946

SALEM engineering group, inc.

AERIAL PHOTOGRAPHS

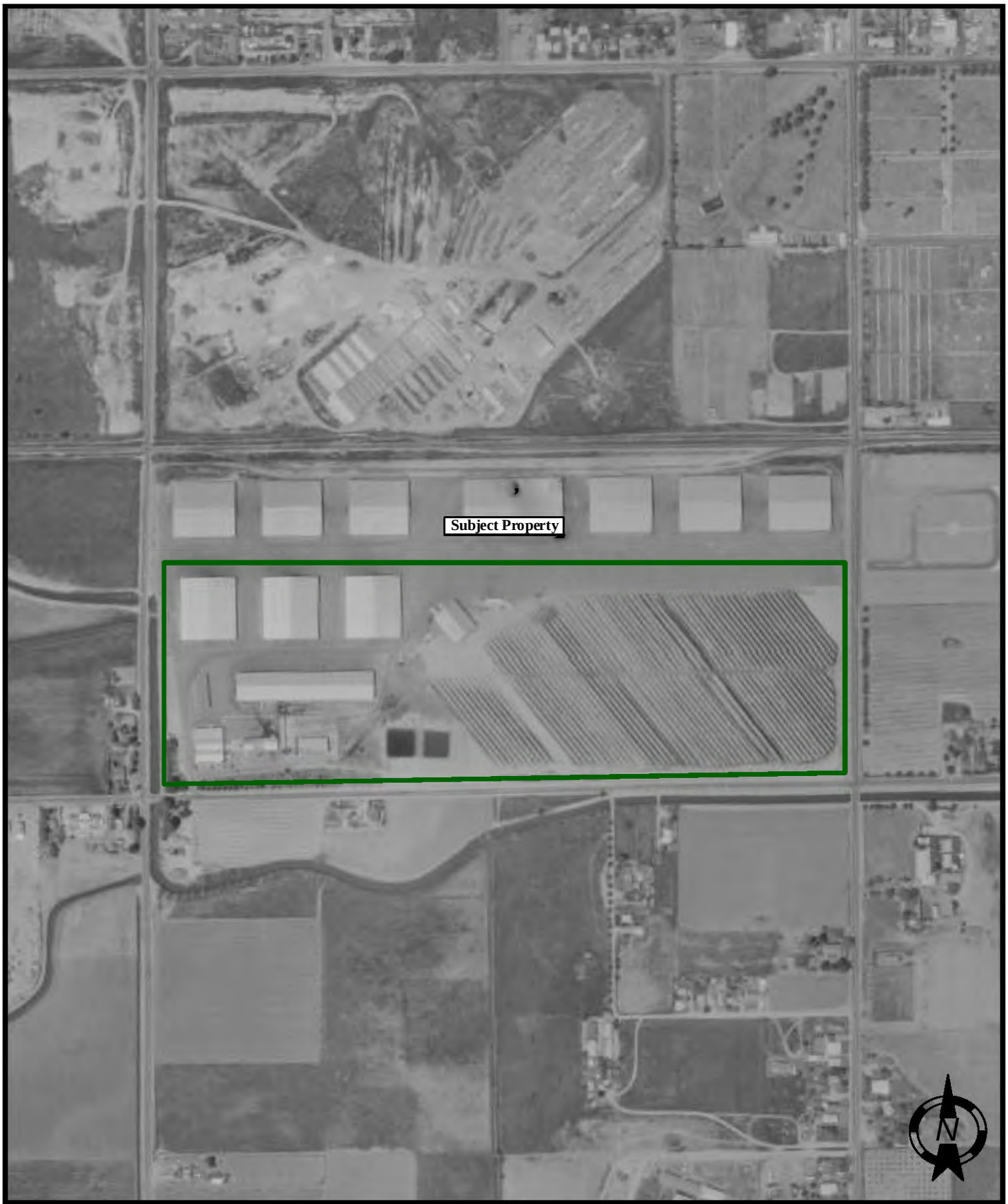
SCALE: NTS	DATE: Jan. 2021	
DRAWN BY: BR	APPROVED BY: SL	
PROJECT NO.: 1-420-1016	YEAR: 1950	

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSEN AVENUE
FRESNO, CALIFORNIA

SALEM engineering group, inc.

AERIAL PHOTOGRAPHS	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	YEAR: 1957	

AERIAL PHOTOGRAPHS	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	YEAR: 1962	



AERIAL PHOTOGRAPHS

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSEN AVENUE
FRESNO, CALIFORNIA

SCALE:	DATE:
NTS	Jan. 2021
DRAWN BY:	**APPROVED BY:**
BR	SL
PROJECT NO.:	**YEAR:**
1-420-1016	1967

SALEM engineering group, inc.

AERIAL PHOTOGRAPHS

SCALE:	DATE:
NTS	Jan. 2021
DRAWN BY:	APPROVED BY:
BR	SL
PROJECT NO.:	YEAR:
1-420-1016	1973

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSEN AVENUE
FRESNO, CALIFORNIA

SALEM engineering group, inc.

AERIAL PHOTOGRAPHS

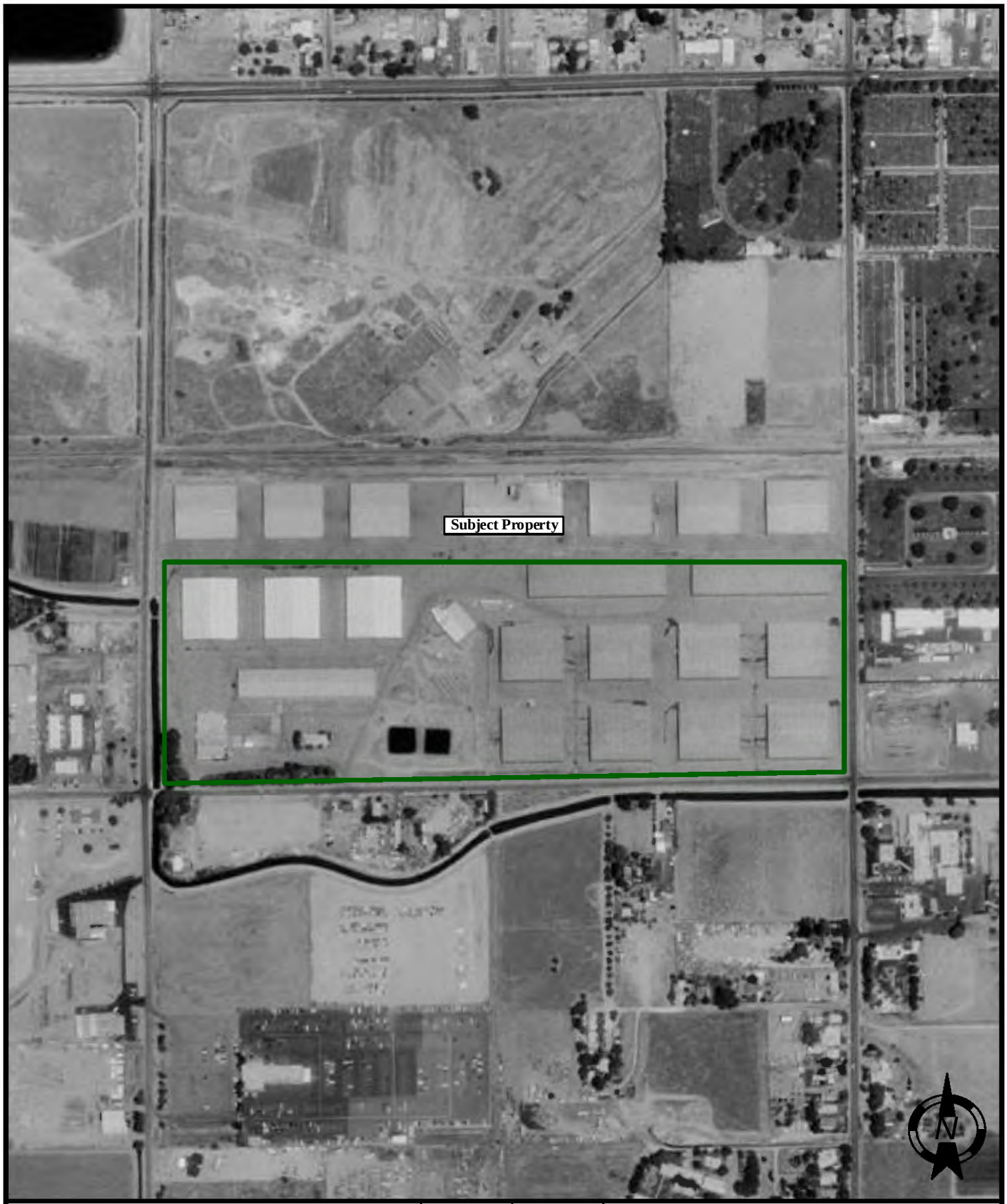
FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSEN AVENUE
FRESNO, CALIFORNIA

SCALE:	DATE:
NTS	Jan. 2021
DRAWN BY:	**APPROVED BY:**
BR	SL
PROJECT NO.:	**YEAR:**
1-420-1016	1979

SALEM engineering group, inc.

AERIAL PHOTOGRAPHS	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	YEAR: 1984	

AERIAL PHOTOGRAPHS	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	YEAR: 1987	



AERIAL PHOTOGRAPHS

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSEN AVENUE
FRESNO, CALIFORNIA

SCALE:	DATE:
NTS	Jan. 2021
DRAWN BY:	**APPROVED BY:**
BR	SL
PROJECT NO.:	**YEAR:**
1-420-1016	1998

SALEM engineering group, inc.

AERIAL PHOTOGRAPHS	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	YEAR: 2006	

AERIAL PHOTOGRAPHS	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	YEAR: 2009	

AERIAL PHOTOGRAPHS	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	YEAR: 2012	

AERIAL PHOTOGRAPHS	SCALE: NTS	DATE: Jan. 2021	SALEM engineering group, inc.
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL	
	PROJECT NO.: 1-420-1016	YEAR: 2016	

APPENDIX

E

EXHIBIT A

City of FRESNO

Planning and Development Department
2600 Fresno Street • Third Floor
Fresno, California 93721-3604
(559) 621-8277, FAX (559) 488-1020

John M. Dugan, AICP
Director

Please reply to:
Robert Berend
(559) 621-8060

March 22, 2010

FILE COPY

Joseph Guagliardo
Comprehensive Planning Associates, Inc.
5414 East Pitt Avenue
Fresno, CA 93727

SUBJECT: SUBJECT: SITE PLAN REVIEW APPLICATION NO. S-09-123, A MAJOR REVISED EXHIBIT FOR PROPERTY LOCATED AT 2650 AND 2740 WEST NIELSEN AVENUE (APN 458-020-09)

Approval of the site plan review application was given to the applicant in accordance with the Fresno Municipal Code (FMC). An appeal was received within the 15 day appeal period which ended on March 16, 2010. The items in dispute are listed below with responses from the Planning and Development Department:

1. The condition that any (new) fence that is located within 45 feet of the frontage of the property and visible from a public street shall be constructed of wrought iron per the Redevelopment Agency of the City of Fresno Industrial Development Design Guidelines.

    a. Per the site plan exhibits submitted there are no new fences proposed within 45 feet of the frontage of this property. To discuss the specific guideline policies for future fences please contact Richard Yee of the Redevelopment Agency of the City of Fresno at (559) 621-7614.

2. The condition to pay City of Fresno Major Street Fees.

    a. This condition is found in the Public Works Department, Engineering Division memorandum dated December 8, 2009 on page 3 under the section titled Fresno Major Street Impact (FMSI) Fees. The condition states: "This entitlement is in the Infill Area; therefore pay all applicable City-wide regional street impact fees." Please contact Ann Lillie, Senior Engineering Technician at (559) 621-8690 regarding this appeal.

3. The condition to pay Caltrans fees.

    a. This condition is also found in the Public Works Department, Engineering Division memorandum dated December 8, 2009 on page 3 under the section titled State of California Department of Transportation (Caltrans) Fees. The condition states "Applicant shall pay fair share contribution as determined by the state of California Department of Transportation (Caltrans) to be collected by the City of Fresno Public Works Department Traffic Engineering, (559) 621-8820, prior to a Building Permit.

FILE COPY

4. The condition to landscape the perimeter of the property.

   a. Pursuant to General Yard Requirements for M-1, M-2 and M-3 zone districts Section 12-226.5.E.1.a,b, and c, (12-228.5) of the FMC, where an "M-1" District (or "M-3" by reference) abuts a major street, a yard of no less than ten (10) feet shall be provided; all required yards shall extend the full width or depth of the lot and shall be open from the ground to the sky, except as provided in subsections 12-105-L-4, Section 12-105-Y(yard) and the exceptions of Subsection 12-216-5-E-5 (C-P District), and; all required yards shall be landscaped and maintained in accordance with subsections 12-306-N-23 and 24. Therefore, as FMC requirements these are not appealable and in fact may already exist on-site to some degree.

   The amount, type and placement of landscaping required is subject to interpretation of the Redevelopment Agency of the City of Fresno Industrial Development Design Guidelines and FMC Sections 12-306-N-23 and 24 which can be discussed after more detailed Landscape and Irrigation plans are provided for review by the Planning Division and the Redevelopment Agency.

All code requirements relating to property development standards are mandatory and may only be modified, and not waived, by variance, provided the findings pursuant to Section 12-405.A of the FMC can be made. Should any of the entities listed above, provide relief in some manner to your requests; please provide documentation from these entities allowing such discretions. Should you need further assistance or have any questions, please call me at (559) 621-8060 or via e-mail at Robert.Berend@fresno.gov .

Sincerely,

PLANNING DIVISION

Robert Berend
Planner

Enclosures: Appeal letter dated March 16, 2010

cc: George Daoudian, 4790 North Cornelia Avenue, Fresno, CA 93722
Job Address Files: 2650 and 2740 West Nielsen Avenue

City of
FRESNO

Planning and Development Department

2600 Fresno Street - Third Floor
Fresno, California 93721-3604
(559) 621-8277 FAX (559) 488-1020

John M. Dugan, AICP
Director

FILE COPY

March 1, 2010

Please reply to:
Robert Berend
(559) 621-8060

Joseph Guagliardo
Comprehensive Planning Associates, Inc.
5414 East Pitt Avenue
Fresno, CA 93727

SUBJECT: SITE PLAN REVIEW APPLICATION NO. S-09-123, A MAJOR REVISED EXHIBIT FOR PROPERTY LOCATED AT 2650 AND 2740 WEST NIELSEN AVENUE (APN 458-020-09)

Dear Mr. Guagliardo:

The Planning and Development Department on March 1, 2010, approved your request to install improvements to the property to allow for proposed agricultural trailer storage and service on a portion of the property at the location noted above subject to the conditions of approval listed below. Improvements shall include the addition of parking stalls for customers and employees of the proposed business and office space on the southwest portion of the subject property, a large paved area for storage of the agricultural trailers on the northwest portion of the subject property and additional landscaping and fencing.

CONDITIONS OF APPROVAL

1. Development shall take place in accordance with Site Plan Review Application No. S-09-123, Exhibits A-1 and A-2, dated November 19, 2009 and the Operational Statement, Exhibit O, dated November 19, 2009. Transfer all red line notes (or those highlighted), make all corrections and provide all information and plans as requested on the original site plan exhibits to the final site plan. Please add the standard notes items to Exhibit A-1, which have been checked on the attached Standard Notes per Page 1 of Site Plan Review Application Submittal Requirements.

2. No other changes to the previously approved entitlements for the overall site are allowed as a result of this approval. All previously imposed Conditions of Approval pertaining to the subject property remain in effect and are incorporated herein by reference; except as may be specifically modified by S-09-123.

3. Please provide proof of compliance with the Public Works Department, Engineering Division requirements and corrections as shown on Exhibits A-1 and A-2, dated November 19, 2009 (see attached photocopies) and as stated in their memorandum dated December 8, 2009. These requirements and corrections shall be shown on the corrected site plan and approved by the Public Works Division prior to final approval by the Planning Division. Please contact Ann Lillis at (559) 621-8690 for further information.

4. Comply with all attached Agency Staff Recommendations of the Redevelopment Agency of the City Fresno, dated February 5, 2010. Please contact Richard Yee at (559) 621-7614 for further information. Redevelopment Agency of the City of Fresno Industrial Development Design Guidelines are also attached.

5. Provide a letter from Daoudian Investments LLC (real property owner), indicating authorization to proceed with the subject application.

In the event you wish to appeal the Department's decision, you may do so by filing a written appeal with the Director. The appeal shall include the appellant's interest in or relationship to the subject property, the decision or action appealed and specific reasons why the appellant believes the decision or action appealed should not be upheld. Appeals must be filed by March 16, 2010. If no appeal is filed you may obtain any necessary permits and proceed with the development of the project in accordance with the conditions noted above.

Any development or improvements shall take place in accordance with the Standards Specifications and Standard Drawings of the City of Fresno Public Works Department. Any building or structure constructed on the subject property must comply with the prevailing California Building Code standards. Development shall take place in accordance with all city, county, state and federal laws and regulations.

EXPIRATION DATES

The exercise of rights granted by this special permit must be commenced by **March 1, 2014,** (four years from the date of approval). There is no extension.

Transfer all red line notes (or those highlighted), etc., shown on all original site plan exhibits, dated November 19, 2009, to the final site plan. CORRECTIONS SHALL INCLUDE ALL THOSE LISTED IN THIS DOCUMENT AND THOSE LISTED IN THE CORRECTION LIST PROVIDED BY THE PLAN CHECK PROCESS.

Copies of the final approved site plan wet-stamped by the Planning Division **must be substituted for unstamped copies of the same in each of the four sets of construction plans previously submitted for plan check as related to the issuance of building permits.**

On-site inspections will not be authorized unless the final wet-stamped approved site plan is included in the plan check field copy.

Should you need further assistance or have any questions, please call me at (559) 621-8060 or via e-mail at Robert.Berend@fresno.gov.

RECEIVED
MAR 16 REC'd
FILE COPY

Comprehensive Planning Associates, Inc.
5414 E. Pitt
Fresno, CA 93727
559-259-5000

RECEIVED
MAR 16 2010
Planning Division
Planning & Development Dept
CITY OF FRESNO

March 16, 2010

Mr. John M. Dugan, AICP
Director
City of Fresno Planning and Development Department
2600 Fresno Street
Fresno, CA 93721

Subject: APPEAL OF SPR 09-123 – NEC MARKS AND NIELSEN AVENUES

Dear Mr. Dugan;

My firm, represents Mr. George Daoudian the owner of the property which is the subject of SPR 09-123. We have reviewed the conditions of approval provided by Mr. Robert Berend. Several conditions are imposed by other agencies, specifically the Redevelopment Agency and Caltrans and other departments within the City, most notably the Public Works Department.

We are attempting to clarify the exact requirements with the outside agencies and departments for some of the conditions, but as of this date have been unable to do so. Therefore, we wish to appeal the conditions of approval for SPR 09-123. These include, but are not limited to.

1. Requirement for wrought iron fencing.
2. Payment of City of Fresno Major Street Fees
3. Payment of Caltrans fees.
4. Requirement to landscape the perimeter of the property.

However, in light of the fact that we are hopeful we can resolve the outstanding issues, we request that the matter not be scheduled for a Planning Commission meeting until such time that we request to do so.

Please feel free to contact me if you have any questions.

Sincerely,

Joe Guagliardo

Sincerely,
PLANNING DIVISION

FILE COPY

Robert Berend
Planner

Enclosures: S-09-123 Exhibits A-1 and A-2 and O, dated November 19, 2009
City of Fresno Public Works Department, Engineering Division memo dated December 8, 2009
Photocopies of Traffic Notes and Requirements from Exhibit A-2
Standard Notes Per Page 1 of the Site Plan Review Application Submittal Requirements
City of Fresno Fire Department memo, dated December 9, 2009
Agency Staff Recommendations of the Redevelopment Agency of the City of Fresno, dated February 5, 2010
Redevelopment Agency of the City of Fresno Industrial Development Design Guidelines

CC: George Daoudian, 4790 North Cornelia Avenue, Fresno, CA 93722
Job Address Files: 2650 and 2740 West Nielsen Avenue

CITY OF FRESNO

Planning & Development Department
Building and Safety Division
Building Section
Fax Inspection

00 Fresno Street
Fresno, Ca. 937214
Tel: (559)621-8116
Tel: (559)498-4357

Application Number . . . . . 17-00011692 Date 8/31/17
Application pin number . . . 132856
Property Address . . . . . 2650 W NIELSEN AVE
Assessor's Parcel Number . . 458-020-71
Tract Lot . . . . . .
Application type description DEMOLITION COMMERCIAL
Subdivision Name . . . . . .
Property Use . . . . . .
Property Zoning . . . . . HEAVY INDUSTRIAL
Application valuation 0

Owner	Contractor
DAOUDIAN INVESTMENTS LLC	AGUIRRE CONSTRUCTION COMPANY
[redacted]	2523 HORNET AVE
	CLOVIS CA 93611
	(559) 392-4890

--- Structure Information 000 000 DEMO COTTON STORAGE BUILDING
Other struct info . . . . . APPLICATION ACCEPTED BY EBA
CODE YEAR 2016

Permit . . . . . DEMOLITION COMMERCIAL
Additional desc . . EBA
Phone Access Code . 5376322
Permit pin number . 5376322
Permit Fee . . . . 163.53 Plan Check Fee . . .00
Issue Date . . . . 8/31/17 Valuation 0
Expiration Date . . 2/27/18

Special Notes and Comments
DEMO COTTON STORAGE BUILDING

Other Fees	DEMOLITION ADMIN FEE	26.78
	GEN PLAN SURCHARGE	26.67
	WASTE DIVERSION FEE	17.70
	WORKERSCOMP	10.70

Fee summary	Charged	Paid	Credited	Due
Permit Fee Total	163.53	.00	.00	163.53
Plan Check Total	.00	.00	.00	.00
Other Fee Total	81.85	.00	.00	81.85
Grand Total	245.38	.00	.00	245.38

NOTE:"Other Fees" & "Other Fee Total" may include amounts from previous transactions. Certifications required by State Law were executed and incorporated by reference. Original on file with City permit.

Expired

City of
FRESNO

Development and Resource Management Department
Building and Safety Services Division

Project Address 2650 W. Nielsen Ave.

Permit No. 17-11692

APPLICATION TYPE: BLDG ____ ELEC ____ PLBG ____ MECH ____ GRAD ____ OTHER ✓ Demo

DRAW DOWN ____ ACCT NO. ____ CREDIT CARD ____ ACCT NAME ____

SPECIAL CONDITIONS

WORKERS COMPENSATION

Section 3800 of the State Labor Code provides that every county or city which requires issuance of a permit as a condition precedent to the construction, alteration, improvement, demolition, or repair of any building or structure shall require that each applicant for permit have on file with the City of Fresno:

(Please initial as applies below)

PA A valid Certificate of Workers' Compensation Insurance or.

____ A signed statement of a Firm Without Employees or,

____ A Certificate of Consent to self-insure by the Director of Industrial Relations.

EXCLUSIONS

(Please initial as applies below)

____ Permits for work costing $100.00 or less.

____ Applicants for permits who sign the following certifications:
"I certify that in the performance of the work for which this permit is issued I shall not employ any person in any manner so as to become subject to the Workers' Compensation Laws of California."

If after signing this certificate, the applicant desires to employ any person for work covered by this permit, the applicant must obtain Workers' Compensation Insurance as required by Section 3700 of the State Labor Code, or this permit shall be deemed revoked.

CA CONTRACTOR'S LICENSE NO. 836482

I hereby affirm under penalty of perjury that I am licensed under provisions or Chapter 9 of Division 3 of the Business and Professions Code, and my license is in full force and effect.

EXEMPTION FROM STATE REQUIRED LICENSING

(Please initial as applies below)

____ I am the owner of the property addressed on the subject permit application. The building or improving of structures hereon, or appurtenances thereto, will be done by myself or through my own employees with wages as their sole compensation. The structure or structures, with or without the appurtenances thereto, is not intended to be and will not be offered for sale within one year after completion of same (B&P Code Section 7044).

____ As owner of the property the building or improving structures or appurtenances thereto will be contracted with licensed contractors. (B&P Code Section 7044)

____ Aggregate total of the contracts is not more than $500.00 for labor, materials, and all other work. (B&P Code Section 7048)

____ I am a licensed architect, engineer, or structural pest control operator within the scope of my license. (B&P Section 7051)
Print Firm Name: ____

HAZARDOUS WASTE AND SUBSTANCE SITES

I declare that I have made application for a permit to develop property at Fresno California. I have consulted the list of Hazardous Waste and Substance Sites developed by the State Office of Planning and Research pursuant to GC Section 65962.5.

(Please initial as applies below)

PA I have determined that the said property **is not** included on a list compiled pursuant to this section.

____ I have determined that the said property **is** included on a list compiled pursuant to this section.

I further declare under penalty of perjury under the laws of the State of California, that the foregoing is true and correct.

PRINT NAME PAUL AGUIRRE DATE 8/31/17

SIGNATURE Paul Aguirre PHONE NUMBER [redacted]

Staff Initials ____

RECORD COPY

Updated 9/02/14

CITY OF FRESNO

Planning & Development Department
Building and Safety Division
Plumbing Section
Fax Inspection

500 Fresno Street
Fresno, Ca. 93721
Tel: (559)621-8116
Tel: (559)498-4357

Application Number . . . . . 17-00011692 Date 8/31/17
Application pin number . . . 132856
Property Address . . . . . 2650 W NIELSEN AVE
Assessor's Parcel Number . . 458-020-71
Tract Lot . . . . . .
Application type description DEMOLITION COMMERCIAL
Subdivision Name . . . . . .
Property Use . . . . . .
Property Zoning . . . . . HEAVY INDUSTRIAL
Application valuation 0

Owner

DAOUDIAN INVESTMENTS LLC
[redacted]

Contractor

AGUIRRE CONSTRUCTION COMPANY
2523 HORNET AVE
CLOVIS CA 93611
(559) 392-4890

--- Structure Information 000 000 DEMO COTTON STORAGE BUILDING
Other struct info . . . . . CODE YEAR 2016

Permit . . . . . PLUMBING COM MISCELLANEOUS
Additional desc . . EBA
Phone Access Code . 5376330
Permit pin number . 5376330
Permit Fee . . . . 103.19 Plan Check Fee . . .00
Issue Date . . . . 8/31/17 Valuation 0
Expiration Date . . 2/27/18

Qty	Unit Charge	Per		Extension
			BASE FEE	21.43
1.00	81.7600	EA	OTHER SIMPLE PLUMBING	81.76

Special Notes and Comments
DEMO COTTON STORAGE BUILDING

Fee summary	Charged	Paid	Credited	Due
Permit Fee Total	103.19	.00	.00	103.19
Plan Check Total	.00	.00	.00	.00
Grand Total	103.19	.00	.00	103.19

Note: "Other Fees" & "Other Fee Total" may include amounts from previous transactions. Certifications required by State Law were executed and incorporated by reference. Original on file with City permit.

END OF PERMIT

Expired

CASE HISTORY REPORT
CASE NUMBER CE00-90013435

CASE TYPE: General Enforcement
Assessor's Parcel Number: 458-020-71
Primary Address: 2740 W NIELSEN AVE FRESNO CA 937061220
FRESNO, CA 937061220

Date Established: 07/24/2000
Status: Closed
Closed Date: 10/24/2000

Inspector Assigned:
Inspector Phone:
Inspector Email:

CASE DATA:
JURISDICTION:
ZONE CODE:
INSPECTION AREA:
COUNCIL DISTRICT:
ACREAGE:

FINE SUMMARY:
TOTAL INVOICED: $0.00
TOTAL PAID: $0.00
BALANCE: $0.00

NARRATIVE:
07/24/2000 RP CALLED REGARDING ILLEGAL DUMPING AT CALIFORNIA COMPRESS. SAYS THERE ARE TIRES, FURNITURE, AND OTHER MISC. DEBRIS. THE GROUNDS COVER NIELSEN, HUGHES, & MARKS. SHE WAS ADVISED THAT PO IS RESPONSIBLE FOR HAVING DEBRIS REMOVED. . 99 90011374 PNRV CL 9/23/99

OWNER:

Primary	CALIFORNIA COMPRESS CO INC	P O BOX 11966	FRESNO	CA	93776

CONTACTS:

TYPE	NAME	ADDRESS
Reporting Party	[redacted]	[redacted]

HISTORY:

Date	Action	Details
07/24/2000	**NOTICE**	**Status**: **Assigned Staff**: **Time**: **Description**: SERVICE REQUEST NA
07/24/2000	**Record Comment**	
07/26/2000	**Inspection Resulted**	**Inspection Type**: Initial Inspection **Time**: - **Total Time**: **Status**: No Violation **Inspector**: JEB **Result Comments:**
07/26/2000	**Inspection Scheduled**	**Inspection Type**: Initial Inspection **Inspector**: JEB **Request Comments:**

CASE HISTORY REPORT
CASE NUMBER CE00-90013435

07/26/2000	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: FIRST INSPECTION ONE SMALL PILE OF TRASH ON MARKS AVE. ADJACENT TO PROPERTY. JEB
08/09/2000	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: TELEPHONE CALL SPOKE W/MGR AND INFORMED HER THAT IT IS THE RESPONSIBILITY OF THE PO TO REMOVE THE TRASH FROM THEIR PROPERTY. I FURTHER SUGGESTED THAT SINCE IT IS A RECURRING PROBLEM, THEY MAY WANT TO HIRE A SECURITY GUARD TEMPORARILY TO CATCH THOSE WHO ARE DUMPING AND REPORT IT TO POLICE. JEB
08/15/2000	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: LETTER MAILED N&O WAS MAILED ON JULY 21,2000 TO PO RE:9-804(A,F)RUBBISH/ JUNK AND AN ATTRACTIVE NUISANCE(OPEN/VACANT BUILDING).
08/15/2000	**Inspection Resulted**	**Inspection Type**: Follow-Up Inspection **Time**: - **Total Time**: **Status**: In Compliance **Inspector**: CBF **Result Comments:**
08/15/2000	**Inspection Scheduled**	**Inspection Type**: Follow-Up Inspection **Inspector**: CBF **Request Comments:**
08/15/2000	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: RE-INSPECTION RI FINDS THAT THE PILE IS STILL THERE. I WILL CONTACT PO RE: THE VIOLATION. CBF/AG
08/24/2000	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: TELEPHONE CALL I SPOKE WITH [redacted] AT 9AM. HE IS THE BRANCH MANAGER FOR THIS PROPERTY. I EXPLAINED TO HIM THAT THE PROPERTY OWNERS ARE RESPONSIBLE FOR THE ILLEGAL DUMPINGS. HE SAYS THAT HE WILL CONTACT THE CORPORAL OFFICE FOR ASSISTANC. HE SAYS HE WILL CONTACT ME WITHIN A FEW DAYS. PH# [redacted] CBF.

09/12/2000	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: GENERAL NOTES FRWD TO CLERICAL FOR N&O LTR AT 16:08. NRT
09/12/2000	**Inspection Resulted**	**Inspection Type**: Follow-Up Inspection **Time**: - **Total Time**: **Status**: In Compliance **Inspector**: CBF **Result Comments:**
09/12/2000	**Inspection Scheduled**	**Inspection Type**: Follow-Up Inspection **Inspector**: CBF **Request Comments:**
09/12/2000	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: RE-INSPECTION 3 PM, REINSPECTION FINDS RUBBISH/JUNK AND DEBRIS AT THIS LOCATION. THE JUNK IS AT THE PARKSTRIP AND BEHIND REAR FENCE. A LETTER WILL BE SENT ADDRESSING THOSE VIOLATIONS. CBF/NRT
09/15/2000	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: LETTER MAILED SENT N&O TO PO RE: 9-804A RUBBISH/JUNK (REFUSE, GARBAGE, LITTER, SCRAP WOOD, TIRES, APPLIANCES, FURNITURE) LOCATED IN THE PARK STRIP AND BEHIND REAR FENCE. CBF/NRT
10/04/2000	**Inspection Resulted**	**Inspection Type**: Follow-Up Inspection **Time**: - **Total Time**: **Status**: In Compliance **Inspector**: CBF **Result Comments:**
10/04/2000	**Inspection Scheduled**	**Inspection Type**: Follow-Up Inspection **Inspector**: CBF **Request Comments:**
10/04/2000	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: RE-INSPECTION 2PM REINSPECTION FINDS RUBBISH, AND JUNK AT THIS LOCATION. I WILL CONTACT PROPERTY MANAGEMENT, BEFORE NEXT ACTION STEP. CBF/VS

CASE HISTORY REPORT
CASE NUMBER CE00-90013435

10/12/2000	**Inspection Resulted**	**Inspection Type**: Follow-Up Inspection **Time**: - **Total Time**: **Status**: In Compliance **Inspector**: CBF **Result Comments:**
10/12/2000	**Inspection Scheduled**	**Inspection Type**: Follow-Up Inspection **Inspector**: CBF **Request Comments:**
10/12/2000	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: RE-INSPECTION REINSPECTION FINDS THE RUBBISH, AND JUNK AT THIS LOCATION AT WEST SIDE OF PROPERTY. I WLL CONTACT PROPERTY MANAGER BY PHONE. I WILL EXPLAIN THAT FAILURE TO REMOVE THE DEBRISE WILL RESULT IN A CITATION. CBF/GM
10/24/2000	**In Compliance**	**Action By**: CBF **Time**: **Comments:**Converted Case Status
10/24/2000	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: CLOSE CASE REINSPECTION FINDS NO RUBBISH, AND JUNK AT THIS LOCATION - CLOSE CASE - CBF/GM
10/24/2000	**Inspection Resulted**	**Inspection Type**: Follow-Up Inspection **Time**: - **Total Time**: **Status**: In Compliance **Inspector**: CBF **Result Comments:**
10/24/2000	**Inspection Scheduled**	**Inspection Type**: Follow-Up Inspection **Inspector**: CBF **Request Comments:**
10/24/2000	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: RE-INSPECTION REINSPECTION FINDS NO RUBBISH, AND JUNK AT THIS LOCATION. - CLOSE CASE - CBF/GM

CASE HISTORY REPORT
CASE NUMBER CE99-90011374

CASE TYPE: General Enforcement
Assessor's Parcel Number: 458-020-71
Primary Address: 2740 W NIELSEN AVE FRESNO CA 937061220
FRESNO, CA 937061220

Date Established: 09/23/1999
Status: Closed
Closed Date: 09/29/1999

Inspector Assigned: Silvestre Gomez
Inspector Phone: 559-621-8413
Inspector Email: Silvestre.Gomez@fresno.gov

CASE DATA:
JURISDICTION:
ZONE CODE:
INSPECTION AREA:
COUNCIL DISTRICT:
ACREAGE:

FINE SUMMARY:
TOTAL INVOICED: $0.00
TOTAL PAID: $0.00
BALANCE: $0.00

NARRATIVE: 09/23/1999 CALIFORNIA COMPRESS BS - SOFA, MATTRESS, BOX SPRINGS, TIRES, ETC., ILLEGALLY DUMPED ON HUGHES ENTRANCE STREET SIDE & ON NIELSEN ENTRANCE STREET SIDE.

OWNER:

Primary	CALIFORNIA COMPRESS CO INC	P O BOX 11966	FRESNO	CA	93776

CONTACTS:

TYPE	NAME	ADDRESS
Reporting Party	[redacted]	[redacted]

HISTORY:

Date	Action	Details
09/23/1999	**NOTICE**	**Status**: **Assigned Staff**: **Time**: **Description**: SERVICE REQUEST NA
09/23/1999	**Record Comment**	
09/27/1999	**Inspection Resulted**	**Inspection Type**: Initial Inspection **Time**: - **Total Time**: **Status**: No Violation **Inspector**: Silvestre Gomez **Result Comments:**
09/27/1999	**Inspection Scheduled**	**Inspection Type**: Initial Inspection **Inspector**: Silvestre Gomez **Request Comments:**

CASE HISTORY REPORT
CASE NUMBER CE99-90011374

09/27/1999	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: FIRST INSPECTION FOUND RUBBISH AND JUNK ILLEGALLY DUMPED ON NIELSON 2700 BLOCK AND ON HUGHES SIDE IN FRONT OF CAL COMPRESS. SOUTH OF BELMONT. WILL REFFER TO COMMUNITY PICK UP. SJG
09/29/1999	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: CLOSE CASE NOT ABLE TO FIND SORACE. REFERRED TO COMMUNITY SANITATION. NFA CL *SJG*
09/29/1999	**In Compliance**	**Action By**: Silvestre Gomez **Time**: **Comments:**Converted Case Status

CASE HISTORY REPORT
CASE NUMBER CE17-1981

CASE TYPE: General Enforcement
Assessor's Parcel Number: 458-020-72
Primary Address: 2102 W NIELSEN AVE S/A FRESNO CA 93706
FRESNO, CA 93706

Date Established: 02/21/2017
Status: Closed
Closed Date: 03/21/2017

Inspector Assigned:
Inspector Phone:
Inspector Email:

CASE DATA:
JURISDICTION:
ZONE CODE:
INSPECTION AREA:
COUNCIL DISTRICT:
ACREAGE:

FINE SUMMARY:
TOTAL INVOICED: $0.00
TOTAL PAID: $0.00
BALANCE: $0.00

NARRATIVE: 02/21/2017 FURNITURE, MATTRESS/BOX SPRING, MISC HOUSEHOLD ITEMS ON VACANT LOT AT W. NIELSEN BETWEEN MARKS & HUGHES AVE. VEHICLE THAT DUMPED ITEMS: TAN FORD RANGER LIC#5X57662. (PS#2309616). . February 21, 2017 11:47:59 AM fresmjw.

OWNER: Primary DAOUDIAN INVESTMENTS LLC [redacted]

CONTACTS:

TYPE	NAME	ADDRESS

HISTORY:

Date	Action	Details
02/21/2017	**NOTICE**	**Status**: **Assigned Staff**: **Time**: **Description**: SERVICE REQUEST NA
02/21/2017	**Record Comment**	
02/21/2017	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: CASE ASSIGNED TO INSPECTOR Case assigned to MXF by SW Senior EJS. February 21, 2017 4:31:00 PM fresejs2.
02/24/2017	**Inspection Resulted**	**Inspection Type**: Initial Inspection **Time**: - **Total Time**: **Status**: No Violation **Inspector**: MXF **Result Comments:**

CASE HISTORY REPORT
CASE NUMBER CE17-1981

02/24/2017	**Inspection Scheduled**	**Inspection Type**: Initial Inspection **Inspector**: MXF **Request Comments:**
02/24/2017	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: FIRST INSPECTION 2-24-17 1353HRS JUNK AND RUBBISH FOUND ON PARK STRIP AND CURB. ITEMS INCLUDE FURNITURE, A MATTRESS AND A WATER HEATER February 24, 2017 4:22:39 PM FRESMXS3.
03/01/2017	**NOTICE**	**Status**: **Assigned Staff**: **Time**: **Description**: NOTICE OF VIOLATION NO FEE PNZ NA
03/13/2017	**Inspection Scheduled**	**Inspection Type**: Follow-Up Inspection **Inspector**: MXF **Request Comments:**
03/20/2017	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: CLOSE CASE VIOLATIONS REMOVED March 21, 2017 8:01:42 AM FRESMXS3.
03/20/2017	**Inspection Resulted**	**Inspection Type**: Follow-Up Inspection **Time**: - **Total Time**: **Status**: In Compliance **Inspector**: MXF **Result Comments:**
03/20/2017	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: RE-INSPECTION 3-20-17 1016HRS JUNK AND RUBBISH HAS BEEN CLEANED UP, CLOSING CASE March 21, 2017 8:00:23 AM FRESMXS3.
03/21/2017	**In Compliance**	**Action By**: MXF **Time**: **Comments:**Converted Case Status

CASE HISTORY REPORT
CASE NUMBER CE13-4795

CASE TYPE: Weed Abatement
Assessor's Parcel Number: 458-020-72
Primary Address: 2102 W NIELSEN AVE S/A FRESNO CA 93706
FRESNO, CA 93706

Date Established: 06/12/2013
Status: Closed
Closed Date: 07/31/2013

Inspector Assigned:
Inspector Phone:
Inspector Email:

CASE DATA:
JURISDICTION:
ZONE CODE:
INSPECTION AREA:
COUNCIL DISTRICT:
ACREAGE:

FINE SUMMARY:
TOTAL INVOICED: $0.00
TOTAL PAID: $0.00
BALANCE: $0.00

NARRATIVE: 06/17/2013 WEED ABATEMENT [VACANT LOT]: TALL GRASS & WEEDS. . June 17, 2013 3:52:01 PM fresrlt.

OWNER: Primary DAOUDIAN INVESTMENTS LLC [redacted]

CONTACTS:

TYPE	NAME	ADDRESS
Reporting Party	[redacted]	[redacted]

HISTORY:

Date	Action	Details
06/12/2013	**Inspection Resulted**	**Inspection Type**: Initial Inspection **Time**: - **Total Time**: **Status**: In Compliance **Inspector**: DAJ **Result Comments:**
06/12/2013	**Inspection Scheduled**	**Inspection Type**: Initial Inspection **Inspector**: DAJ **Request Comments:**
06/12/2013	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: CRFA Comm Rev Focused Area HUD

06/12/2013	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: FIRST INSPECTION WEED ABATEMENT [VACANT LOT]: TALL GRASS & WEEDS. . June 17, 2013 3:52:01 PM fresrlt.
06/17/2013	**NOTICE**	**Status**: **Assigned Staff**: **Time**: **Description**: NOTICE AND ORDER NO FEE PN&ZC NA
06/17/2013	**NOTICE**	**Status**: **Assigned Staff**: **Time**: **Description**: SERVICE REQUEST NA
06/17/2013	**Record Comment**	
06/26/2013	**Inspection Resulted**	**Inspection Type**: Follow-Up Inspection **Time**: - **Total Time**: **Status**: In Compliance **Inspector**: DAJ **Result Comments:**
06/26/2013	**Inspection Scheduled**	**Inspection Type**: Follow-Up Inspection **Inspector**: DAJ **Request Comments:**
06/26/2013	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: RE-INSPECTION No attempt contact me or clean up has been made. July 2, 2013 10:20:06 AM FRESDAJ.
07/03/2013	**NOTICE**	**Status**: **Assigned Staff**: **Time**: **Description**: DMS CITATION NA
07/29/2013	**Inspection Resulted**	**Inspection Type**: Follow-Up Inspection **Time**: - **Total Time**: **Status**: In Compliance **Inspector**: DAJ **Result Comments:**

CASE HISTORY REPORT
CASE NUMBER CE13-4795

07/29/2013	**Inspection Scheduled**	**Inspection Type**: Follow-Up Inspection **Inspector**: DAJ **Request Comments:**
07/29/2013	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: CLOSE CASE July 31, 2013 3:29:27 PM FRESDAJ.
07/29/2013	**OTHER**	**Status**: **Assigned Staff**: **Time**: **Description**: CRFA Comm Rev Focused Area HUD July 31, 2013 3:28:11 PM FRESDAJ.
07/29/2013	**INSPECTION**	**Status**: **Assigned Staff**: **Time**: **Description**: RE-INSPECTION clean up crew removed weeds. July 31, 2013 3:26:24 PM FRESDAJ.
07/31/2013	**In Compliance**	**Action By**: DAJ **Time**: **Comments:**Converted Case Status

ERS: Occupancies / OCCUPANCIES

Occupancies / FRESNO CITY / COMMERCIAL /

VACANT | 2740 W NIELSEN AVE Fresno, CA 93706

Go to Occupancy # 123465 GO

Info | Contacts | Inspections | Prefire Plans | Fire Protection Systems | Files | Permits | Hazards | Actions

Occupancy Info

Next Inspection Date: 01/01/2023 * Required CANCEL SAVE

Details

Name * VACANT

Category * FRESNO CITY Subcategory * COMMERCIAL

ID 10564 NEXT ID ISO ID 121282

Location

Address

Number 2740 Prefix W Street Name: * NIELSEN

Street Type: Avenue Suffix Apt. #

City: * Fresno State * California

Zip Code * 93706

Building # 18

Latitude 36.74320000 Longitude -119.84000000

National Grid Map Page 52541

Assessor Parcel # 45802009

VIEW ON MAP DOWNLOAD FOR GOOGLE EARTH

Contact

Phone Fax

Building Structure

Building Status		Year Built	0000
# of Units	0	Occupancy Load	0
Construction Type	7 - Protected Wood Frame (V	Critical Infrastructure	

Additional Details

Occupancy Type *	S - Storage	Occupancy Zone	
Station	19C - Station 19C	Assigned Inspector	
UB Code	S1	NFPA Code	821
Business License #		Utility Billing Number	
Property Use		SELECT BY CATEGORY	
Assessed Value	$0.00		

History

Occupancy History ADD ENTRY

COMBINED WITH #10548

ARCHIVE THIS OCCUPANCY AND HAVE A NEW ONE TAKE ITS PLACE

* Required

Occupancy Inspections / OCCUPANCIES

Occupancies / FRESNO CITY / COMMERCIAL /

VACANT | 2740 W NIELSEN AVE Fresno, CA 93706

18

Go to Occupancy # 123465 GO

Info | Contacts | Inspections | Prefire Plans | Fire Protection Systems | Files | Permits | Hazards | Actions

Inspections

Inspection Frequency

ADD INSPECTION SCHEDULE | SCHEDULE SINGLE INSPECTION

Start Date	Inspection Type	Frequency
1/1/2023	I - Initial Inspection	Every 3 years

Inspection Schedule

START NEW INSPECTION

Schedule Date	Inspection Type	Entry Method
1/1/2023	I - Initial Inspection	AUTOMATIC
1/1/2026	I - Initial Inspection	AUTOMATIC
1/1/2029	I - Initial Inspection	AUTOMATIC

Inspection History

Inspection Date	Authorized By	Inspection Type	Result	Email / Print
2/14/2020	17085 - Erickson, Wynter	I - Initial Inspection	12 - VACNBCLRD - Vacant Non-Billable - Cleared Other	
9/22/2017	06961 - Giannopulos, Crystal L	I - Initial Inspection	01 NB - NOVI - No Violations Noted - Non-Billable	

APPENDIX

F

Former CA Compress Facility
2740 W. Nielson Ave.
Fresno, CA 93706

Inquiry Number: 6268278.5
November 16, 2020

The EDR-City Directory Abstract

Environmental Data Resources Inc
6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OR DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction orforecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc. or its affiliates is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1922 through 2017. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2017	Cole Information Services	-	X	X	-
2014	Cole Information Services	-	X	X	-
2009	Cole Information Services	-	X	X	-
2004	Cole Information Services	-	X	X	-
	Cole Information Services	X	X	X	-
2002	R.L. Polk & Co Publishers	-	X	X	-
	R.L. Polk & Co Publishers	X	X	X	-
1999	Cole Information Services	-	X	X	-
	Cole Information Services	X	X	X	-
1996	R.L. Polk & Co Publishers	-	X	X	-
	R.L. Polk & Co Publishers	X	X	X	-
1994	Cole Information Services	-	X	X	-

EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1994	Cole Information Services	X	X	X	-
1990	R.L. Polk & Co Publishers	-	X	X	-
1986	R.L. Polk & Co Publishers	-	X	X	-
1980	R.L. Polk & Co Publishers	-	-	-	-
1975	R.L. Polk & Co Publishers	-	-	-	-
1970	R.L. Polk & Co Publisher	-	-	-	-
1965	R.L. Polk & Co Publisher	-	-	-	-
1962	Pacific Telephone	-	-	-	-
1958	R.L. Polk & Co Publishers	-	X	X	-
1952	R.L. Polk & Co Publishers	-	-	-	-
1947	R.L. Polk & Co Publishers	-	-	-	-
1942	R.L. Polk & Co Publishers	-	-	-	-
1937	R.L. Polk & Co Publishers	-	-	-	-
1932	R.L. Polk & Co Publishers	-	-	-	-
1927	R.L. Polk & Co Publishers	-	-	-	-
1922	Polk: Husted Directory Co.	-	-	-	-

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

2740 W. Nielson Ave.
Fresno, CA 93706

FINDINGS DETAIL

Target Property research detail.

W NIELSEN AVE

2740 W NIELSEN AVE

Year	*Uses*	*Source*
2004	HOHENBERG BROTHERS CO	Cole Information Services
2002	CALIFORNIA COMPRESS CO cotton goods m frs	R.L. Polk & Co Publishers
	HOHENBERG BROS CO cotton goods mfrs	R.L. Polk & Co Publishers
1999	HOHENBERG BROTHERS COMPANY	Cole Information Services
1996	CALIF COMPRESS CO	R.L. Polk & Co Publishers
	COTTON	R.L. Polk & Co Publishers
	EXCHANGE	R.L. Polk & Co Publishers
	FRESNO	R.L. Polk & Co Publishers
	HOHENBERG BROS CO	R.L. Polk & Co Publishers
1994	CALIF COMPRESS CO	Cole Information Services
	HOHENBERG BROS CO	Cole Information Services

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

N MARKS AVE

300 N MARKS AVE

Year	Uses	Source
1990	Sugel	R.L. Polk & Co Publishers

301 N MARKS AVE

Year	Uses	Source
2002	9 Thtchener Frank L	R.L. Polk & Co Publishers
1990	Lee Grace	R.L. Polk & Co Publishers
	Kisling	R.L. Polk & Co Publishers

302 N MARKS AVE

Year	Uses	Source
2002	Not Verified	R.L. Polk & Co Publishers
1990	Fulkerson	R.L. Polk & Co Publishers
	Vacant	R.L. Polk & Co Publishers

303 N MARKS AVE

Year	Uses	Source
2002	Barcot Augustine	R.L. Polk & Co Publishers
1990	De Young	R.L. Polk & Co Publishers
	Seasholtz Eliz	R.L. Polk & Co Publishers

304 N MARKS AVE

Year	Uses	Source
2002	Not Verified 3 Apts	R.L. Polk & Co Publishers

305 N MARKS AVE

Year	Uses	Source
1990	Graber Dorothy	R.L. Polk & Co Publishers
	Warner	R.L. Polk & Co Publishers

306 N MARKS AVE

Year	Uses	Source
1990	ACossette	R.L. Polk & Co Publishers
	Russell Carol	R.L. Polk & Co Publishers

FINDINGS

307 N MARKS AVE

Year	Uses	Source
2002	Taul Joe R	R.L. Polk & Co Publishers
	DTaul Lenora	R.L. Polk & Co Publishers
1990	Haurrichorst Mariam	R.L. Polk & Co Publishers
	Meyers	R.L. Polk & Co Publishers

308 N MARKS AVE

Year	Uses	Source
2002	Coleman Elaine L M A	R.L. Polk & Co Publishers
	Coleman Charles R	R.L. Polk & Co Publishers
1990	Gibbons Henritta	R.L. Polk & Co Publishers

309 N MARKS AVE

Year	Uses	Source
2002	Peterson Naomi Y S+	R.L. Polk & Co Publishers
1990	Rapheal Anne	R.L. Polk & Co Publishers

310 N MARKS AVE

Year	Uses	Source
2002	Not Verified	R.L. Polk & Co Publishers
1990	Wagner Helen	R.L. Polk & Co Publishers

311 N MARKS AVE

Year	Uses	Source
2002	Miller Wallace L	R.L. Polk & Co Publishers
	Miller Ze Lima B	R.L. Polk & Co Publishers

312 N MARKS AVE

Year	Uses	Source
2002	Not Verified 5 Apts	R.L. Polk & Co Publishers
1990	Contente Jr	R.L. Polk & Co Publishers
	Vacant	R.L. Polk & Co Publishers

313 N MARKS AVE

Year	Uses	Source
1990	Mayfield	R.L. Polk & Co Publishers
	Vacant	R.L. Polk & Co Publishers

314 N MARKS AVE

Year	Uses	Source
1990	Wolle	R.L. Polk & Co Publishers

FINDINGS

Year	Uses	Source
1990	Brauer Bernaid	R.L. Polk & Co Publishers

315 N MARKS AVE

Year	Uses	Source
2017	KING R M CO	Cole Information Services
2014	KING R M CO COTTN PICKERS PRTS	Cole Information Services
2009	KING CO R M	Cole Information Services
2004	RM KING CO	Cole Information Services
	OCCUPANT UNKNOWN	Cole Information Services
2002	R M KING CO grain handling equip	R.L. Polk & Co Publishers
1999	KING R M COMPANY COTTN PICKERS PRTS	Cole Information Services
	MORRIS LES	Cole Information Services
1996	R M KING CO	R.L. Polk & Co Publishers
1994	R M KING CO	Cole Information Services
1990	Hedger	R.L. Polk & Co Publishers

316 N MARKS AVE

Year	Uses	Source
1990	Kearns	R.L. Polk & Co Publishers
	Russell Lelia	R.L. Polk & Co Publishers
	Bardizian Georgia	R.L. Polk & Co Publishers

317 N MARKS AVE

Year	Uses	Source
2002	Miller Robert P	R.L. Polk & Co Publishers
1990	Johnstone	R.L. Polk & Co Publishers
	Vacant	R.L. Polk & Co Publishers

318 N MARKS AVE

Year	Uses	Source
2002	Colon Josephine V	R.L. Polk & Co Publishers
	Colon Octavio A	R.L. Polk & Co Publishers
1990	Friend Carlene	R.L. Polk & Co Publishers

319 N MARKS AVE

Year	Uses	Source
2002	Not Verified 4 Apts	R.L. Polk & Co Publishers
1990	Woodruff Ruth	R.L. Polk & Co Publishers

FINDINGS

320 N MARKS AVE

Year	Uses	Source
1990	Porter Sterling	R.L. Polk & Co Publishers

321 N MARKS AVE

Year	Uses	Source
1990	De Raffasle Laur	R.L. Polk & Co Publishers

322 N MARKS AVE

Year	Uses	Source
1990	Jones Myrtle	R.L. Polk & Co Publishers

323 N MARKS AVE

Year	Uses	Source
2002	Canales Dora G	R.L. Polk & Co Publishers
1990	Bitoni Jean	R.L. Polk & Co Publishers

324 N MARKS AVE

Year	Uses	Source
2002	Not Verified 4 Apts	R.L. Polk & Co Publishers
1990	Vacant	R.L. Polk & Co Publishers

325 N MARKS AVE

Year	Uses	Source
1990	Wilson Merrits	R.L. Polk & Co Publishers

326 N MARKS AVE

Year	Uses	Source
1990	Blakslee Esther	R.L. Polk & Co Publishers

327 N MARKS AVE

Year	Uses	Source
1990	Burnside David	R.L. Polk & Co Publishers

328 N MARKS AVE

Year	Uses	Source
2002	Chernoff Sam Z	R.L. Polk & Co Publishers
1990	Vlck Elmer	R.L. Polk & Co Publishers

329 N MARKS AVE

Year	Uses	Source
2002	Not Verified 2 Apts	R.L. Polk & Co Publishers

FINDINGS

Year	Uses	Source
1990	Lowe Leanora	R.L. Polk & Co Publishers

330 N MARKS AVE

Year	Uses	Source
1990	Morgan Beatrice	R.L. Polk & Co Publishers

331 N MARKS AVE

Year	Uses	Source
2002	Hutcheson Lyndell	R.L. Polk & Co Publishers
1990	Eiverson Jerry	R.L. Polk & Co Publishers

332 N MARKS AVE

Year	Uses	Source
2002	Not Verified	R.L. Polk & Co Publishers
1990	Kitchen Marth	R.L. Polk & Co Publishers

333 N MARKS AVE

Year	Uses	Source
2002	Blades Dolores D	R.L. Polk & Co Publishers
1990	Warner Edn	R.L. Polk & Co Publishers

334 N MARKS AVE

Year	Uses	Source
2002	Not Verified	R.L. Polk & Co Publishers
1990	Taves Fay	R.L. Polk & Co Publishers

343 N MARKS AVE

Year	Uses	Source
1990	Smodes	R.L. Polk & Co Publishers

344 N MARKS AVE

Year	Uses	Source
1990	Hopkins	R.L. Polk & Co Publishers

345 N MARKS AVE

Year	Uses	Source
1990	Wheeler	R.L. Polk & Co Publishers

346 N MARKS AVE

Year	Uses	Source
1990	Gollaher	R.L. Polk & Co Publishers

FINDINGS

347 N MARKS AVE

Year	Uses	Source
1990	Stevens	R.L. Polk & Co Publishers
1986	Th No Return	R.L. Polk & Co Publishers

348 N MARKS AVE

Year	Uses	Source
1990	Bucknbe	R.L. Polk & Co Publishers

349 N MARKS AVE

Year	Uses	Source
1990	Harris	R.L. Polk & Co Publishers

351 N MARKS AVE

Year	Uses	Source
1990	AAnderson	R.L. Polk & Co Publishers

352 N MARKS AVE

Year	Uses	Source
1990	Summers	R.L. Polk & Co Publishers
	Bergen	R.L. Polk & Co Publishers

353 N MARKS AVE

Year	Uses	Source
1990	Gardner	R.L. Polk & Co Publishers

354 N MARKS AVE

Year	Uses	Source
1990	Pearson	R.L. Polk & Co Publishers

355 N MARKS AVE

Year	Uses	Source
1990	Tompson	R.L. Polk & Co Publishers

357 N MARKS AVE

Year	Uses	Source
1990	OBedrosian	R.L. Polk & Co Publishers

358 N MARKS AVE

Year	Uses	Source
1990	Engelman	R.L. Polk & Co Publishers

FINDINGS

359 N MARKS AVE

Year	Uses	Source
1990	Hattox	R.L. Polk & Co Publishers

360 N MARKS AVE

Year	Uses	Source
1990	Getti	R.L. Polk & Co Publishers

361 N MARKS AVE

Year	Uses	Source
1990	Kndersen	R.L. Polk & Co Publishers

362 N MARKS AVE

Year	Uses	Source
1990	Si Ivera	R.L. Polk & Co Publishers

465 N MARKS AVE

Year	Uses	Source
1990	APeterson	R.L. Polk & Co Publishers

466 N MARKS AVE

Year	Uses	Source
1990	Adams	R.L. Polk & Co Publishers

468 N MARKS AVE

Year	Uses	Source
1990	Harry	R.L. Polk & Co Publishers
	Caire	R.L. Polk & Co Publishers

469 N MARKS AVE

Year	Uses	Source
1990	Serpa	R.L. Polk & Co Publishers

470 N MARKS AVE

Year	Uses	Source
1990	Andrews	R.L. Polk & Co Publishers

472 N MARKS AVE

Year	Uses	Source
1990	Howell	R.L. Polk & Co Publishers

FINDINGS

475 N MARKS AVE

Year	Uses	Source
1990	AJackson	R.L. Polk & Co Publishers

476 N MARKS AVE

Year	Uses	Source
1990	Kunseman	R.L. Polk & Co Publishers

477 N MARKS AVE

Year	Uses	Source
1990	ABoyajean	R.L. Polk & Co Publishers

479 N MARKS AVE

Year	Uses	Source
1990	Irwin	R.L. Polk & Co Publishers

480 N MARKS AVE

Year	Uses	Source
1990	Watenabe	R.L. Polk & Co Publishers

481 N MARKS AVE

Year	Uses	Source
1990	Houelier	R.L. Polk & Co Publishers

482 N MARKS AVE

Year	Uses	Source
1990	il Shermer	R.L. Polk & Co Publishers

483 N MARKS AVE

Year	Uses	Source
1990	Meegan	R.L. Polk & Co Publishers

484 N MARKS AVE

Year	Uses	Source
1990	r Duckworth	R.L. Polk & Co Publishers

485 N MARKS AVE

Year	Uses	Source
1990	it Amerian	R.L. Polk & Co Publishers

486 N MARKS AVE

Year	Uses	Source
1990	Engel	R.L. Polk & Co Publishers

FINDINGS

489 N MARKS AVE

Year	Uses	Source
1990	Fifield	R.L. Polk & Co Publishers

495 N MARKS AVE

Year	Uses	Source
2004	ARCHIE CRIPPEN EXCAVATION	Cole Information Services
	ARCHIE CRIPPEN	Cole Information Services
2002	ARCHIE CRIPPEN RECYCLING demolition contractors	R.L. Polk & Co Publishers
1999	CRIPPEN ARCHIE RECYCLING	Cole Information Services
	CRIPPEN ARCHIE STORAGE	Cole Information Services
1996	ARCHIE CRIPPEN DEMOLITION	R.L. Polk & Co Publishers
	Crippen Archie	R.L. Polk & Co Publishers
	Crippen Archie	R.L. Polk & Co Publishers
1994	CRIPPEN U CART READY MIX	Cole Information Services
	ARCHIE CRIPPEN DEMOLITION	Cole Information Services

W NIELSEN AVE

2605 W NIELSEN AVE

Year	Uses	Source
1958	Andreas Peter 0	R.L. Polk & Co Publishers

2606 W NIELSEN AVE

Year	Uses	Source
1958	Mc Amis James 0	R.L. Polk & Co Publishers

2615 W NIELSEN AVE

Year	Uses	Source
1958	Eiffler Juanita M Mrs	R.L. Polk & Co Publishers

2616 W NIELSEN AVE

Year	Uses	Source
1958	Bebb Arth M	R.L. Polk & Co Publishers

2625 W NIELSEN AVE

Year	Uses	Source
2017	ROGER TOCKEY	Cole Information Services
2009	ROGER TOCKEY	Cole Information Services
2002	A LOW TRANSPORT wrecker serv	R.L. Polk & Co Publishers
	MELS TOWING wrecker serv	R.L. Polk & Co Publishers

FINDINGS

Year	Uses	Source
2002	I Kuf is Chris	R.L. Polk & Co Publishers
1999	ROGER TOCKEY	Cole Information Services
	OCCUPANT UNKNOWN	Cole Information Services
	A & B TOWING & AUTO SERVICE	Cole Information Services
1958	Deveze Andre L 0	R.L. Polk & Co Publishers

2626 W NIELSEN AVE

Year	Uses	Source
1958	Moad Jas P 0	R.L. Polk & Co Publishers

2635 W NIELSEN AVE

Year	Uses	Source
1958	Toews Alen J 0	R.L. Polk & Co Publishers

2636 W NIELSEN AVE

Year	Uses	Source
1958	Vacant	R.L. Polk & Co Publishers

2645 W NIELSEN AVE

Year	Uses	Source
2017	LUIS BANUELOS	Cole Information Services
2014	LUIS BANUELOS	Cole Information Services
2009	LUIS BANUELOS	Cole Information Services
2004	DELORIS BANVELOS	Cole Information Services
2002	Banuolos Dolores	R.L. Polk & Co Publishers
	QBanuolos Luts C	R.L. Polk & Co Publishers
1958	Haydoc I: Wray N jr	R.L. Polk & Co Publishers

2646 W NIELSEN AVE

Year	Uses	Source
1958	Rylee Robt L 0	R.L. Polk & Co Publishers

2650 W NIELSEN AVE

Year	Uses	Source
1994	AMERICAN RIVER PACKAGING INC	Cole Information Services

2700 W NIELSEN AVE

Year	Uses	Source
1999	FRYE R BERSON JR	Cole Information Services
1996	R BERSON FRYE JR	R.L. Polk & Co Publishers
	Frye R B	R.L. Polk & Co Publishers

FINDINGS

Year	Uses	Source
1994	JOHN G WALKER COTTON	Cole Information Services
	FRYE, R B JR	Cole Information Services

2702 W NIELSEN AVE

Year	Uses	Source
1958	Nelson Wm H 0	R.L. Polk & Co Publishers

2705 W NIELSEN AVE

Year	Uses	Source
1958	Parker Wilbert R ba	R.L. Polk & Co Publishers

2706 W NIELSEN AVE

Year	Uses	Source
1958	Patton S Bruce ba	R.L. Polk & Co Publishers

2725 W NIELSEN AVE

Year	Uses	Source
1958	Harper Edw M ba	R.L. Polk & Co Publishers

2728 W NIELSEN AVE

Year	Uses	Source
1958	Felps Carl L	R.L. Polk & Co Publishers

2733 W NIELSEN AVE

Year	Uses	Source
1958	Dicks Dale A	R.L. Polk & Co Publishers

2742 W NIELSEN AVE

Year	Uses	Source
1958	Edwards Chas M 0	R.L. Polk & Co Publishers

2804 W NIELSEN AVE

Year	Uses	Source
1958	Cantrell Howard L A	R.L. Polk & Co Publishers

2805 W NIELSEN AVE

Year	Uses	Source
1958	Vacant	R.L. Polk & Co Publishers

2814 W NIELSEN AVE

Year	Uses	Source
1958	Mc Parland John H	R.L. Polk & Co Publishers

FINDINGS

2829 W NIELSEN AVE

Year	Uses	Source
2017	DAVID MONGE	Cole Information Services
2014	DAVID MONGE	Cole Information Services
2009	OCCUPANT UNKNOWN	Cole Information Services
2004	BRIAN PITTMAN	Cole Information Services
	DAN FLEMING	Cole Information Services
2002	Fleming Nicole L	R.L. Polk & Co Publishers
	Fleming Dan N 1 S+ A	R.L. Polk & Co Publishers
1999	OCCUPANT UNKNOWN	Cole Information Services
1996	FLEMING TRUCKING	R.L. Polk & Co Publishers
1994	FLEMING TRUCKING	Cole Information Services
1958	Miller June M Mrs	R.L. Polk & Co Publishers

2839 W NIELSEN AVE

Year	Uses	Source
1958	Solomon Mary	R.L. Polk & Co Publishers

2844 W NIELSEN AVE

Year	Uses	Source
1958	Mollo Aurelio	R.L. Polk & Co Publishers

2845 W NIELSEN AVE

Year	Uses	Source
1958	Alley Kenneth A 0	R.L. Polk & Co Publishers

2904 W NIELSEN AVE

Year	Uses	Source
1958	Mercado Juan	R.L. Polk & Co Publishers

2905 W NIELSEN AVE

Year	Uses	Source
1958	Deegan Wilfred L AAM	R.L. Polk & Co Publishers

2915 W NIELSEN AVE

Year	Uses	Source
1958	NORMAL AV E Contd	R.L. Polk & Co Publishers
	Hinsberger Chester R	R.L. Polk & Co Publishers

2929 W NIELSEN AVE

Year	Uses	Source
1958	Proifitt Lee R	R.L. Polk & Co Publishers

FINDINGS

2934 W NIELSEN AVE

Year	Uses	Source
1958	Shive John B	R.L. Polk & Co Publishers

2949 W NIELSEN AVE

Year	Uses	Source
1958	Pierce Alf P	R.L. Polk & Co Publishers

2965 W NIELSEN AVE

Year	Uses	Source
1958	Juvinall Loral F Mrs	R.L. Polk & Co Publishers

2975 W NIELSEN AVE

Year	Uses	Source
1958	Adams Warren E	R.L. Polk & Co Publishers

2995 W NIELSEN AVE

Year	Uses	Source
1958	Terronez Cecil V	R.L. Polk & Co Publishers

3007 W NIELSEN AVE

Year	Uses	Source
1958	Curnutte Donald C	R.L. Polk & Co Publishers

3027 W NIELSEN AVE

Year	Uses	Source
1958	Gordon John C MAM	R.L. Polk & Co Publishers

FINDINGS

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
2605 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2606 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2615 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2616 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2625 W NIELSEN AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2625 W NIELSEN AVE	2014, 2004, 2002, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2626 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2635 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2636 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2645 W NIELSEN AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2645 W NIELSEN AVE	2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2646 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2650 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2700 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2700 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2702 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2705 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2706 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2725 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2728 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2733 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922

FINDINGS

Address Researched	Address Not Identified in Research Source
2742 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2804 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2805 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2814 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2829 W NIELSEN AVE	2017, 2014, 2009, 2004, 1999, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2829 W NIELSEN AVE	2002, 1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2839 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2844 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2845 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2904 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2905 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2915 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2929 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2934 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2949 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2965 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2975 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
2995 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
300 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
3007 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
301 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
302 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
3027 W NIELSEN AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1952, 1947, 1942, 1937, 1932, 1927, 1922
303 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922

FINDINGS

Address Researched	Address Not Identified in Research Source
304 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
305 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
306 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
307 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
308 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
309 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
310 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
311 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
312 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
313 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
314 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
315 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
315 N MARKS AVE	2002, 1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
316 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
317 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
318 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
319 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
320 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
321 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
322 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
323 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
324 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
325 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
326 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922

FINDINGS

Address Researched	Address Not Identified in Research Source
327 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
328 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
329 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
330 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
331 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
332 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
333 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
334 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
343 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
344 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
345 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
346 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
347 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
348 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
349 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
351 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
352 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
353 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
354 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
355 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
357 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
358 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
359 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
360 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922

FINDINGS

Address Researched	Address Not Identified in Research Source
361 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
362 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
465 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
466 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
468 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
469 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
470 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
472 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
475 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
476 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
477 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
479 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
480 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
481 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
482 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
483 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
484 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
485 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
486 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
489 N MARKS AVE	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
495 N MARKS AVE	2017, 2014, 2009, 2004, 1999, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
495 N MARKS AVE	2017, 2014, 2009, 2002, 1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
2740 W. Nielson Ave.	2017, 2014, 2009, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922

APPENDIX

G

Former CA Compress Facility
2740 W. Nielson Ave.
Fresno, CA 93706

Inquiry Number: 6275752.3
November 23, 2020

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/23/20

Site Name:

Former CA Compress Facility
2740 W. Nielson Ave.
Fresno, CA 93706
EDR Inquiry # 6275752.3

Client Name:

Salem Engineering Group
4729 West Jacquelyn Ave
Fresno, CA 93722
Contact: Shannon Lodge

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Salem Engineering Group were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 2E2D-4E8A-A0DF

PO # NA

Project 1-420-1016

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 2E2D-4E8A-A0DF

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✓ Library of Congress
- ✓ University Publications of America
- ✓ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

Salem Engineering Group (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

APPENDIX

H

THE TWINING LABORATORIES, INC.
EST 1930
ANALYTICAL CHEMISTRY • ENVIRONMENTAL SERVICES
GEOTECHNICAL ENGINEERING • SAMPLING SERVICES
CONSTRUCTION INSPECTION & MATERIALS TESTING

PHASE I ENVIRONMENTAL SITE ASSESSMENT

66 ACRE PROPERTY LOCATED IN THE

NORTHWESTERN CORNER

OF NIELSEN AND HUGHES AVENUES

APN 458-020-09

FRESNO, CALIFORNIA

Prepared For:

Mr. George Daoudian
4790 North Cornelia
Fresno, California 93722

Prepared By:

The Twining Laboratories, Inc.
2527 Fresno Street
Fresno, California 93721

C50302.01

November 18, 2005

TABLE OF CONTENTS

1.0 **INTRODUCTION** 1
1.1 Objective 1
1.2 Scope of Services 1
1.3 Limitations and Limited Conditions 2

2.0 **SITE DESCRIPTION** 3
2.1 Location and Description of the Site 3
2.2 Physical and Environmental Setting of the Site 3

3.0 **HISTORICAL INFORMATION OF THE SITE AND ADJOINING PROPERTIES** 4
3.1 Aerial Photograph Review 4
3.2 Sanborn Fire Insurance Map Review 5
3.3 Historical City Directory Review 5
3.4 Building Permit Review 5
3.5 Interviews and Discussion of Environmental Questionnaire and Disclosure Statement 5
3.6 Previous Investigations 6
3.7 Past Uses of the Site 6
3.8 Past Uses of Adjoining Properties 6

4.0 **INFORMATION FROM THE SITE RECONNAISSANCE** 7
4.1 Description of Structures, Roads, and Other Site Improvements 7
4.2 Specific Indicators of Environmental Concern 7
4.3 Current Uses of the Site 10
4.4 Current Uses of the Adjoining Properties 10

5.0 **RECORDS REVIEW** 11
5.1 Facilities Identified in the Regulatory Lists and Record Review 12

6.0 **SUMMARY OF FINDINGS** 14
6.1 On-Site 14
6.2 Off-Site 15

7.0 **CONCLUSIONS AND RECOMMENDATIONS** 16

8.0 **CLOSING** 18

9.0 **REFERENCES** 19

10.0 **QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS** 20

LIST OF TABLES, FIGURES, APPENDICES AND ACRONYMS

TABLES

Table 1 - Summary of Regulatory Lists Searched by Environmental Data Resources, Inc. (EDR) and Records Reviewed

APPENDICES

Appendix A - Drawings
Drawing 1 - Site Location Map
Drawing 2 - Site Plan
Appendix B - Site Photographs
Appendix C - Environmental Questionnaire and Disclosure Statement
Appendix D - Transformer Report
Appendix E - EDR Report
Appendix F - Case Closure Letter

ACRONYMS

AST(s)	Aboveground Storage Tank(s)
ASTM	American Society for Testing and Materials
AWP	Annual Workplan
CAL-EPA	State of California, Environmental Protection Agency
CIWMB	California Integrated Waste Management Board
CERCLIS	Comprehensive Environmental Responsibility, Compensation, and Liability Information System
CRWQCB	California Regional Water Quality Control Board
DTSC	Department of Toxic Substances Control
ERNS	Emergency Response and Notification System
FCAO	Fresno County Assessor's Office
FCEHD	Fresno County Environmental Health Department
FCRO	Fresno County Recorder's Office
LUST	Leaking Underground Storage Tank
NPL	National Priority List
NR	Not required at this search distance
Phase I	Phase I Environmental Site Assessment
RCRA	Resource Conservation and Recovery Act
SWIS	Solid Waste Information System
SWRCB	State Water Resource Control Board
TSD	Hazardous Waste Transport, Storage, or Disposal Facilities
US EPA	United States Environmental Protection Agency
UST(s)	Underground Storage Tanks(s)

1.0 INTRODUCTION

The Twining Laboratories, Inc. (Twining) was retained by Mr. George Daoudian, to conduct a Phase I Environmental Site Assessment (Phase I) at an approximately 66 acre property located west of North Hughes Avenue and north of West Nielsen Avenue in the city and county of Fresno, California (Site). This Phase I was conducted in general conformance with the methods and procedures described in the American Society for Testing and Materials (ASTM) "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (Standard Designation E 1527-00), published July 2000, and in accordance with Twining's proposal to Mr. George Daoudian, dated October 19, 2005.

1.1 Objective

The objective of this assessment is to identify recognized environmental conditions located at the Site or adjacent properties which could present material risk of harm to public health or to the environment. Recognized environmental conditions are defined within ASTM Designation E-1527-00 as the presence or likely presence of any hazardous wastes and/or substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

1.2 Scope of Services

The Phase I Scope of Services included the following tasks:

- A review of the current and past uses of the Site since at least 1937;
- A Site reconnaissance to assess evidence of recognized environmental conditions or concerns;
- A visual review of adjacent properties to assess their potential to adversely impact the Site;
- A review of available federal and state Environmental Protection Agency (EPA) lists of known or potential hazardous waste sites or landfills, and sites currently under investigation for environmental violations in the Site area. Using area-profile services, Twining cataloged sites in the vicinity of the Site that have been identified on regulatory agency lists. Search criteria were in conformance with ASTM Standard E 1527-00;
- Contact with relevant municipal, county and state agencies to review readily available records and permits; and
- Preparation of this written report to present the findings and conclusions.

The Scope of Services specifically excluded non-CERCLA items including sampling and analysis for the potential presence of asbestos containing building materials, lead based paint, or an assessment for radon gas. In addition, the Scope of Services did not include the collection and/or analysis of air, soil, groundwater, or other environmental samples.

1.3 Limitations and Limited Conditions

The purpose of an environmental assessment is to reasonably assess the potential for, or actual impact of, past practices on a given site which may pose an environmental impairment to it. No assessment is thorough enough to identify all potential environmental impairments at a given site. If environmental impairments have not been identified during the assessment, such a finding should not, therefore, be construed as a guarantee of the absence of such conditions on the Site, but rather the result of the services performed within the scope, limitations, and cost of the work performed.

The conclusions presented in this report are solely professional opinions based on information provided regarding the Site and the findings of the reconnaissance and records search. Information obtained from the aerial photographs is an interpretation of features observed in the photographs. Actual conditions at the Site may have been different from those interpreted. Conclusions presented are based on conditions as they existed at the time the work was performed. Changes in existing conditions of the Site due to time lapse, natural causes, or operations adjacent to the Site may deem conclusions presented invalid, unless the changes are reviewed and the conclusions reevaluated. Such conditions may require additional field and laboratory investigations to assess if the conclusions are applicable considering the changed conditions.

This work was performed for the sole use of the George Daoudian. Any reliance on this report by a third party is at such party's sole risk. Others who seek to rely on the findings have a duty to determine the adequacy of this report for their intended use, time, and location. Twining does not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report. No other warranty, either expressed or implied, is made. The standard of practice is time-dependent. Services provided were performed consistent with generally-accepted professional consulting principles and practices for environmental assessors in Fresno County, California at the time the work was performed. The findings and conclusions presented in this report are solely professional opinions derived in accordance with current standards of professional practice. There were no limiting conditions encountered during the completion of this Phase I.

2.0 SITE DESCRIPTION

Information concerning the Site was obtained from a Site reconnaissance conducted by Mr. Max Miljevich a representative of the Twining Fresno, California office on Friday, October 28, 2005; interviews with Site representatives; and review of the documents referenced in Section 3.0 of this report.

2.1 Location and Description of the Site

The Site is located near the northwest corner of North Hughes Avenue and West Nielsen Avenue in the city and county of Fresno, California. The Fresno County Assessor's Office has assigned Assessor's Parcel Number (APN) 458-020-09, and listed the legal owner as:

California Compress Co Inc.
P.O. Box 11966
Fresno, California 93776

The Site is an approximately 66 acre parcel consisting of an industrial developed lot. A Site location map is presented as Drawing 1, and a Site plan is presented as Drawing 2 in Appendix A. Additionally, photographs were taken during the Site reconnaissance and selected photographs of the Site are presented in Appendix B.

2.2 Physical and Environmental Setting of the Site

Environmental characteristics including topography, geology, and hydrogeology were evaluated based on the Site observations, published literature, and maps.

Topography

Topographic map coverage of the Site is provided by the United States Geological Survey (USGS), Fresno South, California, 7.5-minute quadrangle map dated 1963, photograph revised 1981. The Site lies within the central portion of Section 6, Township 14 South, Range 20 East, Mount Diablo Baseline and Meridian. According to the map, the Site is located at an elevation of approximately 280 feet above mean sea level, and the land surface slopes toward the south.

Geology

The Site is located within the central portion of the San Joaquin Valley. The San Joaquin Valley is part of the Great Valley Geomorphic Province, a topographic and structural basin bounded on the east by the Sierra Nevada and to the west by the Coast Range. The Sierra Nevada, a fault block dipping gently to the southwest, is composed of igneous and metamorphic rocks of pre-Tertiary age which comprise the basement complex beneath the valley (USGS, 1986). The topography in the area of the Site was formed by recent alluvial fans and flood plains that gently slope along drainageways which flow south towards the San Joaquin River.

Soils

According to the Soil Survey of Fresno County, California, native soil in the vicinity of the Site is Delhi loamy sand (3 to 9 percent slopes). Delhi loamy sand is well drained. Run-off is very slow and the available water holding capacity is very low. The hazard of erosion is negligible.

Hydrogeology

The depth of first encountered groundwater underlying the Site has not been assessed. However, according to hydrograph data displayed on the California Department of Water Resources, Water Data Library website (http://wdl.water.ca.gov), the depth to first encountered groundwater underlying the Site is estimated to be approximately 90 feet below grade. According to a map published by the California Department of Water Resources entitled Lines of Equal Elevation of Water in Wells, Spring 2002, groundwater flow trends to the southwest direction.

3.0 HISTORICAL INFORMATION OF THE SITE AND ADJOINING PROPERTIES

The history of land-use on and near the Site was determined from interviews, and review of historic aerial photographs, and topographic maps. This information is summarized in the following sub-sections.

3.1 Aerial Photograph Review

Available historical aerial photographs of the Site and vicinity for the years 1937, 1950, 1957, 1961, 1965, 1967, 1973, 1977, 1987, 1993, and 1998 were reviewed for indications of past use and/or activities which may have involved the manufacture, generation, use, storage, and/or disposal of hazardous materials. The aerial photographs were reviewed at the California State University Fresno, map library on Monday, October 24, 2005.

- The 1937 aerial photograph depicts the Site as agriculturally developed with a farmstead. North Marks Avenue adjoins the Site to the west, with an agriculturally developed lot depicted beyond the roadway. North Hughes Avenue adjoins the Site to the east, with an agriculturally developed lot depicted beyond the roadway. Southern Pacific Railroad Track adjoins the Site to the north, with a commercially developed lot depicted beyond the railway. West Nielsen Avenue adjoins the Site to the south, with an agriculturally developed lot depicted beyond the roadway.

- The 1950 aerial photograph depicts the Site and adjoining properties in similar use as the 1937 aerial photograph observations.

- The 1957, 1961, 1965 and 1967 aerial photographs depict the Site and adjoining properties in similar use as the 1950 aerial photograph observations, with the exception that the Site is depicted as industrially developed with 13 structures.

- The 1973 aerial photograph depicts the Site and adjoining properties in similar use as the 1967 aerial photograph observations, with the exception that the Site is depicted as having 8 additional structures. Additionally, the property to the east is depicted as a cemetery.

- The 1977, 1987, and 1993 aerial photographs depict the Site and adjoining properties in similar use as the 1973 aerial photograph observations.

- The 1998 aerial photograph depicts the Site and adjoining properties in similar use as the 1993 aerial photograph observations, with the exception of the adjoining property to the west and south are commercially developed. Additionally, the property to the north is depicted vacant.

3.2 Sanborn Fire Insurance Map Review

Twining reviewed Sanborn Fire Insurance Maps at the Fresno County Free Library, located in Fresno, California. Sanborn Maps can provide historical information regarding a Site. Sanborn Fire Insurance Maps drawn for the city of Fresno did not include the Site or surrounding area.

3.3 Historical City Directory Review

City directories published by R.L. Polk Company (Polk) for the city of Fresno were reviewed at the Fresno County Free Library, located in Fresno, California. City directories can provide information concerning past and current occupancy of the Site. Polk city directories listed for the city of Fresno included the following for 2740 W. Nielsen Avenue:

- 2003-1996 California Compress Inc; Hohenberg Bros. Co.

3.4 Building Permit Review

Building permit records were reviewed to assess features which may present a potential environmental concern. Numerous building permits were found on file for the Site at the City of Fresno Building Department. Starting in 1958 building addition permits where identified, as well as electrical and plumbing permits. Buildings added to the Site ranged from warehouses to a guard house. A permit for a 1,500 gallon septic pit was identified dated May 5, 1979. A UST removal and grading permit was issued on May 5, 1995. Roof and fire repair permit was issued on March 27, 2003.

3.5 Interviews and Discussion of Environmental Questionnaire and Disclosure Statement

An environmental questionnaire and disclosure statement (questionnaire) was submitted to Mr. Mike Gleason, and facility operator Mr. Keith Paul. Mr. Gleason completed a draft of the questionnaire and returned it to Twining. A copy of the draft is included in Appendix C.

According to the draft questionnaire produced by Mr. Gleason, he had no knowledge of current or former aboveground or underground storage tanks on the parcel. Additionally, Mr. Gleason had no knowledge of any other hazardous materials, storage, disposal, or disposal areas on the parcel. Further, Mr. Gleason had no information regarding releases, or spills of hazardous materials at the Site as a result of illegal dumping, or traffic accidents along the adjoining roadways. Mr. Gleason also stated that electricity and natural gas are provided by PG&E. Additionally, Mr. Gleason stated that the drinking water is maintained by three water wells on the Site, storm water drainage is handled by Fresno Irrigation Dist., solid waste disposal by BFI, and sewer utilities are maintained by septic systems on the Site.

At the time of report preparation Twining had not received a completed questionnaire from either Mr. Gleason, or Mr. Keith Paul. If information is obtained from these documents that changes the findings of this report, Twining will notify the client and an addendum to the report will be issued. A blank copy of the Environmental Questionnaire and Disclosure Statement is included in Appendix C of this report.

3.6 Previous Investigations

Twining was not supplied with previous investigations for the Site, nor were any identified during the course of this Phase I.

3.7 Past Uses of the Site

The Site appears to have been agriculturally developed since at least 1937, to sometime before 1957. Since at least 1957 to present, the Site has been industrially developed.

3.8 Past Uses of Adjoining Properties

The adjoining properties to the south and west have been agriculturally developed since at least 1937 to sometime before 1998. Since at least 1998 to present, the adjoining properties to the south and west have been commercially developed. West Nielsen Avenue has traversed the southern boundary of the Site since at least 1937 to present. North Marks Avenue has traversed the western boundary of the Site since at least 1937 to present. The adjoining property to the east has been agriculturally developed since at least 1937 to sometime before 1973. Since at least 1973 to the present, the adjoining property to the east has been a cemetery. North Hughes Avenue has traversed the eastern boundary of the Site since at least 1937 to present. The adjoining property to the north has been commercially developed since at least 1937 to sometime before 1998. Since at least 1998 to the present, the adjoining property to the north has been vacant. Southern Pacific Railroad Tracks have traversed the northern boundary of the Site since at least 1937 to present.

4.0 INFORMATION FROM THE SITE RECONNAISSANCE

Twining's Site reconnaissance was conducted on Friday, October 28, 2005 by Mr. Max Miljevich, a representative of the Twining Fresno, California Office. The Site reconnaissance included a Site walk to observe and photograph any specific indicators of environmental concern at the Site. There were no significant limitations encountered at the time of the Site reconnaissance.

The findings of the Site reconnaissance are summarized below. A Site Plan depicting the Site, adjoining property use, and observed on the Site features is presented as Drawing 2 in Appendix A. Copies of selected photographs are presented in Appendix B.

4.1 Description of Structures, Roads, and Other Site Improvements

West Nielsen Avenue adjoins the southern boundary of the Site. North Marks Avenue adjoins western boundary of the Site. North Hughes Avenue adjoins the eastern boundary of the Site. Southern Pacific Railroad adjoins the northern boundary of the Site. Twining observed Twenty six (26) structures at the Site. The structures included: One office building, approximately 16,200 square-feet in area, used as the main office; One 4,000 square-feet in area office, used as a rental office; One 1,200 square-feet in area Receiving office; Two wood frame, slab on-grade buildings, approximately 43,200 square-feet in area, used as warehouses; Seven wood frame, slab on-grade buildings, approximately 45,000 square-feet in area, used as warehouses; One wood frame, slab on-grade buildings, approximately 50,000 square-feet in area, used as a warehouse; One wood frame, slab on-grade buildings, approximately 72,000 square-feet in area, used in the past as a press house now used as a warehouse; Eight steel frame, slab on-grade buildings, approximately 45,000 square-feet in area, used as warehouses; Two steel frame, slab on-grade buildings, approximately 66,500 square-feet in area, used as warehouses; one wood frame, slab on-grade buildings, approximately 12,000 square-feet in area, used as warehouses; One wood frame, slab on-grade buildings, approximately 4,800 square-feet in area, used as machine shop. The majority of the Site is paved with asphalt.

The locations of the structures are depicted on Drawing 2 in Appendix A.

4.2 Specific Indicators of Environmental Concern

Hazardous Substances and Wastes

Twining did not observe any hazardous substances or wastes at the Site on the day of the reconnaissance.

Underground Storage Tanks (USTs) / Aboveground Storage Tanks (ASTs)

Visual indications of USTs such as vent lines or fill ports were not observed on the Site during Twining's Site reconnaissance. Additionally, Twining observed four (4) ASTs on the Site during the Site reconnaissance. Two propane ASTs where observed on the central portion of the Site. Two

Diesel ASTs, 150 and 100 gallons respectively, where also identified on the southern boundary. The Diesel ASTs are connected to two diesel pumps, for fire prevention. No staining was observed near the ASTs.

Septic Tanks, Water Wells, and Dry Wells

During the Site reconnaissance, Twining observed Septic Tanks at the Site. Two (2) where located on the southwestern portion of the Site near the office and rental office buildings. According to Mr. Keith Paul, one is located near Warehouse 18, and another is located in the northwestern portion of the Site. Additionally, Twining observed three (3) water wells on the Site, located on the northeast, south, and west, respectively. According to Mr. Keith Paul, the well on the west has been dry for a few years.

Drums or Other Storage Containers

During the Site reconnaissance, Twining observed two (2) 35 gallon drums, and other small containers in the machine shop at the Site. Oil staining was observed near the drums. According to Mr. Keith Paul, the shop is where they change the oil of their forklifts. The waste oil is kept on the Site, until it can be shipped off for recycling. The concrete in the machine shop is in good condition. Additionally, a 35 gallon drum was identified in the "Loose House", (a building used to re-bail loose cotton together), located on the central portion of the Site. The drum contained water. No staining or odors were identified in connection to with drum.

Potential Polychlorinatedbiphenyl (PCB)-Containing Equipment

During the Site reconnaissance, Twining observed nine (9) pole-mounted transformers. All the transformers appeared to be in new condition, with the exception of three, located near the propane ASTs. No staining was observed near any of the transformers. According to Mr. Keith Paul, Twining Laboratories tested an oil sample in May of 1997. That transformer has since been removed. Additionally, PG&E tested the insulating fluid of the nine transformers left on the property. The results concluded the rest of the transformers had less than 50 ppm (parts per million) PCB content in the oil. A copy of this report is in Appendix D of with report.

Solid Waste

No indication of solid waste disposal was observed at the Site during the Site reconnaissance.

Drains and Sumps

During Site reconnaissance, Twining observed two storm drains located on the central and eastern portion of the Site, respectively. Additionally, two paved storm water drainage ditches traverse the southern and western portion of the Site. Twining did not observe any staining or leakage in connection with the drains, nor did Twining identify any evidence of dumping of hazardous waste.

Wastewater

No wastewater appears to be generated on the Site.

Oil and Gas Wells

No on-Site oil or gas wells were identified during the Site reconnaissance or within California Department of Conservation - Division of Oil & Gas maps reviewed during this assessment.

Pits, Ponds, and Lagoons

No pits, ponds, or lagoons were observed on the Site, during the Site reconnaissance, with the exception of two water basins, used for fire prevention. The basins are located on the southern portion of the Site, near the two diesel pumps. No Staining or sheen was observed on the surface water.

Pipelines and Pipes of unknown use or origin

No pipes of unknown use or origin were observed on the Site, with the exception of a pipe line connecting the water well to the two water basins on the southern portion of the property.

High-Voltage Power Lines

During the Site reconnaissance, Twining did not observe high-tension power lines traversing the Site.

Agricultural Chemicals

No agricultural chemicals, or areas where agricultural chemicals may have been stored or mixed were observed at the Site during the Site reconnaissance.

Wetlands and Surface Waters

Twining did not observe any Wetlands or Surface Waters at the Site.

Soil Mounds

During the Site reconnaissance, Twining observed a soil mound on the southern portion of the Site. According to Mr. Keith Paul, the soil was excavation dirt from the foundation of Warehouse 18, near the water basins on the southern portion of the Site. The warehouse floor was changed from asphalt to concrete to accommodate heavy machinery. The soil mound has been on the Site for a few years.

Cotton Press and Other Equipment

During the Site reconnaissance, Twining observed an above ground cotton press, located on the northern portion of the Site, within the "Press House". The press was used in the past to reform the cotton bails into smaller ones. The press was enclosed in a metal fence. No staining was observed near the press. The press has not been in operation since 1995. According to Mr. Keith Paul, the press used LUBRIPLATE 930 series lubricating grease while it was in operation. An above ground cotton re-bailer was observed in the "Loose House", in the central portion of the Site. The machine has not been used since 1995. No staining was observed near the machine.

Other Physical Evidence of Contamination

Indications of contamination (i.e., stressed vegetation, pavement degradation, etc.) were not observed on the Site the day of the Site reconnaissance.

4.3 Current Uses of the Site

The Site is currently a storage warehouse for cotton.

4.4 Current Uses of the Adjoining Properties

Southern Pacific Railroad Track adjoins the Site on the northern boundary, with an industrial developed lot beyond the road. North Hughes Avenue adjoins the Site on the eastern boundary, with a cemetery beyond the road. North Marks Avenue adjoins the Site on the western boundary, with a commercially developed lot beyond the road. West Nielsen Avenue adjoins the Site on the southern boundary, with an industrial developed lot beyond the road.

5.0 RECORDS REVIEW

Twining contracted Environmental Data Resources, Inc. (EDR) to perform searches of available federal, state, and local database information systems for the purpose of identifying known recognized environmental conditions present on the Site and nearby properties which have the potential to adversely impact the Site being assessed in this study. Information regarding the list, record, and permit review findings is summarized in Table 1. The complete report furnished by EDR is included in Appendix E of the report.

TABLE 1
SUMMARY OF REGULATORY LISTS SEARCHED BY EDR AND RECORDS REVIEWED

Database	Target Site	Search Distance	≤ 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL ASTM STANDARD								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.250	0	0	NR	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRIS-TSD		0.500	0	0	0	0	NR	0
RCRIS Large Quantity Generator		0.250	0	0	NR	NR	NR	0
RCRIS Small Quantity Generator		0.250	0	1	NR	NR	NR	1
ERNS		TP	NR	NR	NR	NR	NR	0
STATE ASTM STANDARD								
AWP		1.000	0	0	0	0	NR	0
Cal-Sites (SMBRP)		1.000	0	0	0	0	NR	0
CHMIRS		TP	NR	NR	NR	NR	NR	0
Cortese	X	0.500	0	0	1	NR	NR	1
Notify 65		1.000	0	0	0	0	NR	0
Toxic Pits		1.000	0	0	0	0	NR	0
State Landfill		0.500	0	0	2	NR	NR	2
WMUDS/SWAT		0.500	0	0	0	NR	NR	0
LUST	X	0.500	0	0	2	NR	NR	2
CA Bond Exp. Plan		1.000	0	0	0	0	NR	0
UST		0.250	0	0	NR	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0
CA FID UST	X	0.250	0	2	NR	NR	NR	2
HIST UST	X	0.250	0	2	NR	NR	NR	2

Search Distance in miles
NR=Not Requested (ASTM does not require a search at this distance)
TP=Target Property

5.1 Facilities Identified in the Regulatory Lists and Record Review

The information regarding the following facilities was obtained from files reviewed at the Fresno County Environmental Health Department (FCEHD), Regional Water Quality Control Board (RWCB), Fresno City Fire Department (FCFD), and Department of Toxic Substance Control (DTSC):

- **The Site** (2740 West Nielsen Avenue). The business is listed as a Fresno Co. CUPA, UST and a CA FID UST facility on the EDR report. The facility previously contained two 4,000-gallon Diesel USTs, one 1,000-gallon motor oil UST, one 10,000-gallon heating oil UST. During April of 1995, the USTs were removed and soil contamination was discovered under the 1,000-gallon UST. Dames and Moore, investigated the extent of contamination. According to the investigation, 2.7 cubic yards of soil was impacted beneath the former UST location. A "case closure" letter dated July 3,1996 was granted by FCEHD. A copy of this letter is included in Appendix F. Based upon the information reviewed at the FCEHD, the environmental concern posed to the Site from this facility appears low.

- **Kemmer Agricultural Co.** is located at 88 North Hughes Avenue, approximately 1,240 feet east of the Site. The business is listed as a Fresno Co. CUPA and a UST facility on the EDR report. The facility previously contained one 100-gallon agricultural rinse water UST, and two 1,000-gallon gasoline USTs. During January 5, 1987, the USTs were removed. After the appropriate remediation actions were taken on October 14, 1996 "case closure" was granted by the FCEHD. A copy of this letter is included in Appendix F. Based upon the information reviewed at the FCEHD, and because the USTs have reportedly been removed, the environmental concern posed to the Site from this facility appears low.

- **Jensen Farms** is located at 2829 West Nielsen Avenue, approximately 1,247 feet west southwest of the Site. The business is listed as a UST facility on the EDR report. During the file review at the FCEHD, no information regarding unauthorized releases or spills in connection with the facility were identified. RWQCB, FCFD, and DTSC were contacted, no information regarding this address was identified. Based upon the information reviewed at the FCEHD, DTSC, FCFD, and RWQCB, and the distance and apparent groundwater flow direction, the environmental concern posed to the Site from this facility appears low.

- **Weldon Trucking** is located at 2002 West Nielsen Avenue, approximately 1,655 feet east southeast of the Site. The business is listed as a LUST and a Fresno Co. CUPA facility on the EDR report. The facility previously contained one 10,000-gallon diesel UST. A letter from Mr. Wieldon to FCEHD, stated his plan to remove the UST system by the end of the summer of 2004. No other information was found

by at FCEHD. RWQCB, FCFD, and DTSC were contacted, no information regarding this address was identified. Although there is no closure information for this facility, based upon available information, and the ground water flow direction, the environmental concern posed to the Site from this facility appears low.

- **Fresno Irrigation District** is located at 3075 West Nielsen Avenue, approximately 1,945 feet west southwest of the Site. The facility is listed as a Fresno Co. CUPA facility on the EDR report. The facility previously contained one 5,656-gallon oil UST, one 3,000-gallon Diesel UST, and one 10,000-gallon gasoline UST. During January 8, 1997, the USTs were removed. On December 11, 1998 "case closure" was granted by the FCEHD. A copy of this letter is in Appendix F. Based upon the information reviewed at the FCEHD, and because the USTs have reportedly been removed, the environmental concern posed to the Site from this facility appears low.

- **Craycroft Brick Inert Site** is located 2301 West Belmont Avenue, approximately 2,463 feet northwest of the Site. The facility is listed as a LUST, Cortese, and Fresno Co. CUPA facility on the EDR report. The facility previously contained one 8,000-gallon gasoline UST, which was removed on December 20, 1991. FCEHD issued a letter on August 31, 1999, stating a copy of the analytical reports regarding the tank removal were needed before a "case closure" can be issued. The analytical report has since been lost by the consulting firm. A copy of this letter is in Appendix F. Based upon the information reviewed at the FCEHD, the distance of this facility to the Site, and the reported direction of groundwater flow, the environmental concern posed to the Site from this facility appears low.

The environmental concern posed to the Site from off-Site sources appears low.

6.0 SUMMARY OF FINDINGS

The findings of the Phase I are summarized in the following sections:

6.1 On-Site

The Site appears to have been agriculturally developed since at least 1937, to sometime before 1957. Since at least 1957 to present, the Site has been industrially developed. The Site is currently a storage warehouse for cotton. Twenty six (26) structures were identified at the Site. Three office buildings are currently on the Site with an approximate total square footage of 21,400 square feet. Additionally, 11 wood, and 10 metal warehouse structures were identified. Two wood shop buildings where also identified, on the southern and central portions of the Site, respectively. Twining observed four (4) ASTs on the Site during the Site reconnaissance. Two gallon propane ASTs where observed on the central portion of the Site. Two Diesel ASTs, 150 and 100 gallons respectively, where also identified on the southern boundary. The Diesel ASTs are connected to two diesel pumps used to pump water from two basins, for fire prevention. No staining was observed near the ASTs. The basins are located on the on the southern portion of the Site. During the Site reconnaissance, Twining observed evidence of septic tanks at the Site. Two (2) where located on the southwestern portion of the Site near the office and rental office buildings. According to Mr. Keith Paul, another is located near Warehouse 18, and another is located in the northwestern portion of the Site. Additionally, Twining observed three (3) water wells on the Site, located on the northeast, south, and west respectively. According to Mr. Keith Paul, the well on the west has been dry for a few years. Twining observed a soil mound on the southern portion of the Site. According to Mr. Keith Paul, the soil was excavation dirt from the foundation of Warehouse 18. The warehouse floor was changed from asphalt to concrete to accommodate heavy machinery. Twining observed an above ground cotton press, located on the northern portion of the Site named the "Press House". The press was used in the past to reform the cotton bails into smaller ones. The press was inclosed in a metal fence, and no staining was observed near the press. The press has not been in operation since 1995. According to Mr. Keith Paul, the press used LUBRIPLATE 930 series lubricating grease while it was in operation. Additionally, Twining observed two (2) 35 gallon drums, and other small containers in the machine shop at the Site. Oil staining was observed near the drums. According to Mr. Keith Paul, the shop is where they change the oil of their forklifts. The waste oil is kept on the Site, until it can be shipped off for recycling. The concrete in the machine shop is in good condition. Additionally, a 35 gallon drum was identified in the "Loose House", (a building used to re-bail loose cotton together), located on the central portion of the Site. The drum contained water. No staining or odors were identified in connection to with drum. During the Site reconnaissance, Twining observed nine (9) pole-mounted transformers. All the transformers appeared to be in new condition, with the exception of three near the propane ASTs. No staining was observed near any of the transformers. According to Mr. Keith Paul, Twining Laboratories tested a oil sample in May of 1997. That transformer has since been removed. Additionally, PG&E tested the insulating fluid of the nine transformers left on the property. The results concluded the rest of the transformers had less than 50 ppm (parts per million) PCB content in the oil. A copy of this report is in Appendix D.

6.2 Off-Site

The adjoining properties to the south and west have been agriculturally developed since at least 1937 to sometime before 1998. Since at least 1998 to present, the adjoining properties to the south and west have been commercially developed. West Nielsen Avenue has traversed the southern boundary of the Site since at least 1937 to present. North Marks Avenue has traversed the western boundary of the Site since at least 1937 to present. The adjoining property to the east has been agriculturally developed since at least 1937 to sometime before 1973. Since at least 1973 to the present, the adjoining property to the east has been a cemetery. North Hughes Avenue has traversed the eastern boundary of the Site since at least 1937 to present. The adjoining property to the north has been commercially developed since at least 1937 to sometime before 1998. Since at least 1998 to the present, the adjoining property to the north has been vacant. Southern Pacific Railroad Tracks have traversed the northern boundary of the Site since at least 1937 to present.

7.0 CONCLUSIONS AND RECOMMENDATIONS

On behalf of Mr. George Daoudian, Twining performed a Phase I for the Site located northwest of the intersection of North Hughes Avenue and West Nielsen Avenue, in the city and county of Fresno, California. This Phase I was performed during October 2005, and includes 66 acres of property that is currently industrially developed. This Phase I has identified potential recognized environmental conditions in connection with the Site:

- Twining observed a soil mound on the southern portion of the Site. According to Mr. Keith Paul, the soil was excavation dirt from the foundation of Warehouse 18. If these soil piles are going to be used in future development they should be sampled for constituents of concern. If not, Twining recommends that they be removed and disposed of in accordance with local, state, and federal guidelines.

- Three domestic water wells were observed on-Site during the Site reconnaissance, one of which was dry. A water well not properly abandoned can pose an environmental concern by acting as a direct conduit for contaminants that are dumped or spilled in or near the well to impact groundwater beneath the Site. Twining recommends the dry well be abandoned according to applicable Environmental Protection Agency (EPA), state, count and/or local regulations.

- During the Site reconnaissance, Twining observed evidence of septic tanks at the Site. Two (2) where located on the southwestern portion of the Site near the office and rental office buildings. According to Mr. Keith Paul, another is located near Warehouse 18 that has been converted into an office, and another is located in the northwestern portion of the Site. Twining recommends that the septic systems should be located and abandoned according to Fresno County requirements, if they are not to be used in the future.

- During the Site reconnaissance, Twining observed nine (9) pole-mounted transformers. All the transformers appeared to be in new condition, with the exception of three near the propane ASTs. No staining was observed near any of the transformers. According to Mr. Keith Paul, Twining Laboratories tested a oil sample in May of 1997. That transformer has since been removed. Additionally, PG&E tested the insulating fluid of the nine transformers left on the property. The results concluded the rest of the transformers had less than 50 ppm (parts per million) PCB content in the oil. A copy of this report is in Appendix D of the report. Although the detected levels of PCB is low, it is a hazardous material and may potentially impact the Site.

- It is unknown if the on-Site structure has asbestos containing building materials (ACBMs). An asbestos survey was not conducted as part of the scope of this assessment. Twining recommends that an asbestos survey of the on-Site structures

be conducted prior to any repair, renovation, or demolition work at the Site.

- Twining observed two (2) 35 gallon drums, and other small containers in the machine shop at the Site. Oil staining was observed near the drums, according to Mr. Keith Paul, the shop is where they change the oil of their forklifts. The waste oil is kept on the Site, till it can be shipped off the Site for recycling. The concrete in the machine shop is in good condition. The staining appears to be deminimis in nature.

- Twining observed two fire prevention basins. The basins are located on the southern portion of the Site, near the two diesel pumps. No Staining or sheen was observed on the surface water. Although there are no reported releases or incidents in connection with the basins, the client may wish to conduct soil sampling within the basins for possible constituents of concern.

Additionally, one historically recognized environmental concern is in connection with the Site:

- The Site previously contained two 4,000-gallon Diesel USTs, one 1,000-gallon motor oil UST, one 10,000-gallon heating oil UST. During April of 1995, the USTs were removed and soil contamination was discovered under the 1,000-gallon UST. Dames and Moore, investigated the extent of contamination, according to the investigation, 2.7 cubic yards of soil was impacted beneath the former UST location. A "case closure" letter dated July 3,1996 was granted by FCEHD.

One off-Site environmental concern was noted:

- The Southern Pacific Railroad Tracks have traversed the northern boundary of the Site since at least 1937 to present. In some cases, buried petroleum pipelines run parallel to railroad tracks. A release from such a pipeline could potentially impact the Site. A request for pipeline information was made to Ms. Lisa Doudy, a State Fire Marshal. At the time of report preparation, Twining had not received this information. If the information is obtained that changes the findings of this report, Twining will notify the client and an addendum to the report will be issued.

8.0 CLOSING

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-00 of the Site. Any exceptions to, or deletions from, this practice are described in the following paragraph.

The material content of this report is intended to be consistent with a standard of practice as defined by ASTM Practice E 1527-00. However, the report format differs in style, arrangement, and presentation of material facts from the format described by ASTM.

We appreciate the opportunity to be of service to you on this project. If you have questions regarding this report, please feel free to contact us at (559) 268-7021.

Sincerely,

THE TWINING LABORATORIES, INC.
Environmental Services Division

Max Miljevich, EIT
Environmental Assessor

Philip M. Marquez
Supervisor - Phase I Environmental Site Assessments

9.0 REFERENCES

American Society for Testing and Materials, 2000, *ASTM Standards on Environmental Site Assessments for Commercial Real Estate*, 2nd ed., E 1527-00, Philadelphia, Pennsylvania.

Munger, Averill H., Ed. 1994. *Munger Map Book, California-Alaska Oil and Gas Fields.* Munger: Los Angeles, California.

United States Geological Survey, Fresno South, California Quadrangle, 1963 photorevised 1981, 7.5 Minute Series Topographic Map.

United States Department of Agriculture, 1971, *Soil Survey of Eastern Fresno County, California*, Soil Conservation Service in cooperation with the California Agricultural Experiment Station, U.S. Government Printing Office, Washington D.C.

10.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

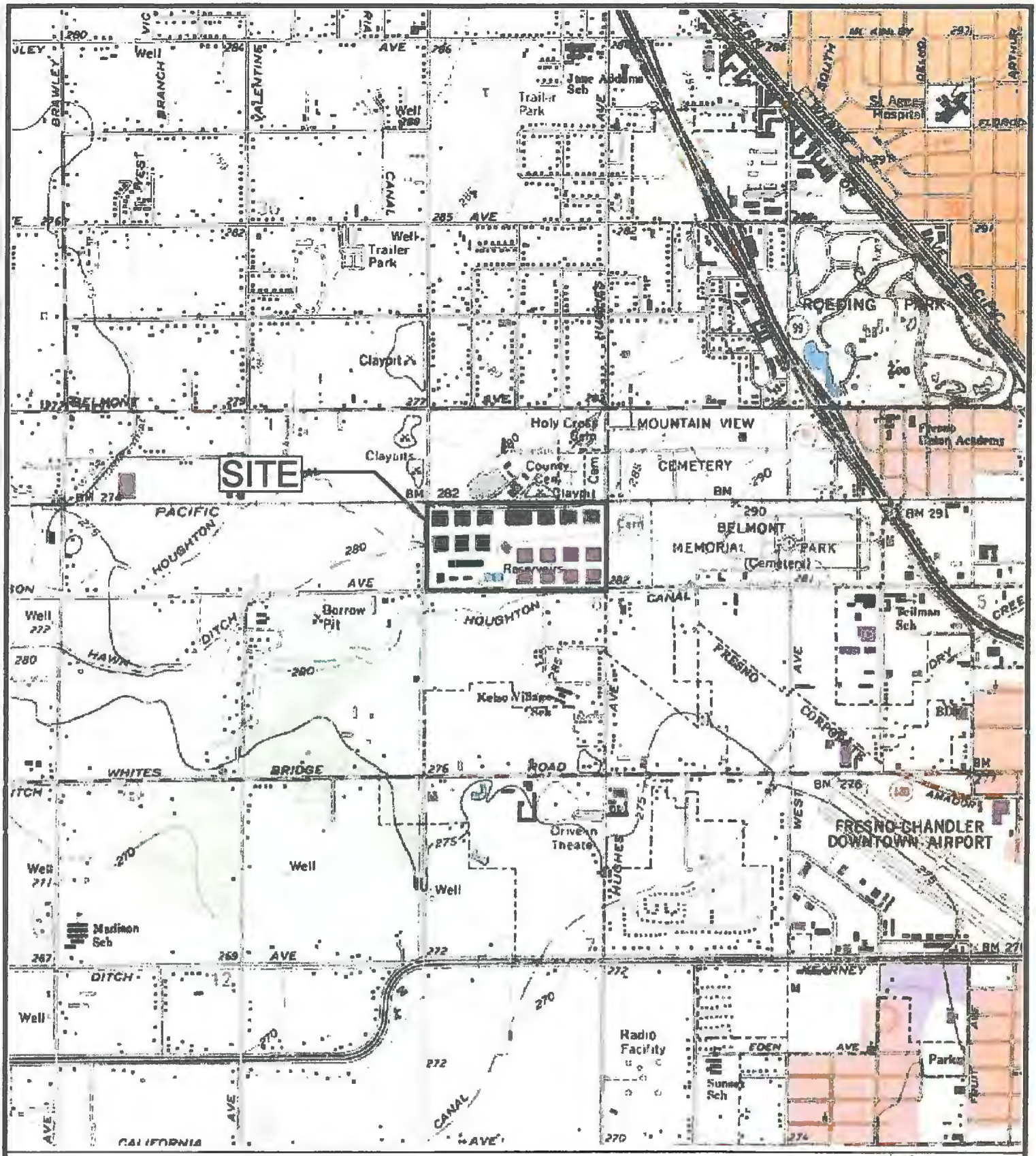
The Twining Laboratories, Inc. Phase I Environmental Site Assessment staff is composed of a group of environmental professionals that perform Environmental Site Assessments on a routine basis. The Phase I staff is managed and supervised by individuals who conduct, prepare, oversee, and/or review Environmental Site Assessments on a daily basis. Qualification profiles for these individuals are provided in the following section.

Philip M. Marquez
Supervisor - Phase I Environmental Site Assessments

Mr. Marquez has four years of experience conducting Phase I environmental site assessments and natural resource monitoring including biological resources and wetlands. Mr. Marquez has conducted environmental site assessments for a number of different project types including canning facilities, pesticide production facilities, shopping centers, gas stations, hospitals, school sites, and agricultural sites.

APPENDIX A

DRAWINGS



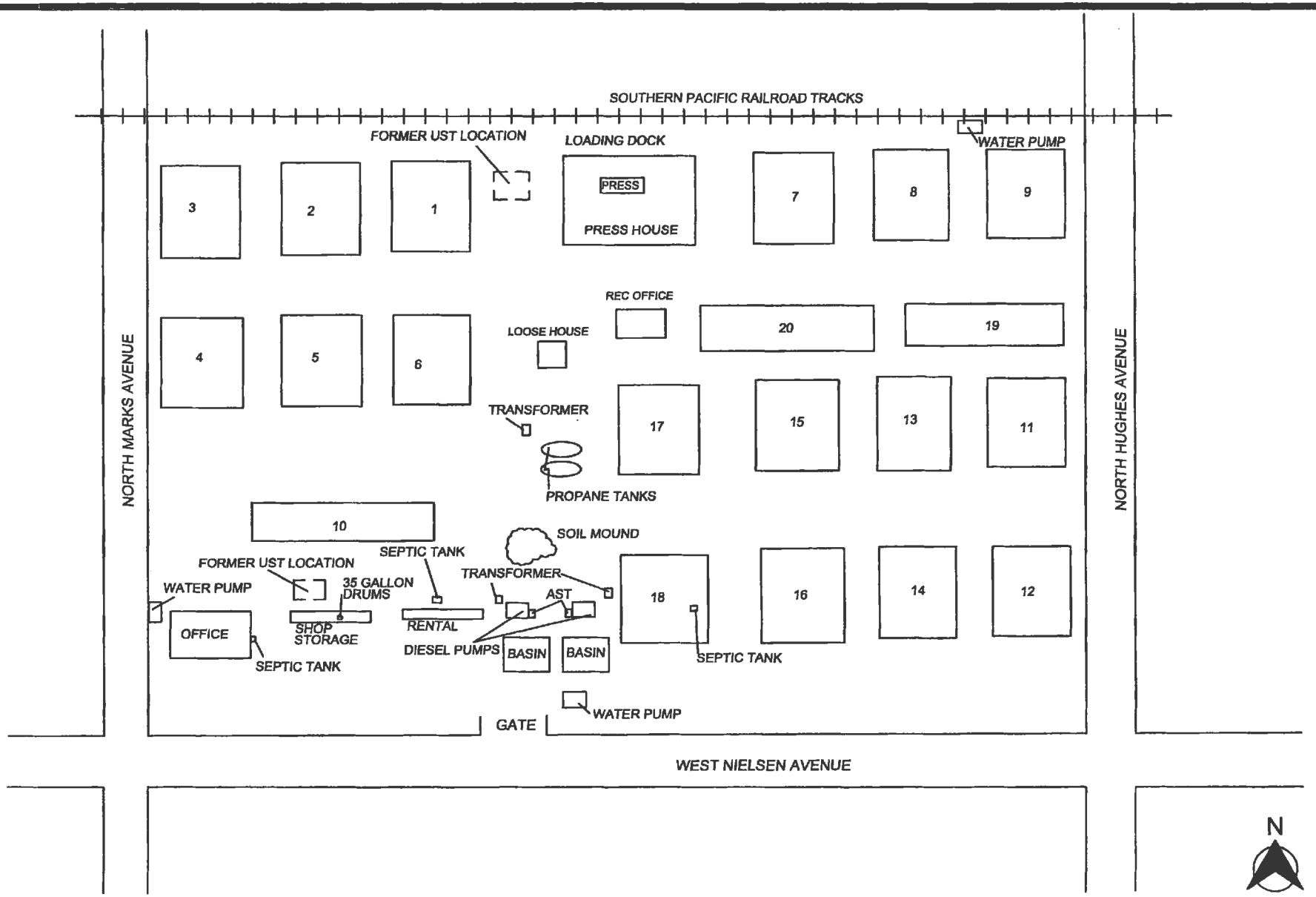
SOURCE: U.S.G.S. TOPOGRAPHIC MAP, 7 ½ MINUTE SERIES
FRESNO SOUTH, CALIFORNIA QUADRANGLE, PHOTOREVISED 1981

0 2000
APPROXIMATE SCALE IN FEET

SITE LOCATION MAP
2740 W. NIELSEN AVENUE
FRESNO, CALIFORNIA

FILE NO.: 50302-01-01	DATE: 10/27/05
DRAWN BY: RM	APPROVED BY:
PROJECT NO. C50302.01	DRAWING NO. 1

THE TWINING LABORATORIES, INC.
FRESNO/MODESTO/VISALIA/BAKERSFIELD/MONTEREY



SITE PLAN
2790 W NIESLEN AVENUE
FRESNO, CALIFORNIA

FILE NO. 50302-01-02	DATE DRAWN: 11/04/05
DRAWN BY: RM	APPROVED BY:
PROJECT NO. C50302.01	DRAWING NO. 2

THE TWINING LABORATORIES, INC.
EST. 1898
FRESNO/MODESTO/VISALIA/BAKERSFIELD/MONTEREY

APPENDIX B

SITE PHOTOGRAPHS

PHOTOGRAPH 1

View of western boundary of the Site from the southwest corner.

PHOTOGRAPH 2

View of 3 pole mounted transformers, located on the central portion of the Site.

PHOTOGRAPH 3

View of the inside of one of the warehouses used to store cotton.

PHOTOGRAPH 4

View of two propane ASTs, on the central portion of the Site.

PHOTOGRAPH 5

View of the storage area in the machine shop, two 35 gallon drums are depicted photo center.

PHOTOGRAPH 6

View of one 150 gallon diesel AST, located near a water basin on the southern portion of the Site.

APPENDIX C

ENVIRONMENTAL QUESTIONNAIRE AND DISCLOSURE STATEMENT

DRAFT

November 2, 2005

Mr. Max Miljevich
Twining Laboratories, Inc.
2527 Fresno Street
Fresno, California 93721

Re: Cargill Questionnaire

Dear Max,

Keith Paul from Cargill Cotton and I are working together to complete the above referenced questionnaire. The answers to my section of the questionnaire are as follows:

1. Site Information:

Current Site Address:	2740 West Nielson Avenue
Current Site Use:	Cotton warehousing and distribution
Current Site Zoning:	M-1 to M-3
Current Parcel Number:	458-020-09

2. Site Ownership and Past Use:

Owner Name & Info	Period of Ownership	Type of Use
Cargill Cotton (Current)	24 Years (1981 to Present)	Cotton Storage
Ralli (Former)	4 Years (1977 to 1981)	Cotton Storage
Cook Industries (Former)	Approx 25 Yrs (1950's to 1977)	Cotton Storage

3. Adjacent Property Use: (See Corresponding Map)

1)	326-060-31	29.45 acres	Nicks Trucking Inc	Raw land & storage
2)	458-020-63	7.67 acres	William M. Shubin	Vacant Land
3)	458-020-62	19.86 acres	Richard F. Guerrero	Vacant Land
4)	458-020-60	4.54 acres	Thomas J. Besmer	OB Lumber (lumber yard)
5)	458-020-63	23.51 acres	William Shubin	Truck & trailer storage yard
6)	458-020-03T	4.75 acres		Asian Cemetery
7)	458-020-05T	23.51 acres	City of Fresno	Fresno City Cemetery
8)	458-020-06T	87.04 acres	Mountain View Cem.	Private Cemetery
9)	458-020-42T	7.72 acres	Masis Ararat Cem.	Private Cemetery
10)	458-020-55	4.0 acres	RF MacDonald/Jm Ent	Chemical company

11)	458-020-56	2.16 acres	D Mendoza/LR Weldon	Truck & trailer storage yard
12)	458-060-52	11.68 acres	Fresno Humane Society	S.P.C.A.
13)	458-050-37	6.19 acres	West Roeding Dev.	Vacant Land
14)	458-050-04	1.38 acres	Raquel C. Zuniga	Residence & Vacant Land
15)	458-050-05	.64 acres	Daniel Martinez	Residence & Vacant Land
16)	458-050-03	8.17 acres	West Roeding Dev.	Unimproved Land
17)	458-050-26	1.75 acres	Beatrice Baker	Residence & Vacant Land
18)	458-050-27	1.81 acres	Dolores Banuelos	Residence & Vacant Land
19)	458-050-29	1.57 acres	Dan Flemming	Vacant Land
20)	458-050-28	1.73 acres	Dan Flemming	Residence & Vacant Land
21)	326-160-12T	1.79 acres	Not Available	Storage & Vacant Land
22)	326-060-32	4.07 acres	Luis Mendoza	Eliason Lumber Yard
23)	326-060-18	12.06 acres	Archie Crippen	Demolition & Recycling Yard
24)	326-060-25	2.45 acres	Priri V. Patel	Vacant Land

4. **Existing Site Structures:** (see attached Excel spreadsheet & aerial photo)

5. **Site Utilities:**

Utility	Provider
Electrical:	PG & E
Natural Gas:	PG& E
Drinking Water:	Bottled (site operates with three (3) water wells)
Storm Water Drainage:	Fresno Irrigation District
Solid Waste Disposal:	BFI
Sanitary Sewer:	Septic
Emergency Power Source:	Two (2) electric motors backed-up by two (2) 125 hp diesel motors

ENVIRONMENTAL QUESTIONNAIRE AND DISCLOSURE STATEMENT

GENERAL INSTRUCTIONS: Please fill-in the blanks to the best of your ability. If you do not know the answer, please check the "DON'T KNOW" box. If you answer "YES" or the answer requires explanation please use additional pages and reference the table. Thank you, for your time and cooperation.

SITE INFORMATION	
Current Site Address	
Current Site Use	
Current Site Zoning	
Current Assessor's Parcel Number	
Addresses Formerly Assigned to Site (if any)	

SITE OWNERSHIP AND PAST USE		
OWNER NAME, ADDRESS & PHONE #	**PERIOD OF OWNERSHIP/USE**	**TYPE OF USE**
CURRENT		
FORMER		
FORMER		

ADJACENT PROPERTY USE		
DIRECTION	**TYPE OF USE**	**LENGTH OF USE**
North		
East		
South		
West		

EXISTING SITE STRUCTURES			
STRUCTURE DESCRIPTION	**LOCATION**	**USE**	**DATE OF CONSTRUCTION**

FORMER SITE STRUCTURES			
STRUCTURE DESCRIPTION	**FORMER LOCATION**	**USE**	**DATE OF DEMOLITION**

SITE LESSEES		
NAME, ADDRESS & PHONE #	**LENGTH/YEARS OF LEASE**	**TYPE OF USE**
PRESENT:		
FORMER:		
FORMER:		

SITE UTILITIES	
UTILITY	**PROVIDER**
Electricity	
Natural Gas	
Drinking Water	
Storm water Drainage	
Solid Waste Disposal	
Sanitary Sewer	
Emergency Power Source	

********** ***PLEASE PROVIDE DETAILS FOR ALL YES ANSWERS*** **********
Additional space is provided on page 7

#	SPECIFIC USES OF SITE AND ADJACENT PROPERTY*	SITE			ADJACENT		
		YES	NO	DON'T KNOW	YES	NO	DON'T KNOW
1A	Agricultural chemical formulation, distribution, or application						
2A	Airport and/or airplane maintenance						
3A	Automotive wrecking yard						
4A	Bulk chemical or fuel storage						
5A	Commercial printing						
6A	Dry cleaning						
7A	Landfill						
8A	Metal plating or finishing						
9A	Mining or minerals processing						
10A	Motor vehicle or equipment repair and/or maintenance						
11A	Photographic laboratory						
12A	Service station						
13A	Skeet shooting or gun club						
14A	Releases, or spills of hazardous materials as a result of illegal dumping, or traffic accidents along the adjoining roadways.						
15A	Waste treatment, storage, disposal, processing or recycling, other than a landfill						

* "Adjacent Property" includes those properties that border the immediate site and properties located across the street from the Site.

********** ***PLEASE PROVIDE DETAILS FOR ALL YES ANSWERS*** **********
Additional space is provided on page 7

#	ON-SITE HAZARDOUS MATERIALS USE, STORAGE AND DISPOSAL	YES	NO	DON'T KNOW
1B	Are asbestos-containing materials present in on-site structures?			
2B	Has an asbestos survey been conducted for on-site structures?			
3B	Are any electrical transformers or capacitors on-site?			
4B	Are any electrical transformers or capacitors on-site **not** owned by an electrical utility?			
5B	Has an Environmental Audit or Assessment been conducted for the site?			
6B	Do you know of any current or former aboveground storage tanks?			
7B	Do you know of any current or former underground storage tanks (not septic)?			
8B	Do you know of any fill dirt having been imported to the site?			
9B	Do you know of any current or former wells on site, including, domestic drinking water, irrigation water, disposal, oil and/or abandoned wells?			
10B	Do you know of any pesticides/herbicides permits for the site?			
11B	Do you know of any pesticides/herbicides stored or used on-site?			
12B	Are solvents, petroleum products, or paint products stored on-site?			
13B	Are you aware of any permits having been issued for the site by the local fire, environmental health, or air pollution control agencies?			

********** ***PLEASE PROVIDE DETAILS FOR ALL YES ANSWERS*** **********
Additional space is provided on page 7

#	SITE WASTE GENERATION, STORAGE AND DISPOSAL	YES	NO	DON'T KNOW
1C	Is liquid waste disposed of to a septic tank on-site?			
2C	Is liquid waste disposed of elsewhere on-site?			
3C	Are any ponds, sumps, basins, lagoons, or clarifiers used on-site to collect, treat, or dispose of liquid?			
4C	If liquid waste is disposed of on-site, is a waste discharge permit required?			
5C	Is liquid waste disposed of to an off-site treatment works?			
6C	Is solid waste disposed of on-site (burned or buried)?			
7C	Does any solid or liquid off-site waste disposal require a waste manifest or disposal permit?			
8C	Is any hazardous waste generated, stored, or treated on-site?			
9C	Are any spills or releases of hazardous materials known or suspected to have occurred at the site?			
10C	Is there another individual who may have additional or more complete information regarding the former use and activities at the site?			

Please provide details of any investigations of an environmental or geotechnical nature that have been performed by you or by others related to the subject property. If you are not aware of any investigation(s) that have been performed in the past regarding the subject property, whether or not a report was ever prepared and/or issued to you, please so state in the space below.

Please provide details of any conditions known to you that could represent an environmental impairment to the subject property other than those items previously noted in this questionnaire. If you are not aware of any conditions, please so state in the space below.

To your knowledge, has the property been subject to any regulatory action related to environmental conditions, whether or not a report was issued to you or filed with a regulatory agency. If you are not aware of any actions, please so state in the space below.

PLEASE INDICATE IN THE BOXES BELOW IF THE FOLLOWING ITEMS EXIST AND IF YOU ARE ABLE TO PROVIDE THEM
Additional space is provided on page 7

	DOCUMENTS, REPORTS, LISTS, PLANS AND MAPS	Exists/Will Provide Copy	Exists/Will Not Provide Copy	Does Not Exist	Don't Know
1D	Site plans and/or maps that include legal property boundaries				
2D	Building plans (architectural, utilities and structural)				
3D	Hazardous materials inventory				
4D	Hazardous waste inventory				
5D	Previously conducted Environmental Site Assessments				
6D	Reports of subsurface investigations performed on the site including analytical data				
7D	Reports of subsurface investigations performed on adjacent properties including analytical data				
8D	Previously conducted geotechnical/ soil investigations at the Site				
9D	Permits and location of USTs, sumps, pits, and drainage systems				
10D	Environmental permits and plans, including hazardous materials management plans, UST closure, etc.				
11D	Agricultural Chemical Permits				
12D	Literature or other sources of information regarding operations at the site				
13D	Individual who may have additional or more complete information regarding uses and activities at the site				

PLEASE PROVIDE DETAILED INFORMATION FOR YES ANSWERS TO QUESTIONS (1A-15A), (1B-13B), (1C-10C)

ADDITIONALLY, PLEASE PROVIDE AN EXPLANATION WHY YOU ARE UNABLE TO PROVIDE (1D-13D) IF THEY EXIST

THIS ENVIRONMENTAL QUESTIONNAIRE AND DISCLOSURE STATEMENT WAS PREPARED BY:

NAME _____ **TITLE** _____

FIRM _____ **RELATIONSHIP TO SITE** _____

ADDRESS _____

_____

TELEPHONE NUMBER _____ **DATE** _____

PREPARER REPRESENTS THAT TO THE BEST OF THE PREPARER'S KNOWLEDGE THE ABOVE STATEMENTS AND FACTS ARE TRUE AND CORRECT AND THAT TO THE BEST OF THE PREPARER'S KNOWLEDGE NO MATERIAL FACTS HAVE BEEN SUPPRESSED OR MISSTATED UNDER PENALTY OF PURGERY BY LAW.

_____ _____
Signed Date

APPENDIX D

TRANSFORMER REPORT

Pacific Gas and Electric Company

705 P Street, Second Floor
Fresno, CA 93760-0001
209/263-7400

May 8, 1997

Mr. Keith Paul
California Compress
2740 W. Neilson
Fresno, CA 93706

Dear Mr. Paul:

You recently requested that we sample and test the insulating fluid in our distribution transformers on your property located at 2740 W. Neilson.

The nine transformers on your property were checked and it was found that they all contained less than 50ppm PCB content in the oil. The attached report will confirm this finding.

If, at any time, you notice that these transformers or any other PG&E equipment has been damaged or is leaking, please notify your nearest PG&E office immediately. This will help us to inspect and repair or replace the equipment quickly.

You have further questions or concerns regarding PCB's, please call me at 263-7414.

Sincerely,

Larry Rosenwinkel

Larry R. Rosenwinkel
New Business Representative

LRR:lia

Enclosure

[illegible]

LABORATORY [illegible] Polychlorinated Biphenyl (PCB)

Laboratory ID: 697-2516-1-9 Client: Pacific Gas & Electric

Reviewed By: [signature] Date: 5/2/97 CAR Generated: _____

Client Sample ID: _____ Sample Type: OIL

Constituent	RESULTS	UNITS	DLR	METHOD	AROCLOR TYPE	ANAL INIT	DATE PREP.	DATE ANAL.
2516-1								
PCB	9.5	mg/kg	1.0	600*	1260	AMF	5/1	5/2
2516-2								
PCB	ND	mg/kg	1.0	600*	N/A			
2516-3								
PCB	ND	mg/kg	1.0	600*	N/A			
2516-4								
PCB	ND	mg/kg	1.0	600*	N/A			
2516-5								
PCB	ND	mg/kg	1.0	600*	N/A			
2516-6								
PCB	ND	mg/kg	1.0	600*	N/A			
2516-7								
PCB	ND	mg/kg	1.0	600*	N/A			
2516-8	~~5.6~~							
PCB	5.6	mg/kg	1.0	600*	1260			
2516-9	~~5.0~~							
PCB	5.0	mg/kg	1.0	600*	1260			

COMMENTS:

600*: EPA 600/4-81-045 Sept. 1981

Rev. 1 [illegible] mg/kg: milligrams per kilogram (parts per million)
page 1 of 1

APPENDIX E

EDR REPORT

The EDR Radius Map
with GeoCheck®

Nielsen Ave.
2740 W. Nielsen Ave.
Fresno, CA 93706

Inquiry Number: 1541494.1s

October 27, 2005

EDR® Environmental
Data Resources Inc

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

FORM-MOR

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	6
Orphan Summary	25
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting Source Map	A-7
Physical Setting Source Map Findings	A-8
Physical Setting Source Records Searched	A-15

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2005 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The report meets the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00. Search distances are per ASTM standard or custom distances requested by the user.

TARGET PROPERTY INFORMATION

ADDRESS

2740 W. NIELSEN AVE.
FRESNO, CA 93706

COORDINATES

Latitude (North):	36.744600 - 36° 44' 40.6"
Longitude (West):	119.839800 - 119° 50' 23.3"
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	246447.3
UTM Y (Meters):	4070099.0
Elevation:	288 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	36119-F7 FRESNO SOUTH, CA
Source:	USGS 7.5 min quad index

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following government records. For more information on this property see page 6 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
CALIFORNIA COMPRESS 2740 W NIELSEN AVE FRESNO, CA 93706	CA FID UST Fresno Co. CUPA SWEEPS UST	N/A
CALIFORNIA COMPRESS 2740 NIELSEN W FRESNO, CA 93706	HAZNET LUST Cortese HIST UST	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the ASTM E 1527-00 search radius around the target property for the following databases:

FEDERAL ASTM STANDARD

NPL ..... National Priority List

EXECUTIVE SUMMARY

Proposed NPL..... Proposed National Priority List Sites
CERCLIS..... Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP..... CERCLIS No Further Remedial Action Planned
CORRACTS..... Corrective Action Report
RCRA-TSDF..... Resource Conservation and Recovery Act Information
RCRA-LQG..... Resource Conservation and Recovery Act Information
ERNS..... Emergency Response Notification System

STATE ASTM STANDARD

AWP..... Annual Workplan Sites
Cal-Sites..... Calsites Database
CHMIRS..... California Hazardous Material Incident Report System
Notify 65..... Proposition 65 Records
Toxic Pits..... Toxic Pits Cleanup Act Sites
WMUDS/SWAT..... Waste Management Unit Database
CA BOND EXP. PLAN..... Bond Expenditure Plan
UST..... Active UST Facilities
VCP..... Voluntary Cleanup Program Properties
INDIAN UST..... Underground Storage Tanks on Indian Land
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

FEDERAL ASTM SUPPLEMENTAL

CONSENT..... Superfund (CERCLA) Consent Decrees
ROD..... Records Of Decision
Delisted NPL..... National Priority List Deletions
FINDS..... Facility Index System/Facility Registry System
HMIRS..... Hazardous Materials Information Reporting System
MLTS..... Material Licensing Tracking System
MINES..... Mines Master Index File
NPL Liens..... Federal Superfund Liens
PADS..... PCB Activity Database System
UMTRA..... Uranium Mill Tailings Sites
US ENG CONTROLS..... Engineering Controls Sites List
ODI..... Open Dump Inventory
FUDS..... Formerly Used Defense Sites
DOD..... Department of Defense Sites
INDIAN RESERV..... Indian Reservations
RAATS..... RCRA Administrative Action Tracking System
TRIS..... Toxic Chemical Release Inventory System
TSCA..... Toxic Substances Control Act
SSTS..... Section 7 Tracking Systems
FTTS INSP..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

STATE OR LOCAL ASTM SUPPLEMENTAL

AST..... Aboveground Petroleum Storage Tank Facilities
CLEANERS..... Cleaner Facilities
CA WDS..... Waste Discharge System
SCH..... School Property Evaluation Program
REF..... Unconfirmed Properties Referred to Another Agency

WIP..... Well Investigation Program Case List
EMI..... Emissions Inventory Data
NFA..... No Further Action Determination
NFE..... Properties Needing Further Evaluation
DEED..... Deed Restriction Listing
SLIC..... Statewide SLIC Cases

EDR PROPRIETARY HISTORICAL DATABASES

Coal Gas..... Former Manufactured Gas (Coal Gas) Sites

BROWNFIELDS DATABASES

US BROWNFIELDS..... A Listing of Brownfields Sites
US INST CONTROL..... Sites with Institutional Controls
VCP..... Voluntary Cleanup Program Properties

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

FEDERAL ASTM STANDARD

RCRAInfo: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System(RCRIS). The database includes selective information on sites which generate, transport, store , treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month Large quantity generators generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-SQG list, as provided by EDR, and dated 08/11/2005 has revealed that there is 1 RCRA-SQG site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
KEMMER AGRICULTRUAL CO.;INC.	***88 N.HUGHES***	***1/8 - 1/4 E***	***C7***	***11***

EXECUTIVE SUMMARY

STATE ASTM STANDARD

CORTESE: This database identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with USTs having a reportable release and all solid waste disposal facilities from which there is known migration. The source is the California Environmental Protection Agency/Office of Emergency Information.

A review of the Cortese list, as provided by EDR, has revealed that there is 1 Cortese site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
FRESNO IRRIGATION DISTRIC	*3075 NIELSEN*	*1/4 - 1/2 WSW*	*9*	*17*

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the Integrated Waste Management Board's Solid Waste Information System (SWIS) database.

A review of the SWF/LF list, as provided by EDR, has revealed that there are 2 SWF/LF sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
FRESNO IRRIGATION DISTRICT	*3075 W. NIELSON*	*1/4 - 1/2 WSW*	*10*	*21*
Lower Elevation	**Address**	**Dist / Dir**	**Map ID**	**Page**
CRAYCROFT BRICK INERT SITE	2301 W BELMONT @ MARKS	1/4 - 1/2 NW	11	23

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the State Water Resources Control Board Leaking Underground Storage Tank Information System.

A review of the LUST list, as provided by EDR, and dated 07/11/2005 has revealed that there are 2 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
FRESNO IRRIGATION DISTRIC	*3075 NIELSEN*	*1/4 - 1/2 WSW*	*9*	*17*
Lower Elevation	**Address**	**Dist / Dir**	**Map ID**	**Page**
WELDON TRUCKING	*2002 NIELSEN*	*1/4 - 1/2 ESE*	*8*	*14*

CA FID: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, has revealed that there are 2 CA FID UST sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
ENSEN FARMS	*2829 W NIELSEN*	*1/8 - 1/4 WSW*	*B4*	*9*
KEMMER AGRICULTURE	*88 N HUGHES*	*1/8 - 1/4 E*	*C6*	*10*

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 2 HIST UST sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
ENSEN FARMS	2829 W NIELSEN AVE	1/8 - 1/4 WSW	B3	9
KEMMER AGRICULTRUAL CO.;INC.	***88 N.HUGHES***	***1/8 - 1/4 E***	***C7***	***11***

SWEEPS: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1980?s. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are 2 SWEEPS UST sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
ENSEN FARMS	***2829 W NIELSEN***	***1/8 - 1/4 WSW***	***B4***	***9***
KEMMER AGRICULTURE	***88 N HUGHES***	***1/8 - 1/4 E***	***C6***	***10***

STATE OR LOCAL ASTM SUPPLEMENTAL

Fresno Co. CUPA: Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

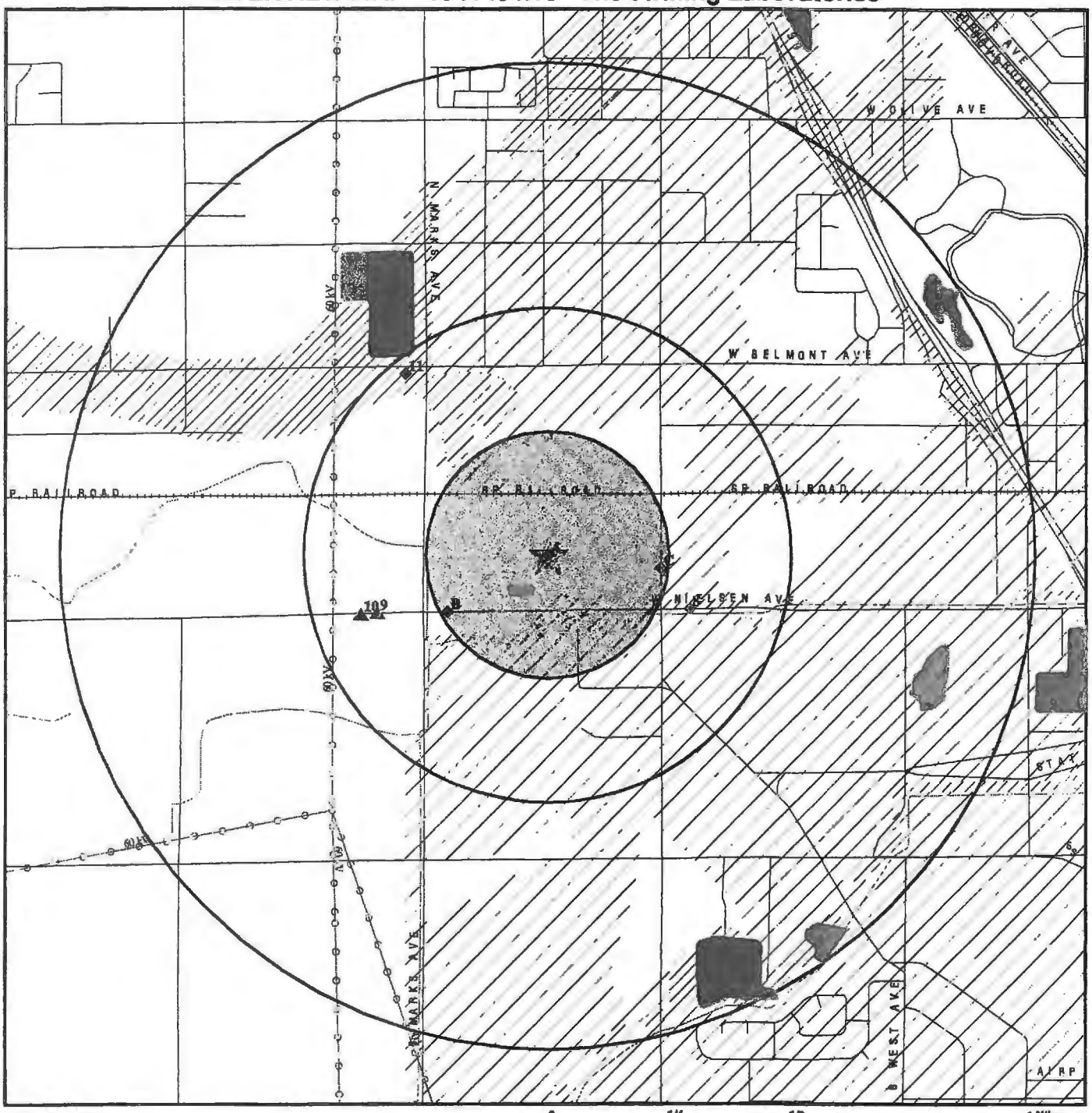
A review of the Fresno Co. CUPA list, as provided by EDR, and dated 07/22/2005 has revealed that there is 1 Fresno Co. CUPA site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
KEMMER AG SUPPLY	88 N HUGHES	1/8 - 1/4 E	C5	10

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
MID-CAL MACHINE WORKS	SWEEPS UST
GUS COZETTE PARCEL	Fresno Co. CUPA
CALIFORNIA AQUEDUCT	CHMIRS, Fresno Co. CUPA
PG&E GAS PLANT FRESNO 325 3	CERCLIS, FINDS
PG & E FRESNO 2	CERCLIS, FINDS
PACIFIC AIRMOTIVE	CERC-NFRAP
CHATEAU FRESNO LDFL	CERC-NFRAP
NICK'S TRUCKING, INC.	SWF/LF
UNKNOWN	LUST

OVERVIEW MAP - 1541494.1s - The Twining Laboratories

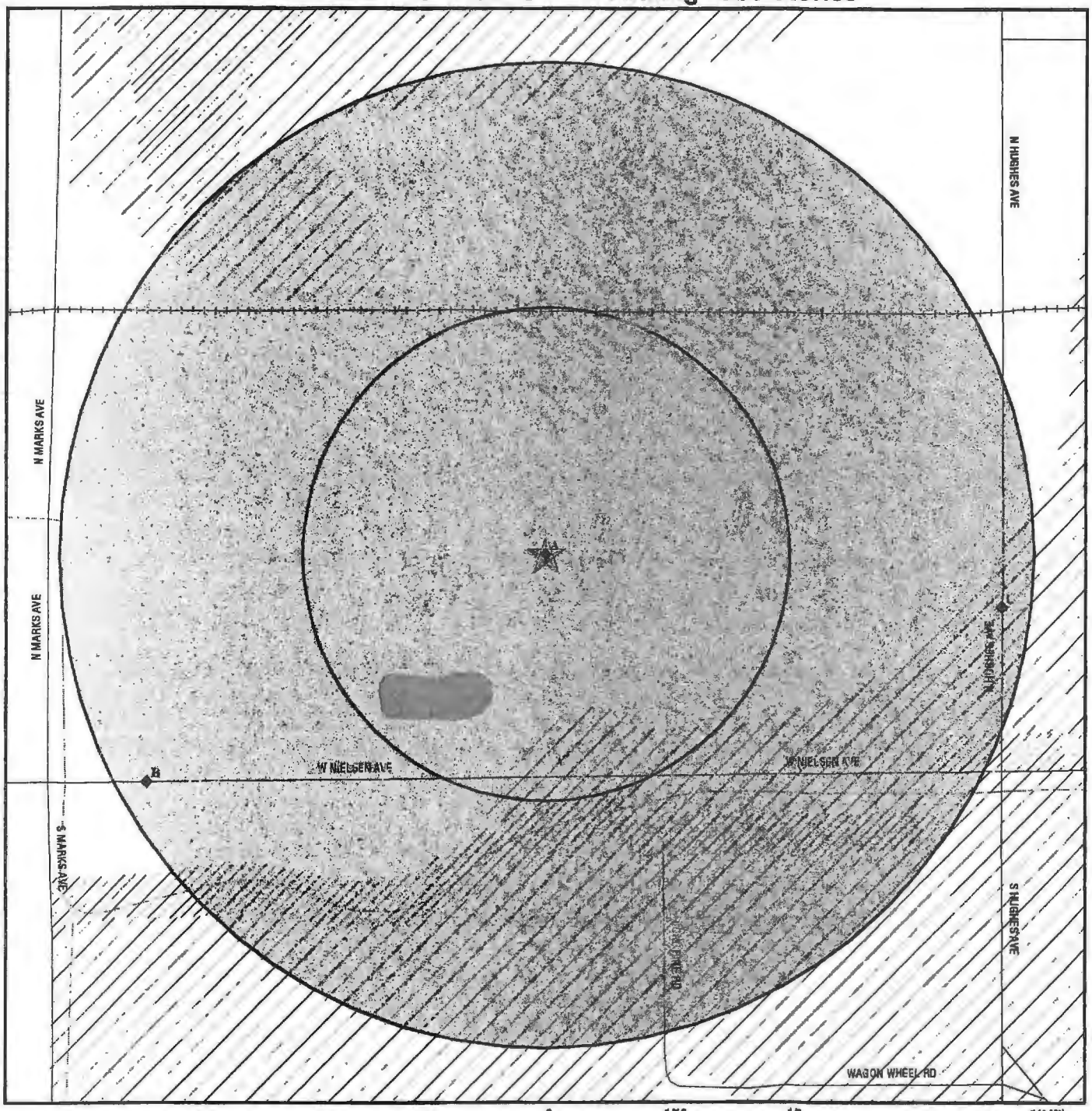


- ★ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- Coal Gasification Sites
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands
- Areas of Concern

TARGET PROPERTY:	Nielsen Ave.	CUSTOMER:	The Twining Laboratories
ADDRESS:	2740 W. Nielsen Ave.	CONTACT:	Max Miljevich
CITY/STATE/ZIP:	Fresno CA 93706	INQUIRY #:	1541494.1s
LAT/LONG:	36.7446 / 119.8398	DATE:	October 27, 2005 10:04 am

Copyright © 2005 EDR, Inc. © 2004 GDT, Inc. Rel. 07/2004. All Rights Reserved.

DETAIL MAP - 1541494.1s - The Twining Laboratories



- ★ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- Coal Gasification Sites
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands
- Areas of Concern

TARGET PROPERTY:	Nielsen Ave.	CUSTOMER:	The Twining Laboratories
ADDRESS:	2740 W. Nielsen Ave.	CONTACT:	Max Miljevich
CITY/STATE/ZIP:	Fresno CA 93706	INQUIRY #:	1541494.1s
LAT/LONG:	36.7446 / 119.8398	DATE:	October 27, 2005 10:05 am

Copyright © 2005 EDR, Inc. © 2004 GDT, Inc. Rel. 07/2004. All Rights Reserved.

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL ASTM STANDARD								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.250	0	0	NR	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRA TSD		0.500	0	0	0	NR	NR	0
RCRA Lg. Quan. Gen.		0.250	0	0	NR	NR	NR	0
RCRA Sm. Quan. Gen.		0.250	0	1	NR	NR	NR	1
ERNS		TP	NR	NR	NR	NR	NR	0
STATE ASTM STANDARD								
AWP		1.000	0	0	0	0	NR	0
Cal-Sites		1.000	0	0	0	0	NR	0
CHMIRS		TP	NR	NR	NR	NR	NR	0
Cortese	X	0.500	0	0	1	NR	NR	1
Notify 65		1.000	0	0	0	0	NR	0
Toxic Pits		1.000	0	0	0	0	NR	0
State Landfill		0.500	0	0	2	NR	NR	2
WMUDS/SWAT		0.500	0	0	0	NR	NR	0
LUST	X	0.500	0	0	2	NR	NR	2
CA Bond Exp. Plan		1.000	0	0	0	0	NR	0
UST		0.250	0	0	NR	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0
CA FID UST	X	0.250	0	2	NR	NR	NR	2
HIST UST	X	0.250	0	2	NR	NR	NR	2
SWEEPS UST	X	0.250	0	2	NR	NR	NR	2
FEDERAL ASTM SUPPLEMENTAL								
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
NPL Liens		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
FUDS		1.000	0	0	0	0	NR	0
DOD		1.000	0	0	0	0	NR	0
INDIAN RESERV		1.000	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
RAATS		TP	NR	NR	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
STATE OR LOCAL ASTM SUPPLEMENTAL								
AST		TP	NR	NR	NR	NR	NR	0
CLEANERS		0.250	0	0	NR	NR	NR	0
CA WDS		TP	NR	NR	NR	NR	NR	0
Fresno Co. CUPA	X	0.250	0	1	NR	NR	NR	1
SCH		0.250	0	0	NR	NR	NR	0
REF		0.250	0	0	NR	NR	NR	0
WIP		0.250	0	0	NR	NR	NR	0
EMI		TP	NR	NR	NR	NR	NR	0
NFA		0.250	0	0	NR	NR	NR	0
NFE		0.250	0	0	NR	NR	NR	0
DEED		0.500	0	0	0	NR	NR	0
SLIC		0.500	0	0	0	NR	NR	0
HAZNET	X	TP	NR	NR	NR	NR	NR	0
EDR PROPRIETARY HISTORICAL DATABASES								
Coal Gas		1.000	0	0	0	0	NR	0
BROWNFIELDS DATABASES								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0

NOTES:

AQUIFLOW - see EDR Physical Setting Source Addendum

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Coal Gas Site Search: No site was found in a search of Real Property Scan's ENVIROHAZ database.

A1 **CALIFORNIA COMPRESS** **CA FID UST** **S101621549**
Target **2740 W NIELSEN AVE** **Fresno Co. CUPA** **N/A**
Property **FRESNO, CA 93706** **SWEEPS UST**

Site 1 of 2 in cluster A

Actual:
287 ft.

FID:

Facility ID:	10007614	Regulate ID:	00048585
Reg By:	Active Underground Storage Tank Location		
Cortese Code:	Not reported	SIC Code:	Not reported
Status:	Active	Facility Tel:	(209) 233-1725
Mail To:	Not reported PO BOX 9095 FRESNO, CA 93706		
Contact:	Not reported	Contact Tel:	Not reported
DUNs No:	Not reported	NPDES No:	Not reported
Creation:	10/22/93	Modified:	00/00/00
EPA ID:	Not reported		
Comments:	Not reported		

CUPA:

Facility ID:	FA0170193
Region:	CUPA
Program Element:	MEDIUM HAZARDOUS MATERIALS HANDLER
Owner Name:	CALIFORNIA COMPRESS
APM Number:	Not reported

Facility ID:	FA0170193
Region:	CUPA
Program Element:	FORMER CONTAMINATED SITE/CLEANUP COMPLETE
Owner Name:	CALIFORNIA COMPRESS
APM Number:	Not reported

Facility ID:	FA0170193
Region:	CUPA
Program Element:	CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR
Owner Name:	CALIFORNIA COMPRESS
APM Number:	Not reported

Facility ID:	FA0170193
Region:	CUPA
Program Element:	CLOSED UST FACILITY/DATA VAULT
Owner Name:	CALIFORNIA COMPRESS
APM Number:	Not reported

SWEEPS:

Status :	A
Comp Number :	48585
Number :	1
Board Of Equalization :	44-004340
Ref Date :	10-24-90
Act Date :	10-24-90
Created Date :	02-29-88
Tank Status :	A
Owner Tank Id :	Not reported
Swrcb Tank Id :	10-000-048585-000001

CALIFORNIA COMPRESS (Continued) **S101621549**

Actv Date :	10-25-90
Capacity :	4000
Tank Use :	M.V. FUEL
Stg :	P
Content :	REG UNLEADED
Number Of Tanks :	4
Status :	A
Comp Number :	48585
Number :	1
Board Of Equalization :	44-004340
Ref Date :	10-24-90
Act Date :	10-24-90
Created Date :	02-29-88
Tank Status :	A
Owner Tank Id :	Not reported
Swrcb Tank Id :	10-000-048585-000002
Actv Date :	10-25-90
Capacity :	3000
Tank Use :	M.V. FUEL
Stg :	P
Content :	LEADED
Number Of Tanks :	Not reported
Status :	A
Comp Number :	48585
Number :	1
Board Of Equalization :	44-004340
Ref Date :	10-24-90
Act Date :	10-24-90
Created Date :	02-29-88
Tank Status :	A
Owner Tank Id :	Not reported
Swrcb Tank Id :	10-000-048585-000003
Actv Date :	10-25-90
Capacity :	5000
Tank Use :	M.V. FUEL
Stg :	P
Content :	REG UNLEADED
Number Of Tanks :	Not reported
Status :	A
Comp Number :	48585
Number :	1
Board Of Equalization :	44-004340
Ref Date :	10-24-90
Act Date :	10-24-90
Created Date :	02-29-88
Tank Status :	A
Owner Tank Id :	Not reported
Swrcb Tank Id :	10-000-048585-000004
Actv Date :	10-25-90
Capacity :	5000
Tank Use :	M.V. FUEL
Stg :	P
Content :	DIESEL
Number Of Tanks :	Not reported

Map ID / Direction / Distance / Distance (ft.) / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
A2 Target Property Actual: 287 ft.	CALIFORNIA COMPRESS 2740 NIELSEN W FRESNO, CA 93706 Site 2 of 2 in cluster A	HAZNET LUST Cortese HIST UST	S106174850 N/A

State LUST:

Cross Street:	MARKS		
Qty Leaked:	Not reported		
Case Number	5T10000561		
Reg Board:	5F		
Chemical:	Gasoline		
Lead Agency:	Local Agency		
Local Agency :	10000		
Case Type:	Soil only		
Status:	Case Closed		
Review Date:	Not reported	Confirm Leak:	Not reported
Workplan:	Not reported	Prelim Assess:	Not reported
Pollution Char:	Not reported	Remed Plan:	Not reported
Remed Action:	Not reported		
Monitoring:	Not reported		
Close Date:	1996-07-03 00:00:00		
Release Date:	1995-06-06 00:00:00		
Cleanup Fund Id :	Not reported		
Discover Date :	1995-06-06 00:00:00		
Enforcement Dt :	1965-01-01 00:00:00		
Enf Type:	None Taken		
Enter Date :	1995-06-26 00:00:00		
Funding:	Responsible Party		
Staff Initials:	TON		
How Discovered:	Tank Closure		
How Stopped:	Not reported		
Interim :	Not reported		
Leak Cause:	UNK		
Leak Source:	UNK		
MTBE Date :	Not reported		
Max MTBE GW :	Not reported		
MTBE Tested:	Site NOT Tested for MTBE.Includes Unknown and Not Analyzed.		
Priority:	4		
Local Case # :	FA0170193		
Beneficial:	Not reported		
Staff :	DAM		
GW Qualifier :	Not reported		
Max MTBE Soil :	Not reported		
Soil Qualifier :	Not reported		
Hydr Basin #:	SAN JOAQUIN (5-22)		
Operator :	KEITH PAUL		
Oversight Prgm:	LUST		
Review Date :	1996-07-03 00:00:00		
Stop Date :	1995-04-27 00:00:00		
Work Suspended :	No		
Responsible Party	CALIFORNIA COMPRESS		
RP Address:	P.O. BOX 9095, FRESNO, CA 93790-9095		
Global Id:	T0601900544		
Org Name:	Not reported		
Contact Person:	Not reported		
MTBE Conc:	0		
Mtbe Fuel:	1		
Water System Name:	Not reported		

CALIFORNIA COMPRESS (Continued) **S106174850**

Well Name: Not reported
Distance To Lust: 0
Waste Discharge Global ID: Not reported
Waste Disch Assigned Name: Not reported
Summary : FRESNO COUNTY COMMUNITY HEALTH DEPARTMENT HAS REQUIRED THE SITE RESPONSIBLE PARTY TO SECURE THE SERVICES OF AN APPROVEDENVIRONMENTAL ENGINEERING CONSULTING FIRM.

LUST Region 5:
Substance: GASOLINE
Case Type: Soil only
Program: LUST
Staff Initials: DAM
Case Number: 5T10000561
Status: Case Closed
MTBE Code: N/A
Lead Agency: Local

B3 **ENSEN FARMS** **HIST UST** **U001591701**
WSW **2829 W NIELSEN AVE** **N/A**
1/8-1/4 **FRESNO, CA 93706**
1239 ft.

Site 1 of 2 in cluster B

Relative:
Lower

Actual:
287 ft.

UST HIST:
Facility ID: 37998
Owner Name: JOHN A. JENSEN
Total Tanks: 1
Region: STATE
Owner Address: 2829 W NIELSEN
FRESNO, CA 93706
Tank Used for: PRODUCT
Tank Num: 1
Container Num: 1
Tank Capacity: 00000500
Year Installed: Not reported
Type of Fuel: UNLEADED
Tank Construction: Not Reported
Leak Detection: Visual, Stock Inventor
Contact Name: Not reported
Telephone: (209) 237-1309
Facility Type: Other
Other Type: FARMING

B4 **ENSEN FARMS** **CA FID UST** **S101621680**
WSW **2829 W NIELSEN** **SWEEPS UST** **N/A**
1/8-1/4 **FRESNO, CA 93706**
1239 ft.

Site 2 of 2 in cluster B

Relative:
Lower

Actual:
287 ft.

FID:
Facility ID: 10006927
Regulate ID: 00037998
Reg By: Active Underground Storage Tank Location
Cortese Code: Not reported
SIC Code: Not reported
Status: Active
Facility Tel: (209) 237-1309
Mail To: Not reported
2829 W NIELSEN
FRESNO, CA 93706
Contact: Not reported
Contact Tel: Not reported
DUNs No: Not reported
NPDES No: Not reported
Creation: 10/22/93
Modified: 00/00/00
EPA ID: Not reported
Comments: Not reported

SWEEPS:
Status : A
Comp Number : 37998

ENSEN FARMS (Continued) **S101621680**

Number : 9
Board Of Equalization : Not reported
Ref Date : 07-01-85
Act Date : Not reported
Created Date : 02-29-88
Tank Status : A
Owner Tank Id : 1
Swrcb Tank Id : 10-000-037998-000001
Actv Date : 07-01-85
Capacity : 500
Tank Use : M.V. FUEL
Stg : P
Content : REG UNLEADED
Number Of Tanks : 1

C5 **KEMMER AG SUPPLY** **Fresno Co. CUPA** **1003838164**
East **88 N HUGHES** **N/A**
1/8-1/4 **FRESNO, CA 93772**
1241 ft.

Site 1 of 3 in cluster C

Relative:
Lower

Actual:
286 ft.

CUPA:
Facility ID: FA0169818
Region: CUPA
Program Element: HAZ MAT DISCLOSURE/CLOSED SITE
Owner Name: KEMMER, DON, NANCY & JEFF
APM Number: Not reported

Facility ID: FA0169818
Region: CUPA
Program Element: CLOSED UST FACILITY/DATA VAULT
Owner Name: KEMMER, DON, NANCY & JEFF .
APM Number: Not reported

C6 **KEMMER AGRICULTURE** **CA FID UST** **S101581670**
East **88 N HUGHES** **SWEEPS UST** **N/A**
1/8-1/4 **FRESNO, CA 93772**
1241 ft.

Site 2 of 3 in cluster C

Relative:
Lower

Actual:
286 ft.

FID:
Facility ID: 10004438 Regulate ID: 00003383
Reg By: Inactive Underground Storage Tank Location
Cortese Code: Not reported SIC Code: Not reported
Status: Inactive Facility Tel: (209) 233-0367
Mail To: Not reported
88 N HUGHES
FRESNO, CA 93772
Contact: Not reported Contact Tel: Not reported
DUNs No: Not reported NPDES No: Not reported
Creation: 10/22/93 Modified: 00/00/00
EPA ID: Not reported
Comments: Not reported

SWEEPS:
Status : Not reported
Comp Number : 3383
Number : Not reported
Board Of Equalization : 44-003477

KEMMER AGRICULTURE (Continued) **S101581670**

Ref Date :	Not reported
Act Date :	Not reported
Created Date :	Not reported
Tank Status :	Not reported
Owner Tank Id :	Not reported
Swrcb Tank Id :	10-000-003383-000001
Actv Date :	Not reported
Capacity :	100
Tank Use :	CHEMICAL
Stg :	WASTE
Content :	Not reported
Number Of Tanks :	3
Status :	Not reported
Comp Number :	3383
Number :	Not reported
Board Of Equalization :	44-003477
Ref Date :	Not reported
Act Date :	Not reported
Created Date :	Not reported
Tank Status :	Not reported
Owner Tank Id :	Not reported
Swrcb Tank Id :	10-000-003383-000002
Actv Date :	Not reported
Capacity :	1000
Tank Use :	M.V. FUEL
Stg :	PRODUCT
Content :	LEADED
Number Of Tanks :	Not reported
Status :	Not reported
Comp Number :	3383
Number :	Not reported
Board Of Equalization :	44-003477
Ref Date :	Not reported
Act Date :	Not reported
Created Date :	Not reported
Tank Status :	Not reported
Owner Tank Id :	Not reported
Swrcb Tank Id :	10-000-003383-000003
Actv Date :	Not reported
Capacity :	1000
Tank Use :	M.V. FUEL
Stg :	PRODUCT
Content :	REG UNLEADED
Number Of Tanks :	Not reported

C7
East
1/8-1/4
1241 ft.

Relative:
Lower

Actual:
286 ft.

KEMMER AGRICULTRUAL CO.;INC.
88 N.HUGHES
FRESNO, CA 93706

Site 3 of 3 in cluster C

RCRA-SQG **1000297899**
FINDS **CAT080012057**
HAZNET
HIST UST

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

RCRAInfo:
Owner: NOT REQUIRED
(415) 555-1212
EPA ID: CAT080012057

Contact: Not reported

Classification: Small Quantity Generator
TSDF Activities: Not reported

Violation Status: Violations exist

Regulation Violated: 262.50-60
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 02/14/1987
Actual Date Achieved Compliance: 02/14/1992

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 03/13/1987
Penalty Type: Not reported

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 03/29/1985
Penalty Type: Not reported

Regulation Violated: 262.10-12.A
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 03/29/1985
Actual Date Achieved Compliance: 03/29/1985

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 03/13/1987
Penalty Type: Not reported

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 03/29/1985
Penalty Type: Not reported

There are 2 violation record(s) reported at this site:

Evaluation	Area of Violation	Date of Compliance
Non-Financial Record Review	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	19920214
Compliance Evaluation Inspection	GENERATOR-ALL REQUIREMENTS (OVERSIGHT)	19850329

FINDS:
Other Pertinent Environmental Activity Identified at Site:
NATIONAL COMPLIANCE DATABASE SYSTEM
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM
TOXIC CHEMICAL RELEASE INVENTORY SYSTEM

HAZNET:
Gepaid: CAT080012057
TSD EPA ID: CAD059494310
Gen County: Fresno
Tsd County: Santa Clara
Tons: 2.1000
Waste Category: Off-specification, aged, or surplus organics
Disposal Method: Transfer Station
Contact: DONALD KEMMER & NANCY KEMMER
Telephone: (000) 000-0000
Mailing Address: PO BOX 454
LAKE OSWEGO, OR 97034 - 0049

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

County Fresno

Gepaid: CAT080012057
TSD EPA ID: AZD009015389
Gen County: Fresno
Tsd County: 99
Tons: 45.1255
Waste Category: Unspecified organic liquid mixture
Disposal Method: Disposal, Land Fill
Contact: DONALD KEMMER & NANCY KEMMER
Telephone: (000) 000-0000
Mailing Address: PO BOX 454
LAKE OSWEGO, OR 97034 - 0049
County Fresno

Gepaid: CAT080012057
TSD EPA ID: AZD009015389
Gen County: Fresno
Tsd County: 99
Tons: .5000
Waste Category: Liquids with pH <UN-> 2
Disposal Method: Treatment, Incineration
Contact: DONALD KEMMER & NANCY KEMMER
Telephone: (000) 000-0000
Mailing Address: PO BOX 454
LAKE OSWEGO, OR 97034 - 0049
County Fresno

Gepaid: CAT080012057
TSD EPA ID: AZD009015389
Gen County: Fresno
Tsd County: 99
Tons: 1.0000
Waste Category: Unspecified organic liquid mixture
Disposal Method: Not reported
Contact: DONALD KEMMER & NANCY KEMMER
Telephone: (000) 000-0000
Mailing Address: PO BOX 454
LAKE OSWEGO, OR 97034 - 0049
County Fresno

Gepaid: CAT080012057
TSD EPA ID: AZD009015389
Gen County: Fresno
Tsd County: 99
Tons: 1.4500
Waste Category: Off-specification, aged, or surplus organics
Disposal Method: Disposal, Land Fill
Contact: DONALD KEMMER & NANCY KEMMER
Telephone: (000) 000-0000
Mailing Address: PO BOX 454
LAKE OSWEGO, OR 97034 - 0049
County Fresno

UST HIST:
Facility ID: 3383
Total Tanks: 3
Owner Address: 88 N. HUGHES
FRESNO, CA 93706
Tank Used for: WASTE
Owner Name: KEMMER AGRICULTURAL SUPPLY CO.
Region: STATE

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Tank Num:	1	Container Num:	103
Tank Capacity:	00001000	Year Installed:	1980
Type of Fuel:	Not reported	Tank Construction:	Not Reported
Leak Detection:	None		
Contact Name:	DONALD A. KEMMER	Telephone:	(209) 233-0367
Facility Type:	Other	Other Type:	FERTILIZER DEALER
Facility ID:	3383	Owner Name:	KEMMER AGRICULTURAL SUPPLY CO.
Total Tanks:	3	Region:	STATE
Owner Address:	88 N. HUGHES FRESNO, CA 93706		
Tank Used for:	PRODUCT		
Tank Num:	2	Container Num:	102
Tank Capacity:	00001000	Year Installed:	1980
Type of Fuel:	REGULAR	Tank Construction:	10 gauge
Leak Detection:	Pressure Test		
Contact Name:	DONALD A. KEMMER	Telephone:	(209) 233-0367
Facility Type:	Other	Other Type:	FERTILIZER DEALER
Facility ID:	3383	Owner Name:	KEMMER AGRICULTURAL SUPPLY CO.
Total Tanks:	3	Region:	STATE
Owner Address:	88 N. HUGHES FRESNO, CA 93706		
Tank Used for:	PRODUCT		
Tank Num:	3	Container Num:	101
Tank Capacity:	00001000	Year Installed:	1980
Type of Fuel:	UNLEADED	Tank Construction:	10 gauge
Leak Detection:	Pressure Test		
Contact Name:	DONALD A. KEMMER	Telephone:	(209) 233-0367
Facility Type:	Other	Other Type:	FERTILIZER DEALER

---

8 **WELDON TRUCKING** **LUST U003787634**
ESE **2002 NIELSEN** **UST N/A**
1/4-1/2 **FRESNO, CA 93706** **Fresno Co. CUPA**
1653 ft. **CA WDS**
SWEEPS UST

Relative:
Lower

Actual:
285 ft.

State LUST:

Cross Street:	HUGHES AVENUE		
Qty Leaked:	Not reported		
Case Number	5T10000819		
Reg Board:	5F		
Chemical:	Diesel		
Lead Agency:	Local Agency		
Local Agency :	10000		
Case Type:	Undefined		
Status:	Leak being confirmed		
Review Date:	2004-04-19 00:00:00	Confirm Leak:	2004-04-19 00:00:00
Workplan:	Not reported	Prelim Assess:	Not reported
Pollution Char:	Not reported	Remed Plan:	Not reported
Remed Action:	Not reported		
Monitoring:	Not reported		
Close Date:	Not reported		
Release Date:	2004-02-13 00:00:00		
Cleanup Fund Id :	Not reported		
Discover Date :	2004-02-13 00:00:00		
Enforcement Dt :	Not reported		
Enf Type:	Not reported		
Enter Date :	Not reported		

WELDON TRUCKING (Continued) **U003787634**

Funding: Not reported
Staff Initials: JRA
How Discovered: UM
How Stopped: Other Means
Interim : Not reported
Leak Cause: UNK
Leak Source: D
MTBE Date : Not reported
Max MTBE GW : Not reported
MTBE Tested: Not Required to be Tested.
Priority: Not reported
Local Case # : FA0170192
Beneficial: Not reported
Staff : DAM
GW Qualifier : Not reported
Max MTBE Soil : Not reported
Soil Qualifier : Not reported
Hydr Basin #: Not reported
Operator : Not reported
Oversight Prgm: LUST
Review Date : Not reported
Stop Date : 2003-12-23 00:00:00
Work Suspended : Not reported
Responsible Party LEE ROY WELDON
RP Address: 1575 WEST ALLUVIAL
Global Id: T0601989710
Org Name: Not reported
Contact Person: Not reported
MTBE Conc: 0
Mtbe Fuel: 0
Water System Name: Not reported
Well Name: Not reported
Distance To Lust: 0
Waste Discharge Global ID: Not reported
Waste Disch Assigned Name: Not reported
Summary : Not reported

LUST Region 5:
Substance: DIESEL
Case Type: Undefined
Program: LUST
Staff Initials: DAM
Case Number: 5T10000819
Status: Leak being confirmed
MTBE Code: N/A
Lead Agency: Local

WDS:
Facility ID: 5F 10I010795
Facility Contact LEE ROY WELDON
Facility Telephone (559) 264-3081
SIC Code: 0
SIC Code 2: Not reported
Agency Name: LEE ROY WELDON
Agency Address: 2002 W Nielsen Ave
Fresno 93706 - 1337
Agency Contact: LEE ROY WELDON
Agency Phone: (559) 264-3081
Design Flow: 0.00000 Million Gal/Day
Baseline Flow: 0.00000 Million Gal/Day
Facility Type: Industrial - Facility that treats and/or disposes of liquid or semisolid wastes from any servicing, producing, manufacturing or processing operation of whatever nature, including mining, gravel washing, geothermal operations, air conditioning, ship building and

WELDON TRUCKING (Continued) **U003787634**

repairing, oil production, storage and disposal operations, water pumping.
Facility Status: Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
Agency Type: Private
Waste Type: Not reported
Threat to Water: Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity: Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.
Reclamation: Not reported
POTW: Not reported
NPDES Number: CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion: 0

CUPA:
Facility ID: FA0170192
Region: CUPA
Program Element: UST FACILITY WITH ONE TANK
Owner Name: WELDON, LEE ROY
APM Number: 458-020-57

Facility ID: FA0170192
Region: CUPA
Program Element: CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR
Owner Name: WELDON, LEE ROY
APM Number: 458-020-57

Facility ID: FA0170192
Region: CUPA
Program Element: CONTAMINATED UST SITE/EHS LEAD AGENCY
Owner Name: WELDON, LEE ROY
APM Number: 458-020-57

Facility ID: FA0170192
Region: CUPA
Program Element: AUTO REPAIR/MAINTENANCE MODEL PLAN
Owner Name: WELDON, LEE ROY
APM Number: 458-020-57

SWEEPS:
Status : A
Comp Number : 344
Number : 1
Board Of Equalization : 44-003335
Ref Date : 06-02-94
Act Date : 06-28-94
Created Date : 06-07-89
Tank Status : A
Owner Tank Id : 3393201
Swrcb Tank Id : 10-000-000344-000001
Actv Date : 06-02-94

WELDON TRUCKING (Continued) **U003787634**

Capacity : 10000
Tank Use : M.V. FUEL
Stg : P
Content : DIESEL
Number Of Tanks : 1

State UST:
Facility ID: FA0170192
Total Tanks: 1
Region: STATE
Local Agency: 10000

---

9 **FRESNO IRRIGATION DISTRIC** **HAZNET** **S101581608**
WSW **3075 NIELSEN** **LUST** **N/A**
1/4-1/2 **FRESNO, CA** **Cortese**
1940 ft. **CA FID UST**
Fresno Co. CUPA
Relative: **SWEEPS UST**
Equal

State LUST:
Actual: Cross Street: MARKS
288 ft. Qty Leaked: Not reported
Case Number 5T10000637
Reg Board: 5F
Chemical: Hydrocarbons
Lead Agency: Local Agency
Local Agency : 10000
Case Type: Soil only
Status: Case Closed
Review Date: Not reported
Workplan: Not reported
Pollution Char: Not reported
Remed Action: Not reported
Monitoring: Not reported
Close Date: 1998-12-11 00:00:00
Release Date: 1997-02-19 00:00:00
Cleanup Fund Id : Not reported
Discover Date : 1997-02-18 00:00:00
Enforcement Dt : 1965-01-01 00:00:00
Enf Type: None Taken
Enter Date : 1997-03-31 00:00:00
Funding: Responsible Party
Staff Initials: JUI
How Discovered: Tank Closure
How Stopped: Not reported
Interim : No
Leak Cause: UNK
Leak Source: UNK
MTBE Date : Not reported
Max MTBE GW : Not reported
MTBE Tested: Not Required to be Tested.
Priority: 4
Local Case # : Not reported
Beneficial: Not reported
Staff : DAM
GW Qualifier : Not reported
Max MTBE Soil : Not reported
Soil Qualifier : Not reported
Hydr Basin #: SAN JOAQUIN (5-22)

Confirm Leak: Not reported
Prelim Assess: Not reported
Remed Plan: Not reported

FRESNO IRRIGATION DISTRIC (Continued) **S101581608**

Operator : FRESNO IRRIGATION DISTRICT
Oversight Prgm: LUST
Review Date : 1998-12-11 00:00:00
Stop Date : 1997-01-07 00:00:00
Work Suspended : No
Responsible Party: FRESNO IRRIGATION DISTRICT
RP Address: 29075 S MAPLE
Global Id: T0601900617
Org Name: Not reported
Contact Person: Not reported
MTBE Conc: 0
Mtbe Fuel: 0
Water System Name: Not reported
Well Name: Not reported
Distance To Lust: 0
Waste Discharge Global ID: Not reported
Waste Disch Assigned Name: Not reported
Summary : WEED OIL - FRESNO COUNTY CHD HAS REQUIRED THE RESPONSIBLE PARTY TO SECURE THE SERVICES OF AN APPROVED ENVIRONMENTAL ENGINEERING CONSULTING FIRM CLOSED BY COUNTY

LUST Region 5:
Substance: HYDROCARBONS
Case Type: Soil only
Program: LUST
Staff Initials: DAM Case Number: 5T10000637
Status: Case Closed
MTBE Code: N/A
Lead Agency: Local

HAZNET:
Gepaid: CAC001239984
TSD EPA ID: CAD099452708
Gen County: Fresno
Tsd County: Los Angeles
Tons: .2085
Waste Category: Unspecified oil-containing waste
Disposal Method: Recycler
Contact: COUNTY OF FRESNO
Telephone: (000) 000-0000
Mailing Address: 2907 SO MAPLE
FRESNO, CA 93725
County Fresno

Gepaid: CAC001239984
TSD EPA ID: CAD099452708
Gen County: Fresno
Tsd County: Los Angeles
Tons: .2085
Waste Category: Unspecified oil-containing waste
Disposal Method: Not reported
Contact: COUNTY OF FRESNO
Telephone: (000) 000-0000
Mailing Address: 2907 SO MAPLE
FRESNO, CA 93725
County Fresno

CORTESE:
Region: CORTESE

FRESNO IRRIGATION DISTRIC (Continued) **S101581608**

Fac Address 2: Not reported

FID:

Facility ID:	10002948	Regulate ID:	00031522
Reg By:	Active Underground Storage Tank Location		
Cortese Code:	Not reported	SIC Code:	Not reported
Status:	Active	Facility Tel:	(209) 233-7161
Mail To:	Not reported 1568 N MILLBROOK AVE FRESNO, CA 93706		
Contact:	Not reported	Contact Tel:	Not reported
DUNs No:	Not reported	NPDES No:	Not reported
Creation:	10/22/93	Modified:	00/00/00
EPA ID:	Not reported		
Comments:	Not reported		

CUPA:

Facility ID:	FA0170195
Region:	CUPA
Program Element:	LARGE HAZARDOUS MATERIALS HANDLER
Owner Name:	FRESNO IRRIGATION DISTRICT
APM Number:	326-160-27T

Facility ID:	FA0170195
Region:	CUPA
Program Element:	SOLID WASTE FACILITY-CLOSED SITE
Owner Name:	FRESNO IRRIGATION DISTRICT
APM Number:	326-160-27T

Facility ID:	FA0170195
Region:	CUPA
Program Element:	CLOSED UST FACILITY/DATA VAULT
Owner Name:	FRESNO IRRIGATION DISTRICT
APM Number:	326-160-27T

Facility ID:	FA0170195
Region:	CUPA
Program Element:	FORMER CONTAMINATED SITE/CLEANUP COMPLETE
Owner Name:	FRESNO IRRIGATION DISTRICT
APM Number:	326-160-27T

Facility ID:	FA0170195
Region:	CUPA
Program Element:	CONTAMINATED SITE - MISC/RWQCB LEAD
Owner Name:	FRESNO IRRIGATION DISTRICT
APM Number:	326-160-27T

SWEEPS:

Status :	Not reported
Comp Number :	31522
Number :	Not reported
Board Of Equalization :	44-004027
Ref Date :	Not reported
Act Date :	Not reported
Created Date :	Not reported
Tank Status :	Not reported
Owner Tank Id :	Not reported
Swrcb Tank Id :	10-000-031522-000005
Actv Date :	Not reported

FRESNO IRRIGATION DISTRIC (Continued) **S101581608**

Capacity : 3000
Tank Use : M.V. FUEL
Stg : PRODUCT
Content : DIESEL
Number Of Tanks : 2

Status : Not reported
Comp Number : 31522
Number : Not reported
Board Of Equalization : 44-004027
Ref Date : Not reported
Act Date : Not reported
Created Date : Not reported
Tank Status : Not reported
Owner Tank Id : Not reported
Swrcb Tank Id : 10-000-031522-000006
Actv Date : Not reported
Capacity : 3000
Tank Use : UNKNOWN
Stg : PRODUCT
Content : Not reported
Number Of Tanks : Not reported

Status : A
Comp Number : 31522
Number : 1
Board Of Equalization : 44-004027
Ref Date : 02-05-93
Act Date : 06-23-93
Created Date : 02-29-88
Tank Status : A
Owner Tank Id : 1
Swrcb Tank Id : 10-000-031522-000001
Actv Date : 02-05-93
Capacity : 10000
Tank Use : M.V. FUEL
Stg : P
Content : PRM UNLEADED
Number Of Tanks : 4

Status : A
Comp Number : 31522
Number : 1
Board Of Equalization : 44-004027
Ref Date : 02-05-93
Act Date : 06-23-93
Created Date : 02-29-88
Tank Status : A
Owner Tank Id : 2
Swrcb Tank Id : 10-000-031522-000002
Actv Date : 02-05-93
Capacity : 5656
Tank Use : M.V. FUEL
Stg : P
Content : DIESEL
Number Of Tanks : Not reported

Map ID / Direction / Distance / Distance (ft.) / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number

FRESNO IRRIGATION DISTRIC (Continued) **S101581608**

Status :	A
Comp Number :	31522
Number :	1
Board Of Equalization :	44-004027
Ref Date :	02-05-93
Act Date :	06-23-93
Created Date :	02-29-88
Tank Status :	A
Owner Tank Id :	3
Swrcb Tank Id :	10-000-031522-000003
Actv Date :	02-05-93
Capacity :	3000
Tank Use :	M.V. FUEL
Stg :	P
Content :	DIESEL
Number Of Tanks :	Not reported

Status :	A
Comp Number :	31522
Number :	1
Board Of Equalization :	44-004027
Ref Date :	02-05-93
Act Date :	06-23-93
Created Date :	02-29-88
Tank Status :	A
Owner Tank Id :	4
Swrcb Tank Id :	10-000-031522-000004
Actv Date :	05-15-89
Capacity :	5000
Tank Use :	M.V. FUEL
Stg :	P
Content :	DIESEL
Number Of Tanks :	Not reported

10
WSW
1/4-1/2
2112 ft.

FRESNO IRRIGATION DISTRICT **HAZNET S102360031**
3075 W. NIELSON **SWF/LF N/A**
FRESNO, CA 93703

Relative:
Equal

Actual:
288 ft.

LF:

Facility ID:	10-CR-0053	Operator:	Fresno Irrigation District
Operator Addr:	2907 S Maple		
	Fresno, CA 93725		
Date:	Not reported		
Address:	Not reported		
Prep By:	Not reported		
DOHS Number:	Not reported		
CUP Number:	Not reported		
CIWMB:	Not reported		
Activity:	Solid Waste Disposal Site		
Operator's Status:	Closed		
Owner:	Fresno Irrigation District		
Facility Phone 2 :	Not reported		
Owner Address:	Not reported		
	2907 S Maple		
	Fresno, CA 93725		
Operator Phone:	(209) 233-7165	Owner Telephone:	(209) 233-7165
Regulation Status:	Unpermitted	Region:	STATE

FRESNO IRRIGATION DISTRICT (Continued) **S102360031**

Location: Not reported
Parcel Num: Not reported
Parcel Num 2 : Not reported
Land Use: Not reported
Sig. Change Since Last Visit: Not reported
Site Size: Not reported
Other Observations: Not reported
Issue And Observations: Not reported
Recommendations / Follow Up: Not reported
Lat/Long: 36.75000 / -119.76667 Permit Date: Not reported
Accepted Waste:
Restrictions:

Status : Not reported Swisnumber : Not reported
Site Type : Not reported Aka : Not reported
Type Of Waste : Not reported Disposal Area : Not reported
SWFP Date : Not reported WDR Number : Not reported
Dates Operation : Not reported Closure Approve : Not reported
Dt Of Field Units : Not reported Surface Condition : Not reported
Lea Date : Not reported Reassess Site : Not reported
Leachate : Not reported Emrgncy Response Not reported
Landfill Gas : Not reported
Priority For Site Assessment : Not reported
Other Recommendation : Not reported
Explanation: Not Reported
No Further Action: Not Reported
Permitted Throughput with Units: Not reported
Actual Throughput with Units: Not reported
Actual Capacity with Units: Not reported
Permitted Capacity with Units: Not reported
Remaining Capacity with Units: Not reported
Permitted Total Acreage: 0
Remaining Capacity : Not reported
Fill Area: Not reported Inspec Frequency : Annual
Landuse Name: Not reported GIS Source: Place
Permit Status: Not reported Category: Disposal
Unit Number: 01 Closure Date: / /
Closure Type: Not reported Disposal Acreage: 0
Year Opened: Not reported Year Closed: Not reported
Last Waste Tire Inspection Count : Not reported
Last Waste Tire Inspection Date: Not reported
Original Waste Tire Count: Not reported
Original Waste Tire Count Date: Not reported
Type Of Refuse: Not reported
Avg Depth Of Fill: Not reported
Addtl Expansion Area: Not reported
Site Description: Not Reported

HAZNET:
Gepaid: CAC001495272
TSD EPA ID: CAD099452708
Gen County: Fresno
Tsd County: Los Angeles
Tons: 2.2809
Waste Category: Waste oil and mixed oil
Disposal Method: Recycler
Contact: FRESNO COUNTY
Telephone: (000) 000-0000

FRESNO IRRIGATION DISTRICT (Continued) **S102360031**

Mailing Address: 2907 S. MAPLE
FRESNO, CA 93725
County Fresno

Gepaid: CAL000172311
TSD EPA ID: CAD981382732
Gen County: Fresno
Tsd County: 1
Tons: 33.7120
Waste Category: Asbestos-containing waste
Disposal Method: Not reported
Contact: CENTRAL UNIFIED SCH DIST
Telephone: (209) 276-5243
Mailing Address: 3075 W NIELSON AVE
FRESNO, CA 93706
County Fresno

---

11 **CRAYCROFT BRICK INERT SITE** **SWF/LF** **S102359975**
NW **2301 W BELMONT @ MARKS** **N/A**
1/4-1/2 **FRESNO, CA**
2471 ft.

Relative:
Lower

Actual:
278 ft.

LF:
Facility ID: 10-AA-0173 Operator: Craycroft Brick Co.
Operator Addr: 2301 W. Belmont
Fresno, CA 93728
Date: Not reported
Address: Not reported
Prep By: Not reported
DOHS Number: Not reported
CUP Number: Not reported
CIWMB: Not reported
Activity: Inert Waste Disposal Site
Operator's Status: Active
Owner: Craycroft Brick Co.
Facility Phone 2 : Not reported
Owner Address: Not reported
2301 W. Belmont
Fresno, CA 93728
Operator Phone: (209) 268-5635 Owner Telephone: (209) 268-5635
Regulation Status: Exempt Region: STATE
Location: Not reported
Parcel Num: Not reported
Parcel Num 2 : Not reported
Land Use: Not reported
Sig. Change Since Last Visit: Not reported
Site Size: Not reported
Other Observations: Not reported
Issue And Observations: Not reported
Recommendations / Follow Up: Not reported
Lat/Long: 36.74973 / -119.84385 Permit Date: Not reported
Accepted Waste: Construction/demolition
Restrictions:

Status : Not reported Swisnumber : Not reported
Site Type : Not reported Aka : Not reported
Type Of Waste : Not reported Disposal Area : Not reported
SWFP Date : Not reported WDR Number : Not reported
Dates Operation : Not reported Closure Approve : Not reported

CRAYCROFT BRICK INERT SITE (Continued) **S102359975**

Dt Of Field Units : Not reported
Lea Date : Not reported
Leachate : Not reported
Landfill Gas : Not reported
Priority For Site Assessment : Not reported
Other Recommendation : Not reported
Explanation: Not Reported
No Further Action: Not Reported
Permitted Throughput with Units: 0
Actual Throughput with Units: Cubic Yards
Actual Capacity with Units: 0
Permitted Capacity with Units: 0
Remaining Capacity with Units: Not reported
Permitted Total Acreage: 0
Remaining Capacity : 0
Fill Area: Not reported
Landuse Name: Not reported
Permit Status: Not reported
Unit Number: 01
Closure Type: Estimated
Year Opened: Not reported
Last Waste Tire Inspection Count : 0
Last Waste Tire Inspection Date: Not reported
Original Waste Tire Count: 305
Original Waste Tire Count Date: 1/26/1989
Type Of Refuse: Not reported
Avg Depth Of Fill: Not reported
Addtl Expansion Area: Not reported
Site Description: Not Reported

Surface Condition : Not reported
Reassess Site : Not reported
Emrgncy Response Not reported
Inspec Frequency : Monthly
GIS Source: External
Category: Disposal
Closure Date: 01/01/35
Disposal Acreage: 0
Year Closed: Not reported

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
FRESNO	S105174080	UNKNOWN	HIGHWAY 99 @ THORNE	93728	LUST
FRESNO	1003878509	PACIFIC AIRMOTIVE	CHANDLER FLD	93706	CERC-NFRAP
FRESNO	1003878253	CHATEAU FRESNO LDFL	CHATEAU FRESNO AND MUSCAT ST	93706	CERC-NFRAP
FRESNO	S106175466	GUS COZETTE PARCEL	CHESTNUT / GOLDEN STATE	93706	Fresno Co. CUPA
FRESNO	1003878932	PG&E GAS PLANT FRESNO 325 3	NW COR N THORNE AVE& BUTTON AV	93706	CERCLIS, FINDS
FRESNO	S107030086	NICK'S TRUCKING, INC.	SW CORNER N. MARKS AND W BELMO		SWF/LF
FRESNO	S106929381	MID-CAL MACHINE WORKS	2756 S ELM AVENUE HWY 41	93706	SWEEPS UST
FRESNO	1000708997	PG & E FRESNO 2	FRESNO & TULARE STREET	93706	CERCLIS, FINDS
FRESNO COUNTY	S104867814		CALIFORNIA AQUEDUCT		CHMIRS, Fresno Co. CUPA

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM STANDARD RECORDS

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 07/01/05
Date Data Arrived at EDR: 08/03/05
Date Made Active in Reports: 08/22/05
Number of Days to Update: 19

Source: EPA
Telephone: N/A
Last EDR Contact: 08/03/05
Next Scheduled EDR Contact: 10/31/05
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 8
Telephone: 303-312-6774

EPA Region 4
Telephone 404-562-8033

Proposed NPL: Proposed National Priority List Sites

Date of Government Version: 04/27/05
Date Data Arrived at EDR: 05/04/05
Date Made Active in Reports: 05/16/05
Number of Days to Update: 12

Source: EPA
Telephone: N/A
Last EDR Contact: 08/05/05
Next Scheduled EDR Contact: 10/31/05
Data Release Frequency: Quarterly

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 09/19/05
Date Data Arrived at EDR: 10/21/05
Date Made Active in Reports: 10/27/05
Number of Days to Update: 6

Source: EPA
Telephone: 703-413-0223
Last EDR Contact: 09/20/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Quarterly

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

Date of Government Version: 08/22/05
Date Data Arrived at EDR: 09/20/05
Date Made Active in Reports: 10/27/05
Number of Days to Update: 37

Source: EPA
Telephone: 703-413-0223
Last EDR Contact: 09/20/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Quarterly

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/28/05
Date Data Arrived at EDR: 07/05/05
Date Made Active in Reports: 08/08/05
Number of Days to Update: 34

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/06/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: Quarterly

RCRA: Resource Conservation and Recovery Act Information

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 08/11/05
Date Data Arrived at EDR: 08/23/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 44

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/23/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: Quarterly

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/04
Date Data Arrived at EDR: 01/27/05
Date Made Active in Reports: 03/24/05
Number of Days to Update: 56

Source: National Response Center, United States Coast Guard
Telephone: 202-260-2342
Last EDR Contact: 07/25/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: Annually

FEDERAL ASTM SUPPLEMENTAL RECORDS

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 06/17/05
Date Made Active in Reports: 08/04/05
Number of Days to Update: 48

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 09/12/05
Next Scheduled EDR Contact: 12/12/05
Data Release Frequency: Biennially

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/14/04
Date Data Arrived at EDR: 02/15/05
Date Made Active in Reports: 04/25/05
Number of Days to Update: 69

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 07/25/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 06/08/05
Date Data Arrived at EDR: 07/11/05
Date Made Active in Reports: 08/08/05
Number of Days to Update: 28

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 07/06/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Annually

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 07/01/05
Date Data Arrived at EDR: 08/03/05
Date Made Active in Reports: 08/22/05
Number of Days to Update: 19

Source: EPA
Telephone: N/A
Last EDR Contact: 08/03/05
Next Scheduled EDR Contact: 10/31/05
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 07/11/05
Date Data Arrived at EDR: 07/19/05
Date Made Active in Reports: 08/08/05
Number of Days to Update: 20

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 07/05/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Quarterly

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/27/05
Date Data Arrived at EDR: 07/22/05
Date Made Active in Reports: 09/01/05
Number of Days to Update: 41

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 07/22/05
Next Scheduled EDR Contact: 10/17/05
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 07/14/05
Date Data Arrived at EDR: 07/22/05
Date Made Active in Reports: 08/22/05
Number of Days to Update: 31

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 07/05/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Quarterly

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 05/13/05
Date Data Arrived at EDR: 06/27/05
Date Made Active in Reports: 08/08/05
Number of Days to Update: 42

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/27/05
Next Scheduled EDR Contact: 12/26/05
Data Release Frequency: Semi-Annually

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Date Data Arrived at EDR: 02/02/94
Date Made Active in Reports: 03/30/94
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/22/05
Next Scheduled EDR Contact: 11/21/05
Data Release Frequency: No Update Planned

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 08/30/05
Date Data Arrived at EDR: 09/13/05
Date Made Active in Reports: 10/27/05
Number of Days to Update: 44

Source: EPA
Telephone: 202-564-3887
Last EDR Contact: 08/25/05
Next Scheduled EDR Contact: 11/07/05
Data Release Frequency: Annually

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 10/01/03
Date Data Arrived at EDR: 11/12/03
Date Made Active in Reports: 11/21/03
Number of Days to Update: 9

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 08/09/05
Next Scheduled EDR Contact: 11/07/05
Data Release Frequency: Semi-Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized. In 1978, 24 inactive uranium mill tailings sites in Oregon, Idaho, Wyoming, Utah, Colorado, New Mexico, Texas, North Dakota, South Dakota, Pennsylvania, and on Navajo and Hopi tribal lands, were targeted for cleanup by the Department of Energy.

Date of Government Version: 12/29/04
Date Data Arrived at EDR: 01/07/05
Date Made Active in Reports: 03/14/05
Number of Days to Update: 66

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 09/19/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/85
Date Data Arrived at EDR: 08/09/04
Date Made Active in Reports: 09/17/04
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 05/23/95
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/04
Date Data Arrived at EDR: 06/29/05
Date Made Active in Reports: 08/08/05
Number of Days to Update: 40

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 06/29/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 10/01/03
Date Data Arrived at EDR: 11/12/03
Date Made Active in Reports: 11/21/03
Number of Days to Update: 9

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 08/09/05
Next Scheduled EDR Contact: 11/07/05
Data Release Frequency: Semi-Annually

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/02/05
Date Data Arrived at EDR: 08/12/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 55

Source: Environmental Protection Agency
Telephone: 703-603-8867
Last EDR Contact: 10/03/05
Next Scheduled EDR Contact: 01/02/06
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Date Data Arrived at EDR: 07/03/95
Date Made Active in Reports: 08/07/95
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 09/06/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: No Update Planned

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 07/13/05
Date Made Active in Reports: 08/17/05
Number of Days to Update: 35

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 09/19/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/02
Date Data Arrived at EDR: 04/27/04
Date Made Active in Reports: 05/21/04
Number of Days to Update: 24

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 07/18/05
Next Scheduled EDR Contact: 10/17/05
Data Release Frequency: Every 4 Years

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

Date of Government Version: 07/15/05
Date Data Arrived at EDR: 07/25/05
Date Made Active in Reports: 08/22/05
Number of Days to Update: 28

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 09/19/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Quarterly

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 01/03/05
Date Made Active in Reports: 01/25/05
Number of Days to Update: 22

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/18/05
Next Scheduled EDR Contact: 10/17/05
Data Release Frequency: Annually

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 07/15/05
Date Data Arrived at EDR: 07/25/05
Date Made Active in Reports: 08/22/05
Number of Days to Update: 28

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 09/19/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Quarterly

STATE OF CALIFORNIA ASTM STANDARD RECORDS

AWP: Annual Workplan Sites

Known Hazardous Waste Sites. California DTSC's Annual Workplan (AWP), formerly BEP, identifies known hazardous substance sites targeted for cleanup.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 23

Source: California Environmental Protection Agency
Telephone: 916-323-3400
Last EDR Contact: 08/29/05
Next Scheduled EDR Contact: 11/28/05
Data Release Frequency: Annually

CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 23

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 08/29/05
Next Scheduled EDR Contact: 11/28/05
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 05/18/04
Date Made Active in Reports: 06/25/04
Number of Days to Update: 38

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 08/22/05
Next Scheduled EDR Contact: 11/21/05
Data Release Frequency: Varies

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/01/01
Date Data Arrived at EDR: 05/29/01
Date Made Active in Reports: 07/26/01
Number of Days to Update: 58

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-9100
Last EDR Contact: 07/26/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/93
Date Data Arrived at EDR: 11/01/93
Date Made Active in Reports: 11/19/93
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 07/19/05
Next Scheduled EDR Contact: 10/17/05
Data Release Frequency: No Update Planned

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/95
Date Data Arrived at EDR: 08/30/95
Date Made Active in Reports: 09/26/95
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 08/01/05
Next Scheduled EDR Contact: 10/31/05
Data Release Frequency: No Update Planned

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/12/05
Date Data Arrived at EDR: 09/13/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 23

Source: Integrated Waste Management Board
Telephone: 916-341-6320
Last EDR Contact: 09/13/05
Next Scheduled EDR Contact: 12/12/05
Data Release Frequency: Quarterly

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/00
Date Data Arrived at EDR: 04/10/00
Date Made Active in Reports: 05/10/00
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 09/06/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: Quarterly

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 07/11/05
Date Data Arrived at EDR: 07/12/05
Date Made Active in Reports: 08/03/05
Number of Days to Update: 22

Source: State Water Resources Control Board
Contact: Fresno County Environmental Health, (559) 445-3271
Last EDR Contact: 07/12/05
Next Scheduled EDR Contact: 10/10/05
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/01
Date Data Arrived at EDR: 02/28/01
Date Made Active in Reports: 03/29/01
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-576-2220
Last EDR Contact: 08/22/05
Next Scheduled EDR Contact: 11/21/05
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Date of Government Version: 09/30/04
Date Data Arrived at EDR: 10/20/04
Date Made Active in Reports: 11/19/04
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 07/11/05
Next Scheduled EDR Contact: 10/10/05
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database

Date of Government Version: 05/19/03
Date Data Arrived at EDR: 05/19/03
Date Made Active in Reports: 06/02/03
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 08/15/05
Next Scheduled EDR Contact: 11/14/05
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/04
Date Data Arrived at EDR: 09/07/04
Date Made Active in Reports: 10/12/04
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 09/27/05
Next Scheduled EDR Contact: 12/26/05
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Date of Government Version: 07/01/05
Date Data Arrived at EDR: 08/02/05
Date Made Active in Reports: 09/01/05
Number of Days to Update: 30

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 07/08/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/03
Date Data Arrived at EDR: 09/10/03
Date Made Active in Reports: 10/07/03
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 916-542-5424
Last EDR Contact: 09/06/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Date of Government Version: 06/07/05
Date Data Arrived at EDR: 06/07/05
Date Made Active in Reports: 06/29/05
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-346-7491
Last EDR Contact: 07/08/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Date of Government Version: 02/26/04
Date Data Arrived at EDR: 02/26/04
Date Made Active in Reports: 03/24/04
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-346-7491
Last EDR Contact: 09/27/05
Next Scheduled EDR Contact: 12/26/05
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/05
Date Data Arrived at EDR: 02/15/05
Date Made Active in Reports: 03/28/05
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-4130
Last EDR Contact: 08/08/05
Next Scheduled EDR Contact: 11/07/05
Data Release Frequency: Varies

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/01
Date Data Arrived at EDR: 04/23/01
Date Made Active in Reports: 05/21/01
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 07/18/05
Next Scheduled EDR Contact: 10/17/05
Data Release Frequency: No Update Planned

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/89
Date Data Arrived at EDR: 07/27/94
Date Made Active in Reports: 08/02/94
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/94
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA UST:

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 07/11/05
Date Data Arrived at EDR: 07/12/05
Date Made Active in Reports: 08/11/05
Number of Days to Update: 30

Source: SWRCB
Contact: Fresno County Environmental Health, (559) 445-3271
Last EDR Contact: 07/12/05
Next Scheduled EDR Contact: 10/10/05
Data Release Frequency: Semi-Annually

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 23

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/29/05
Next Scheduled EDR Contact: 11/28/05
Data Release Frequency: Quarterly

INDIAN UST: Underground Storage Tanks on Indian Land

Date of Government Version: 04/18/05
Date Data Arrived at EDR: 05/16/05
Date Made Active in Reports: 05/31/05
Number of Days to Update: 15

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 08/25/05
Next Scheduled EDR Contact: 11/21/05
Data Release Frequency: Varies

INDIAN LUST: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 06/02/05
Date Data Arrived at EDR: 06/03/05
Date Made Active in Reports: 07/01/05
Number of Days to Update: 28

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 08/25/05
Next Scheduled EDR Contact: 11/21/05
Data Release Frequency: Varies

INDIAN LUST: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 06/14/05
Date Data Arrived at EDR: 06/14/05
Date Made Active in Reports: 07/15/05
Number of Days to Update: 31

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 08/25/05
Next Scheduled EDR Contact: 11/21/05
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/94
Date Data Arrived at EDR: 09/05/95
Date Made Active in Reports: 09/29/95
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/98
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/90
Date Data Arrived at EDR: 01/25/91
Date Made Active in Reports: 02/12/91
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/01
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1980?s. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/94
Date Data Arrived at EDR: 07/07/05
Date Made Active in Reports: 08/11/05
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/05
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

STATE OF CALIFORNIA ASTM SUPPLEMENTAL RECORDS

AST: Aboveground Petroleum Storage Tank Facilities

Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/05
Date Data Arrived at EDR: 08/25/05
Date Made Active in Reports: 09/30/05
Number of Days to Update: 36

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 08/16/05
Next Scheduled EDR Contact: 10/31/05
Data Release Frequency: Quarterly

CLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 04/18/05
Date Data Arrived at EDR: 04/18/05
Date Made Active in Reports: 05/06/05
Number of Days to Update: 18

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 07/05/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Annually

CA WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 09/19/05
Date Data Arrived at EDR: 09/20/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 16

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 09/20/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Quarterly

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 08/02/05
Date Data Arrived at EDR: 08/02/05
Date Made Active in Reports: 09/01/05
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/05/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Semi-Annually

NFA: No Further Action Determination

This category contains properties at which DTSC has made a clear determination that the property does not pose a problem to the environment or to public health.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/29/05
Next Scheduled EDR Contact: 11/28/05
Data Release Frequency: Quarterly

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 07/19/05
Date Made Active in Reports: 08/11/05
Number of Days to Update: 23

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 07/19/05
Next Scheduled EDR Contact: 10/17/05
Data Release Frequency: Varies

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/27/05
Date Data Arrived at EDR: 07/28/05
Date Made Active in Reports: 08/11/05
Number of Days to Update: 14

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 07/25/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: Varies

REF: Unconfirmed Properties Referred to Another Agency

This category contains properties where contamination has not been confirmed and which were determined as not requiring direct DTSC Site Mitigation Program action or oversight. Accordingly, these sites have been referred to another state or local regulatory agency.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/29/05
Next Scheduled EDR Contact: 11/28/05
Data Release Frequency: Quarterly

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/29/05
Next Scheduled EDR Contact: 11/28/05
Data Release Frequency: Quarterly

NFE: Properties Needing Further Evaluation

This category contains properties that are suspected of being contaminated. These are unconfirmed contaminated properties that need to be assessed using the PEA process. PEA in Progress indicates properties where DTSC is currently conducting a PEA. PEA Required indicates properties where DTSC has determined a PEA is required, but not currently underway.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 23

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/29/05
Next Scheduled EDR Contact: 11/28/05
Data Release Frequency: Quarterly

SLIC: Statewide SLIC Cases

The Spills, Leaks, Investigations, and Cleanups (SLIC) listings includes unauthorized discharges from spills and leaks, other than from underground storage tanks or other regulated sites.

Date of Government Version: 07/11/05
Date Data Arrived at EDR: 07/12/05
Date Made Active in Reports: 08/03/05
Number of Days to Update: 22

Source: State Water Resources Control Board
Contact: Fresno County Environmental Health, (559) 445-3271
Last EDR Contact: 07/12/05
Next Scheduled EDR Contact: 10/10/05
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

Date of Government Version: 04/03/03
Date Data Arrived at EDR: 04/07/03
Date Made Active in Reports: 04/25/03
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/22/05
Next Scheduled EDR Contact: 11/21/05
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

Any contaminated site that impacts groundwater or has the potential to impact groundwater.

Date of Government Version: 09/30/04
Date Data Arrived at EDR: 10/20/04
Date Made Active in Reports: 11/19/04
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 07/11/05
Next Scheduled EDR Contact: 10/10/05
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

Any contaminated site that impacts groundwater or has the potential to impact groundwater.

Date of Government Version: 08/19/05
Date Data Arrived at EDR: 08/22/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 30

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 08/15/05
Next Scheduled EDR Contact: 11/14/05
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

Any contaminated site that impacts groundwater or has the potential to impact groundwater.

Date of Government Version: 11/17/04
Date Data Arrived at EDR: 11/18/04
Date Made Active in Reports: 01/04/05
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/25/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Unregulated sites that impact groundwater or have the potential to impact groundwater.

Date of Government Version: 04/01/05
Date Data Arrived at EDR: 04/05/05
Date Made Active in Reports: 04/21/05
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 07/08/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

Date of Government Version: 05/24/05
Date Data Arrived at EDR: 05/25/05
Date Made Active in Reports: 06/16/05
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 07/05/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites

Date of Government Version: 09/07/04
Date Data Arrived at EDR: 09/07/04
Date Made Active in Reports: 10/12/04
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 09/06/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List

Date of Government Version: 11/24/04
Date Data Arrived at EDR: 11/29/04
Date Made Active in Reports: 01/04/05
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/22/05
Next Scheduled EDR Contact: 11/21/05
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

Date of Government Version: 07/01/04
Date Data Arrived at EDR: 08/10/04
Date Made Active in Reports: 09/08/04
Number of Days to Update: 29

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 07/05/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

Date of Government Version: 06/27/05
Date Data Arrived at EDR: 06/27/05
Date Made Active in Reports: 07/21/05
Number of Days to Update: 24

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 09/26/05
Next Scheduled EDR Contact: 11/28/05
Data Release Frequency: Annually

HAZNET: Facility and Manifest Data
Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/02
Date Data Arrived at EDR: 11/24/03
Date Made Active in Reports: 01/08/04
Number of Days to Update: 45

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 08/23/05
Next Scheduled EDR Contact: 11/07/05
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LOCAL RECORDS

ALAMEDA COUNTY:

Underground Tanks

Date of Government Version: 06/28/05
Date Data Arrived at EDR: 06/28/05
Date Made Active in Reports: 07/26/05
Number of Days to Update: 28

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/28/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: Semi-Annually

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 08/16/05
Date Data Arrived at EDR: 08/16/05
Date Made Active in Reports: 09/01/05
Number of Days to Update: 16

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/25/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/29/05
Date Data Arrived at EDR: 08/30/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 37

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 08/29/05
Next Scheduled EDR Contact: 11/28/05
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 07/22/05
Date Data Arrived at EDR: 07/25/05
Date Made Active in Reports: 08/25/05
Number of Days to Update: 31

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 07/25/05
Next Scheduled EDR Contact: 11/07/05
Data Release Frequency: Semi-Annually

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing

Kern County Sites and Tanks Listing.

Date of Government Version: 05/10/05
Date Data Arrived at EDR: 05/10/05
Date Made Active in Reports: 06/06/05
Number of Days to Update: 27

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 09/26/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LOS ANGELES COUNTY:

List of Solid Waste Facilities

Date of Government Version: 02/01/05
Date Data Arrived at EDR: 02/18/05
Date Made Active in Reports: 03/28/05
Number of Days to Update: 38

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 08/18/05
Next Scheduled EDR Contact: 11/14/05
Data Release Frequency: Varies

City of El Segundo Underground Storage Tank

Date of Government Version: 08/29/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 09/28/05
Number of Days to Update: 30

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 08/29/05
Next Scheduled EDR Contact: 11/14/05
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank

Date of Government Version: 03/28/03
Date Data Arrived at EDR: 10/23/03
Date Made Active in Reports: 11/26/03
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 08/22/05
Next Scheduled EDR Contact: 11/21/05
Data Release Frequency: Annually

City of Torrance Underground Storage Tank

Date of Government Version: 08/16/05
Date Data Arrived at EDR: 09/14/05
Date Made Active in Reports: 09/28/05
Number of Days to Update: 14

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 08/15/05
Next Scheduled EDR Contact: 11/14/05
Data Release Frequency: Semi-Annually

City of Los Angeles Landfills

Date of Government Version: 03/01/05
Date Data Arrived at EDR: 03/18/05
Date Made Active in Reports: 04/08/05
Number of Days to Update: 21

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 09/13/05
Next Scheduled EDR Contact: 12/12/05
Data Release Frequency: Varies

HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 04/28/05
Date Data Arrived at EDR: 07/08/05
Date Made Active in Reports: 08/03/05
Number of Days to Update: 26

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 08/15/05
Next Scheduled EDR Contact: 11/14/05
Data Release Frequency: Semi-Annually

Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 05/25/05
Date Data Arrived at EDR: 05/27/05
Date Made Active in Reports: 07/01/05
Number of Days to Update: 35

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 08/15/05
Next Scheduled EDR Contact: 11/14/05
Data Release Frequency: Annually

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 09/01/05
Date Data Arrived at EDR: 09/19/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 17

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 09/09/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: Annually

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 08/10/05
Date Data Arrived at EDR: 08/31/05
Date Made Active in Reports: 09/13/05
Number of Days to Update: 13

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 09/19/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 09/15/05
Date Data Arrived at EDR: 09/16/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 20

Source: Department of Public Health
Telephone: 951-358-5055
Last EDR Contact: 07/18/05
Next Scheduled EDR Contact: 10/17/05
Data Release Frequency: Quarterly

Underground Storage Tank Tank List

Date of Government Version: 05/24/05
Date Data Arrived at EDR: 05/25/05
Date Made Active in Reports: 06/16/05
Number of Days to Update: 22

Source: Health Services Agency
Telephone: 951-358-5055
Last EDR Contact: 07/18/05
Next Scheduled EDR Contact: 10/17/05
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS - Contaminated Sites

Date of Government Version: 08/19/05
Date Data Arrived at EDR: 09/02/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 34

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 08/26/05
Next Scheduled EDR Contact: 10/31/05
Data Release Frequency: Quarterly

ML - Regulatory Compliance Master List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 07/25/05
Date Data Arrived at EDR: 08/19/05
Date Made Active in Reports: 09/13/05
Number of Days to Update: 25

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 08/05/05
Next Scheduled EDR Contact: 10/31/05
Data Release Frequency: Quarterly

San Gabriel Valley Areas of Concern

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 12/31/98
Date Data Arrived at EDR: 07/07/99
Date Made Active in Reports: N/A
Number of Days to Update: 35

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 07/06/99
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

MARIN COUNTY:

Underground Storage Tank Sites

Currently permitted USTs in Marin County.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/26/05
Date Made Active in Reports: 09/28/05
Number of Days to Update: 33

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 08/01/05
Next Scheduled EDR Contact: 10/31/05
Data Release Frequency: Semi-Annually

NAPA COUNTY:

Sites With Reported Contamination

Date of Government Version: 06/27/05
Date Data Arrived at EDR: 06/27/05
Date Made Active in Reports: 07/26/05
Number of Days to Update: 29

Source: Napa County Department of Environmental Managemen
Telephone: 707-253-4269
Last EDR Contact: 09/26/05
Next Scheduled EDR Contact: 12/26/05
Data Release Frequency: Semi-Annually

Closed and Operating Underground Storage Tank Sites

Date of Government Version: 06/27/05
Date Data Arrived at EDR: 06/27/05
Date Made Active in Reports: 07/26/05
Number of Days to Update: 29

Source: Napa County Department of Environmental Managemen
Telephone: 707-253-4269
Last EDR Contact: 09/26/05
Next Scheduled EDR Contact: 12/26/05
Data Release Frequency: Annually

ORANGE COUNTY:

List of Underground Storage Tank Cleanups

Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 09/01/05
Date Data Arrived at EDR: 09/19/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 17

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 09/09/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities

Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 06/01/05
Date Data Arrived at EDR: 06/10/05
Date Made Active in Reports: 07/13/05
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 09/09/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 09/20/05
Date Data Arrived at EDR: 09/20/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 16

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 09/06/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 08/01/00
Date Data Arrived at EDR: 12/13/01
Date Made Active in Reports: 01/15/02
Number of Days to Update: 33

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 08/22/05
Next Scheduled EDR Contact: 11/21/05
Data Release Frequency: Varies

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 05/16/05
Date Data Arrived at EDR: 05/18/05
Date Made Active in Reports: 06/16/05
Number of Days to Update: 29

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 07/08/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Quarterly

SAN FRANCISCO COUNTY:

Local Oversite Facilities

Date of Government Version: 09/07/05
Date Data Arrived at EDR: 09/08/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 28

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 09/06/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: Quarterly

Underground Storage Tank Information

Date of Government Version: 09/07/05
Date Data Arrived at EDR: 09/08/05
Date Made Active in Reports: 10/20/05
Number of Days to Update: 42

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 09/06/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SAN MATEO COUNTY:

Fuel Leak List

Date of Government Version: 08/11/05
Date Data Arrived at EDR: 08/12/05
Date Made Active in Reports: 09/13/05
Number of Days to Update: 32

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 07/11/05
Next Scheduled EDR Contact: 10/10/05
Data Release Frequency: Semi-Annually

Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 08/17/05
Date Data Arrived at EDR: 08/17/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 35

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 07/11/05
Next Scheduled EDR Contact: 10/10/05
Data Release Frequency: Annually

SANTA CLARA COUNTY:

Fuel Leak Site Activity Report

Date of Government Version: 03/29/05
Date Data Arrived at EDR: 03/30/05
Date Made Active in Reports: 04/21/05
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 09/27/05
Next Scheduled EDR Contact: 12/26/05
Data Release Frequency: Semi-Annually

Hazardous Material Facilities

Date of Government Version: 09/13/05
Date Data Arrived at EDR: 09/13/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 23

Source: City of San Jose Fire Department
Telephone: 408-277-4659
Last EDR Contact: 09/06/05
Next Scheduled EDR Contact: 12/05/05
Data Release Frequency: Annually

SOLANO COUNTY:

Leaking Underground Storage Tanks

Date of Government Version: 06/28/05
Date Data Arrived at EDR: 06/28/05
Date Made Active in Reports: 07/26/05
Number of Days to Update: 28

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/12/05
Next Scheduled EDR Contact: 12/12/05
Data Release Frequency: Quarterly

Underground Storage Tanks

Date of Government Version: 06/28/05
Date Data Arrived at EDR: 06/28/05
Date Made Active in Reports: 07/26/05
Number of Days to Update: 28

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/12/05
Next Scheduled EDR Contact: 12/12/05
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SONOMA COUNTY:

Leaking Underground Storage Tank Sites

Date of Government Version: 07/01/05
Date Data Arrived at EDR: 07/25/05
Date Made Active in Reports: 08/25/05
Number of Days to Update: 31

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 07/25/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks

Date of Government Version: 01/29/04
Date Data Arrived at EDR: 01/29/04
Date Made Active in Reports: 02/23/04
Number of Days to Update: 25

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 07/18/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 08/01/05
Date Data Arrived at EDR: 09/20/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 16

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/09/05
Next Scheduled EDR Contact: 11/21/05
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 06/01/05
Date Data Arrived at EDR: 07/05/05
Date Made Active in Reports: 08/03/05
Number of Days to Update: 29

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/13/05
Next Scheduled EDR Contact: 12/12/05
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 07/05/05
Date Data Arrived at EDR: 07/22/05
Date Made Active in Reports: 08/04/05
Number of Days to Update: 13

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/15/05
Next Scheduled EDR Contact: 10/10/05
Data Release Frequency: Quarterly

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 06/01/05
Date Data Arrived at EDR: 07/06/05
Date Made Active in Reports: 08/03/05
Number of Days to Update: 28

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/13/05
Next Scheduled EDR Contact: 12/12/05
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Date of Government Version: 07/19/05
Date Data Arrived at EDR: 08/08/05
Date Made Active in Reports: 08/30/05
Number of Days to Update: 22

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 07/18/05
Next Scheduled EDR Contact: 10/17/05
Data Release Frequency: Annually

EDR PROPRIETARY HISTORICAL DATABASES

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

Disclaimer Provided by Real Property Scan, Inc.

The information contained in this report has predominantly been obtained from publicly available sources produced by entities other than Real Property Scan. While reasonable steps have been taken to insure the accuracy of this report, Real Property Scan does not guarantee the accuracy of this report. Any liability on the part of Real Property Scan is strictly limited to a refund of the amount paid. No claim is made for the actual existence of toxins at any site. This report does not constitute a legal opinion.

BROWNFIELDS DATABASES

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 08/08/05
Date Data Arrived at EDR: 08/29/05
Date Made Active in Reports: 09/21/05
Number of Days to Update: 23

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/29/05
Next Scheduled EDR Contact: 11/28/05
Data Release Frequency: Quarterly

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 08/18/05
Date Data Arrived at EDR: 08/18/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 49

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 08/11/05
Next Scheduled EDR Contact: 12/12/05
Data Release Frequency: Semi-Annually

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/10/05
Date Data Arrived at EDR: 02/11/05
Date Made Active in Reports: 04/06/05
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 703-603-8867
Last EDR Contact: 07/05/05
Next Scheduled EDR Contact: 10/03/05
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

© 2004 Geographic Data Technology, Inc., Rel. 07/2004. This product contains proprietary and confidential property of Geographic Data Technology, Inc. Unauthorized use, including copying for other than testing and standard backup procedures, of this product is expressly prohibited.

GEOCHECK® - PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

NIELSEN AVE.
2740 W. NIELSEN AVE.
FRESNO, CA 93706

TARGET PROPERTY COORDINATES

Latitude (North):	36.744598 - 36° 44' 40.6"
Longitude (West):	119.839798 - 119° 50' 23.3"
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	246447.3
UTM Y (Meters):	4070099.0
Elevation:	288 ft. above sea level

EDR's GeoCheck Physical Setting Source Addendum has been developed to assist the environmental professional with the collection of physical setting source information in accordance with ASTM 1527-00, Section 7.2.3. Section 7.2.3 requires that a current USGS 7.5 Minute Topographic Map (or equivalent, such as the USGS Digital Elevation Model) be reviewed. It also requires that one or more additional physical setting sources be sought when (1) conditions have been identified in which hazardous substances or petroleum products are likely to migrate to or from the property, and (2) more information than is provided in the current USGS 7.5 Minute Topographic Map (or equivalent) is generally obtained, pursuant to local good commercial or customary practice, to assess the impact of migration of recognized environmental conditions in connection with the property. Such additional physical setting sources generally include information about the topographic, hydrologic, hydrogeologic, and geologic characteristics of a site, and wells in the area.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata. EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

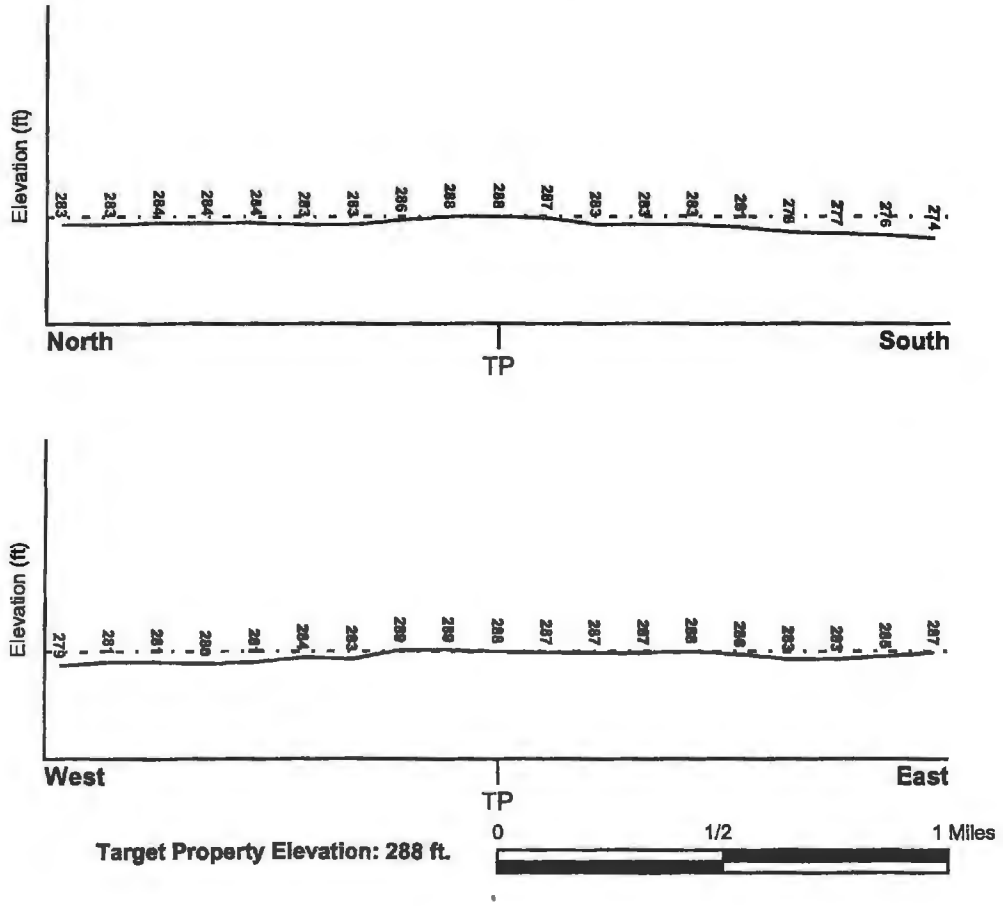
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

USGS Topographic Map:	36119-F7 FRESNO SOUTH, CA
General Topographic Gradient:	General South
Source:	USGS 7.5 min quad Index

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
FRESNO, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property:	0650290870B
Additional Panels in search area:	0600480015C 0650290890B 0600480030C

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
FRESNO SOUTH	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1998 Site-specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	HANFORD
Soil Surface Texture:	fine sandy loam
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
Soil Drainage Class:	Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel:	MODERATE
Depth to Bedrock Min:	> 60 inches
Depth to Bedrock Max:	> 60 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	12 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 6.00 Min: 2.00	Max: 7.80 Min: 5.60
2	12 inches	50 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 6.00 Min: 2.00	Max: 7.80 Min: 5.60
3	50 inches	60 inches	gravelly - fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 6.00 Min: 2.00	Max: 7.80 Min: 5.60

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: sandy loam
sand
coarse sandy loam
loamy sand
loam

Surficial Soil Types: sandy loam
sand
coarse sandy loam
loamy sand
loam

Shallow Soil Types: loam

Deeper Soil Types: silt loam
sand
stratified
fine sandy loam
sandy loam
loamy fine sand
cemented

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

ADDITIONAL ENVIRONMENTAL RECORD SOURCES

According to ASTM E 1527-00, Section 7.2.2, "one or more additional state or local sources of environmental records may be checked, in the discretion of the environmental professional, to enhance and supplement federal and state sources... Factors to consider in determining which local or additional state records, if any, should be checked include (1) whether they are reasonably ascertainable, (2) whether they are sufficiently useful, accurate, and complete in light of the objective of the records review (see 7.1.1), and (3) whether they are obtained, pursuant to local, good commercial or customary practice." One of the record sources listed in Section 7.2.2 is water well information. Water well information can be used to assist the environmental professional in assessing sources that may impact groundwater flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
2	USGS3176940	1/4 - 1/2 Mile WSW
3	USGS3176810	1/2 - 1 Mile North
4	USGS3176955	1/2 - 1 Mile WNW
5	USGS3176821	1/2 - 1 Mile North
6	USGS3176935	1/2 - 1 Mile ESE
7	USGS3176918	1/2 - 1 Mile SE
9	USGS3176834	1/2 - 1 Mile North

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

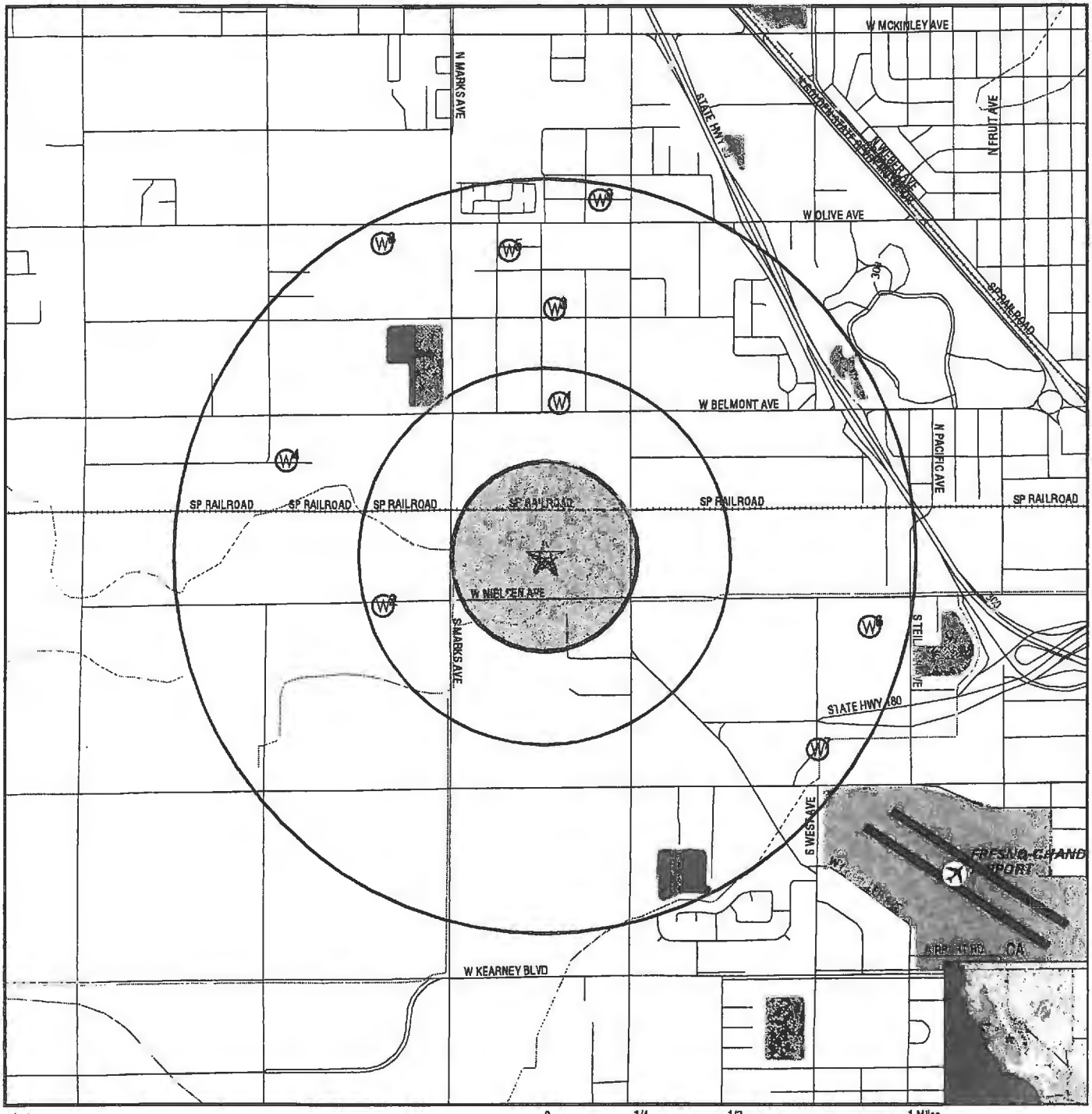
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	11764	1/4 - 1/2 Mile North
8	11604	1/2 - 1 Mile NNW

PHYSICAL SETTING SOURCE MAP - 1541494.1s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

TARGET PROPERTY:	Nielsen Ave.	CUSTOMER:	The Twining Laboratories
ADDRESS:	2740 W. Nielsen Ave.	CONTACT:	Max Miljevich
CITY/STATE/ZIP:	Fresno CA 93706	INQUIRY #:	1541494.1s
LAT/LONG:	36.7446 / 119.8398	DATE:	October 27, 2005 10:05 am

Copyright © 2005 EDR, Inc. © 2004 GDT, Inc. Rel. 07/2004. All Rights Reserved.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
1 **North** **1/4 - 1/2 Mile** **Lower**	**CA WELLS**	**11764**

Water System Information:

Prime Station Code:	13S/20E-31P01 M	User ID:	10C
FRDS Number:	1000242001	County:	Fresno
District Number:	40	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	364502.0 1195017.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	2706 W BELMONT FRESNO		
System Number:	1000242		
System Name:	TODD'S TRAILER COURT		
Organization That Operates System:	4561 E. JENSEN FRESNO, CA 93725		
Pop Served:	27	Connections:	13
Area Served:	Not Reported		

	Database	EDR ID Number
2 **WSW** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS3176940**

Agency cd:	USGS	Site no:	364434119504801
Site name:	014S023E04M001M		
Latitude:	364434		
Longitude:	1195048	Dec lat:	36.74272565
Dec lon:	-119.84764763	Coor meth:	M
Coor accr:	M	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	019
Country:	US	Land net:	S04 T14S R23E M
Location map:	WAHTOKE	Map scale:	24000
Altitude:	406.00	Altitude method:	M
Altitude accuracy:	52	Altitude datum:	NGVD29
Hydrologic:	TulareBuena Vista Lakes. California. Area = 8510 sq.mi.		
Topographic:	Alluvial or marine terrace		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	19630306	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	35.0	Hole depth:	Not Reported
Source of depth data:	other reported	Project number:	Not Reported
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

3
North
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3176810**

Agency cd:	USGS	Site no:	364515119501801
Site name:	013S020E31L001M		
Latitude:	364515		
Longitude:	1195018	Dec lat:	36.75411468
Dec lon:	-119.83931416	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	019
Country:	US	Land net:	SWNESWS31 T13S R20E M
Location map:	FRESNO NORTH	Map scale:	24000
Altitude:	282	Altitude method:	M
Altitude accuracy:	2.5	Altitude datum:	NGVD29
Hydrologic:	TulareBuena Vista Lakes. California. Area = 8510 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19781027
Date inventoried:	19870306	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	145	Hole depth:	145
Source of depth data:	driller	Project number:	470642800
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1978-10-27	Ground water data end date:	1987-03-06
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1987-03-06	65.89		1978-10-27	68	

4
WNW
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3176955**

Agency cd:	USGS	Site no:	364454119510501
Site name:	014S019E01D002M		
Latitude:	364454		
Longitude:	1195105	Dec lat:	36.74828108
Dec lon:	-119.85237027	Coor meth:	M
Coor accr:	M	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	019
Country:	US	Land net:	SES01 T14S R19E M
Location map:	FRESNO SOUTH	Map scale:	24000

Altitude:	277.00	Altitude method:	M
Altitude accuracy:	52	Altitude datum:	NGVD29
Hydrologic:	TulareBuena Vista Lakes. California. Area = 8510 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	19621123	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported	Project number:	Not Reported
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-10-15	Ground water data end date:	1963-10-15
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-10-15	67.76	

5
North
1/2 - 1 Mile
Lower

FED USGS **USGS3176821**

Agency cd:	USGS	Site no:	364523119502601
Site name:	013S019E36J001M		
Latitude:	364523		
Longitude:	1195026	Dec lat:	36.75633687
Dec lon:	-119.84153654	Coor meth:	M
Coor accr:	M	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	019
Country:	US	Land net:	S36 T13S R19E M
Location map:	FRESNO NORTH	Map scale:	24000
Altitude:	286.00	Altitude method:	M
Altitude accuracy:	52	Altitude datum:	NGVD29
Hydrologic:	TulareBuena Vista Lakes. California. Area = 6510 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	19630322	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported	Project number:	Not Reported
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-10-15	Ground water data end date:	1963-10-15
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-10-15	67.56	

6
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3176935**

Agency cd:	USGS	Site no:	364431119492301
Site name:	014S023E03G001M		
Latitude:	364431		
Longitude:	1194923	Dec lat:	36.74189281
Dec lon:	-119.82403529	Coor meth:	M
Coor accr:	M	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	019
Country:	US	Land net:	S03 T14S R23E M
Location map:	WAHTOKE	Map scale:	24000
Altitude:	415.00	Altitude method:	M
Altitude accuracy:	52	Altitude datum:	NGVD29
Hydrologic:	TulareBuena Vista Lakes. California. Area = 8510 sq.mi.		
Topographic:	Flood plain		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	19630207	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	70.0	Hole depth:	Not Reported
Source of depth data:	other reported	Project number:	Not Reported
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-10-30	Ground water data end date:	1963-10-30
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-10-30	7.74	

7
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3176918**

Agency cd:	USGS	Site no:	364414119493201
Site name:	014S020E06R001M		
Latitude:	364414		
Longitude:	1194932	Dec lat:	36.73717056
Dec lon:	-119.82653528	Coor meth:	M
Coor accr:	M	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	019
Country:	US	Land net:	S06 T14S R20E M
Location map:	FRESNO SOUTH	Map scale:	24000
Altitude:	275.00	Altitude method:	M
Altitude accuracy:	52	Altitude datum:	NGVD29
Hydrologic:	TulareBuena Vista Lakes. California. Area = 8510 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19590601
Date inventoried:	19620214	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	128	Hole depth:	175
Source of depth data:	driller	Project number:	Not Reported
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-10-16	Ground water data end date:	1963-10-16
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-10-16	60.07	

8
NNW
1/2 - 1 Mile
Lower

CA WELLS **11604**

Water System Information:

Prime Station Code:	13S/19E-36J02 M	User ID:	10C
FRDS Number:	1000259001	County:	Fresno
District Number:	40	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	364524.0 1195048.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	3147 W OLIVE		
System Number:	1000259		
System Name:	HO HO MHP		
Organization That Operates System:	Not Reported		
Pop Served:	Unknown, Small System	Connections:	Unknown, Small System
Area Served:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
FED USGS	USGS3176834

9
North
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	364530119501001
Site name:	013S020E31F001M		
Latitude:	364530		
Longitude:	1195010	Dec lat:	36.75828141
Dec lon:	-119.8370919	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	019
Country:	US	Land net:	NWSENWS31 T13S R20E M
Location map:	FRESNO NORTH	Map scale:	24000
Altitude:	280	Altitude method:	M
Altitude accuracy:	2.5	Altitude datum:	NGVD29
Hydrologic:	TulareBuena Vista Lakes. California. Area = 8510 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19771202
Date inventoried:	19870306	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	145	Hole depth:	145
Source of depth data:	driller	Project number:	470642800
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1987-03-06	Ground water data end date:	1987-03-06
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1987-03-06	63.55	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zip	Total Sites	> 4 Pci/L	Pct. > 4 Pci/L
93706	13	6	46.15

Federal EPA Radon Zone for FRESNO County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93706

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.150 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	2.300 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002. 7.5-Minute DEMs correspond to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

ADDITIONAL ENVIRONMENTAL RECORD SOURCES

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STATE RECORDS

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations for District 2, 3, 5 and 6
Source: Department of Conservation
Telephone: 916-323-1779

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

APPENDIX F

CASES CLOSURE LETTERS

CALIFORNIA COMPRESS [redacted]
P.O. BOX 11966
FRESNO, CALIFORNIA 93776-1966

NIELSEN AVENUE
AT MARKS

TELEPHONE (209)
266-0511

July 1, 1996

Mr. Jim Armstrong
Fresno County Department of Health
Environmental Health System.
1221 Fulton Mall
Fresno, Ca. 93775

RE; Disposal of Investigative Waste
Preliminary Site Investigation
California Compress Facility
2740 W. Nielsen Avenue
Fresno, California. 93706

Dear Mr. Armstrong:

In response to your June 6, 1996 telephone request to Keith Paul, California Compress has disposed of the investigative wastes (auger cuttings) associated with the preliminary site investigation conducted by Dames and Moore at California Compress' facility in February 1996. The auger cuttings (approximately one cubic yard) were spread out at a thickness of approximately six inches onsite to allow for aeration and degradation of gasoline concentrates within the soil. The location where the auger cuttings were spread is inaccessible to the public and is shown on the attached site map.

Should you have any questions, please contact Keith Paul at California Compress facility at (209) 266-0511

Sincerely,

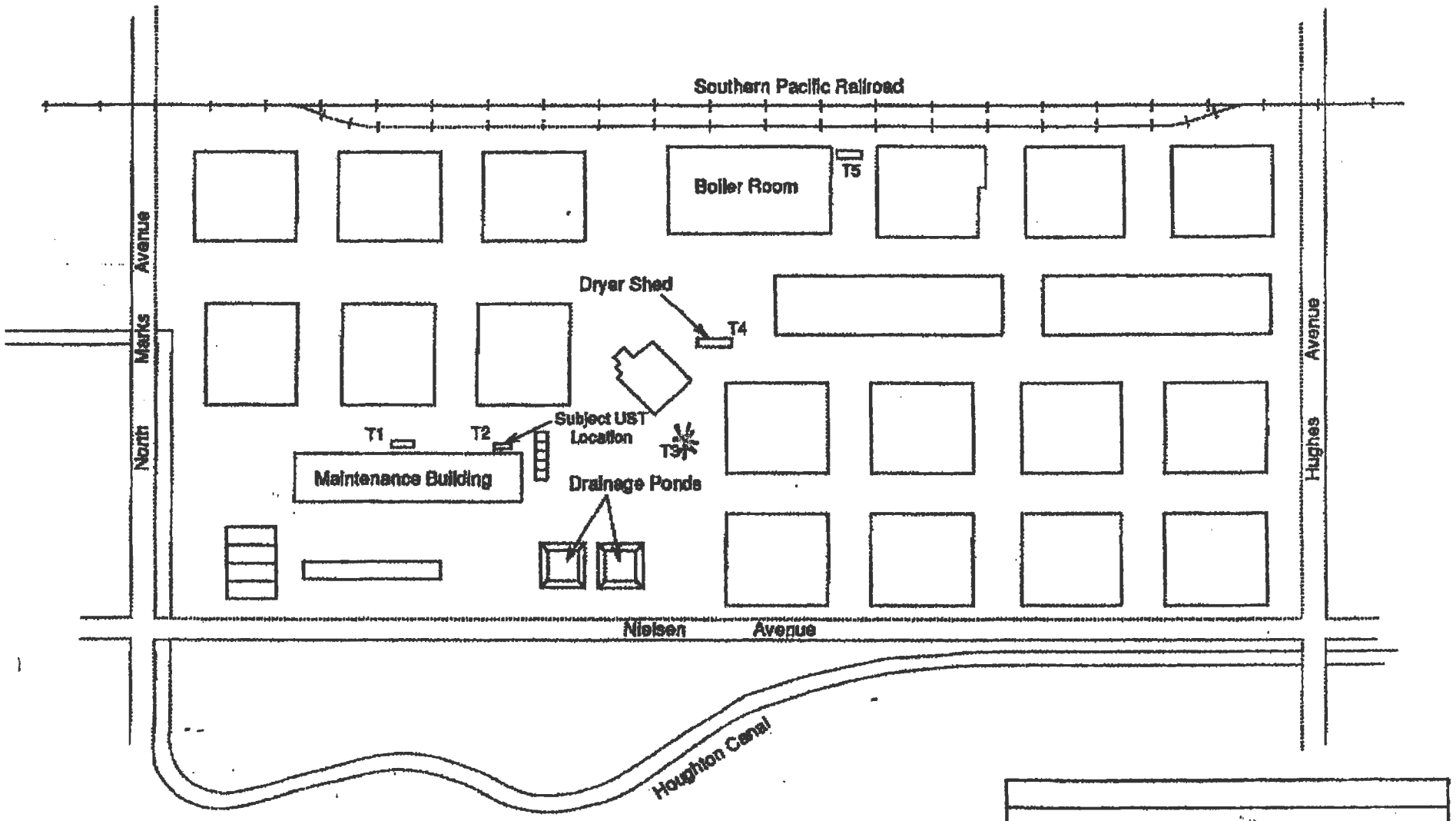
Keith Paul

Keith Paul
California compress

Attached Site Map

PR 6 4 7 0 8 7 Assigned J R A
Date Received 07 / 02 / 96
Priority 3 Type ST

170193



LEGEND

T2 ▭ Former Underground Tank Location

* DISPOSAL OF SITE WASTES

N

Not To Scale

SITE MAP

California Compress

Fresno, CA

Health Services Agency

George Bleth
Agency Director

July 3, 1996

Mr. Keith Paul
California Compress
P. O. Box 11966
Fresno, California 93776-1966

Dear Mr. Paul:

SUBJECT: Certification of Response Action
LOCATION: 2740 West Nielsen, Fresno, California

Our department has reviewed the **"Final Report, Preliminary Site Investigation, California Compress Facility, 2740 West Nielsen Avenue, Fresno, California,"** dated May 2, 1996, and the May 31, 1996 letter, both submitted by Dames & Moore. The report and letter documents that approximately 2.70 cubic yards of soil impacted by gasoline constituents exists at the subject location beneath the former location of the underground storage tank(s). Our department has concluded from the information contained in the Dames & Moore submittals that the extent of impact in subsurface soils at the subject location has been satisfactorily defined. Our department agrees with the intention of California Compress stated in the May 3, 1996 letter from Dames & Moore that *". . . California Compress will repave the area above the former UST pit to match the surrounding asphalt pavement."* Our department also agrees with the RECOMMENDATIONS on Page 9 of the report that *". . .Dames & Moore recommends no further investigation and/or remediation of the soil beneath the site at this time."* and *". . .the Fresno County Department of Health, Environmental Health System grant closure of the California Compress site."*

Gary M. Carozza, Director
Community Health Department
1221 Fulton Mall • P.O. Box 11867 • Fresno, California 93775
Phone 209-445-0666

All engineering reports relating to this site will remain on file with our office and be available for reference with regard to any future environmental assessments or concerns in the area near the subject location.

This letter confirms the completion of a site investigation with regard to a release of hazardous substances in relation to underground storage tanks at the above site. With the provision that the information provided to this office is accurate and representative of existing conditions, no further action is required at this time. This site should now be properly closed, including backfilling as necessary.

We are required by the State to advise you that this letter does not relieve you of any liability under the California Health and Safety Code or Water Code for past, present, or future operations at the site. Nor, does it relieve you of the responsibility to clean up existing, additional, or previously unidentified conditions at the site which cause or threaten to cause pollution, or nuisance, or otherwise pose a threat to water quality or public health. Additionally, changes in the present or proposed use of the site may require further site characterization and mitigation activity. It is the property owner's responsibility to notify this agency of any changes in report content, future contamination findings, or site usage.

Further, nothing in the above determination: 1) is intended or shall be construed to limit the rights of any parties with respect to claims arising out of, or relating to deposit, or disposal at any other location of substances removed from the site: 2) is intended or shall be construed to limit, or preclude the County, or any other agency from taking any action authorized by law, including, but not limited to, any further enforcement actions.

Notwithstanding compliance with any previous directives, you may be required to take further actions as are necessary to protect public health and the environment.

Please call me at (209) 445-3271 if you have any questions.

Respectfully,

Jim R. Armstrong
Geologist
Environmental Health System

JRA:kmj

c: Mr. John Noonan
Central Valley Regional Water Quality Control Board

Dames & Moore

Hoemberger Brothers

THE COUNTY OF FRESNO 1856

Health Services Agency

Gary M. Carozza, Interim Health Services Agency Director

October 14, 1996

Kemmer Ag. Manufacturing Company, Inc.
P. O. Box 11216
Fresno, California 93772

Gentlemen:

Subject: Underground Storage Tank Abandonment Completion
Location: 88 North Hughes, Fresno, CA

Our department has reviewed the contents of the file for the subject location. After our review we have determined that the Nitrates and Petroleum Hydrocarbons present at the subject location do not pose a significant threat to human health, welfare, or the environment. This letter confirms the permanent closure of underground storage tanks at the above site as required by the California Code of Regulations, Title 23, Article 7. The closure occurred on January 5, 1987, with the removal of three (3) underground storage tanks. With the provision that the information provided to this office is accurate and representative of existing conditions, no further action is required at this time. The site should now be properly closed, including backfilling as necessary.

This letter does not relieve you of any liability under the California Health and Safety Code or Water Code for past, present, or future operations at the site. Nor, does it relieve you of the responsibility to cleanup existing, additional, or previously unidentified conditions at the site which cause or threaten to cause pollution, or nuisance, or otherwise pose a threat to water quality or public health. Please call me at (209) 445-3271 if you have any questions.

Sincerely,

Jim R. Armstrong

Jim R. Armstrong
Geologist
Environmental Health System

JRA:pw

1221 Fulton Mall / P.O. Box 11867 / Fresno, California 93775 / Phone (209) 445-3271 / FAX (209) 445-3301

THE COUNTY OF FRESNO 1856

Human Services System
Community Health Department
Gary M. Carozza, Director

Adult Services Department
Children & Family Services Department
Employment & Temporary Assistance Department

December 11, 1998

Mr. Rick Karkula, Purchasing Agent
Fresno Irrigation District
2907 South Maple
Fresno, California 93725-2218

Dear Mr. Karkula:

Subject: Certification of Response Action
Location: 3705 West Nielsen, Fresno, CA

This letter confirms the completion of a site investigation and/or remedial action with regard to a release of hazardous substances or waste in relation to underground storage tanks at the above site. With the provision that the information provided to this office is accurate and representative of existing conditions, no further action is required at this time. This site should now be properly closed, including backfilling as necessary.

We are required by the State to advise you that this letter does not relieve you of any liability under the California Health and Safety Code or Water Code for past, present, or future operations at the site. Nor, does it relieve you of the responsibility to clean up existing, additional, or previously unidentified conditions at the site which cause or threaten to cause pollution, or nuisance, or otherwise pose a threat to water quality or public health. Additionally, changes in the present or proposed use of the site may require further site characterization and mitigation activity. It is the property owner's responsibility to notify this agency of any changes in report content, future contamination findings, or site usage.

1221 Fulton Mall / P.O. Box 11867 / Fresno, California 93775 / (209) 445-3271 / FAX (209) 445-3301

Further, nothing in the above determination: 1) is intended or shall be construed to limit the rights of any parties with respect to claims arising out of, or relating to deposit, or disposal at any other location of substances removed from the site: 2) is intended or shall be construed to limit, or preclude the County, or any other agency from taking any action authorized by law, including, but not limited to, any further enforcement actions.

Notwithstanding compliance with any previous directives, you may be required to take further actions as are necessary to protect public health and the environment.

Please call me at (559) 445-3271 between the hours of 8:00-9:00 a.m. and 3:00-4:00 p.m., if you have any questions.

Sincerely,

Jim R. Armstrong
Geologist
Environmental Health System

JRA:pw

cc: John Noonan
California Central Valley Regional
Water Quality Control Board

William Sheehe
Moore Services, Inc.

THE COUNTY OF FRESNO 1856

Human Services System
Community Health Department
Gary M. Carozza, Director

Adult Services Department
Children & Family Services Department
Employment & Temporary Assistance Department

August 31 1999

Mr. Gary Craycroft
Craycroft Brick Company
P. O. Box 4587
Fresno, California 93744-4587

Dear Mr. Craycroft:

SUBJECT: Underground Storage Tank Removal
LOCATION: 2301 W. Belmont, Fresno, CA

According to our records, an underground storage tank removal occurred on December 20, 1991 with the removal of one (1) underground storage tank. Fresno County Department of Community Health requires closure documentation to be submitted following a tank removal. A recent file review revealed that the following required documentation had not been submitted:

1. Copies of all the closure process sample analytical results.

2. A scaled site drawing which includes the sample locations and depths, and the tank, dispenser, and piping locations.

3. Copies of laboratory chain of custody forms and documentation of precision and accuracy.

Please ensure that the above items are submitted to this office within 30 days of receipt of this letter in order to evaluate the status of the site. If you have any questions regarding this matter, please contact me at (559) 445-3271.

Sincerely,

Lisa Smoot

Lisa Smoot, R.E.H.S.
Environmental Health Analyst
Environmental Health System

LMS:csw

cc: Enviro Probe Division

RECEIVED
SEP - 7 1999
Advanced
GeoEnvironmental Inc

APPENDIX

I

Jmm

Health Services Agency

George Bleth
Agency Director

July 3, 1996

Mr. Keith Paul
California Compress
P. O. Box 11966
Fresno, California 93776-1966

Dear Mr. Paul:

SUBJECT: Certification of Response Action
LOCATION: 2740 West Nielsen, Fresno, California

Our department has reviewed the **"Final Report, Preliminary Site Investigation, California Compress Facility, 2740 West Nielsen Avenue, Fresno, California,"** dated May 2, 1996, and the May 31, 1996 letter, both submitted by Dames & Moore. The report and letter documents that approximately 2.70 cubic yards of soil impacted by gasoline constituents exists at the subject location beneath the former location of the underground storage tank(s). Our department has concluded from the information contained in the Dames & Moore submittals that the extent of impact in subsurface soils at the subject location has been satisfactorily defined. Our department agrees with the intention of California Compress stated in the May 3, 1996 letter from Dames & Moore that *". . . California Compress will repave the area above the former UST pit to match the surrounding asphalt pavement."* Our department also agrees with the RECOMMENDATIONS on Page 9 of the report that *". . .Dames & Moore recommends no further investigation and/or remediation of the soil beneath the site at this time."* and *". . .the Fresno County Department of Health, Environmental Health System grant closure of the California Compress site."*

Gary M. Carozza, Director
Community Health Department
1221 Fulton Mall • P.O. Box 11867 • Fresno, California 93775
Phone 209•445•0666

Equal Employment Opportunity • Affirmative Action • Disabled Employer

All engineering reports relating to this site will remain on file with our office and be available for reference with regard to any future environmental assessments or concerns in the area near the subject location.

This letter confirms the completion of a site investigation with regard to a release of hazardous substances in relation to underground storage tanks at the above site. With the provision that the information provided to this office is accurate and representative of existing conditions, no further action is required at this time. This site should now be properly closed, including backfilling as necessary.

We are required by the State to advise you that this letter does not relieve you of any liability under the California Health and Safety Code or Water Code for past, present, or future operations at the site. Nor, does it relieve you of the responsibility to clean up existing, additional, or previously unidentified conditions at the site which cause or threaten to cause pollution, or nuisance, or otherwise pose a threat to water quality or public health. Additionally, changes in the present or proposed use of the site may require further site characterization and mitigation activity. It is the property owner's responsibility to notify this agency of any changes in report content, future contamination findings, or site usage.

Further, nothing in the above determination: 1) is intended or shall be construed to limit the rights of any parties with respect to claims arising out of, or relating to deposit, or disposal at any other location of substances removed from the site: 2) is intended or shall be construed to limit, or preclude the County, or any other agency from taking any action authorized by law, including, but not limited to, any further enforcement actions.

Notwithstanding compliance with any previous directives, you may be required to take further actions as are necessary to protect public health and the environment.

Please call me at (209) 445-3271 if you have any questions.

Respectfully,

Jim R. Armstrong
Geologist
Environmental Health System

JRA:kmj

c: Mr. John Noonan
Central Valley Regional Water Quality Control Board

Dames & Moore

Hoemberger Brothers

APPENDIX

J

Department of Public Health
ENVIRONMENTAL HEALTH DIVISION
1221 Fulton Mall, Third Floor / P.O. Box 11867
Fresno, California 93775-1867
Telephone: (559) 600-3271 Fax: (559) 600-7633
EnvironmentalHealth@co.fresno.ca.us www.fcdph.org

FA 0170193
PR 0032344
PE 6304
FNCR
DocTitle: PRR

Guidelines for Inspection of Public Records

All public records of the Fresno County Department of Public Health, Environmental Health Division, which are subject to disclosure under the provisions of the California Public Records Act (Government Code Sections 6250 - 6260), are open to inspection by the public during normal office hours of the office at which those records are located. However, certain records are confidential, and the Department may not release these records to the public.

Any person who wishes to inspect a public record may present his request to the clerk on duty where the public record is located. A particular record, or if not known, the particular type or class of record, may be requested.

No record may be removed from the office unless subpoenaed. Copies can be made at a charge of ten cents (10¢) for each original copy for copies 1 - 8. A charge of five cents (5¢) per copy will be made on copies of 9 or more. The requestor may reproduce a copy by his own means, subject to the limitations that no record is removed from the office and that the record is not damaged by the reproduction equipment.

The Department may temporarily deny or restrict inspection of public records under the following circumstances:

1. Records are at the particular time required by staff or other officials in the performance of their duties; or
2. Supervision of inspection is at that particular moment not possible; or
3. Other members of the public are waiting to inspect those records.

Request to Inspect Public Records

Completion of this form is VOLUNTARY and is not required to obtain public records.
This document is a public record.

Name (print): Sangeeta Goyal (voluntary)

Phone Number: (510) 371-0045 (voluntary)

Date of Request: October 2, 2012

File Name: California Compress ~~Facility~~

File Address: 2740 West Nielsen Avenue, Fresno

►►►Do Not Write Below This Line – Department Use Only◄◄◄

Location of Requested Material: ☒ FileNET 3.0 ☐ File ☐ DataVault

Request Approved: ☒ Request Temporarily Restricted or Denied: ☐ Facility/Program Documents Reconciled: ☐

Specialist: Goyal Mehal Title: EHS Date: 10-3-12

Revised 6/7/2012

OFFICIAL INSPECTION REPORT

DEPARTMENT OF PUBLIC HEALTH ❖ ENVIRONMENTAL HEALTH DIVISION
PO BOX 11867, Fresno, CA 93775-1867,1221 Fulton Mall, (559) 445-3357
www.fcdph.org ❖ Email: EnvironmentalHealth@co.fresno.ca.us

Facility Name			Date
California Compress			4-17-12
Site Address	City/ZIP		FA
2740 W Nielsen	Fresno, 93706		0170193
Owner/Permittee			Record ID (PR, CO, WA)
			0048225
Phone	Time In	Time Out	CT	PE
	2:00	3:15	7.00	2270

☐ Routine ☐ Reinspection ☒ Complaint ☐ Construction ☐ _____

Unless otherwise stated, the violations below must be corrected by this ***REINSPECTION DATE :*** / /

Arrived at above location to investigate nature of complaint. PR States "Business is Vacant and there is Leaking oil Filled Equipment in metal storage area."

I met with PR at property to gain Entry into facility and verify Complaint. PR stated - has key to fence lock to allow Entry. At the time of investigation. PR's key no longer was able to unlock gate. It was determined that the lock has been changed.

Report/business is vacant as stated. location of equipment was generally area but was unable to verify to ~~to~~ due to locked fence

Received By: _____ Inspected By: Dawn L. Jackson

NOTICE : REINSPECTION FEES WILL BE CHARGED FOR REINSPECTIONS DUE TO UNCORRECTED VIOLATIONS

For Office Use Only

Reset Date

☐ INTERIM PERMIT TO OPERATE ISSUED Valid for 90 days. Authorized by: _____

☐ Building permits are required for correction of these items and can be obtained at the location shown on the back of this report. Corrections will not be approved until permits are finaled.

430.00

Date run : 2/17/2009 8:16:32AM
Run by :

Fresno County Department of Public Health
Facility Information as of 2/17/2009

Report #: 5109
Page #: 1

Record Selection Criteria: Facility ID FA0170193

Facility Information Record/Change Form

INFORMATION CHANGE DATE: _____

Make changes/corrections below.

Note: Do Not use this form for Change of Ownership; an Environmental Health Application is required.

OWNER FILE INFORMATION

Owner ID: OW0011608
Owner Name: CALIFORNIA COMPRESS
Owner DBA: CALIFORNIA COMPRESS
Owner Address:

New Owner ID: _____

Home Phone: Not Specified
Work/Business Phone: 559-266-0511

Mailing Address: P O BOX 3000
CORDOVA, TN 380883000
Care of:

FACILITY FILE INFORMATION

Facility ID: FA0170193
Facility Name: CALIFORNIA COMPRESS
Location: 2740 W NIELSEN
FRESNO, CA 93706
Phone: 559-233-1725

Mailing Address: P O BOX 3000
CORDOVA, TN 380883000
Care of:

Census Tract: 000700
City Code: 05 - FRESNO

APN: 458-020-09
SIC Code: _____

ACCOUNTS RECEIVABLE FILE INFORMATION

Account ID: AR0005043
Mail Invoices to: Owner Mailing Address
Account Name: CALIFORNIA COMPRESS
Account Status: 01
Anniversary Date: 3/1/2004

(Circle One)
Mail Invoices to: Owner / Facility / Account

Record ID	Program/Element and Description	Employee ID and Name	Status	UST(s) Linked	(Circle One) Active 01/Inactive 02/ Nonscheduled 03/ Fee Exempt 04			
PR0032344	6304 - UST REMOVAL/CLOSURE W/4 TANKS		Inactive	4	01	02	03	04
PR0047087	6710 - FORMER CONTAMINATED SITE/CLEANUP COI		Inactive	0	01	02	03	04
PR0048687	~~2243~~ 2249 - MEDIUM HAZARDOUS MATERIALS HANDLER	EE0000110 - Dianna Mirzai	Active	0	01	02	03	04
PR0058832	2231 - HAZARDOUS WASTE GENERATOR (CESQG)	EE0000110 - Dianna Mirzai	Active		01	02	03	04

COMMENTS: Change 2243 to 2249 - Facility has closed per email of 2/13/09; See inspection report of 1-7-09

Approved By: D Mirzai EE# 110 Date 2/23/2009

Supervisor Review STR 2/24/09 Envision III [signature]

Envision Updated By [signature] Date 2-25-09

2/25/09 Adjustment done on IN0137542 (+30.00). [initials]

Revised 5.30.2007

FA0170193
PR0048687
PE 2249

Mirzai, Dianna

Ex

From: Mirzai, Dianna
Sent: Tuesday, February 17, 2009 8:54 AM
To: 'Tanya_Baldwin@cargill.com'
Subject: California Compress @ 2740 W Nielsen ,Fresno, California; FA0170193; IN0139542; Account ID AR0005043

Tanya – Good Morning

Our office has received an e-mail regarding Invoice # IN0139542. Notice was given that this facility closed effective 8-31-2008. Our records show this operation as California Compress at 2740 W Nielsen, Fresno, California. Please confirm operation name and location so that our office can begin closure to the record.

If you have any questions regarding this matter, please call me at 559-445-3271.

Dianna Mirzai, R.E.H.S.
Department of Public Health
PH 559-445-3271 Fax 559-445-3301

Note - NO Reponse to date 2/23/09 DM

California Compress FA0170193 PR0048687 PE2249 FNCR

Mirzai, Dianna

From: Rhodes, Steven
Sent: Friday, February 13, 2009 11:22 AM
To: Mirzai, Dianna
Cc: Robinson, Michael - EH; Hopper, Lynne
Subject: RE: Account ID AR0005043

Please contact Ms. Baldwin and get this matter straightened out.
Thank you,

Steven

From: DPH Environmental Health
Sent: Friday, February 13, 2009 10:41 AM
To: Rhodes, Steven
Cc: Robinson, Michael - EH
Subject: FW: Account ID AR0005043

From the EH mailbox regarding FA0170193. Thanks. Lynne

From: Tanya_Baldwin@cargill.com [mailto:Tanya_Baldwin@cargill.com]
Sent: Friday, February 13, 2009 10:24 AM
To: DPH Environmental Health
Subject: Account ID AR0005043

This office was closed on 8-31-08 so please delete us from your billing list.

2-4-09 Invoice # IN0139542 was issued for $430.00.

If you have any questions please don't hesitate to email me.

Tanya Baldwin
Cargill Cotton
901-937-4500

8:40 2-17-09 called Tanya (901-937-4500) & left message to call back

2-17-09 8:53 email sent to Tanya to confirm closure

Date run : 1/12/2009 2:15:20PM
Run by :

Fresno County Department of Public Health
Facility Information as of 1/12/2009

Report # : 5109
Page # : 1

Record Selection Criteria: Facility ID FA0170193 - FA0271444

Facility Information Record/Change Form

INFORMATION CHANGE DATE: _____

Make changes/corrections below.

Note: Do Not use this form for Change of Ownership; an Environmental Health Application is required.

OWNER FILE INFORMATION

Owner ID: OW0011608
Owner Name: CALIFORNIA COMPRESS
Owner DBA: CALIFORNIA COMPRESS
Owner Address:

Home Phone: Not Specified
Work/Business Phone: 559-266-0511

Mailing Address: ~~P O BOX 11966~~
~~FRESNO, CA 937761966~~
Care of:

New Owner ID: _____

PO BOX 3000
Cordova, TN 38088-3000

FACILITY FILE INFORMATION

Facility ID: FA0170193
Facility Name: CALIFORNIA COMPRESS
Location: 2740 W NIELSEN
FRESNO, CA 93706
Phone: 559-233-1725

Mailing Address: ~~2740 W NIELSEN~~
~~FRESNO, CA 93706~~
Care of:

PO Box 3000
Cordova, TN 38088-3000

Census Tract: 000700
City Code: 05 - FRESNO

APN: 458-020-09
SIC Code: _____

ACCOUNTS RECEIVABLE FILE INFORMATION

Account ID: AR0005043
Mail Invoices to: Owner Mailing Address
Account Name: CALIFORNIA COMPRESS
Account Status: 01

(Circle One)
Mail Invoices to: Owner / Facility / Account

Anniversary Date: 3/1/2004

Record ID	Program/Element and Description	Employee ID and Name	Status	UST(s) Linked	(Circle One) Active 01/Inactive 02/ Nonscheduled 03/ Fee Exempt 04			
PR0032344	6304 - UST REMOVAL/CLOSURE W/4 TANKS		Inactive	4	01	02	03	04
PR0047087	6710 - FORMER CONTAMINATED SITE/CLEANUP COM		Inactive	0	01	02	03	04
PR0048687	2243 - MEDIUM HAZARDOUS MATERIALS HANDLER	EE0000110 - Dianna Mirzai	Active	0	01	02	03	04
PR0058832	2231 - HAZARDOUS WASTE GENERATOR (CESQG)	EE0000110 - Dianna Mirzai	Active		01	02	03	04

COMMENTS: per returned mail; phone# disconnected & no one is responding to telephone ~~calls~~ calls (other on-site #'s)

Approved By: Dianna Mirzai EE# 110 Date 1-12-09

Supervisor Review STR 1/14/09 Envision ID [signature]

Envision Updated By [signature] Date 1-15-09

Close Window | Print | Email This Page

Map layers that overlap the selected geographic area

Location Clicked: X = 6315417.49199669 Y = 2155209.45901545

Street Address			
Number	2650	2740	149
Fraction			
Street Direction	W	W	N
Street Name	NIELSEN	NIELSEN	HUGHES
Street Type	AVE	AVE	AVE
Post Direction			
Apartment Number			

FMFCD Master Plan Existing Manhole			
Type of Pipe	A	A	A

FMFCD Master Plan Future Inlet		
Inlet Number	4	1

FMFCD Existing Curb Elevation	
WSC	

FMFCD Existing Inlets	
Agency	

FMFCD Future Curb Elevation	
GB	1

FMFCD Curb Line				
Object ID	150	126	125	147

FMFCD Existing Pipe							
Material	RCP	RCP	RCP	RCP	CIP	RCP	RCP

Fresno Irrigation District Facilities	
Name	Cole - S. Br.
Type	Pipeline

FMFCD Master Plan Existing Pipe				
Contract	UU3-14-3	UU3-14-3	ZZ-11-3	ZZ-11-3

FMFCD Master Plan Future Pipe		
Da Type	ZZ	ZZ
Diameter of Pipe	18	24

Parcels	
Parcel Number	45802009
Date Parcel Created	
Roll Year	0

Sphere of Influence	
Agency Name	Fresno

Zoning			
District	M3	M-3	M3
Condition		M-3	

Township/Range/Section		
Township	14S	14S
Range	19E	20E
Section	1	6

Unified School District	
Code	S11
Name	Fresno Unified
Trustee Area Name	Fresno Unified Trustee Area #1

Pest Control District	
Name	WEST FRESNO RED DISTRICT

Phone Service Areas	
Provider	FRESNO (SBC)
Exchange	FRESNO EXCHANGE

Post Office Community Delivery Areas	
Zip Code	93706
Name of Delivery Area	FRESNO

Power Company Services Districts	
Provider Name	PG&E - FRESNO #8

Septic Tank Dry	
Not allowed	NO RESTRICTIONS

Septic Tank Factors	
Factor	40

FID Service Area	
Name	Houghton

FID Boundary	
ID	5

Senatorial Districts	
Name	16th Senate Dist.

Soil Types Eastern Fresno County						
Name	DhB	GsA	AoA	ScA	Es	GtA

City Council Districts	
Name/Number	Fresno City Council Dist. #3

County Supervisorial Districts	
Number	District 1

County Boundary	
County Name	Fresno

Mosquito Abatement District	
Name	FRESNO

FMFCD District	
Name	FMFCD

Irrigation Districts	
Name	Fresno Irrigation Dist

County Election Precinct	
Precinct Number	011B

County Election Root Precinct	
Root Precinct Number	11

2000 Census Tracts	
Tract Number	7

FMFCD Inlet Boundaries					
Inlet Number	0	1	4	2	0

FMFCD Landuse	
Landuse	

FMFCD Drainage Boundary		
Name	ZZ	AS
Acres	376.07	1075.14

County Hauler Rate Areas		
Name	URBAN	RURAL WITH GREENWASTE

Airport Zones		
Name	TRAFFIC PATTERN ZONE	OUTER SAFETY ZONE
Name of Airport	FRESNO-CHANDLER DOWNTOWN AIRPO	FRESNO-CHANDLER DOWNTOWN AIRPO

Assessor Map Index	
Book Number	458

2000 Census Block Group	
Block Group	0007009

City Limits	
Agency Name	Fresno

Assessor Information for the selected parcel: 45802009

Primary Owner	
APN	45802009
Name Line One	DAOUDIAN INVESTMENTS LLC
Name Line Two	
Mailing Address	4970 N CORNELIA
Mailing Address	FRESNO CA 93722
Mailing Address	
Mailing Address	
Percent Interest	0
Joint Tenancy	

Change Date	1/12/2006
Last Recorded Document Date	1/12/2006
Last Recorded Instrument Number (Internal Use Only!)	007684
Owner Percent Interest	0
Joint Tenancy	
Change Date	
Next to Last Recorded Document Date	
Next to Last Recorded Instrument Number (Internal Use Only!)	000000

Personal Property	
Information about item No:1	
APN	45802009
Property Type	S
account Number	A11D2523
Name Line One	DAOUDIAN INVESTMENTS LLC
Name Line Two	
Name of Addressee	4970 N CORNELIA
Address Line One	FRESNO CA 93722
Address Line Two	
Address Line Three	
Description Line One	SIGNS FIXTRS TENANTS
Description Line Two	2650-2740 W NIELSON
Description Line Three	FR
Standard Land Use Code	6151
Standard Land Use Code Suffix	

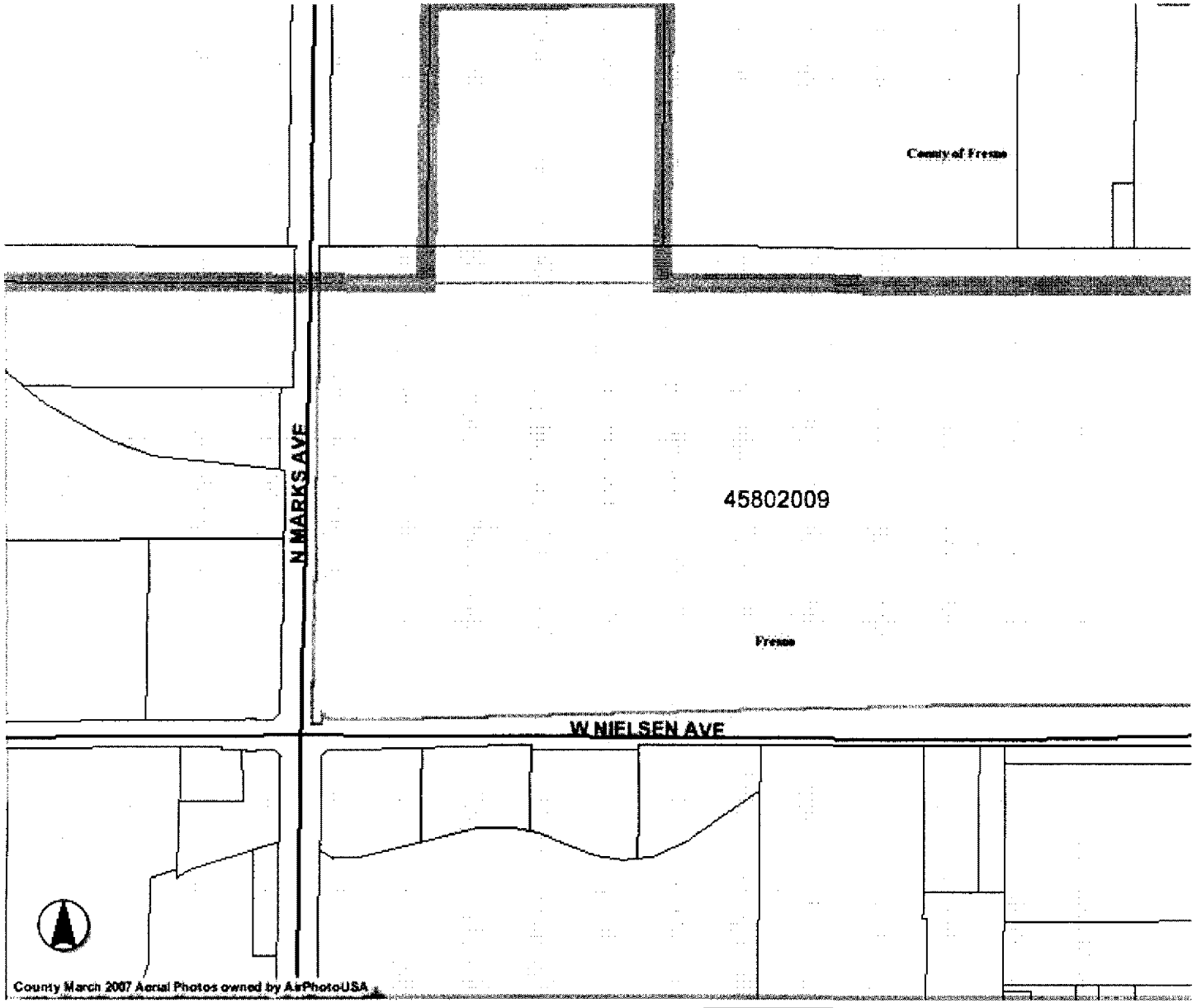
Information about item No:2	
APN	45802009
Property Type	U
account Number	C85A01H1053
Name Line One	CARGILL INC
Name Line Two	
Name of Addressee	
Address Line One	P O BOX 5626
Address Line Two	MINNEAPOLIS MN 55440
Address Line Three	

Description Line One	SUPPLIES & EQUIP
Description Line Two	2740 W NIELSEN
Description Line Three	FRESNO
Standard Land Use Code	6593
Standard Land Use Code Suffix	B

Information about item No:3	
APN	45802009
Property Type	U
account Number	A02A2150
Name Line One	AUTOMOTIVE RENTALS INC
Name Line Two	
Name of Addressee	
Address Line One	9000 MIDLANTIC DR
Address Line Two	MT LAUREL NJ 08054
Address Line Three	
Description Line One	L/EQ
Description Line Two	CARGILL
Description Line Three	2740 W NEILSEN
Standard Land Use Code	6392
Standard Land Use Code Suffix	E

Parcel Attributes	
APN	45802009
Word Description of Property	70.32 AC IN LTS 17-32 EX RD WEST FRESNO
Tax Area Code	5989
Lot Width	7032
Lot Depth	1
Lot Area(Acres)	70.32
Total Assessed Value	6790200
Last Recorded Date	1/12/2006
Assessed Land Value	1290096
Assessed Improvement Value	5472504
Trade Fixtures Inprovement Value	27600
Personal Property Value	0
Mobile Home Value	0
Homeowner Exemption Value	0

Assessor Use Codes	
APN	45802009
Highest and Best Use	I
Primary Use Code	COG
Secondary Use Code	WAH



Show Map

Close Window Print Email This Page

STR

OFFICIAL INSPECTION REPORT

DEPARTMENT OF COMMUNITY HEALTH ❖ ENVIRONMENTAL HEALTH DIVISION
PO BOX 11867, Fresno, CA 93775-1867,1221 Fulton Mall, (559) 445-3357
www.fresnohumanservices.org ❖ Email: EnvironmentalHealth@co.fresno.ca.us

Facility Name: California Compress				Date: 1-7-09
Site Address: 2740 W Nielsen	City/ZIP: Fresno			FA: 0170193
Owner/Permittee				Record ID (PR, CO, WA): PR0048687
Phone	Time In	Time Out	CT: 7	PE: 2243

☒ Routine ☐ Reinspection ☐ Complaint ☐ Construction ☐ _____

Unless otherwise stated, the violations below must be corrected by this ***REINSPECTION DATE:*** 1 1

Drive by to check status of operation.
Operation gates ~~dtt~~ closed
No activity on site
appears closed

Received By: _____ Inspected By: Diana Morgan

NOTICE: REINSPECTION FEES WILL BE CHARGED FOR REINSPECTIONS DUE TO UNCORRECTED VIOLATIONS

For Office Use Only

Reset Date

☐ **INTERIM PERMIT TO OPERATE ISSUED** Valid for 90 days. Authorized by: _____

☐ Building permits are required for correction of these items and can be obtained at the location shown on the back of this report. Corrections will not be approved until permits are finaled.

County of Fresno

DEPARTMENT OF PUBLIC HEALTH
EDWARD L. MORENO, M.D., M.P.H.
DIRECTOR-HEALTH OFFICER

January 1, 2009

FA0170193
PR0048687
2243

CALIFORNIA COMPRESS
CALIFORNIA COMPRESS
2740 W NIELSEN
FRESNO, CA 93706

Dear Facility Owner:

Subject: Hazardous Materials Business Plan Annual Review/Update Requirements
NOTICE AND FREQUENTLY ASKED QUESTIONS
Facility: CALIFORNIA COMPRESS
Location: 2740 W NIELSEN, FRESNO, California

Why am I receiving this letter?
You are receiving this letter because a Hazardous Materials Business Plan (HMBP) is on file for your business (in compliance with Health and Safety Code (H&SC) Section 25503.5) and it is time to update the information it contains.

As you may recall, the HMBP is a document which discloses the hazardous materials handled (or stored) at a facility equal to or greater than reportable quantities (55 gallons liquids, 200 cubic feet compressed gas, or 500 lb solids). It is your plan to help prevent or mitigate the damage to the health and safety of persons and the environment from a release or threatened release of hazardous materials into your workplace and the environment.

Because this important information is used for emergency response purposes, the H&SC requires the information contained within a facility's HMBP be updated on an annual basis. **The purpose of this letter is to remind you of the annual update requirement.**

Our records indicate that the ***due date*** for your Hazardous Materials Business Plan (HMBP) Annual Review/Update is **March 1, 2009**.

How do I update my HMBP?
In order to update your HMBP, you will first need to review your current plan and determine if any of the information on the following UPC Forms has changed: 1) Business Owner/Operator Identification form; 2) Business Activities; 3) Hazardous Materials Inventory; and 4) Site Map. *(If you cannot locate your current plan, contact this office for a replacement copy. It is a regulatory requirement that a copy of the plan is maintained at the facility.)*

What do I need to do if nothing has changed?
If no changes have occurred please complete and submit the following:
(1) Business Owner/Operator Identification; and
(2) Business Activities Forms.

What do I do if I need to make changes to my HMBP?
If changes have occurred submit the following:
(1) Business Owner/Operator Identification;
(2) Business Activities;
And any of the following items that have changed:
(3) Hazardous Materials Inventory Sheets;
(4) Site Map; and
(5) Health and Safety/Emergency Response Plan.

What if my business handles an Extremely Hazardous Substance?
If your facility has an **Extremely Hazardous Substances (EHS)** (as listed from the Federal "*Emergency Planning Community Right to Know Act* "(EPCRA), you need to submit the following by March 1st of every year:
(1) Business Owner/Operator Identification;
(2) Business Activities; and
(3) A Signed Chemical Description (Inventory Form) to certify the EHS inventory regardless of whether a change has occurred. (*Hint: If the number 2260 is printed near the upper right hand corner of page one, you are identified as handling an EHS.*)

What if my facility operates only Underground Storage Tanks (with no other hazardous materials over reportable quantities) and nothing has changed?
To meet the update requirement, submit the following:
(1) Business Owner/Operator Identification Form,
(2) Business Activities Form, and
(3) Model UST Monitoring/Emergency Response.

Where can I get the UPC forms?
UPC forms are available online at:
http://www.calepa.ca.gov/CUPA/Publications/#ConsolidatedForms
(Hint: scroll down to Unified Program Consolidated Forms (UPCF) for "Business to CUPA Reporting")

Additional HMBP information and forms can also be found at our website:
http://www.co.fresno.ca.us/DepartmentPage.aspx?id=1128
(Click on Forms & Guidelines for forms.)

If you encounter difficulties obtaining the forms from the internet, or do not have internet access, please call our office and let us know if you would like us to email, fax, or mail you the necessary forms.

I've just submitted an HMBP update, do I have to do it all over again?
If your facility has recently submitted your Annual Review/Update, you can disregard this notice.

Are there situations where I am required to update my HMBP sooner than my annual update?

YES! The H&SC requires you to **notify this office within thirty (30) days** of the following changes:

- One hundred percent (100%) or more increase in the quantity of any previously reported hazardous material,
- Any new additions to your hazardous material inventory not previously reported, and
- Changes of ownership, location, business name, etc.

What if my business has closed, changed ownership, or moved?

Please contact this office so we can update our records. All active HMBP facilities are billed annual fees for inspections.

Your efforts towards compliance are appreciated.

Remember, Hazardous Materials Business Plan violations may result in Civil/Administrative Penalties of $2000 - $5000 per day for each violation (H&SC 25514).

Still have questions or need help?

If you would like forms from our office or have any questions regarding this notice, please contact staff at (559) 445-3271.

Sincerely,

Steven T. Rhodes, R.E.H.S.
Supervising Environmental Health Specialist
Environmental Health Division

Vincent A Mendes, R.E.H.S.
Supervising Environmental Health Specialist
Environmental Health Division

County of Fresno

DEPARTMENT OF PUBLIC HEALTH
EDWARD L. MORENO, M.D., M.P.H.
DIRECTOR-HEALTH OFFICER

January 1, 2009

FA0170193
PR0048687
2243
CIN 1/5/09

CALIFORNIA COMPRESS
CALIFORNIA COMPRESS
2740 W NIELSEN
FRESNO, CA 93706

Dear Facility Owner:

Subject: Hazardous Materials Business Plan Annual Review/Update Requirements
NOTICE AND FREQUENTLY ASKED QUESTIONS
Facility: CALIFORNIA COMPRESS
Location: 2740 W NIELSEN, FRESNO, California

Why am I receiving this letter?
You are receiving this letter because a Hazardous Materials Business Plan (HMBP) is on file for your business (in compliance with Health and Safety Code (H&SC) Section 25503.5) and it is time to update the information it contains.

As you may recall, the HMBP is a document which discloses the hazardous materials handled (or stored) at a facility equal to or greater than reportable quantities (55 gallons liquids, 200 cubic feet compressed gas, or 500 lb solids). It is your plan to help prevent or mitigate the damage to the health and safety of persons and the environment from a release or threatened release of hazardous materials into your workplace and the environment.

Because this important information is used for emergency response purposes, the H&SC requires the information contained within a facility's HMBP be updated on an annual basis. **The purpose of this letter is to remind you of the annual update requirement.**

Our records indicate that the ***due date*** for your Hazardous Materials Business Plan (HMBP) Annual Review/Update is **March 1, 2009**.

How do I update my HMBP?
In order to update your HMBP, you will first need to review your current plan and determine if any of the information on the following UPC Forms has changed: 1) Business Owner/Operator Identification form; 2) Business Activities; 3) Hazardous Materials Inventory; and 4) Site Map. *(If you cannot locate your current plan, contact this office for a replacement copy. It is a regulatory requirement that a copy of the plan is maintained at the facility.)*

What do I need to do if nothing has changed?
If no changes have occurred please complete and submit the following:
(1) Business Owner/Operator Identification; and
(2) Business Activities Forms.

What do I do if I need to make changes to my HMBP?
If changes have occurred submit the following:

(1) Business Owner/Operator Identification;
(2) Business Activities;
And any of the following items that have changed:
(3) Hazardous Materials Inventory Sheets;
(4) Site Map; and
(5) Health and Safety/Emergency Response Plan.

What if my business handles an Extremely Hazardous Substance?
If your facility has an **Extremely Hazardous Substances (EHS)** (as listed from the Federal "*Emergency Planning Community Right to Know Act* "(EPCRA), you need to submit the following by March 1st of every year:

(1) Business Owner/Operator Identification;
(2) Business Activities; and
(3) A Signed Chemical Description (Inventory Form) to certify the EHS inventory regardless of whether a change has occurred. (*Hint: If the number 2260 is printed near the upper right hand corner of page one, you are identified as handling an EHS.*)

What if my facility operates only Underground Storage Tanks (with no other hazardous materials over reportable quantities) and nothing has changed?
To meet the update requirement, submit the following:

(1) Business Owner/Operator Identification Form,
(2) Business Activities Form, and
(3) Model UST Monitoring/Emergency Response.

Where can I get the UPC forms?
UPC forms are available online at:
http://www.calepa.ca.gov/CUPA/Publications/#ConsolidatedForms
(Hint: scroll down to Unified Program Consolidated Forms (UPCF) for "Business to CUPA Reporting")

Additional HMBP information and forms can also be found at our website:
http://www.co.fresno.ca.us/DepartmentPage.aspx?id=1128
(Click on Forms & Guidelines for forms.)

If you encounter difficulties obtaining the forms from the internet, or do not have internet access, please call our office and let us know if you would like us to email, fax, or mail you the necessary forms.

I've just submitted an HMBP update, do I have to do it all over again?
If your facility has recently submitted your Annual Review/Update, you can disregard this notice.

Are there situations where I am required to update my HMBP sooner than my annual update?

YES! The H&SC requires you to **notify this office within thirty (30) days** of the following changes:

- One hundred percent (100%) or more increase in the quantity of any previously reported hazardous material,
- Any new additions to your hazardous material inventory not previously reported, and
- Changes of ownership, location, business name, etc.

What if my business has closed, changed ownership, or moved?

Please contact this office so we can update our records. All active HMBP facilities are billed annual fees for inspections.

Your efforts towards compliance are appreciated.

Remember, Hazardous Materials Business Plan violations may result in Civil/Administrative Penalties of $2000 - $5000 per day for each violation (H&SC 25514).

Still have questions or need help?

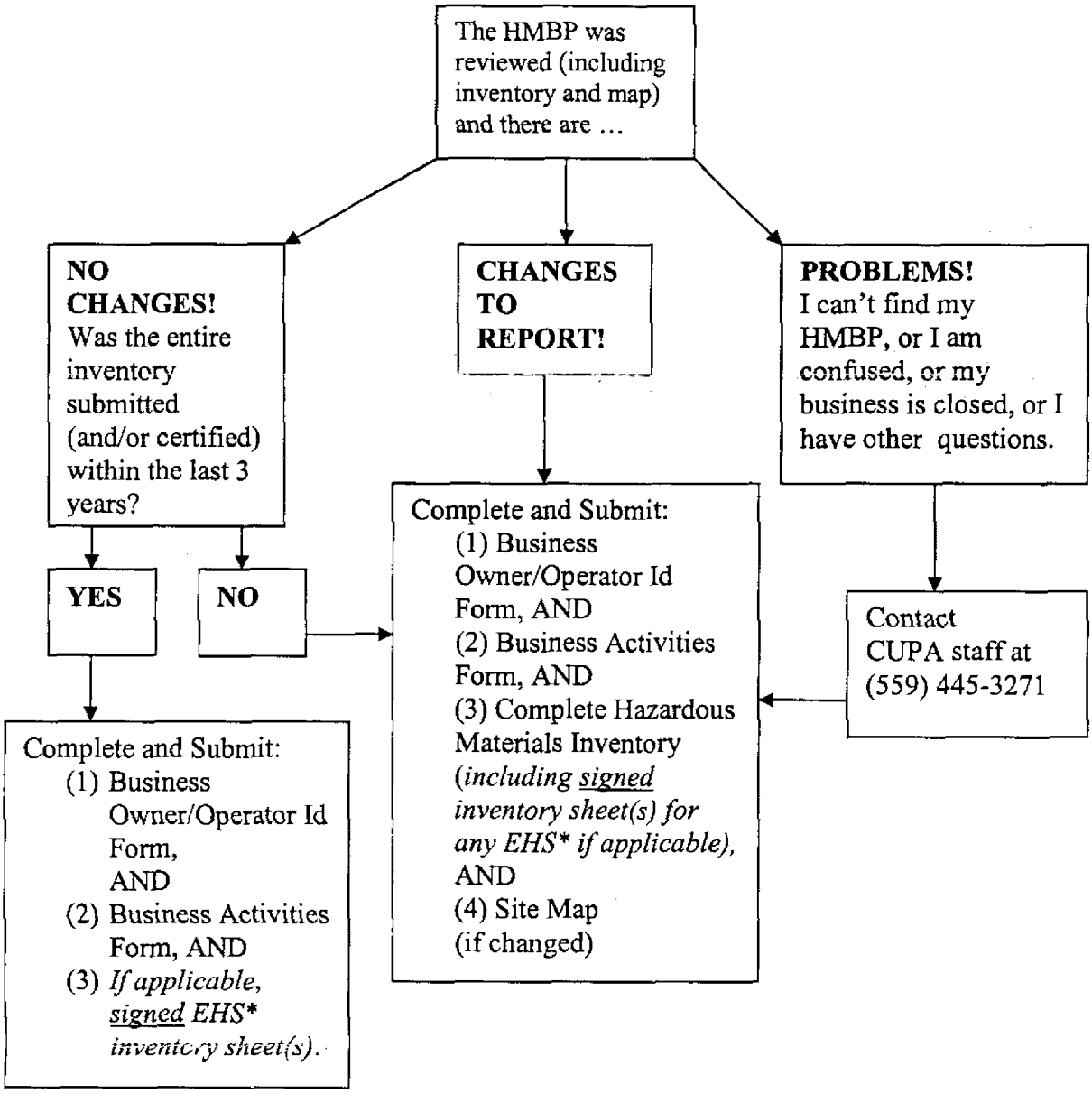
If you would like forms from our office or have any questions regarding this notice, please contact staff at (559) 445-3271.

Sincerely,

Steven T. Rhodes, R.E.H.S.
Supervising Environmental Health Specialist
Environmental Health Division

Vincent A Mendes, R.E.H.S.
Supervising Environmental Health Specialist
Environmental Health Division

HMBP UPDATE PROCESS



NEED FORMS?? Get current UPCF forms on the internet at http://www.calepa.ca.gov/CUPA/Publications/#ConsolidatedForms (Hint: scroll down to Business to CUPA Reporting section of UPCF Forms) Fresno County's Website is being updated and plans are underway for future Hazardous Materials Business Plan submittals to be done online via Public Portal. **Remember to keep a copy of the completed forms for your records!**

*EHS – Extremely Hazardous Substances – (for example, anhydrous ammonia, sulfur dioxide, sulfuric acid, and other listed substances handled over specific Threshold Planning Quantities). Inventory sheets for EHS over TPQ need to be signed and submitted to certify the inventory every year.

CUPA CONSOLIDATED PERMITS WILL BE ISSUED IN 2009 AFTER PAYMENT OF ANNUAL CUPA FEES!

MY UPDATE OR HMBP IS DONE, NOW WHAT ?

Remember to make two copies of the completed paperwork. You will need to send one copy to this office, the CUPA, at the following address:

Fresno County Dept of Public Health
Environmental Health Division - CUPA
PO Box 11867
Fresno, CA 93775

You will need to send another copy to the fire department. (For example, City of Fresno Fire Prevention, 911 H St, Fresno, CA 93721 or if located within Clovis, use City of Clovis Fire Prevention, 1233 Fifth St, Clovis, CA 93612).

Don't forget to keep the original document (or copy) at your business!

HOW DO I IMPLEMENT MY PLAN?

Now that you have a Plan, it's time to put it into action. This office is required to inspect the business to make sure your plan has been implemented. Ask yourself, if there were a hazardous materials spill or release today at your business, would your employees know what to do?

All employees must be trained to some level of emergency response. A training program must be developed which is reasonable and appropriate for the size of the business and the nature of the hazardous materials handled. The level of training required is dependent on the specific job function or duties of an employee during an emergency response action.

What do I need to train my employees in?

For Hazardous Materials Business Plans you need to have a training program that includes, at a minimum, the following:

(1) safe handling methods for hazardous materials including use of emergency response equipment;
(2) procedures for responding to a release/threatened release of a hazardous material, including notification to the CUPA and appropriate emergency response agencies and coordination with local emergency response organizations;
(3) evacuation plans and procedures; and
(4) provisions for ensuring that appropriate personnel receive initial and annual refresher training. (Hint: the facility's Health and Safety/Emergency Response Plan (H&S/ERP) that was submitted with your HMBP and Material Safety Data Sheets are good sources of employee training information). Remember to keep training records to document this training!

What about inspections? Any suggestions?

To assist in making inspections go smoothly, we recommend that you maintain your copy of the HMBP, employee training records, Material Safety Data Sheets, and Hazardous Waste Receipts/Manifests (if any) in an organized manner. Also, it is important that all hazardous materials and hazardous waste containers be properly labeled and sealed. If you have questions, please contact CUPA staff at 445-3271.

WHAT ABOUT PERMITS?

We are scheduled to start issuing Certified Unified Program Consolidated Permits in Spring 2009. Businesses that are in compliance with requirements (i.e., not known to have significant outstanding violations) and have paid annual fees, will be issued permits.

INSP
SR

FRESNO COUNTY HUMAN SERVICES SYSTEM - DEPARTMENT OF COMMUNITY HEALTH - ENVIRONMENTAL HEALTH SYSTEM
Certified Unified Program Agency (CUPA)
1221 Fulton Mall, P.O. Box 11867, Fresno, California 93775
Telephone: (559) 445-3271 Fax: (559) 445-3301 www.fresnohumanservices.org

HAZARDOUS WASTE GENERATOR OFFICIAL INSPECTION REPORT

Facility Name: California Compress Date: 6.23.08

Site Address: 2740 W Nielsen - Fresno Time In: _____ Time Out: _____

Owner/Operator: California Compress Phone No.: 233-1725 Census Tract: 07

Type of Inspection
☒ Routine ☐ Consultation
☐ Reinspection ☐ Complaint
☐ Other: _____

Inspection Consolidation
☒ Combined Routine Inspection
☐ Joint Inspection
☐ Integrated
☐ Multi-Media Inspection

Facility ID: 0170193
Record ID: PR0058832
Program Element: 2231

☐ CONSENT TO INSPECT GRANTED BY (Name / Title): X Inspection may involve obtaining photographs, review and copying of records, and determination of compliance with hazardous materials/waste handling requirements.

HAZARDOUS WASTE GENERATOR REQUIREMENTS	Yes	No	N/A	Violation #	Class I	Class II	Minor
Generator has an EPA ID number. Title 22 CCR 66262.12 CAL000122762	X						
Contingency Plan is established and maintained at the facility. Title 22 CCR 66265.53	X						
Hazardous waste determination by: ☐ Analysis ☒ Generator Knowledge Title 22 CCR 66262.11	X						
Manifests and receipts are maintained on site for at least 3 years. Title 22 CCR 66262.23, 66263.42	X						
Hazardous waste generated per month: 15.7 kilograms (kg). /month							
Hazardous wastes are removed within: ☐ 90 days if waste generated > 1000 kg / month (LQG) ☐ *180 days if waste generated < 1000 kg / month (SQG & CESQG) ☐ *270 days if waste generated < 1000 kg / month & transported > 200mi for disposal (SQG)							
*NOTE: Applies only if hazardous waste accumulated on site never exceeds 6000 kg and no extremely hazardous waste over 1 kg is held on site > 90 days. Title 22 CCR 66262.34							
Containers of hazardous waste are properly labeled. Title 22 CCR 66262.31, .32	X						
Containers of hazardous waste are in good condition and sealed. Title 22 CCR 66265.171, .173, .191, .177(c)	X						
Empty containers are managed properly. Title 22 CCR 66261.7	X						

NOTES / VIOLATIONS: SEE REVERSE SIDE OF PAGE FOR REQUIRED CORRECTIVE ACTION

Asbury
~~Safety Kleen~~ picks up waste oil - Last pick up was on 9-13-05 for 50 gals

Safety Kleen picks up Universal Waste 11-05

VIOLATIONS NOTED SHALL BE CORRECTED WITHIN _____ DAYS. REINSPECTION DATE: _____
NOTICE: REINSPECTION FEES WILL BE CHARGED FOR MULTIPLE REINSPECTIONS DUE TO UNCORRECTED VIOLATIONS.
☐ **"RETURN TO COMPLIANCE STATEMENT" has been reviewed and left with the facility.**

Received By: X _____ 6/23/08 **CUPA Specialist:** Deanna Meyer

INSP STR

FRESNO COUNTY DEPARTMENT OF COMMUNITY HEALTH - ENVIRONMENTAL HEALTH DIVISION
Certified Unified Program Agency (CUPA)
1221 Fulton Mall, P.O. Box 11867, Fresno, California 93775
Telephone: (559) 445-3271 Fax: (559) 445-3301 www.fresnohumanservices.org/communityhealth/environmentalhealth/

HAZARDOUS MATERIALS HANDLER OFFICIAL INSPECTION REPORT

Facility Name California Compress Date 6.23-08

Site Address 2740 W Nielsen - Fresno Time In 900 Time Out 10

Owner/Operator California Compress Phone 233-1725 Census Tract 07

Type of Inspection: X Routine ☐ Reinspection ☐ Consultation ☐ Complaint ☐ Other FA 0170193

Inspection may involve obtaining photographs, review and copying of records, and determination of compliance with hazardous materials/waste handling requirements. PR 0048687

CONSENT TO INSPECT (HSC 25508) GRANTED BY: X PE 2243

Violation #	HAZARDOUS MATERIALS BUSINESS PLAN REQUIREMENTS	CODE REFERENCE	Yes	No	N/A
1	Business Plan has been submitted	HSC 25505, Title 19 CCR 2729.2	X		
2	Business Plan has been implemented on site	HSC 25503.5 Title 19 CCR 2729.1	X		
3	Inventory of hazardous materials is accurate (including EHS)	HSC 25509 Title 19 CCR 2729.4(b)	X		
4	Annual EHS chemical description form signed and submitted	HSC 25509, Title 19 CCR 2729.6			X
5	Site and facility maps are accurate	HSC 25504(a), Title 19 CCR 2729.2		X	
6	Annual Business Plan update has been submitted: ☐ HMBP Inventory Certification/Changes ☐ Emergency Contact Changes ☐ Ownership/Name/Address Changes ☐ BP 3 yr review date	HSC 25509, 25510, 25505(c), Title 19 CCR 2729.4, 2729.5	X		
7	Health & Safety/Emergency Response Plan established & implemented: Procedures for: ☐ Reporting release/Threatened release ☐ Evacuation ☐ Emergency Equipment list/location/description	HSC 25504(b), 25507(a), Title 19 CCR 2731 Title 22 CCR 66265.52(e)	X		
8	Training program is established and documentation is maintained on site: ☐ MSDS ☐ Annual/Refresher Training ☐ Safe Handling/Storage Methods	HSC 25504(c), Title 19 CCR 2732	X		
9	Hazardous materials are properly labeled	Title 22 CCR 66261.2(f)	X		
10	Hazardous Materials are properly handled & stored	HSC 25504, Title 19 CCR 2732(a) (1)	X		
11	Spill control equipment is available on site	HSC 25504, Title 19 CCR 2731	X		
12	Facility has failed to report any release or threatened release to the appropriate agencies	HSC 25507(a)			X
13	CalARP/Federal RMP has been submitted.	HSC 25531.1, Title 19 CCR 2745.1, 40 CFR Part 68			X
14	Certified SPCC Plan has been submitted & maintained on site	HSC 25270.5(c), Title 40 CFR Part 112			X

Violation	UNIVERSAL WASTE (UW) HANDLER REQUIREMENTS	CODE REFERENCE	Yes	No	N/A
15	Containers are labeled or marked to identify type of UW, provide accumulation start date	Title 22 CCR 66273.14, 66273.15	X		
16	Containers are closed, structurally sound, compatible, lacking evidence of leakage, spillage, or damage.	Title 22 CCR 66273.13, 66273.33, 66373.83 *some items are excluded	X		
17	Records are maintained for 3 years	Title 22 CCR 66273.19	X		

NOTES / VIOLATIONS: SEE REVERSE SIDE OF PAGE FOR REQUIRED CORRECTIVE ACTION

☐ New Business Owner shall submit a Hazardous Materials Business Plan to this office by 30 days.

☐ Hazardous Materials Business Plan information booklet received by facility representative.

☐ Owner shall be notified of Business Plan Requirements for businesses located on leased or rented real property (HSC 25503.6).

VIOLATIONS NOTED SHALL BE CORRECTED WITHIN _____ DAYS REINSPECTION DATE: _____

***NOTICE*: FAILURE TO SUBMIT A HAZARDOUS MATERIALS BUSINESS PLAN MAY RESULT IN CIVIL/ADMINISTRATIVE PENALTIES OF $2000-$5000 PER DAY FOR EACH VIOLATION (HSC 25514).**
FAILURE TO REPORT A SIGNIFICANT RELEASE OR THREATENED RELEASE MAY RESULT IN STATE AND FEDERAL ADMINISTRATIVE PENALTIES OF UP TO $25000 PER DAY. CRIMINAL PENALTIES MAY ALSO APPLY (HSC 25507(a)).

☐ **"RETURN TO COMPLIANCE STATEMENT" has been reviewed and left with the facility.**

Received By: X _____ Signature
MOHAMMAD I. KHAN 6/23/08 Print Name and Title

Inspected By: _____ Signature
Dianna Mirza Print Name

Mileage _____

Page 1 of 2

FRESNO COUNTY DEPARTMENT OF COMMUNITY HEALTH - ENVIRONMENTAL HEALTH DIVISION
Certified Unified Program Agency (CUPA)
1221 Fulton Mall, P.O. Box 11867, Fresno, California 93775
Telephone: (559) 445-3271 Fax: (559) 445-3301

OFFICIAL INSPECTION REPORT CONTINUATION PAGE

Facility Name California Compress Date 6.23.08

Site Address 2740 W Nielsen

VIOLATIONS NOTED BELOW SHALL BE CORRECTED WITHIN _____ DAYS / *IMMEDIATELY

Met on site w/ Mohammad Khan -

This facility operates as a Cotton Warehouse. Historically facility operation compressed the cotton into bails.

Viewed Emergency Response Plan & obtained copies for submittal.

Viewed log of active employee training - last training was on 3/25/08 for used oil policy and training awareness for MSDS monthly also

Forklifts (11) are contracted out from Graylift and serviced by Graylift

(1) Submit a corrected site map
Show unleaded gas
copper sulfate
Quin-Syn

REINSPECTION DATE: _____

NOTICE: REINSPECTION FEES WILL BE CHARGED FOR MULTIPLE REINSPECTIONS DUE TO UNCORRECTED VIOLATIONS.

Received By: X _____ 6/23/08 **CUPA Specialist:** Dianna Myers

BUSINESS OWNER/OPERATOR IDENTIFICATION - FACILITY INFORMATION

Doc Date 2-11-08

UNIFIED PROGRAM CONSOLIDATED FORM

FA0170193

This Form is Required for Initial Submission and Annual Certifications

FRESNO COUNTY DEPARTMENT OF COMMUNITY HEALTH-ENVIRONMENTAL HEALTH DIVISION
1221 Fulton Mall, Post Office Box 11867, Fresno, California 93775 (559) 445-3271

FR0048687

PE 2243

I. IDENTIFICATION

FACILITY ID# 1	BEGINNING DATE 100	ENDING DATE 101
		BP

BUSINESS NAME (Same as FACILITY NAME or DBA - Doing Business As) 3	BUSINESS PHONE 102
CALIFORNIA COMPRESS	(559)266-0511

BUSINESS SITE ADDRESS 103		
2740 W.NIELSEN		
CITY 104	CA	ZIP CODE 105
FRESNO		93706
DUN & BRADSTREET 106		SIC CODE (4 digit #) 107
087216897		4221
COUNTY 108		
FRESNO		
BUSINESS OPERATOR NAME 109		BUSINESS OPERATOR PHONE 110
KEITH PAUL		(559)266-0511

II. BUSINESS OWNER

OWNER NAME 111	OWNER PHONE 112
CALIFORNIA COMPRESS	(559)266-0511

OWNER MAILING ADDRESS 113		
P.O. BOX 11966		
CITY 114	STATE 115	ZIP CODE 116
FRESNO	CA	93776

III. ENVIRONMENTAL CONTACT

CONTACT NAME 117	CONTACT PHONE 118
KEITH PAUL	(559)266-0511

CONTACT MAILING ADDRESS 119		
P.O.BOX 11966		
CITY 120	STATE 121	ZIP CODE 122
FRESNO	CA	93776

IV. EMERGENCY CONTACTS

-PRIMARY-	-SECONDARY-
NAME 123	NAME 128
KEITH PAUL	MOHAMMAD KHAN
TITLE 124	TITLE 129
GENERAL MANAGER	SUPERVISOR
BUSINESS PHONE 125	BUSINESS PHONE 130
(559)266-0511	(559)266-0511
24-HOUR PHONE 126	24-HOUR PHONE 131
(559)221-7748	(559)277-3689
PAGER # 127	PAGER # 132
( ) -	( ) -

LOCAL REQUIREMENTS 133

BUSINESS PLAN ANNUAL CERTIFICATION (not to be completed upon initial submittal):

☐Y ☒N Is there any change to your Business Owner/Operator Identification form, Business Activities form, Hazardous Materials Inventory (most recently submitted), or Site map? If yes, complete and submit the appropriate forms.
The Business Plan has been reviewed every three years to determine if revisions need to be made? Date reviewed _____

☐Y ☒N The information contained in the hazardous materials inventory most recently submitted is complete, accurate and up to date. All hazardous materials handled at our facility subject to inventory requirements have been disclosed on the most recently submitted inventory.

Fire Department Copy Mailed To:Fire Prevention Bureau
Date Mailed: 2/11/08

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE 134	NAME OF DOCUMENT PREPARER 135
Keith Paul	2/11/08	MOHAMMAD KHAN
NAME OF SIGNER (print) 136	TITLE OF SIGNER 137	
KEITH PAUL	GENERAL MANAGER	

BUSINESS ACTIVITIES — FACILITY INFORMATION

UNIFIED PROGRAM CONSOLIDATED FORM

This Form is Required for Initial Submission and Annual Certifications

FRESNO COUNTY DEPARTMENT OF COMMUNITY HEALTH-ENVIRONMENTAL HEALTH DIVISION
1221 Fulton Mall, Post Office Box 11867, Fresno, California 93775 (559) 445-3271

RECEIVED
FEB 13 2008
Fresno County Department of Community Health
Environmental Health Division

Page 1 of 1

I. FACILITY IDENTIFICATION

FACILITY ID #	EPA ID # (Hazardous Waste Only)
FA0017019393 [1]	CAL000122762 [2]

BUSINESS NAME (Same as Facility Name of DBA-Doing Business As): CALIFORNIA COMPRESS

BUSINESS SITE ADDRESS [3]: 559-266-0511

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page (OES Form 2730).

Does your facility...	If Yes, please complete these pages of the UPCF....	
A. HAZARDOUS MATERIALS		
Have on site (for any purpose) hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	☒ YES ☐ NO 4	HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (OES 2731)
B. UNDERGROUND STORAGE TANKS (USTs)		
▪ Own or operate underground storage tanks?	☐ YES ☒ NO 5	UST FACILITY (Formerly SWRCB Form A) UST TANK (one page per tank) (Formerly Form B)
▪ Intend to upgrade existing or install new USTs?	☐ YES ☒ NO 6	UST FACILITY UST TANK (one per tank) UST INSTALLATION - CERTIFICATE OF COMPLIANCE (one page per tank) (Formerly Form C)
▪ Need to report closing a UST?	☐ YES ☐ NO 7	UST TANK (closure portion –one page per tank)
C. ABOVE GROUND PETROLEUM STORAGE TANKS (ASTs)		
▪ Own or operate ASTs above these thresholds: ---any tank capacity is greater than 1320 gallons, or ---the total capacity for the facility is greater than 1,320 gallons?	☒ YES ☐ NO 8	NO FORM REQUIRED TO CUPAs
D. HAZARDOUS WASTE		
▪ Generate hazardous waste?	☒ YES ☐ NO 9	EPA ID NUMBER – provide at the top of this page
▪ Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	☐ YES ☒ NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
▪ Treat hazardous waste on site?	☐ YES ☒ NO 11	ONSITE HAZARDOUS WASTE TREATMENT – FACILITY (Formerly DTSC Forms 1772) ONSITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit) (Formerly DTSC Forms 1772 A,B,C,D and L)
▪ Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	☐ YES ☒ NO 12	CERTIFICATION OF FINANCIAL ASSURANCE (Formerly DTSC Form 1232)
▪ Consolidate hazardous waste generated at a remote site?	☐ YES ☒ NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION (Formerly DTSC Form 1196)
▪ Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned onsite?	☐ YES ☒ NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION (Formerly DTSC Form 1249)

E. LOCAL REQUIREMENTS [15]

CERTIFICATION: I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

☐ I am exempt from these requirements and understand that my business may be subject to inspections to confirm my exemption status.

SIGNATURE OF OWNER/OPERATOR: Keith Pan DATE: 2/11/08

EMERGENCY CONTACTS

THE FIRST CALL IN CASE OF EMERGENCY SHOULD BE TO PRODUCT LINE MANAGEMENT. LISTED ARE PHONE NUMBERS FOR KEY CONTACTS WITHIN CARGILLINCORPORATED, GRAIN DIVISION AND LOCAL PLANT MANAGEMENT.

EMERGENCY CONTACTS	NAME	OFFICE PHONE	HOME PHONE
PLANT MANAGER	KEITH PAUL	559-266-0511	559-221-7748
PLANT SUPERINTENDENT	MOHAMMAD KHAN	559-266-0511	559-277-3689
PLANT SUPERVISOR	MARK SKIPPER	559-266-0511	559-346-1922
PRODUCT LINE MANAGER	RICKY CLARK	901-937-4522	901-756-1310
PRODUCT LINE SUPERINTENDENT	GREG BELL	901-937-4518	901-854-5242
PRESIDENT CARGILL COTTON	GARY TAYLOR	901-937-4503	
HRD CARGILL COTTON	CRAIG CLEMMENSEN	901-937-4586	
CARGILL ATTORNEY	TRACY WESSEL JOHNSON	952-742-4772	
CARGILL PUBLIC AFFAIRS	DAVID FEIDER	952-742-6910	612-922-1534
MANAGER PLANT OPERATIONS	DOUG DUNLAY	952-742-2568	763-478-9433
ENVIRONMENTAL COORDINATOR	DENNIS KLEIN	952-742-5622	952-572-9187
EHS MANAGER	LARAYE OSBORNE	952-742-0116	952-472-7328
CARGILL INSURANCE	SHARON DONOVAN	952-742-7282	952-470-9953

CHEMICAL EMERGENCY PHONE NUMBERS

LOCAL EMERGENCY RESPONSE (FIRE DEPARTMENT,SHERIFF,HIGHWAY PATROL,ETC.)		911
STATE EMERGENCY RESPONSE (DEPARTMENT OF ENVIRONMENTAL QUALITY,DNR,ETC)	FRESNO CITY	559-498-1023
	CALIFORNIA	1-800-842-7550
REGIONAL EPA OFFICE	CA	916- 445-3846
NATIONAL RESPONSE CENTER		1-800-424-8802
CHEMTREC (EMERGENCY)		1-800-424-9300
CHEMTREC (INFORMATION)		1-800-262-8200

THE FIRST FOUR ENVIRONMENTAL EMERGENCY NUMBERS ARE TO BE CALLED IF SPILLS OCCUR THAT EXCEED REPORTABLE QUANTITIES. CHEMTREC MAY BE CALLED IF EMERGENCY INFORMATION IS NEEDED.

9/2007

received 6.23.08

CALIFORNIA COMPRESS
FRESNO, CALIFORNIA

IN CASE OF FIRE, EARTHQUAKE, BOMB THREAT, ENVIRONMENTAL SPILLS PLEASE PHONE THE FOLLOWING IN THE ORDER THAT THEY ARE LISTED:

FIRST: PHONE THE FIRE DEPARTMENT.....9-1-1

MOHAMMAD KHAN	277-3689	
MARK SKIPPER	346-1922	Fork Lift
ANTHONY CALLES	312-5525	Diesel Pumps
SERGIO GONZALES	287-0610	Garrett
KEITH PAUL	221-7748	

GIVE EACH PARTY THE LOCATION OF THE "FIRE" AND INSTRUCTIONS TO RUSH TO THE COMPRESS TO MAN THE ITEM LISTED BY HIS NAME.

ALL MEDIA CALLS SHOULD BE REFERRED TO KEITH PAUL. MANAGEMENT WILL INFORM DIVISION PRODUCT LINE MANAGERS.

Craig Clemmensen
Ricky Clark
Greg Bell
Dennis Klein (Environmental)

01 Rev 9/07

EMERGENCY CONTACTS

THE FIRST CALL IN CASE OF EMERGENCY SHOULD BE TO PRODUCT LINE MANAGEMENT. LISTED ARE PHONE NUMBERS FOR KEY CONTACTS WITHIN CARGILLINCORPORATED, GRAIN DIVISION AND LOCAL PLANT MANAGEMENT.

EMERGENCY CONTACTS	NAME	OFFICE PHONE	HOME PHONE
PLANT MANAGER	KEITH PAUL	559-266-0511	559-221-7748
PLANT SUPERINTENDENT	MOHAMMAD KHAN	559-266-0511	559-277-3689
PLANT SUPERVISOR	MARK SKIPPER	559-266-0511	559-346-1922
PRODUCT LINE MANAGER	RICKY CLARK	901-937-4522	901-756-1310
PRODUCT LINE SUPERINTENDENT	GREG BELL	901-937-4518	901-854-5242
PRESIDENT CARGILL COTTON	GARY TAYLOR	901-937-4503	
HRD CARGILL COTTON	CRAIG CLEMMENSEN	901-937-4586	
CARGILL ATTORNEY	TRACY WESSEL JOHNSON	952-742-4772	
CARGILL PUBLIC AFFAIRS	DAVID FEIDER	952-742-6910	612-922-1534
MANAGER PLANT OPERATIONS	~~DOUG DUNLAY~~	952-742-2568	763-478-9433
ENVIRONMENTAL COORDINATOR	DENNIS KLEIN	952-742-5622	952-572-9187
EHS MANAGER	LARAYE OSBORNE	952-742-0116	952-472-7328
CARGILL INSURANCE	SHARON DONOVAN	952-742-7282	952-470-9953

CHEMICAL EMERGENCY PHONE NUMBERS

LOCAL EMERGENCY RESPONSE (FIRE DEPARTMENT,SHERIFF,HIGHWAY PATROL,ETC.)		911
STATE EMERGENCY RESPONSE	FRESNO CITY	559-498-1023
(DEPARTMENT OF ENVIRONMENTAL QUALITY,DNR,ETC)	CALIFORNIA	1-800-842-7550
REGIONAL EPA OFFICE CA		916- 445-3846
NATIONAL RESPONSE CENTER		1-800-424-8802
CHEMTREC (EMERGENCY)		1-800-424-9300
CHEMTREC (INFORMATION)		1-800-262-8200

THE FIRST FOUR ENVIRONMENTAL EMERGENCY NUMBERS ARE TO BE CALLED IF SPILLS OCCUR THAT EXCEED REPORTABLE QUANTITIES. CHEMTREC MAY BE CALLED IF EMERGENCY INFORMATION IS NEEDED.

9/2007

CALIFORNIA COMPRESS
FRESNO, CALIFORNIA

EVACUATION PROCEDURE
EARTHQUAKE, BOMB THREAT, ENVIRONMENTAL SPILLS
INCIDENTS ON RAILTRACK NEAR THE PLANT
ENVIRONMENTAL OR SAFETY PROBLEMS AT NEIGHBORING OPERATION

EMERGENCY COORDINATORS: PLANT MANAGER: KEITH PAUL
ALTERNATE: PLANT SUPERINTENDENT: MOHAMMAD KHAN

ANY EMPLOYEE WHO NOTICES SIGNS OF AN EARTHQUAKE OR ANY OTHER INCIDENT SHOULD IMMEDIATELY NOTIFY A SUPERVISOR AND BLOW THE AIR WHISTLE LOCATED BEHIND COMPRESSOR ROOM. ANTHONY CALLES IS RESPONSIBLE FOR CUTTING OFF ALL GAS & ELECTRICAL MAINS.

AT THE SOUND OF CONSTANT WHISTLE ALL EMPLOYEES:

MOVE IMMEDIATELY TOWARDS THE CENTER ISLE OF THE WAREHOUSE YOU ARE WORKING IN, EXIT AT THE NEAREST DOOR AND GO TO OPEN AREA IN FRONT OF THE MAIN OFFICE.

SUPERVISORS ARE RESPONSIBLE FOR SEEING THAT THE EMPLOYEES ON THEIR CREW ARE SAFELY OUTSIDE OF THE BUILDINGS.

PLANT SUPERINTENDENT IS RESPONSIBLE FOR CONTRACTOR EVACUATION.

ALL EMPLOYEES ARE TO REPORT TO THE OPEN AREA IN FRONT OF THE MAIN OFFICE TO BE COUNTED BY SUPERVISOR AND WILL BE REQUIRED TO REMAIN THERE UNTIL RELEASED BY THE PLANT MANAGER OR PLANT SUPERINTENDENT.

AFTER THE EARTHQUAKE HAS SUBSIDED, ALL BUILDINGS MUST BE SAFETY CHECKED FOR POSSIBLE LEAKS OR DAMAGE BEFORE THE GAS & ELECTRICAL MAINS ARE TURNED ON.

IN THE CASE OF BOMB THREATS AND ENVIRONMENTAL SPILLS, NO ONE IS TO RETURN TO ANY BUILDINGS UNTIL THE ALL-CLEAR IS GIVEN.

INCIDENTS ON RAILTRACK: PLANT MANAGER OR PLANT SUPERINTENDENT WILL INFORM THE RAILROAD OFFICE AND WILL ACT UPON INFORMATION RECEIVED. NO EMPLOYEE IS PERMITTED TO GO TO THE INCIDENT SITE.

ENVIRONMENTAL OR SAFETY PROBLEMS AT NEIGHBORING OPERATION: PLANT MANAGER OR PLANT SUPERINTENDENT WILL SOLICIT INFORMATION FROM THE NEIGHBORING PLANT AND WILL DECIDE ACCORDINGLY ABOUT OUR ACTIONS.

EMERGENCY EQUIPMENT:

1) FIRST-AID BOX AT MAIN OFFICE, YARD OFFICE, SHOP AND 18 HOUSE.
2) CPR-MICROSHIELD- CLEARMOUTH BARRIER PROTECTION PAK ON EACH ROLLING EQUIPMENT.
3) EMERGENCY SPILL KIT AT THE SHOP.
4) PORTABLE FIRE HOSE REEL AT THE DRYER BUILDING.
5) PORTABLE WATER DRUMS CART AT COMPRESSOR ROOM.
6) EYE-WASH STATION AT YARD OFFICE, SHOP AND PROPANE STATION.

CALIFORNIA COMPRESS

FRESNO, CALIFORNIA

PLANT EMERGENCY ORGANIZATION PROCEDURE

EMERGENCY COORDINATOR: PLANT MANAGER: KEITH PAUL
ALTERNATE: PLANT SUPERINTENDENT: MOHAMMAD KHAN

ANY EMPLOYEE WHO SEES A FIRE WILL IMMEDIATELY SEND A CO-WORKER TO NOTIFY A SUPERVISOR. AFTER REPORTING THE CONDITION TO THE SUPERVISOR, THE CO-WORKER WILL GO DIRECTLY TO COMPRESSOR ROOM AND BLOW THE AIR WHISTLE THREE (3) TIMES THEN REPORT TO YARD OFFICE TO DIRECT TRAFFIC UNTIL THE PERSON ASSIGNED BELOW ARRIVES.

AT THE SOUND OF THE AIR WHISTLE THE FOLLOWING EMPLOYEES ARE RESPONSIBLE FOR THE DUTIES LISTED:

CALLING FIRE DEPT	MOHAMMAD KHAN	&	MARK SKIPPER
DIRECTING EMERGENCY TRAFFIC	KEITH PAUL	&	MOHAMMAD KHAN
STARTING DIESEL PUMP	MARK SKIPPER		ANTHONY CALLES
OPERATING LIFT MACHINES	MANUEL MUNOZ		ANTHONY CALLES
OPERATING GARRETT MACHINES	ISAIAH TORRES		SERGIO GONZALES
PENING SECOND GATE	DIANA BRANCO	&	KEITH PAUL
USE FIRE HOSE AND/OR FIRE EXTINGUISHERS	SERGIO GONZALES		LUIS VILLALVAZO
MAN THE WET WATER DRUMS	LUIS VILLALVAZO		JUAN RAMIREZ
HANDLE THE HOSE REEL CARTS	JUAN RAMIREZ		MANUEL MUNOZ

THE NECESSARY STEPS OF THIS PROCEDURE WILL ALSO BE FOLLOWED IN CASE OF EXPLOSION, NATURAL OCCURRENCE, SERIOUS INJURY, BOMB THREAT & ENVIRONMENTAL SPILLS.

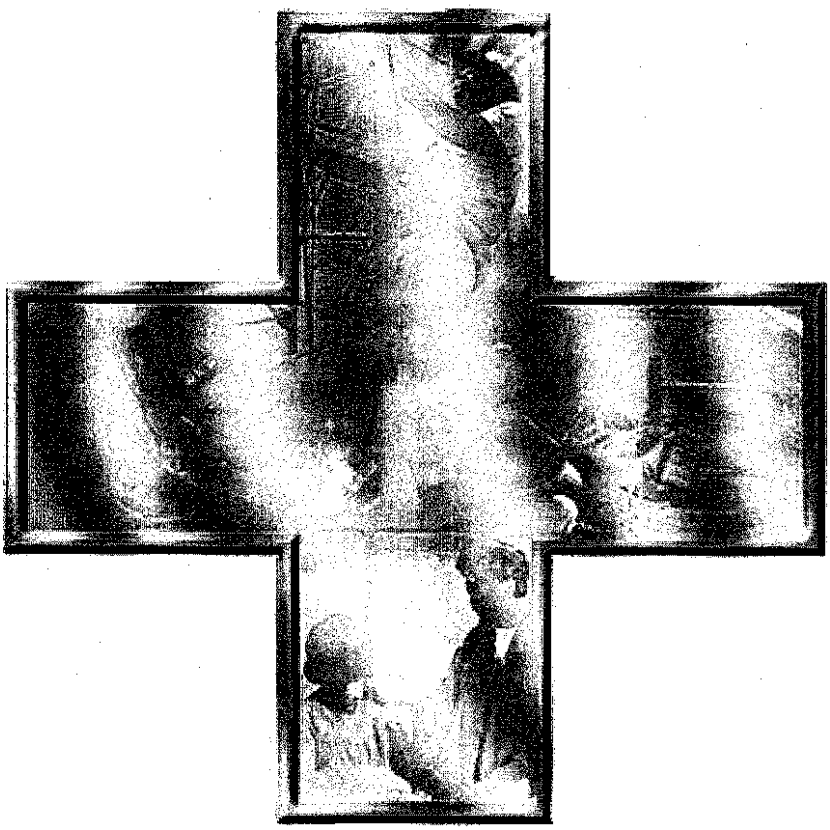
IF AN EMERGENCY (INCLUDING A NATURAL OCCURRENCE) DEMANDS EVACUATION, ANY EMPLOYEE CLOSE BY SHOULD BLOW THE AIR WHISTLE. ANTHONY CALLES WILL BE RESPONSIBLE FOR CUTTING OF ALL GAS & ELECTRICAL MAINS WHILE ALL EMPLOYEES EXIT TOWARDS THE OPEN AREA IN FRONT OF MAIN OFFICE TO BE COUNTED AND SHALL REMAIN THERE UNTIL RELEASED BY THE PLANT MANAGER OR PLANT SUPERINTENDENT.

EMERGENCY EQUIPMENT:

1) FIRST-AID BOX AT MAIN OFFICE, YARD OFFICE, SHOP AND 18 HOUSE.
2) CPR-MICROSHIELD- CLEARMOUTH BARRIER PROTECTION PAK ON EACH ROLLING EQUIPMENT.
3) EMERGENCY SPILL KIT AT THE SHOP.
4) PORTABLE FIRE HOSE REEL AT THE DRYER BUILDING.
5) PORTABLE WATER DRUMS CART AT COMPRESSOR ROOM.
6) EYE-WASH STATION AT YARD OFFICE, SHOP AND PROPANE STATION.

Cargill™

California Compress
Fresno, Ca



Chemical Hazard Communications

received 6-23-08

HAZARD COMMUNICATION

MATERIAL SAFETY DATA SHEETS
TABLE OF CONTENTS

MATERIAL	AREA/USED	
ACETYLENE	SHOP	1
OXYGEN	SHOP	2
BORAXO HAND SOAP	SHOP/18 House	3
GRINDING WHEEL	SHOP	4
UNLEADED GASOLINE	SHOP	9
SOLVENTS	SHOP	11
DIESEL	PUMPHOUSE	12
PROPANE	SHOP/YARD	13
GREASES- LUBRIPLATE 630 AAA	SHOP	15
PENN MOLYSULFIDE EP 704	SHOP	
COPER SULFITE	SHOP/POND	17
WELDING RODS - MCKAY6011	SHOP	18
OILS- SILVAS DELO 400 MOTOR OIL	SHOP	19
MOBIL DELVAC 1300 MOTOR OIL	SHOP	
QUIN-SYN COMPRESSOR OIL	SHOP/Compressor Room	
FYR-FYTER WETTING AGENT	SHOP	20
UNIVERSAL - MARKING INK	18 House/YARD	22
REDI-SEAL ROOF PATCH	18 House/SHOP	23

5/20/2008

CALIFORNIA COMPRESS 2740 W. NIELSEN, FRESNO

HAZARDOUS MATERIALS MAXIMUM QUANTITIES

Used Motor oil for recycling	50 gallons
76 Super Motor oil - 10W40	5 gallons
Silvas SS Pump oil	2 gallons
Mobilube HD Gear oil- 80-90 wt.	2 gallons
Silvas Hydraulic oil - AW 46	1 gallon
Tekusolv II - Synthetic part washing solvent	15 gallons
Quin-Syn Synthetic oil for compressor	50 gallons
Lubri Plate Grease	15 lbs
Convoy Bearing Grease	10 lbs
Acetylene - 1 tank	130 cf
Oxygen - 1 tank	249 cf
Copper Sulfate- Algae treatment for Ponds	60 lbs
Red Diesel - 2 tanks for stationary engines	275 gallons
Propane- - 2 tanks	2308 gallons
Unleaded Gas	10 gallons

TITLE: 29 C.F.R 1910.120 Policy & Procedure

FILED UNDER: **P:window/IIP program**/Chemical Hazard Communications/Policy & Procedure.doc

Location:	**Fresno, Ca**
Author Signature:	**Abe Khan**
Date of Establishment:	**September 7, 2005**
Version Effective Date:	**October 8, 2007**
Reviewed Date:	**May 20, 2008**
Reviewed By:	**Abe Khan**

POLICY

It is the policy of the California Compress to safeguard the people, property, and the environment within these facilities and the surrounding communities from the physical and health hazards associated with the chemicals and materials we use.

PURPOSE

The purpose of this program is to describe in writing Cargill's Hazard communication and Right To Know Program to our employees, community members, visitors, contractors, emergency responders, and government officials.

OBJECTIVE

The specific objectives of the program are:

To reduce chemical/material source injuries and illnesses of our employees, by providing appropriate information concerning the physical and health hazards of the substances used at our facility.

To reduce property or environmental damage caused by the types of operations, instructional activities, and hazardous chemicals or materials we use.

To comply with the California Hazardous Substances Information and Training Act (California Labor Code Part 6360 et seq., Statutes of 1980, Chapter 874, Appendix A), Federal OSHA Hazard Communication Standard (29 CFR Part 1910.1200, appendix A), Cal/OSHA Hazard Communication Standard (CCR, Title 8, General Industry Safety Orders Part 5194, Appendix A), and the EPA's SARA Title III.

SCOPE

This institution's written Right to Know Program will communicate in detail the specific program components, information, and training required to protect all individuals from exposure to hazardous chemicals or materials. Cargill's Hazard Communication and Right to Know Program will consist of the following:

An inventory of all chemicals and materials used or stored on company property that could have the potential of creating any physical or health damage to people, property, or the environment. This inventory will include: Name, Specific Use, Approximate Quantity, and Storage Location.

A hazard determination will be performed on all chemicals and materials used or stored at our facility to determine the toxicity, reactivity, flammability, and any other special concerns in order to develop appropriate control measures to protect our employees and others from harm.

A system to assure that all containers and piped chemicals are properly labeled so as to inform everyone of the hazards associated with the use, location, and storage of each chemical or material on the inventory list.

A series of information and training programs to educate employees to recognize and interpret information found on container labels and material safety data sheets (MSDS) in order to protect themselves from the hazards associated with where they work. This program will include information on all aspects addressed in this written program.

A program to provide community members, vendors, visitors, and outside contractors with the appropriate levels of information needed to protect them.

A program to provide local emergency responders and emergency medical services with the information required assisting them in their emergency planning and response activities.

This written Hazard Communication and Right To Know Program will be made available upon request to all Cargill employees, their designated representative(s), emergency responders, outside contractors, visitors, government officials, and members of the community.

PROGRAM COMPONENTS

The following information describes in specific detail the nine components of the Hazard Communication and Right to Know program.

I. Chemical/Material Inventory and Listing
II. Chemical/Material Hazard Determination
III. Chemical/Material Labeling and Placarding
IV. Material Safety Data Sheets (MSDS)
V. Employees Information and Training
VI. Outside Contractors, Visitors and Vendors
VII. Community Right To Know
VIII. Emergency Response Right To Know
IX. Nonroutine Tasks
X. Standard Operating Procedures
XI. Emergency Procedures

I. CHEMICAL/MATERIAL INVENTORY AND LISTING

The success of our Hazard Communication and Right to Know program is dependent upon a complete inventory of all potentially hazardous chemicals and materials at our facilities. If, for any reason, we allow any hazardous material or chemical to enter our facility without first being entered into our Hazardous Chemical/Material Inventory, we would be allowing holes to develop in our program. For this reason, the following procedures apply:

The supervisors or the Superintendent will take a complete listing of ALL hazardous chemicals, materials, products, and substances annually, to assure that all items are on our Chemical/Material Inventory and have an accompanying MSDS.

Before ANY hazardous chemical or material is used or stored at our facility, it must be entered on the Chemical/Material Inventory, have MSDS information, and be properly labeled.

II. CHEMICAL/MATERIAL HAZARD DETERMINATION

In order to assure the safety and health of all employees, visitors, community members, contractors, and emergency responders, Cargill will center its efforts on finding the safest and most effective chemicals and materials needed to perform in our operations. This task will be performed in cooperation with the chemical manufacturers, affected departments, and the Superintendent.

A review of the procedures for the safe handling, use, and storage of those items will be performed annually.

Cargill will place its trust in the manufacturers, importers, suppliers, and distributors to provide accurate physical and health information about the chemicals and materials, which they sell in the form of the MATERIAL SAFETY DATA SHEETS (MSDS).

This company will use a variety of references and resources to assist us in our continuing hazard determination efforts including: environmental and health references, agencies, publications, regulations, private consultants, the corporate environmental office, and the Division Environmental Coordinator.

III. CHEMICAL/MATERIAL LABELING AND PLACARDING

A key element of Cargill's Hazard Communication and Right To Know program is the conveyance of hazardous materials information in the form of effective container labels and placarding of chemical/material storage areas. The Department Supervisors are responsible for the labeling and placarding program, which includes the following:

All containers of hazardous chemicals or materials at this facility must be properly labeled. A proper label must include as a minimum:

- The identity of the chemical(s) or material(s) name as referenced on the MSDS
- An appropriate hazardous warning
- The manufacturer's, importer's or responsible party's name and address.

Our facility uses the Hazardous Material Identification System (HMIS), in conjunction with training and MSDS's, to inform employees of the hazards encountered in the performance of their jobs. The HMIS system consists of three numbers and one letter when appropriate. The three numbers rate, respectively, the health hazard, the flammability hazard, and the reactivity hazard of the chemical on a scale of 0 to 4 (0 designating a minimal hazard and 4 a severe hazard). The hazards are also identifiable by color: blue for health, red for flammability, and yellow for reactivity. The letter or symbol that is used by the HMIS system designates a specific hazard. One example would be a "W" with a line through it, signifying that this substance is not compatible with water.

If anyone finds a container of hazardous chemical or material that is not properly labeled, they should contact a supervisor or the Plant Superintendent.

Employees should never remove, deface or change a label on a container, transfer chemicals or materials into different or unlabeled containers, or mix chemicals or materials without first getting specific directions from their supervisors. In the event that an employee was to somehow remove the label from a container, immediately the container must be marked with the required information.

IV. MATERIAL SAFETY DATA SHEETS (MSDS)

The MSDS is an essential tool in the Hazard Communication and Right To Know program. It provides valuable information about physical and health hazards of the chemicals and materials used and stored at our facilities. It also provides information to assist the worker in his or her efforts to protect themselves from these hazards. The Occupation Safety and Health Administration (OSHA) requires that the MSDS provide at least the following general categories of information:

Section I	**Chemical/Material Identity**
Section II	**Hazardous Ingredients/Identity Information**
Section III	**Physical/Chemical Characteristics**
Section IV	**Fire and Explosion Hazard Data**
Section V	**Reactivity Data**
Section VI	**Health Hazard Data**
Section VII	**Precautions for the Safe Handling and Use**
Section VIII	**Control Measures**

It will be the responsibility of the supervisors and the Plant Superintendent to assure that there is an MSDS for each product, substance, chemical or material used or stored at our facility. The MSDS information is stored Maine office, Shop and Press Room office and available at all times.

The Plant Superintendent will be notified if a chemical or material is found at this facility and cannot be matched up with the appropriate MSDS.

V. EMPLOYEE INFORMATION AND TRAINING

Employees can only be expected to perform at the level in which they have been

trained to make informed decisions based on having the needed information. This Hazard Communication and Right to Know program's effectiveness will depend on the quality of our employee information and training program. The Supervisors will be responsible for providing the different types of information and training to our employees, and will consist of, but is not limited to, the following:

An annual Hazard Communication and Right To Know training program will be presented to all new and existing employees.

a. Chemical/Material Inventory and Listing
b. Chemical/Material Hazard Determination
c. Chemical/Material Labeling and Placarding
d. Material Safety Data Sheet
e. Methods employees can take to protect themselves
f. The Federal OSHA Hazard Communication Standard
g. The SARA Title III Emergency Planning and Community Right To Know law
h. Nonroutine tasks
i. Monitoring

Employees will receive specific training when they are called upon to perform certain duties, which are considered by the Superintendent to require additional training, or when an employee is assigned a new department or job function. Examples include the use of respiratory protection or specially regulated chemicals or materials.

All employees should know about the existence, availability, and location of the written Hazard Communication and Right To Know program, the MSDS information, emergency response and first aid equipment.

VI. OUTSIDE CONTRACTORS, VISITORS AND VENDORS

Cargill will communicate this program to any contractor, visitor or vendor called upon to perform any service or work at this facility, in which they or their employees could come into contact with any hazardous chemical or material. The contractor shall provide an MSDS on all hazardous materials brought onto Cargill's property during the performance of the contractual work. The contractor shall inform Cargill about any precautionary measures needed to protect Cargill employees during the performance of the contractual work. A contractor shall acknowledge in writing the receipt of this information and his intent to circulate the information to his/her employees. The project/maintenance supervisor is responsible for implementing the outside contractor policies.

VII. COMMUNITY RIGHT TO KNOW

The Environmental Protection Agency's SARA Title III "Emergency Planning and Community Right-To-Know" law requires that the community members have access to general information about the quantities and types of hazards associated with the chemicals and materials used and stored at this facility. It consists of a list of all chemicals used and stored on site, which are covered under SARA Title III Section 311 & 312. A copy of the corresponding MSDS is also available upon request.

VIII. EMERGENCY RESPONSE

In addition to placarding noted in the Labeling and Placarding section of this written program, Cargill will conduct an annual facilities tour for the local fire department.

IX. NON-ROUTINE TASKS

Employees who if required by their work to wear respiratory protection, enter confined spaces respond to hazardous chemicals and materials emergencies, or handle hazardous wastes will receive specific training for these non-routine tasks. A permit will be required by an employee or contractor before any of these non-routine tasks are carried out. The person or personnel performing the work, department Supervisor and the Plant Superintendent must sign this permit. Non-routine tasks involving hazardous material include but are not limited to: Welding and cutting.

PROGRAM DOCUMENTATION

Cargill's complete Hazard Communication and Right To Know program will be conveyed and documented in writing and all written records will be retained in the Plant Safety file.

RECORDS

A copy of this Written Hazard Communication and Right To Know program, including the Chemical/Material Inventory list, the Hazard Determination References, MSDS request letters, training program materials and attendance records, and any other program materials and information will be kept in the Plant Safety file.

MSDS BOOK LOCATIONS

MAINE OFFICE

SHOP

YARD OFFICE

Cargill

CHEMICAL HAZARD COMMUNICATIONS

County of Fresno

DEPARTMENT OF COMMUNITY HEALTH
BRAD MAGGY, DIRECTOR

FA 0170193
PR 0032344
PE 6304
FNCR DocTitle: PRR

Guidelines for Inspection of Public Records

All public records of the Fresno County Department of Community Health, Environmental Health Division, which are subject to disclosure under the provisions of the California Public Records Act (Government Code Sections 6250 - 6260), are open to inspection by the public during normal office hours of the office at which those records are located. However, certain records are confidential, and the Department may not release these records to the public.

Any person who wishes to inspect a public record may present his request to the clerk on duty where the public record is located. A particular record, or if not known, the particular type or class of record, may be requested.

No record may be removed from the office unless subpoenaed. Copies can be made at a charge of ten cents (10¢) for each original copy for copies 1 - 8. A charge of five cents (5¢) per copy will be made on copies of 9 or more. The requestor may reproduce a copy by his own means, subject to the limitations that no record is removed from the office and that the record is not damaged by the reproduction equipment.

The Department may temporarily deny or restrict inspection of public records under the following circumstances:

1. Records are at the particular time required by staff or other officials in the performance of their duties; or
2. Supervision of inspection is at that particular moment not possible; or
3. Other members of the public are waiting to inspect those records.

Request to Inspect Public Records

I have read the Department's guidelines and wish to inspect the following record:

Name (print): Ken Sani Phone Number: 268-7021

Signature: Ken Sani Date of Request: 1/23/08

Representing: MOORE TWINING ASSOC.

File Name: California Compress

File Address: 2740 W. Nielsen, Fresno, CA

Program: ☐ CUPA ☐ Solid Waste ☐ Food ☐ Rabies ☐ Other: Former Cont. Site/Cleaned/UST Removal/Closure/4 tanks Med. HAZMAT/Cond. Exempt SC

►►► Do Not Write Below This Line – Department Use Only ◄◄◄

Location of Requested Material: ☒ FileNET ☐ File ☐ DataVault

Request Approved: X Request Temporarily Denied or Restricted: _____ Request Denied File Confidential: _____

Specialist: [signature] Title: EHS Date: 1/25/08

1221 Fulton Mall / P.O. Box 11867 / Fresno, California 93775 / Phone (559) 445-3271 / FAX (559) 445-3301
Email: EnvironmentalHealth@co.fresno.ca.us www.fresnohumanservices.org
Equal Employment Opportunity · Affirmative Action · Disabled Employer

County of Fresno

DEPARTMENT OF COMMUNITY HEALTH
EDWARD L. MORENO, M.D., M.P.H.
DIRECTOR-HEALTH OFFICER

January 9, 2008

FA0170193
PR0048687
2243

CALIFORNIA COMPRESS
CALIFORNIA COMPRESS
2740 W NIELSEN
FRESNO, CA 93706

Dear Facility Owner:

Subject: Hazardous Materials Business Plan Annual Review/Update Requirements-**NOTICE**
Facility: CALIFORNIA COMPRESS
Location: 2740 W NIELSEN, FRESNO

Our records indicate that the ***due date*** for your Hazardous Materials Business Plan (HMBP) Annual Review/Update is **March 1, 2008**. In order to update your HMBP, the following items shall be completed and submitted to this office by the ***due date***. If your facility operates Underground Storage Tanks and there are no other reportable quantities of hazardous materials on site, the HMBP Update requirement can be met by submittal of the "Model UST Monitoring/Emergency Response" (if there are no changes see item 1b).

Note: If your facility has already submitted your Annual Review/Update or if your facility has set an alternate due date approved by our office other than the date that is indicated by our records, please disregard this notice. If your business has moved, is no longer operating, or does not meet the HMBP requirements please contact this office so we can update our records. All active HMBP facilities are billed annual fees for inspections.

Hazardous Materials Business Plan Violations may result in Civil/Administrative Penalties of $2000-$5000 per day for each violation (HSC 25514).

1. The requirements to submit a HMBP Annual Review/Update are as follows:

   a) On an **annual** basis it is necessary to review the following *"Unified Program Consolidated"* (UPC) forms to determine if any information has changed: 1) Business Owner/Operator Identification form; 2) Business Activities; 3) Hazardous Materials Inventory; 4) Site Map. In addition, the facility is required to review the HMBP every three years to determine if revisions need to be made.

   b) If **changes have <u>not</u>** occurred and your facility has submitted an updated HMBP to our office within the past three years (regulations require facilities to review the HMBP every three years to determine if revisions need to be made), please submit the following signed UPC forms: 1) Business Owner/Operator Identification; 2) Business Activities.

c) If **changes <u>have</u>** occurred submit the following UPC forms: 1) Business Owner/Operator Identification; 2) Business Activities; 3*) Hazardous Materials Inventory; 4*) Site Map; 5*) Health and Safety/Emergency Response Plan *(* submit these forms only if changes have occurred to these documents).*

d) If your facility has **Extremely Hazardous Substances (EHSs)** as listed from the Federal "*Emergency Planning Community Right to Know Act* " (EPCRA), Title 40 of CFR Part 355 Appendix A, you are required to submit the EHS inventory annually by March 1st of every year. This requirement can be satisfied during the HMBP Annual Review/Update by submitting the following: 1) A **Signed** Hazardous Materials Inventory form. If the hazardous material being reported is an EHS as identified in 40 CFR Part 355, Appendix A, the Chemical Description page, for that material, must contain an original signature, a photocopy of the original signature, or a signature stamp. This signature may be placed in the box for locally collected information.

2. **Information and forms on the HMBP can be found at**:
http://www.fresnohumanservices.org/communityhealth/EnvironmentalHealth/CUPA/ or
UPC forms can be downloaded at:
http://www.calepa.ca.gov/CUPA/Publications/#ConsolidatedForms

Note: You are required to notify this office within (30) thirty days of the following changes:

- **One hundred percent (100%) or more increase in the quantity of any previously reported hazardous material.**
- **Any additions to your hazardous material inventory not previously reported.**
- **Change of ownership, location, business name or emergency contact personnel.**

If you would like forms from our office or have any questions regarding this notice, please contact this office at (559) 445-3271.

Sincerely,

Steven T. Rhodes, R.E.H.S.
Supervising Environmental Health Specialist
Environmental Health Division

Vincent A Mendes, R.E.H.S.
Supervising Environmental Health Specialist
Environmental Health Division

HY

Date run : 2/23/2007 2:43:50PM
Run by :

Fresno County Department of Community Health
Facility Information as of 2/23/2007

Report #: 5109
Page #: 1

Record Selection Criteria: Facility ID FA0170193

Facility Information Record/Change Form

INFORMATION CHANGE DATE: _____

Make changes/corrections below.

Note: Do Not use this form for Change of Ownership; an Environmental Health Application is required.

OWNER FILE INFORMATION

Owner ID: OW0011608
Owner Name: CALIFORNIA COMPRESS
Owner DBA: CALIFORNIA COMPRESS
Owner Address:

Home Phone: Not Specified
Work/Business Phone: 559-266-0511

Mailing Address: P O BOX 11966
FRESNO, CA ~~937661966~~
Care of:

New Owner ID: _____

PO Box 11966
Fresno, CA 93776-196

FACILITY FILE INFORMATION

Facility ID: FA0170193
Facility Name: CALIFORNIA COMPRESS
Location: 2740 W NIELSEN
FRESNO, CA 93706
Phone: 559-233-1725

Mailing Address: 2740 W NIELSEN
FRESNO, CA 93706
Care of:

Census Tract: 000700
City Code: 05 - FRESNO

APN: 458-020-09
SIC Code: _____

ACCOUNTS RECEIVABLE FILE INFORMATION

Account ID: AR0005043
Mail Invoices to: Owner Mailing Address
Account Name: CALIFORNIA COMPRESS
Account Status: 01
Anniversary Date: 3/1/2004

(Circle One)
Mail Invoices to: Owner / Facility / Account

Record ID	Program/Element and Description	Employee ID and Name	Status	UST(s) Linked	(Circle One) Active 01/Inactive 02/ Nonscheduled 03/ Fee Exempt 04			
PR0032344	6304 - UST REMOVAL/CLOSURE W/4 TANKS		Inactive	4	01	02	03	04
PR0047087	6710 - FORMER CONTAMINATED SITE/CLEANUP COI		Inactive	0	01	02	03	04
PR0048687	2243 - MEDIUM HAZARDOUS MATERIALS HANDLER	EE0000110 - Dianna Mirzai	Active	0	01	02	03	04
PR0058832	2231 - CONDITIONALLY EXEMPT SMALL QUANTITY G	EE0000110 - Dianna Mirzai	Active		01	02	03	04

COMMENTS: correction to Zip Code per phone call this day

Approved By: D Mirzai EE# 110 Date 2-23-2007

Supervisor Review SR 3/12/07 Envision III _____

Envision Updated By RC Date 3-12-07

FA0170193 PR0048687 PE2243 CT7 DM

UNIFIED PROGRAM CONSOLIDATED FORM

FACILITY INFORMATION

BUSINESS OWNER/OPERATOR IDENTIFICATION

BP

Page ___ of ___

I. IDENTIFICATION

FACILITY ID#	BEGINNING DATE 100	ENDING DATE 101
FA 0170193 1		

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3: CALIFORNIA COMPRESS

BUSINESS PHONE 102: 559-266-0511

BUSINESS SITE ADDRESS 103: 2740 W. NIELSEN

RECEIVED
FEB 23 2007
DEPARTMENT OF COMMUNITY HEALTH
ENVIRONMENTAL HEALTH DIVISION

CITY 104		ZIP CODE 105
FRESNO	CA	93706

DUN & BRADSTREET 106	SIC CODE (4 digit #) 107
087216897	4221

COUNTY 108: FRESNO

BUSINESS OPERATOR NAME 109	BUSINESS OPERATOR PHONE 110
KEITH PAUL	559-266-0511

II. BUSINESS OWNER

OWNER NAME 111	OWNER PHONE 112
CALIFORNIA COMPRESS	559-266-0511

OWNER MAILING ADDRESS 113: P.O. BOX 11966

CITY 114	STATE 115	ZIP CODE 116
FRESNO	CA	93776

III. ENVIRONMENTAL CONTACT

CONTACT NAME 117	CONTACT PHONE 118
KEITH PAUL	559-266-0511

CONTACT MAILING ADDRESS 119: P.O. BOX 11966

CITY 120	STATE 121	ZIP CODE 122
FRESNO	CA	93776

IV. EMERGENCY CONTACTS

-PRIMARY-	-SECONDARY-
NAME 123: KEITH PAUL	NAME 128: MOHAMMAD KHAN
TITLE 124: GENERAL MANAGER	TITLE 129: SUPERVISOR
BUSINESS PHONE 125: 559-266-0511	BUSINESS PHONE 130: 559-266-0511
24-HOUR PHONE 126: 559-221-7748	24-HOUR PHONE 131: 559-277-3689
PAGER # 127	PAGER # 132

ADDITIONAL LOCALLY COLLECTED INFORMATION: 133

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE 134	NAME OF DOCUMENT PREPARER 135
Keith Paul	2-22-07	MOHAMMAD KHAN

NAME OF SIGNER (print) 136	TITLE OF SIGNER 137
KEITH PAUL	GENERAL MANAGER

UNIFIED PROGRAM CONSOLIDATED FORM

FACILITY INFORMATION

BUSINESS ACTIVITIES

I. FACILITY IDENTIFICATION

FACILITY ID #	F	A	[redacted]	0	1	7		0	1	9	3				1	EPA ID # (Hazardous Waste Only) CAL000122762	2

BUSINESS NAME (Same as Facility Name of DBA-Doing Business As) 3

CALIFORNIA COMPRESS -2740 W. NIELSEN, FRESNO, CA 93706

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page (OES Form 2730).

Does your facility...		If Yes, please complete these pages of the UPCF....
A. HAZARDOUS MATERIALS		
Have on site (for any purpose) hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	x YES ☐ NO 4	HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (OES 2731)
B. UNDERGROUND STORAGE TANKS (USTs)		UST FACILITY (Formerly SWRCB Form A)
1. Own or operate underground storage tanks?	☐ YES x NO 5	UST TANK (one page per tank) (Formerly Form B)
2. Intend to upgrade existing or install new USTs?	☐ YES x NO 6	UST FACILITY UST TANK (one per tank) UST INSTALLATION - CERTIFICATE OF COMPLIANCE (one page per tank) (Formerly Form C)
3. Need to report closing a UST?	☐ YES ☐ NO 7	UST TANK (closure portion -one page per tank)
C. ABOVE GROUND PETROLEUM STORAGE TANKS (ASTs) Own or operate ASTs above these thresholds: ---any tank capacity is greater than 660 gallons, or ---the total capacity for the facility is greater than 1,320 gallons?	x YES ☐ NO 8	NO FORM REQUIRED TO CUPAs
D. HAZARDOUS WASTE		
1. Generate hazardous waste?	x YES ☐ NO 9	EPA ID NUMBER – provide at the top of this page
2. Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	☐ YES x NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
3. Treat hazardous waste on site?	☐ YES x NO 11	ONSITE HAZARDOUS WASTE TREATMENT - FACILITY (Formerly DTSC Forms 1772) ONSITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit) (Formerly DTSC Forms 1772 A,B,C,D and L)
4. Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	☐ YES x NO 12	CERTIFICATION OF FINANCIAL ASSURANCE (Formerly DTSC Form 1232)
5. Consolidate hazardous waste generated at a remote site?	☐ YES x NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION (Formerly DTSC Form 1196)
6. Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned onsite?	☐ YES x NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION (Formerly DTSC Form 1249)

E. LOCAL REQUIREMENTS 15

(You may also be required to provide additional information by your CUPA or local agency.)

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
ACETYLENE

TRADE SECRET ☐ Yes X No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
ACETYLENE

EHS* ☐ Yes X No 208

CAS# 209
74-86-2

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) X a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☐ b. LIQUID X c. GAS 214

LARGEST CONTAINER 130 CF 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE X b. REACTIVE X c. PRESSURE RELEASE ☐ d. ACUTE HEALTH X e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
130 CF	130 CF		

UNITS* (Check one item only) ☐ a. GALLONS X b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX X l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☐ a. AMBIENT X b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

% WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

RECEIVED
FEB 23 2007
DEPARTMENT OF ... ENVIRONMENTAL HEALTH

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
GASOLINE - UNLEADED

TRADE SECRET ☐ Yes X No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
GASOLINE - UNLEADED

EHS* ☐ Yes X No 208

CAS# 209
8006-61-9

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE X b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 5 GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) 216
X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
5 GALLONS	10 GALLONS		

UNITS* (Check one item only) 221
X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM X f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224
X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225
X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
PENNZOIL-MOLY-SULFIDE

TRADE SECRET ☐ Yes X No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
MOLY LUBE GREASE 704

EHS* ☐ Yes X No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE X b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) X a. SOLID ☐ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 10 LBS 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
10 LBS	10 LBS		

UNITS* (Check one item only) ☐ a. GALLONS ☐ b. CUBIC FEET X c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM X f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 5 TO 90 226	LYTHIUM 12-HYDROXYSTEARTE GREASE MISTURE 227	☐ Yes ☐ No 228	229
2 10 TO 90 230	BASE LUBRICATING OIL MIX 231	☐ Yes ☐ No 232	233
3 1 TO 5 234	ANTIWEAR ADDITIVE PROPRIETARY 235	☐ Yes ☐ No 236	237
4 1 TO 5 238	GRAPHITE 7782-42-5 239	☐ Yes ☐ No 240	241
5 < 1 242	CORROSION INHIBITOR PROPRIETARY 243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA - Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
76 SUPER MOTOR OIL 10W-40

TRADE SECRET ☐ Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
MOTOR OIL 10W-40

EHS* ☐ Yes ☐ No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) 211 ☐ a. PURE X b. MIXTURE ☐ c. WASTE

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) 214 ☐ a. SOLID X b. LIQUID ☐ c. GAS

LARGEST CONTAINER 5 GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) 216
X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
5 GALLONS	5 GALLONS	20 GALLONS	

UNITS* (Check one item only) 221 X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM
X e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO
☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER
☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON
☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224 X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225 X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

% WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 1 TO 2 226	ZINC COMPOUND 227	☐ Yes ☐ No 228	229
2 79 TO 85 230	LUBRICANT BASE OIL 231	☐ Yes ☐ No 232	233
3 5 TO 21 234	ADDITIVES 235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
WASTE OIL

TRADE SECRET ☐ Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
USED MOTOR OIL

EHS* ☐ Yes ☐ No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE X b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 55 GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
50 GALLONS	50 GALLONS	25 GALLONS	

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING X d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 80 TO 100 226	PETROLEUM HYDROCARBONS 227	☐ Yes ☐ No 228	229
2 0 TO 20 230	WATER 231	☐ Yes ☐ No 232	233
3 0 TO 10 234	GREASE- DIRT- SOLIDS 235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
LUBRIPLATE

TRADE SECRET ☐ Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
LUBRIPLATE GREASE

EHS* ☐ Yes ☐ No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) X a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) X a. SOLID ☐ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 15 LBS 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
15 LBS	15 LBS		

UNITS* (Check one item only) ☐ a. GALLONS ☐ b. CUBIC FEET X c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP / YARD

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
L P G

TRADE SECRET ☐ Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
PROPANE

EHS* ☐ Yes ☐ No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE X b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 1154 GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE ☐ b. REACTIVE X c. PRESSURE RELEASE X d. ACUTE HEALTH X e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
2308 GALLONS	2308 GALLONS		

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222

STORAGE CONTAINER 223
X a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE ☐ a. AMBIENT X b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT X c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 0-5.0 226	ETHANE 227	☐ Yes ☐ No 228	74-84-0 229
2 87.5-100 230	PROPANE 231	☐ Yes ☐ No 232	74-98-6 233
3 0-5.0 234	PROPYLENE 235	☐ Yes ☐ No 236	115-07-1 237
4 0-2.5 238	BUTANES 239	☐ Yes ☐ No 240	VARIOUS 241
5 0-50PPM 242	ETHYL MERCAPTAN 243	☐ Yes ☐ No 244	75-08-01 245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
TEKUSOLV II

TRADE SECRET ☐ Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
TEKUSOLV II

EHS* ☐ Yes ☐ No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE X b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 15 GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
15 GALLONS	15 GALLONS		

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING X d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	TETRADECENE 227	☐ Yes ☐ No 228	1120-36-1 229
2 230	LIMONENE 231	☐ Yes ☐ No 232	5989-27-5 233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
OXYGEN

TRADE SECRET ☐ Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
OXYGEN

EHS* ☐ Yes ☐ No 208

CAS# 209
7782-44-7

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) X a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☐ b. LIQUID X c. GAS 214

LARGEST CONTAINER 249CF 215

FED HAZARD CATEGORIES (Check all that apply) ☐ a. FIRE ☐ b. REACTIVE X c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
249CF	249CF		

UNITS* (Check one item only) ☐ a. GALLONS X b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX X l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☐ a. AMBIENT X b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
COPPER SULFATE

TRADE SECRET ☐ Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
COPPER SULFATE PENTAHYDRATE CRYSTALS

EHS* ☐ Yes ☐ No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) X a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) X a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 60LBS 215

FED HAZARD CATEGORIES (Check all that apply) ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
60LBS	60LBS		

UNITS* (Check one item only) ☐ a. GALLONS ☐ b. CUBIC FEET X c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM X j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
POLYPHAOLEFIN

TRADE SECRET ☐ Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
QUIN-SYN

EHS* ☐ Yes ☐ No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) X a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 5 GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) 216
X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
50 GALLONS	50 GALLONS		

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM
X e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO
☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER
☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON
☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
MOBILUBE HD PLUS 80W-90

TRADE SECRET ☐ Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
GEAR OIL

EHS* ☐ Yes ☐ No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE X b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 5 GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
2 GALLONS	2 GALLONS		

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ e. PLASTIC/NONMETALLIC DRUM ☐ i. FIBER DRUM ☐ m. GLASS BOTTLE ☐ q. RAIL CAR
☐ b. UNDERGROUND TANK X f. CAN ☐ j. BAG ☐ n. PLASTIC BOTTLE ☐ r. OTHER
☐ c. TANK INSIDE BUILDING ☐ g. CARBOY ☐ k. BOX ☐ o. TOTE BIN
☐ d. STEEL DRUM ☐ h. SILO ☐ l. CYLINDER ☐ p. TANK WAGON

STORAGE PRESSURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 1-5 226	ALKYL PHOSPHORIC ACID ESTER 227	☐ Yes ☐ No 228	229
2 1-5 230	SULFURIZED ISOBUTYLENE 231	☐ Yes ☐ No 232	233
3 1-5 234	POLY BUTENYL SUCCINIMIDE 235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE X REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

CHEMICAL LOCATION 201
WATER RESERVOIR

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES X NO

FACILITY ID # F A [redacted] 0 1 7 [redacted] 0 1 9 3 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
CARB DIESEL

TRADE SECRET ☐ Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
DIESEL FUEL

EHS* ☐ Yes ☐ No 208

CAS# 209
68476-34-6

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) X a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 150 GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
275 GALLONS	275 GALLONS		

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER 223
X a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE X a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

County of Fresno

DEPARTMENT OF COMMUNITY HEALTH
EDWARD L. MORENO, M.D., M.P.H.
DIRECTOR-HEALTH OFFICER

January 8, 2007

FA0170193
PR0048687
2243

CALIFORNIA COMPRESS
CALIFORNIA COMPRESS
2740 W NIELSEN
FRESNO, CA 93706

Dear Facility Owner:

Subject: Hazardous Materials Business Plan Annual Review/Update Requirements-**NOTICE**
Facility: CALIFORNIA COMPRESS
Location: 2740 W NIELSEN, FRESNO

Our records indicate that the ***due date*** for your Hazardous Materials Business Plan (HMBP) Annual Review/Update is **March 1, 2007**. In order to update your HMBP, the following items shall be completed and submitted to this office by the ***due date***. If your facility operates Underground Storage Tanks and there are no other reportable quantities of hazardous materials on site, the HMBP Update requirement can be met by submittal of the "Model UST Monitoring/Emergency Response" (if there are no changes see item 1b).

Note: If your facility has already submitted your Annual Review/Update or if your facility has set an alternate due date approved by our office other than the date that is indicated by our records, please disregard this notice. If your business has moved, is no longer operating, or does not meet the HMBP requirements please contact this office so we can update our records. All active HMBP facilities are billed annual fees for inspections.

Hazardous Materials Business Plan Violations may result in Civil/Administrative Penalties of $2000-$5000 per day for each violation (HSC 25514).

1. The requirements to submit a HMBP Annual Review/Update are as follows:

   a) On an **annual** basis it is necessary to review the following *"Unified Program Consolidated"* (UPC) forms to determine if any information has changed: 1) Business Owner/Operator Identification form; 2) Business Activities; 3) Hazardous Materials Inventory; 4) Site Map. In addition, the facility is required to review the HMBP every three years to determine if revisions need to be made.

   b) If **changes have <u>not</u>** occurred and your facility has submitted an updated HMBP to our office within the past three years (regulations require facilities to review the HMBP every three years to determine if revisions need to be made), please submit the following signed UPC forms: 1) Business Owner/Operator Identification; 2) Business Activities.

c) If **changes <u>have</u>** occurred submit the following UPC forms: 1) Business Owner/Operator Identification; 2) Business Activities; 3*) Hazardous Materials Inventory; 4*) Site Map; 5*) Health and Safety/Emergency Response Plan *(* submit these forms only if changes have occurred to these documents).*

d) If your facility has **Extremely Hazardous Substances (EHSs)** as listed from the Federal "*Emergency Planning Community Right to Know Act*" (EPCRA), Title 40 of CFR Part 355 Appendix A, you are required to submit the EHS inventory annually by March 1st of every year. This requirement can be satisfied during the HMBP Annual Review/Update by submitting the following: 1) A **Signed** Hazardous Materials Inventory form. If the hazardous material being reported is an EHS as identified in 40 CFR Part 355, Appendix A, the Chemical Description page, for that material, must contain an original signature, a photocopy of the original signature, or a signature stamp. This signature may be placed in the box for locally collected information.

2. **Information and forms on the HMBP can be found at**:
http://www.fresnohumanservices.org/communityhealth/EnvironmentalHealth/CUPA/ or
UPC forms can be downloaded at:
http://www.calepa.ca.gov/CUPA/Publications/#ConsolidatedForms

Note: You are required to notify this office within (30) thirty days of the following changes:

- **One hundred percent (100%) or more increase in the quantity of any previously reported hazardous material.**
- **Any additions to your hazardous material inventory not previously reported.**
- **Change of ownership, location, business name or emergency contact personnel.**

If you would like forms from our office or have any questions regarding this notice, please contact this office at (559) 445-3271.

Sincerely,

Steven T. Rhodes, R.E.H.S.
Supervising Environmental Health Specialist
Environmental Health Division

Vincent A Mendes, R.E.H.S.
Supervising Environmental Health Specialist
Environmental Health Division

HY

Date run : 2/27/2006 9:43:28AM
Run by :

Fresno County Department of Community Health
Facility Information as of 2/27/2006

Report # : 5109
Page # : 1

Record Selection Criteria: Facility ID FA0170193

Facility Information Record/Change Form

INFORMATION CHANGE DATE: _____

Make changes/corrections below.

Note: Do Not use this form for Change of Ownership; an Environmental Health Application is required.

OWNER FILE INFORMATION

Owner ID: OW0011608
Owner Name: CALIFORNIA COMPRESS
Owner DBA: CALIFORNIA COMPRESS
Owner Address:

Home Phone: Not Specified
Work/Business Phone: 559-266-0511

Mailing Address: ~~P O BOX 9095~~
~~FRESNO, CA 937909095~~
Care of:

New Owner ID: _____

P.O. Box 11966
FRESNO, CA 93766 ✓

FACILITY FILE INFORMATION

Facility ID: FA0170193
Facility Name: CALIFORNIA COMPRESS
Location: 2740 W NIELSEN
FRESNO, CA 93706
Phone: 559-233-1725

Mailing Address: 2740 W NIELSEN
FRESNO, CA 93706
Care of:

Census Tract: 000700
City Code: 05 - FRESNO

APN: 458-020-09 ✓
SIC Code: _____

ACCOUNTS RECEIVABLE FILE INFORMATION

Account ID: AR0005043
Mail Invoices to: Owner Mailing Address
Account Name: CALIFORNIA COMPRESS
Account Status: 01

(Circle One)
Mail Invoices to: Owner / Facility / Account

Anniversary Date: 3/1/2004

Record ID	Program/Element and Description	Employee ID and Name	Status	UST(s) Linked	(Circle One) Active 01/Inactive 02/ Nonscheduled 03/ Fee Exempt 04			
PR0032344	6398 - CLOSED UST FACILITY/DATA VAULT		Inactive	4	01	02	03	04
PR0047087	6710 - FORMER CONTAMINATED SITE/CLEANUP COM		Inactive	0	01	02	03	04
PR0048687	2243 - MEDIUM HAZARDOUS MATERIALS HANDLER	EE0000110 - Dianna Mirzai	Active	0	01	02	03	04
PR0058832	2231 - CONDITIONALLY EXEMPT SMALL QUANTITY G	EE0000110 - Dianna Mirzai	Active		01	02	03	04

COMMENTS: correction to owner mailing; add APN ✓

Approved By: D Mirzai EE# 110 Date 2-27-06

Supervisor Review STR 3/1/06 Envision III _____

Envision Updated By: Sa Date 3/9/06

FA0170193 PR0048687 PE2243 BF

UNIFIED PROGRAM CONSOLIDATED FORM

FACILITY INFORMATION

BUSINESS OWNER/OPERATOR IDENTIFICATION

Page ___ of ___

I. IDENTIFICATION

FACILITY ID# 1: FA 0170193		BEGINNING DATE 100:	ENDING DATE 101:
BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3: CALIFORNIA COMPRESS			BUSINESS PHONE 102: (559) 266-0511
BUSINESS SITE ADDRESS 103: 2740 W. NIELSEN			
CITY 104: FRESNO	CA		ZIP CODE 105: 93706
DUN & BRADSTREET 106: 087216897			SIC CODE (4 digit #) 107: 4221
COUNTY 108: FRESNO			
BUSINESS OPERATOR NAME 109: KEITH PAUL			BUSINESS OPERATOR PHONE 110: (559) 266-0511

II. BUSINESS OWNER

OWNER NAME 111: CALIFORNIA COMPRESS			OWNER PHONE 112: (559) 266-0511
OWNER MAILING ADDRESS 113: P.O. BOX 11966			
CITY 114: FRESNO	STATE 115: CA		ZIP CODE 116: 93766

III. ENVIRONMENTAL CONTACT

CONTACT NAME 117: KEITH PAUL			CONTACT PHONE 118: (559) 266-0511
CONTACT MAILING ADDRESS 119: P.O. BOX 11966			
CITY 120: FRESNO	STATE 121: CA		ZIP CODE 122: 93766

IV. EMERGENCY CONTACTS

-PRIMARY-		-SECONDARY-	
NAME 123: KEITH PAUL		NAME 128: MOHAMMAD KHAN	
TITLE 124: GENERAL MANAGER		TITLE 129: SUPERVISOR	
BUSINESS PHONE 125: (559) - 266-0511		BUSINESS PHONE 130: (559) 266-0511	
24-HOUR PHONE 126: (559) 221-7748		24-HOUR PHONE 131: (559) 277-3689	
PAGER # 127:		PAGER # 132:	

ADDITIONAL LOCALLY COLLECTED INFORMATION: 133:

RECEIVED
FEB 24 2006
DEPARTMENT OF COMMUNITY HEALTH
ENVIRONMENTAL HEALTH DIVISION

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE: Keith Paul	DATE 134: 2/22/06	NAME OF DOCUMENT PREPARER 135: MOHAMMAD KHAN
NAME OF SIGNER (print) 136: KEITH PAUL	TITLE OF SIGNER 137: GENERAL MANAGER.	

UNIFIED PROGRAM CONSOLIDATED FORM

FACILITY INFORMATION

BUSINESS ACTIVITIES

I. FACILITY IDENTIFICATION

FACILITY ID # FA 0017 0193 1

EPA ID # (Hazardous Waste Only) CAL000122762 2

BUSINESS NAME (Same as Facility Name of DBA-Doing Business As) 3

CALIFORNIA COMPRESS - 2740 W. NIELSEN, FRESNO, CA 93706

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page (OES Form 2730).

Does your facility....	If Yes, please complete these pages of the UPCF....	
A. HAZARDOUS MATERIALS		
Have on site (for any purpose) hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	☑ YES ☐ NO 4	HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION (OES 2731)
B. UNDERGROUND STORAGE TANKS (USTs)		
1. Own or operate underground storage tanks?	☐ YES ☑ NO 5	UST FACILITY (Formerly SWRCB Form A) UST TANK (one page per tank) (Formerly Form B)
2. Intend to upgrade existing or install new USTs?	☐ YES ☑ NO 6	UST FACILITY UST TANK (one per tank) UST INSTALLATION - CERTIFICATE OF COMPLIANCE (one page per tank) (Formerly Form C)
3. Need to report closing a UST?	☐ YES ☐ NO 7	UST TANK (closure portion - one page per tank)
C. ABOVE GROUND PETROLEUM STORAGE TANKS (ASTs) Own or operate ASTs above these thresholds: ---any tank capacity is greater than 660 gallons, or ---the total capacity for the facility is greater than 1,320 gallons?	☑ YES ☐ NO 8	NO FORM REQUIRED TO CUPAs
D. HAZARDOUS WASTE		
1. Generate hazardous waste?	☑ YES ☐ NO 9	EPA ID NUMBER – provide at the top of this page
2. Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	☐ YES ☑ NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
3. Treat hazardous waste on site?	☐ YES ☑ NO 11	ONSITE HAZARDOUS WASTE TREATMENT – FACILITY (Formerly DTSC Forms 1772) ONSITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit) (Formerly DTSC Forms 1772 A,B,C,D and L)
4. Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	☐ YES ☑ NO 12	CERTIFICATION OF FINANCIAL ASSURANCE (Formerly DTSC Form 1232)
5. Consolidate hazardous waste generated at a remote site?	☐ YES ☑ NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION (Formerly DTSC Form 1195)
6. Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned onsite?	☐ YES ☑ NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION (Formerly DTSC Form 1249)
E. LOCAL REQUIREMENTS 15 (You may also be required to provide additional information by your CUPA or local agency.)		

RECEIVED

FEB 24 2006

DEPARTMENT OF COMMUNITY HEALTH
ENVIRONMENTAL HEALTH DIVISION

County of Fresno

DEPARTMENT OF COMMUNITY HEALTH
EDWARD L. MORENO, M.D., M.P.H.
DIRECTOR- HEALTH OFFICER

January 2, 2006

FA0170193
PR0048687
2243

CALIFORNIA COMPRESS
P O BOX 9095
FRESNO, CA 937909095

Dear Facility Owner:

Subject: Hazardous Materials Business Plan Annual Review/Update Requirements-**NOTICE**
Facility: CALIFORNIA COMPRESS
Location: 2740 W NIELSEN, FRESNO

Our records indicate that the ***due date*** for your Hazardous Materials Business Plan (HMBP) Annual Review/Update is **March 1, 2006**. In order to update your HMBP, the following items shall be completed and submitted to this office by the ***due date***. If your facility operates Underground Storage Tanks and there are no other reportable quantities of hazardous materials on site, the HMBP Update requirement can be met by submittal of the "Model UST Monitoring/Emergency Response" (if there are no changes see item 1b).

Note: If your facility has already submitted your Annual Review/Update or if your facility has set an alternate due date approved by our office other than the date that is indicated by our records, please disregard this notice. If your business has moved or is no longer operating, please contact this office so we can update our records.

1. The requirements to submit a HMBP Annual Review/Update are as follows:

   a) On an **annual** basis it is necessary to review the following *"Unified Program Consolidated"* (UPC) forms to determine if any information has changed: 1) Business Owner/Operator Identification form; 2) Business Activities; 3) Hazardous Materials Inventory; 4) Site Map. In addition, the facility is required to review the HMBP every three years to determine if revisions need to be made.

   b) If **changes have <u>not</u>** occurred submit the following signed UPC forms: 1) Business Owner/Operator Identification; 2) Business Activities.

   c) Owner/Operator Identification; 2) Business Activities; 3*) Hazardous Materials Inventory; If **changes <u>have</u>** occurred submit the following UPC forms: 1) Business 4*) Site Map; 5*) Health and Safety/Emergency Response Plan *(* submit these forms only if changes have occurred to these documents).*

   d) If your facility has **Extremely Hazardous Substances (EHSs)** as listed from the Federal "*Emergency Planning Community Right to Know Act* " (EPCRA), Title 40 of CFR Part

355 Appendix A, you are required to submit the EHS inventory annually by March 1st of every year. This requirement can be satisfied during the HMBP Annual Review/Update by submitting the following: 1) A **Signed** Hazardous Materials Inventory form. If the hazardous material being reported is an EHS as identified in 40 CFR Part 355, Appendix A, the Chemical Description page, for that material, must contain an original signature, a photocopy of the original signature, or a signature stamp. This signature may be placed in the box for locally collected information.

2. Additional information on the HMBP can be found at:
   http://www.fresnohumanservices.org/communityhealth/EnvironmentalHealth/CUPA/ or
   http://www.oes.ca.gov/Operational/OESHome.nsf/1?OpenForm
   UPC forms can be downloaded at:
   http://www.calepa.ca.gov/CUPA/Publications/ConsolidatedForms

   Note: You are required to notify this office within (30) thirty days of the following changes:
   - **One hundred percent (100%) or more increase in the quantity of any previously reported hazardous material.**
   - **Any additions to your hazardous material inventory not previously reported.**
   - **Change of ownership, location, business name or emergency contact personnel.**

If you have any questions regarding this notice, please contact this office at (559) 445-3271.

Sincerely,

Steven T. Rhodes, R.E.H.S.
Supervising Environmental Health Specialist
Environmental Health Division

Vincent A Mendes, R.E.H.S.
Supervising Environmental Health Specialist
Environmental Health Division

HY

CALIFORNIA COMPRESS
2740 WEST NIELSEN
FRESNO, CALIFORNIA 93706
PR032344 6304
PR047087 6701

04/24/95	UST Permit Application for Abandonment: (1) 10K gallon, fuel oil tank; (1) 1K gallon, gasoline tank; and (2) 4K gallon, gasoline tanks.
04/27/95	Abandonment Inspection Report: the 10K gallon fuel oil tank was removed - no soil discoloration noted, tank had moderate to heavy rust. Also, tank #2, the 4K gallon tank had no holes and moderate rust - no soil discoloration noted. Tanks #3 and #4, the 4K gallon and 1K gallon, had no soil discoloration. Tank #3 had moderate rust and Tank #4 had moderate to heavy rust. Odors were detected in the excavation pit for tank #4 and in the backhoe bucket from which the sample was taken.
05/25/95	(received 06/05/95) Dames & Moore Report of Underground Tank Removals: the sample collected from beneath the 1K gallon tank (their tank #2 and our inspector's tank #4), contained 2900 ppm TPH-G but was ND for Benzene. All other samples were ND for constituents of concern.
06/06/95	Unauthorized Release Report: gasoline discovered 06/06/95
06/09/95	Issue Alert
06/13/95	LUSTR letter
07/14/95	Telephone Call Record: Jeff Palmer of Dames & Moore called to let this office know that they have been retained by California Compress to prepare a workplan for site investigation and cleanup.
07/17/95	(received 07/18/95) Dames & Moore Workplan for Preliminary Site Investigation: propose (3) soil borings to a maximum depth of 50' BSG and the possible installation of (1) monitoring well.

ISSUE ALERT

jpw

HAZARDOUS MATERIAL RELEASE
Immediate Notification of Board of Supervisors Required

170193
47087
6710

DATE: 6/9/95 XX **NEW INCIDENT**
TIME: 4:00 p.m. **UPDATE**

ISSUE: SOIL CONTAMINATION FROM PETROLEUM PRODUCTS DUE TO UNDERGROUND STORAGE TANKS.

LOCATION: 2740 West Neilsen **COMMUNITY:** Fresno

NAME, ADDRESS, PHONE: California Compress, P. O. Box 9095, Fresno, CA 93790-9095, Phone: (209) 266-0511

HEALTH DEPT. PROGRAM: UNDERGROUND STORAGE TANK SECTION.

ISSUE DESCRIPTION: SUBSURFACE ANALYSIS REVEALED THE PRESENCE OF PETROLEUM CONSTITUENTS IN SOIL.

POTENTIAL RISKS AND HEALTH EFFECTS: BENZENE, A CONSTITUENT OF PETROLEUM PRODUCTS IS CURRENTLY ON THE LIST OF PROP. 65 CHEMICALS AS A KNOWN CARCINOGEN.

COMMUNITY AFFECTED: Fresno, CA

Date Index Case Diagnosed: N/A
Number of People Involved: N/A
Additional Information: N/A

TIME LINE: PRELIMINARY INVESTIGATION CONDUCTED AT THE ABOVE SITE SHOWED SOIL CONTAMINATION. FURTHER INVESTIGATION WILL BE REQUIRED.

PLANNED INTERVENTION AND DEPARTMENT ACTIVITIES: OUR OFFICE WILL REVIEW FUTURE SITE INVESTIGATIONS AND DIRECT FURTHER ASSESSMENT WORK IF NEEDED.

OTHER PERTINENT INFORMATION: SCOPE OF FUTURE SUBSURFACE INVESTIGATION MAY BE NECESSARY TO DETERMINE POTENTIAL GROUNDWATER IMPACTS.

OTHER DEPARTMENTS OR AGENCIES INVOLVED: THE REGIONAL WATER QUALITY CONTROL BOARD WILL BE ADVISED VIA STATUS REPORTS.

PUBLIC INFORMATION & INQUIRY:

Agency: Fresno County Community Health Dept. **Phone:** (209) 445-3271

PERSON REPORTING: Tony Shamshoian **STAFF ASSIGNED:** Jim Armstrong

PERSON INITIATING ALERT: Environmental Health System Director

DISTRIBUTION - PLEASE HAND DELIVER

X Director	X Director/Mental Health	X Others:
X Health Officer	X Asst. Dir./Support Services	
X Director/Comm. Health	X E.H. System Director	

REV: 4/13/93

ISSUE ALERT

JPW

170193
47087
6710

HAZARDOUS MATERIAL RELEASE
Immediate Notification of Board of Supervisors Required

DATE: 6/9/95 — XX — **NEW INCIDENT**
TIME: 4:00 p.m. — _____ — **UPDATE**

ISSUE: SOIL CONTAMINATION FROM PETROLEUM PRODUCTS DUE TO UNDERGROUND STORAGE TANKS.

LOCATION: 2740 West Neilsen **COMMUNITY:** Fresno

NAME, ADDRESS, PHONE: California Compress, P. O. Box 9095, Fresno, CA 93790-9095, Phone: (209) 266-0511

HEALTH DEPT. PROGRAM: UNDERGROUND STORAGE TANK SECTION.

ISSUE DESCRIPTION: SUBSURFACE ANALYSIS REVEALED THE PRESENCE OF PETROLEUM CONSTITUENTS IN SOIL.

POTENTIAL RISKS AND HEALTH EFFECTS: BENZENE, A CONSTITUENT OF PETROLEUM PRODUCTS IS CURRENTLY ON THE LIST OF PROP. 65 CHEMICALS AS A KNOWN CARCINOGEN.

COMMUNITY AFFECTED: Fresno, CA

Date Index Case Diagnosed: N/A
Number of People Involved: N/A
Additional Information: N/A

TIME LINE: PRELIMINARY INVESTIGATION CONDUCTED AT THE ABOVE SITE SHOWED SOIL CONTAMINATION. FURTHER INVESTIGATION WILL BE REQUIRED.

PLANNED INTERVENTION AND DEPARTMENT ACTIVITIES: OUR OFFICE WILL REVIEW FUTURE SITE INVESTIGATIONS AND DIRECT FURTHER ASSESSMENT WORK IF NEEDED.

OTHER PERTINENT INFORMATION: SCOPE OF FUTURE SUBSURFACE INVESTIGATION MAY BE NECESSARY TO DETERMINE POTENTIAL GROUNDWATER IMPACTS.

OTHER DEPARTMENTS OR AGENCIES INVOLVED: THE REGIONAL WATER QUALITY CONTROL BOARD WILL BE ADVISED VIA STATUS REPORTS.

PUBLIC INFORMATION & INQUIRY:

Agency: Fresno County Community Health Dept. **Phone:** (209) 445-3271

PERSON REPORTING: Tony Shamshoian **STAFF ASSIGNED:** Jim Armstrong

PERSON INITIATING ALERT: Environmental Health System Director

DISTRIBUTION - PLEASE HAND DELIVER

X Director	X Director/Mental Health	X Others:
X Health Officer	X Asst. Dir./Support Services	_____
X Director/Comm. Health	X E.H. System Director	_____

REV: 4/13/93

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☒ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED ? ☐ YES ☒ NO

REPORT DATE M M D D Y Y

CASE #

FOR LOCAL AGENCY USE ONLY

I HEREBY CERTIFY THAT I HAVE DISTRIBUTED THIS INFORMATION ACCORDING TO THE DISTRIBUTION SHOWN ON THE INSTRUCTION SHEET ON THE BACK PAGE OF THIS FORM.

SIGNED DATE

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT

PHONE

SIGNATURE

REPRESENTING ☐ OWNER/OPERATOR ☐ REGIONAL BOARD ☒ LOCAL AGENCY ☐ OTHER

COMPANY OR AGENCY NAME

ADDRESS STREET CITY STATE ZIP

RESPONSIBLE PARTY

NAME ☐ UNKNOWN

CONTACT PERSON

PHONE

ADDRESS STREET CITY STATE ZIP

SITE LOCATION

FACILITY NAME (IF APPLICABLE)

OPERATOR

PHONE

ADDRESS STREET CITY COUNTY ZIP

CROSS STREET

IMPLEMENTING AGENCIES

LOCAL AGENCY AGENCY NAME

CONTACT PERSON

PHONE

REGIONAL BOARD

PHONE

SUBSTANCES INVOLVED

(1) NAME QUANTITY LOST (GALLONS) ☐ UNKNOWN

(2) ☐ UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED M M D D Y Y

HOW DISCOVERED ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☒ TANK REMOVAL ☐ OTHER

DATE DISCHARGE BEGAN M M D D Y Y ☒ UNKNOWN

HAS DISCHARGE BEEN STOPPED ? ☒ YES ☐ NO IF YES, DATE M M D D Y Y

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY)

☐ REMOVE CONTENTS ☒ CLOSE TANK & REMOVE ☐ REPAIR PIPING ☐ REPAIR TANK ☐ CLOSE TANK & FILL IN PLACE ☐ CHANGE PROCEDURE ☐ REPLACE TANK ☐ OTHER

SOURCE/CAUSE

SOURCE OF DISCHARGE

☐ TANK LEAK ☒ UNKNOWN ☐ PIPING LEAK ☐ OTHER

CAUSE(S)

☐ OVERFILL ☐ RUPTURE/FAILURE ☐ SPILL ☐ CORROSION ☒ UNKNOWN ☐ OTHER

CASE TYPE

CHECK ONE ONLY

☒ UNDETERMINED ☐ SOIL ONLY ☐ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS

CHECK ONE ONLY

☐ NO ACTION TAKEN ☐ PRELIMINARY SITE ASSESSMENT WORKPLAN SUBMITTED ☒ POLLUTION CHARACTERIZATION

☐ LEAK BEING CONFIRMED ☐ PRELIMINARY SITE ASSESSMENT UNDERWAY ☐ POST CLEANUP MONITORING IN PROGRESS

☐ REMEDIATION PLAN ☐ CASE CLOSED (CLEANUP COMPLETED OR UNNECESSARY) ☐ CLEANUP UNDERWAY

REMEDIAL ACTION

CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)

☐ CAP SITE (CD) ☐ CONTAINMENT BARRIER (CB) ☐ VACUUM EXTRACT (VE) ☐ EXCAVATE & DISPOSE (ED) ☐ EXCAVATE & TREAT (ET) ☐ NO ACTION REQUIRED (NA) ☐ OTHER (OT) ☐ REMOVE FREE PRODUCT (FP) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ TREATMENT AT HOOKUP (HU) ☐ ENHANCED BIO DEGRADATION (IT) ☐ REPLACE SUPPLY (RS) ☐ VENT SOIL (VS)

COMMENTS

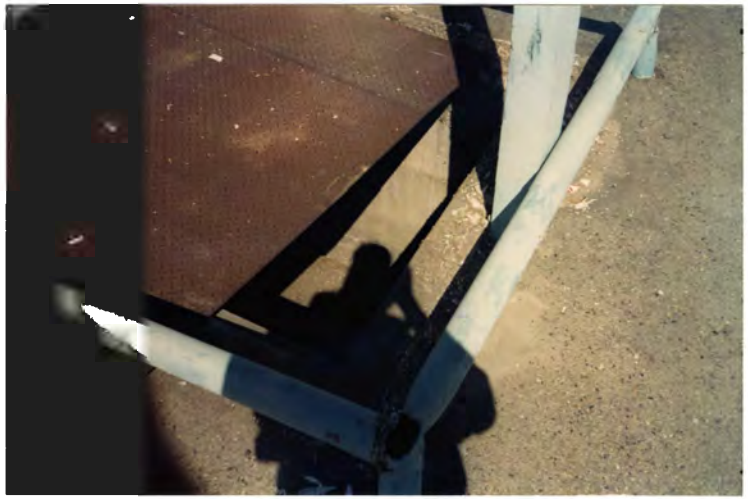
HSC 05 (8/90)

Human Services System
Department of Community Health
Brad Maggy, Director

Adult Services Department
Children & Family Services Department
Employment & Temporary Assistance Department

Environmental Health System
Photograph Documentation

FACILITY NAME	CA. Compress	**PHOTO DATE**	9-1-94
SITE ADDRESS	2740 W. Nielson	**FA**	FA0170193
CITY	Fresno	**RECORD ID**	PR0032344
EMPLOYEE NAME		**PE**	6398



PHOTOGRAPH DESCRIPTION:

Document3 Form Revised 4/26/04

Equal Employment Opportunity · Affirmative Action · Disabled Employer

Human Services System
Department of Community Health
Brad Maggy, Director

Adult Services Department
Children & Family Services Department
Employment & Temporary Assistance Department

Environmental Health System
Photograph Documentation

FACILITY NAME CA Compress

PHOTO DATE 9-1-94
FA FA0170193
RECORD ID PR0032344
PE 6398

PHOTOGRAPH DESCRIPTION:

Document3

Form Revised 4/26/04

Equal Employment Opportunity · Affirmative Action · Disabled Employer

Human Services System
Department of Community Health
Brad Maggy, Director

Adult Services Department
Children & Family Services Department
Employment & Temporary Assistance Department

Environmental Health System
Photograph Documentation

FACILITY NAME Ca Compress

PHOTO DATE 9-1-94
FA FA0170193
RECORD ID PR0323944
PE 6398

PHOTOGRAPH DESCRIPTION:

Document3

Form Revised 4/26/04

Human Services System
Department of Community Health
Brad Maggy, Director

Adult Services Department
Children & Family Services Department
Employment & Temporary Assistance Department

Environmental Health System
Photograph Documentation

FACILITY NAME Ca Cowbells

PHOTO DATE 9-1-94
FA FA0170193
RECORD ID PR0032344
PE 6398

PHOTOGRAPH DESCRIPTION:

Document3

Form Revised 4/26/04

1221 Fulton Mall / P.O. Box 11867 / Fresno, California 93775 / (559) 445-3357 / FAX (559) 445-3379
www.fresnohumanservices.org

DISPLAY IN A CONSPICUOUS PLACE

County of FRESNO

DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH FEE RECEIPT

065611

NON TRANSFERABLE

July 27, 1992

RECEIVED OF CALIFORNIA COMPRESS CT 7.00

THE SUM OF $ 342.00 FOR ENVIRONMENTAL HEALTH FEE TO ENGAGE IN THE ACTIVITY OF

UNDERGROUND STORAGE TANK FOUR EXISTING NON UPGRADED TANKS

FOR THE PERIOD TO

MAILING ADDRESS
CALIFORNIA COMPRESS
KEITH PAUL
2740 W NEILSON AVE
FRESNO,CA 93776

COST CENTER 4690

BUSINESS I.D. NO. 116120

** THANK YOU FOR YOUR PAYMENT **

SITE: 2740 W. NEILSON AVE
FRESNO,CA 93776

BY GEORGE BLETH - DIRECTOR

DISPLAY IN A CONSPICUOUS PLACE

County of FRESNO

DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH FEE RECEIPT

059381

August 30, 1991

RECEIVED OF CALIFORNIA COMPRESS CT 7.00
THE SUM OF $ 167.00 FOR ENVIRONMENTAL HEALTH FEE TO ENGAGE IN THE ACTIVITY OF

UNDERGROUND STORAGE TANK FOUR EXISTING NON UPGRADED TANKS

FOR THE PERIOD TO

MAILING ADDRESS
CALIFORNIA COMPRESS
KEITH PAUL
2740 W NEILSON AVE
FRESNO,CA 93776

COST CENTER 4890

BUSINESS I.D. NO. 116120

** THANK YOU FOR YOUR PAYMENT **

SITE: 2740 W. NEILSON AVE

BY GEORGE BLETH -- DIRECTOR

DISPLAY IN CONSPICUOUS PLACE

County of FRESNO

51054

DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH FEE RECEIPT

September 17, 19
CT 7.00

RECEIVED OF CALIFORNIA COMPRESS
THE SUM OF $ 167.00 FOR ENVIRONMENTAL HEALTH FEE TO ENGAGE IN THE ACTIVITY(S) OF

UNDERGROUND STORAGE TANK FOUR EXISTING NON UPGRADED TANKS

FOR THE PERIOD TO

MAILING ADDRESS
CALIFORNIA COMPRESS
KEITH PAUL
2740 W NEILSON AVE
FRESNO,CA 93776

COST CENTER 4890

BUSINESS I.D. NO. 116120

** THANK YOU FOR YOUR PAYMENT **

SITE: KEITH PAUL 2740 W NEILSON AVE
FRESNO,CA 93776

BY GEORGE BLETH - DIRE

DISPLAY IN CONSPICUOUS PLACE

County of FRESNO

51053

DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH FEE RECEIPT

September 13, 1990
CT 7.00

RECEIVED OF CALIFORNIA COMPRESS
THE SUM OF $ 224.00 FOR ENVIRONMENTAL HEALTH FEE TO ENGAGE IN THE ACTIVITY(S) OF

UNDERGROUND STORAGE TANK STATE SURCHARGE 4 TANKS

FOR THE PERIOD TO

MAILING ADDRESS
CALIFORNIA COMPRESS
KEITH PAUL
2740 W NEILSON AVE
FRESNO,CA 93776

COST CENTER 4890

BUSINESS I.D. NO. 11612D

** THANK YOU FOR YOUR PAYMENT **

SITE: KEITH PAUL 2740 W NEILSON AVE
FRESNO CA 93776

BY GEORGE BLETH - DIRECTOR

GUIDELINES FOR INSPECTION OF PUBLIC RECORDS

All public records of the Fresno County Community Health Department, Environmental Health System, which are subject to disclosure under the provisions of the California Public Records Act (Government Code 6250-6260), are open to inspection by the public during normal business hours. However, certain records are confidential, and these records may not be released to the public.

Any person who wishes to inspect a public record may request an appointment to view the resources to determine if a file exists. If a file does exist and a person wishes to view that file a request form needs to be filled out and submitted.

No record may be removed from the office unless subpoenaed. A limited number of copies of selected documents can be made at a charge of $.10 per copy for the first eight and $.05 per copy for all others. The requestor may make their own copies as long as the original is not damaged by the reproduction equipment and the record is not removed from the office.

This office may temporarily deny inspection of a record under the following circumstances:

1. The record is at that time required by staff or other officials in performing their duties.

2. Other members of the public are waiting to inspect that record.

3. Supervision of inspection at the time requested is not possible.

Signature	Representing	Date
[signature]	QZA	10-8-96

I have read the Department's guidelines and wish to inspect the following record.

Type of File	File Name: California Compress
☐ Business Plan ☒ Underground Tanks ☐ Miscellaneous ☐ Other	File Address: 2740 W. Nielsen Ave, Fresno

Department Use Only

☒ Request Approved

[signature]

Department Representative

☐ Request Not Approved

10/7/96

Date

Revised 8/17/95 kmj

HEALTH SERVICES AGENCY
COMMUNITY HEALTH DEPARTMENT
Environmental Health Application
P.O. Box 11800, Fresno, California 93775
1221 Fulton Mall - ☎ (209) 445-3357

PLEASE PRINT OR TYPE

Business Name _____

Inspection Site Address _____

_____

Date of Business Commencement _____ **Business Telephone** _____

Billing Address _____

_____

_____

Business Owner _____

Owner Address _____

_____ **Telephone** _____

The Applicant hereby agrees to abide by all applicable Federal, State, and Fresno County statutes, laws, regulations, and the Fresno County Charter Ordinances and to pay all applicable Fresno County Environmental Health Permit and Inspection Fees, and late penalties, if any, which apply to the Permit which is being applied for here. PENALTIES FOR LATE PAYMENT ARE ASSESSED AT 10% PER MONTH OR FRACTION THEREOF. Notify Environmental Health of any change in the type of business activity, name, billing address, or ownership by calling 445-3357. Failure to notify Environmental Health may result in late penalties, Permit denial or revocation, and business closure. **PERMITS AND FEES ARE NOT TRANSFERABLE.**

☞ _____ _____ _____
Owner / Authorized Representative | Title | Date

— DO NOT WRITE BELOW THIS LINE —

Record ID#	Prog Elem #	Fee/Activity Description	Billing Code	Fee
047087	6700	Contaminated Site Oversight Initial Assessment		$278.00

Penalty Calculation: Penalty Due _____
TOTAL AMOUNT DUE $278.00

RETURN TO: _____ Date Left: _____ ROUTE TO: ☐ Business ☐ Envision ☐ File

☐ New Business ☐ Ownership Change ☐ Business Name Change ☐ Billing Address Change ☐ Other

☐ Close(inactive) ☐ Close(delete) Closure Date _____ ☐ Site Correction/Change ☐ Activity Change

Comments _____

Business Name CALIFORNIA COMPRESS Owner CALIFORNIA COMPRESS

Inspection Site 2740 W NIELSEN, FRESNO CA Census Tract # 0700 City Code 05

Business ID # 170193 Tank # _____ Permit Code __ Designated Employee ID # 1006

Application Approved By: Jim R. Armstrong Employee ID# 0220 Date 7/19/95

Business Office Use

Envision updated by _____ Date 7/24/95

Supervisor Review _____ ✓✓✓

A/R# 0005043

WP51\DATA\FORM1D 10-8-91

(Rev. 7.93)

FRESNO COUNTY COMMUNITY HEALTH DEPARTMENT
Environmental Health System

TELEPHONE CALL RECORD

CALIFORNIA COMPRESS
(Facility Name/ERT Incident Number)

2740 W NIELSEN, FRESNO, CA
(Facility Address)

Jeff Palmer DAMES & MOORE
(Person called/calling)

(Phone number)

July 14, 1995
(Date)

2:05 p.m.
(Time)

DISCUSSION SUMMARY

DAMES & MOORE HAS BEEN RETAINED BY CALIFORNIA COMPRESS TO PREPARE A WORKPLAN FOR SITE INVESTIGATION AND CLEANUP.

Jim R Armstrong
(Geologist)

☐ ERT Report File ☐ Haz Mat File ☐ Haz Waste File ☑ UGST File

☐ Liquid Waste File ☐ Solid Waste File ☐ Tire File

RECEIVED
JUL 18 1995
Environmental Health System
Fresno Co Community Health Dept.

WORK PLAN
PRELIMINARY SITE INVESTIGATION
CALIFORNIA COMPRESS FACILITY
2740 WEST NEILSEN AVENUE
FRESNO, CALIFORNIA

July 17, 1995

DAMES & MOORE

NOTE: This workplan was returned to DAMES & MOORE 8-15-95

INCOMPLETE SITE ASSESSMENT/CORRECTIVE ACTIONS WORKPLAN/REPORT

Thank you for submitting the workplan/report for your site, dated July 17, 1995. Unfortunately, we cannot complete our review because the workplan/report is incomplete or missing data. Please complete the workplan/report and resubmit it by _____. Be sure to include all information described in Guidelines For Site Assessment/Corrective Actions Workplans & Reports, requested below.

SECTION 1	*SECTION 2*	*SECTION 3*	*SECTION 4*
☐ *1.1*	☐ *2.1*	☐ *3.1*	☐ *4.1*
☑ *1.2*	☐ *2.2*	☐ *3.1.1*	☐ *4.2*
☐ *1.2.1*	☑ *2.3*	☐ *3.1.2*	☐ *4.3*
☐ *1.2.2*	☑ *2.4*	☐ *3.1.3*	☐ *4.4*
☐ *1.2.3*	☑ *2.5*	☑ *3.2*	☐ *4.5*
☐ *1.3*	☑ *2.6*	☐ *3.3*	☐ *4.6*
☑ *1.4*	☐ *2.7*	☐ *3.4*	☐ *4.7*
☑ *1.5*	☑ *2.8*	☑ *3.5*	☐ *4.8*
☐ *1.6*	☑ *2.9*	☑ *3.5.1*	☐ *4.9*
☐ *1.7*	☐ *2.10*	☐ *3.5.2*	☐ *4.10*
☐ *1.7.1*	☑ *2.11*	☑ *3.5.3*	☐ *4.10.1*
☐ *1.7.2*		☑ *3.5.4*	☐ *4.10.2*
☐ *1.8*		☐ *3.6*	
☐ *1.9*		☐ *3.7*	
☐ *1.10*		☐ *3.8*	
☑ *1.11*		☐ *3.8.1*	
☑ *1.12*		☐ *3.8.2*	
☐ *1.13*		☐ *3.8.3*	
☐ *1.13.1*		☐ *3.8.4*	
☐ *1.13.2*		☐ *3.9*	
☐ *1.13.3*		☑ *3.10*	
☐ *1.14*		☑ *3.11*	
☐ *1.15*		☑ *3.12*	
☐ *1.16*		☐ *3.13*	
☐ *1.17*			
☑ *1.18*			
☐ *1.18.1*			
☐ *1.18.2*			
☑ *1.18.3* Expired 1/1/95			
☐ *1.18.4*			
☑ *1.19*			

☐ *Other*

_____

_____

_____

Please call me at (209) 445-3271 if you have any questions.

cc:

NOTE: This workplan was returned to Dames & Moore on 8-15-95 JRA

HEALTH SERVICES AGENCY
COMMUNITY HEALTH DEPARTMENT
Environmental Health Application
P.O. Box 11800, Fresno, California 93775
1221 Fulton Mall - ☎ (209) 445-3357

PLEASE PRINT OR TYPE

Business Name _____

Inspection Site Address _____

_____

Date of Business Commencement _____ **Business Telephone** _____

Billing Address _____

_____

_____

Business Owner _____

Owner Address _____

_____ **Telephone** _____

The Applicant hereby agrees to abide by all applicable Federal, State, and Fresno County statutes, laws, regulations, and the Fresno County Charter Ordinances and to pay all applicable Fresno County Environmental Health Permit and Inspection Fees, and late penalties, if any, which apply to the Permit which is being applied for here. PENALTIES FOR LATE PAYMENT ARE ASSESSED AT 10% PER MONTH OR FRACTION THEREOF. Notify Environmental Health of any change in the type of business activity, name, billing address, or ownership by calling 445-3357. Failure to notify Environmental Health may result in late penalties, Permit denial or revocation, and business closure. **PERMITS AND FEES ARE NOT TRANSFERABLE**

☞ _____ _____ _____
Owner / Authorized Representative | Title | Date

— DO NOT WRITE BELOW THIS LINE —

Record ID#	Prog Elem #	Fee/Activity Description	Billing Code	Fee
	6701	Data entry only		Ø

Penalty Due _____

Penalty Calculation: TOTAL AMOUNT DUE Ø

RETURN TO: _____ Date Left: _____ ROUTE TO: ☐ Business ☑ Envision ☑ File

☐ New Business ☐ Ownership Change ☐ Business Name Change ☐ Billing Address Change ☐ Other

☐ Close(inactive) ☐ Close(delete) Closure Date _____ ☐ Site Correction/Change ☑ Activity Change

Comments Please create a new program # and program element 6701

Business Name California Compress Owner California Compress

Inspection Site 2740 W. NIELSEN Census Tract # 0700 City Code 05

Business ID # 170193 Tank # _____ Permit Code __ Designated Employee ID # 1006

Application Approved By: Lynn Klinkerg Employee ID# 0221 Date 6/8/95

Business Office Use

Envision updated by BR Date 6/15/95

Supervisor Review _____ ✓✓✓ _____

WP51\DATA\FORM1D 10-8-91

(Rev. 7.93)

HEALTH SERVICES AGENCY
COMMUNITY HEALTH DEPARTMENT
Environmental Health Application
P.O. Box 11800, Fresno, California 93775
1221 Fulton Mall - ☎ (209) 445-3357

PLEASE PRINT OR TYPE

Business Name _____

Inspection Site Address _____

_____

Date of Business Commencement _____ **Business Telephone** _____

Billing Address 2740 W. Nelson

Fresno Ca. 93706

_____

Business Owner _____

Owner Address _____

_____ **Telephone** _____

The Applicant hereby agrees to abide by all applicable Federal, State, and Fresno County statutes, laws, regulations, and the Fresno County Charter Ordinances and to pay all applicable Fresno County Environmental Health Permit and Inspection Fees, and late penalties, if any, which apply to the Permit which is being applied for here. PENALTIES FOR LATE PAYMENT ARE ASSESSED AT 10% PER MONTH OR FRACTION THEREOF. Notify Environmental Health of any change in the type of business activity, name, billing address, or ownership by calling 445-3357. Failure to notify Environmental Health may result in late penalties, Permit denial or revocation, and business closure. **PERMITS AND FEES ARE NOT TRANSFERABLE.**

☞ _____ _____ _____
Owner / Authorized Representative Title Date

— DO NOT WRITE BELOW THIS LINE —

Record ID#	Prog Elem #	Fee/Activity Description	Billing Code	Fee

Penalty Due _____

Penalty Calculation: TOTAL AMOUNT DUE _____

RETURN TO: Tony Date Left: 5/26 ROUTE TO: ☒ Business ☐ Envision ☒ File

☐ New Business ☐ Ownership Change ☐ Business Name Change ☒ Billing Address Change ☐ Other

☐ Close(inactive) ☐ Close(delete) Closure Date _____ ☐ Site Correction/Change ☐ Activity Change

Comments _____

Business Name California Compress Owner California Compress

Inspection Site 2740 W. Nelson Census Tract # 0700 City Code 05

Business ID # _____ Tank # _____ Permit Code __ Designated Employee ID # ____

Application Approved By: Tony Thompson Employee ID# 0222 Date 5/26/95

Business Office Use

Envision updated by JA Date 5/26/95

Supervisor Review DP ✓✓✓ _____

WP51\DATA\FORM1D 10-8-91

(Rev. 7.93)

PIPING TANK #1

UNDERGROUND STORAGE TANK ABANDONMENT INSPECTION REPORT

FRESNO COUNTY DEPARTMENT OF HEALTH-ENVIRONMENTAL HEALTH SYSTEM
Post Office Box 11867, Fresno, California 93775
1221 Fulton Mall--(209)445-3271

Site Information Date 5/1/95

Facility California Compress Site I.D. PR#: 032744

Address 2740 W. Nielsen City Fresno Zip 93706

Tank Information Abandonment in place ____ Removal X

Tank#/size: 1. ____/____ 2. ____/____ 3. ____/____ 4. ____/____ 5. ____/____ 6. ____/____

Inspection Information	Y/N	Inspection Information	Y/N
Tank(s) completely emptied	NA	Groundwater/Product in excavation(circle one)	NA
Tank(s) cleaned and waste manifested	NA	Approved abandonment in place	N
Tank(s) properly purged/LEL below 5%	NA	A & B forms completed and submitted	N/A
All piping removed	Y	Samples taken by: Matthew to ~~Kim~~ ABC - PIPING Analytical	

Soil discoloration and its location(s): None Detected, Slight Odor in S1, No Odor S2, No Odor S3

Tank condition(describe):

TANK #3816

Notes: On 4/27/95 TANK #1 was removed but piping remained. Today the piping was removed and samples taken. See 4/27/95 Inspection Report for Tank Removal Info.

Plot Key

X = Sample location
T_x = Tank number
S_y = Sample number
D' = Depth below grade(ft)
Note the depth of sample. eg.: S_y D'

Analysis/Sample numbers

TPH Gas & BTXE/

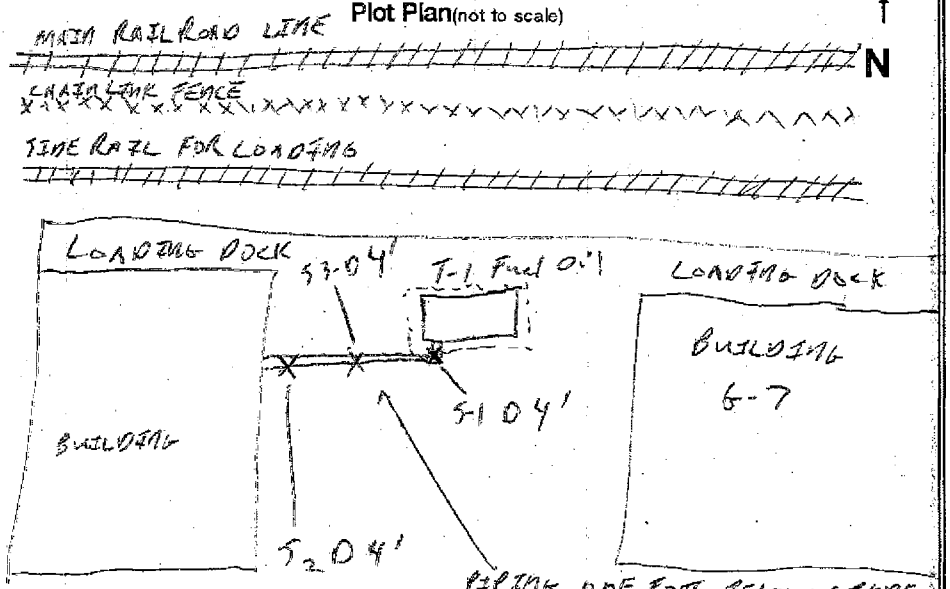
TPH Diesel/ S1 S2 S3

EPA 418.1/ S1 S2 S3

Other:

Note: TPH by DHS-GC/FID(LUFT), BTXE by 8020

Plot Plan(not to scale)



Tony Shamshoian
Analyst's Signature

Owner/Representative's Signature, Title

CONTRACTOR CERTIFIES PROPER DECONTAMINATION OF TANKS: ____

PIPING T3

UNDERGROUND STORAGE TANK ABANDONMENT INSPECTION REPORT

PP

FRESNO COUNTY DEPARTMENT OF HEALTH-ENVIRONMENTAL HEALTH SYSTEM
Post Office Box 11867, Fresno, California 93775
1221 Fulton Mall--(209)445-3271

Site Information Date 5/1/95

Facility California Compress Site I.D. PR#: 032344

Address 2740 W. Nielsen City Fresno Zip 93706

Tank Information Abandonment in place ____ Removal X

Tank#/size: 1. ____/____ 2. ____/____ 3. ____/____ 4. ____/____ 5. ____/____ 6. ____/____

Inspection Information	Y/N	Inspection Information	Y/N
Tank(s) completely emptied	NA	Groundwater/Product in excavation(circle one)	NA
Tank(s) cleaned and waste manifested	NA	Approved abandonment in place	N
Tank(s) properly purged/LEL below 5%	NA	A & B forms completed and submitted	NA
All piping removed	Y	Samples taken by: Matthew Nutting for ABC PAVING	

Soil discoloration and its location(s): NO ODORS DETECTED, NO SOIL DISCOLORATION

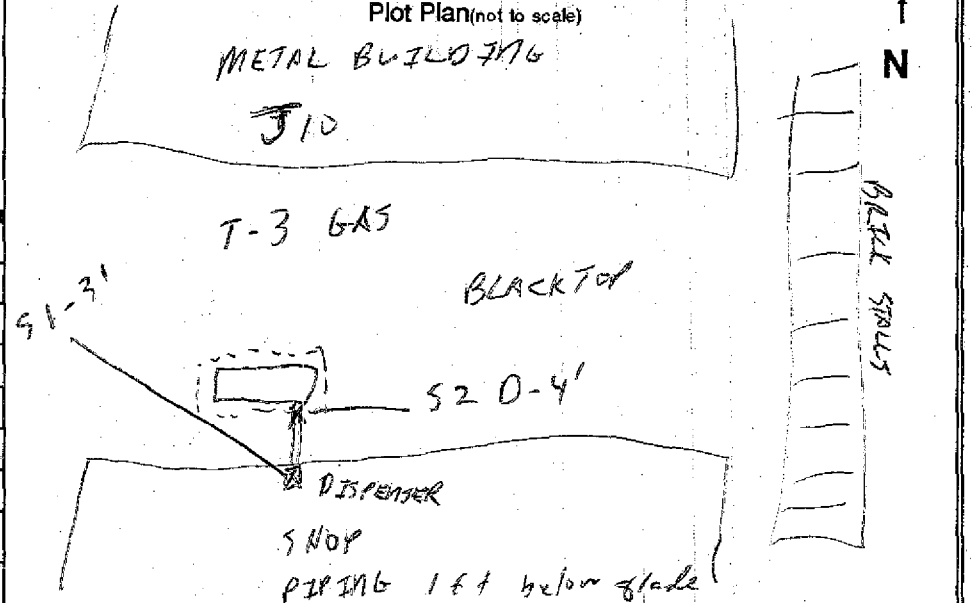
Tank condition(describe):

Notes: TANK # 3B13
On 4/27/95 Tank #3 was removed but piping remained. Today the piping was removed and samples taken. SEE 4/27/95 Inspection Report for tank removal Info.

Plot Key
X = Sample location
T# = Tank number
S# = Sample number
D' = Depth below grade (ft)
Note the depth of sample eg.: S1-D'

Analysis/Sample numbers
TPH Gas & BTXE: S1, S2
TPH Diesel:
EPA 18:
Other:
Note: TPH by DHS GC/FID(LUFT), BTXE by 8020

Plot Plan(not to scale)



Analyst's Signature

Owner/Representative's Signature, Title

CONTRACTOR CERTIFIES PROPER DECONTAMINATION OF TANKS: ____

TANK #1

UNDERGROUND STORAGE TANK ABANDONMENT INSPECTION REPORT

FRESNO COUNTY DEPARTMENT OF HEALTH-ENVIRONMENTAL HEALTH SYSTEM
Post Office Box 11867, Fresno, California 93775
1221 Fulton Mall--(209)445-3271

DP

Site Information Date 4/27/95

Facility California Compress Site I.D. — PR#: 032344

Address 2740 W. Nielson City Fresno Zip 93706

Tank Information Abandonment in place ____ Removal X

Tank#/size: 1. 3816 / 10K 2. ___/___ 3. ___/___ 4. ___/___ 5. ___/___ 6. ___/___

Inspection Information	Y/N	Inspection Information	Y/N
Tank(s) completely emptied	Y	Groundwater/Product in excavation(circle one)	N
Tank(s) cleaned and waste manifested# 95223533	Y	Approved abandonment in place	NA
Tank(s) properly purged/LEL below 5% 1%	Y	A & B forms completed and submitted T/S ~~ABC Panag~~	Y
All piping removed SEE NOTE	N	Samples taken by: Matthew Hutson to ~~Alpha Analytical~~	

Soil discoloration and its location(s): None Detected. Very Sandy Soil

Tank condition(describe): MODERATE-TO HEAVY RUST

Notes: T-1 Product Line will remain in the ground at this time. Contractor will contact me for inspection once they decide whether to remove or abandon piping in place.

Plot Key

X = Sample location

T_x = Tank number

S_y = Sample number

D' = Depth below grade(ft)

Note the depth of sample. eg.: S_y-D'

Analysis/Sample numbers

TPH Gas & BTXE/

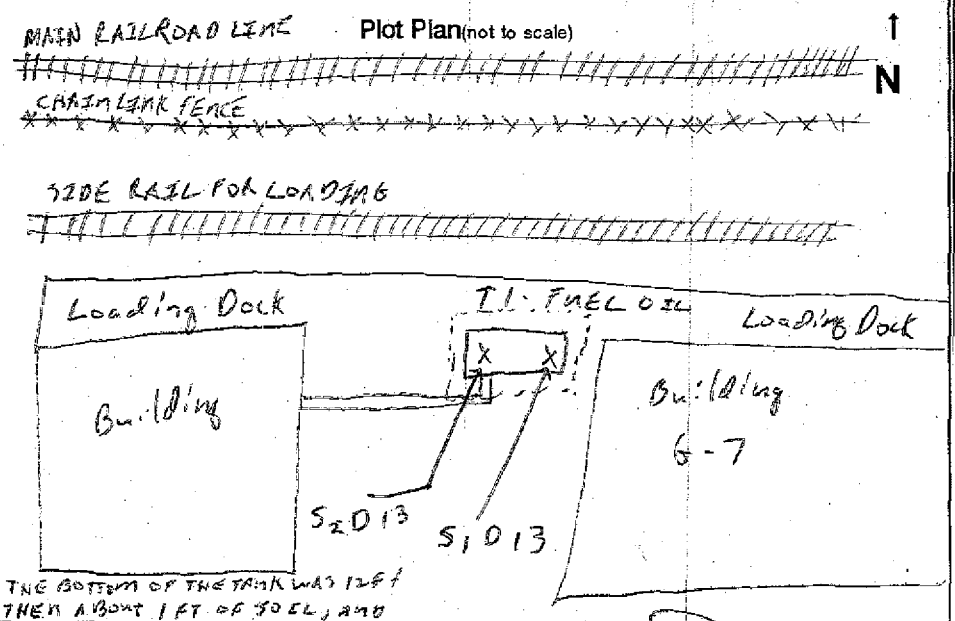
TPH Diesel/ S_1, S_2

EPA 418.1/ S_1, S_2

Other:

Note: TPH by DHS-GC/FID(LUFT), BTXE by 8020

Plot Plan(not to scale)



THE BOTTOM OF THE TANK WAS 12 FT THEN ABOUT 1 FT OF SOIL, AND FINALLY A CEMENT SLAB FOR SECURING THE TANK. THE SAMPLES WERE TAKEN ABOVE THE CEMENT SLAB. WE DID NOT BREAK THROUGH

Analyst's Signature

Owner/Representative's Signature, Title

CONTRACTOR CERTIFIES PROPER DECONTAMINATION OF TANKS:

TANK #2

UNDERGROUND STORAGE TANK ABANDONMENT INSPECTION REPORT

FRESNO COUNTY COMMUNITY HEALTH DEPARTMENT-ENVIRONMENTAL HEALTH SYSTEM
Post Office Box 11867, Fresno, California 93775
1221 Fulton Mall--(209)445-3271

Site Information Date 4/27/95

Facility California Compress PR# 032344 C.T. 7

Address 2740 W. Nielsen City Fresno Zip 93706

Tank Information Abandonment in place ____ Removal X

Tank#/size: 1. ____/____ 2. 3819/4K 3. ____/____ 4. ____/____ 5. ____/____ 6. ____/____

Inspection Information	Y/N	Inspection Information	Y/N
Tank(s) completely emptied	Y	Groundwater/Product in excavation(circle one)	N
Tank(s) cleaned and waste manifested #95223533	Y	Approved abandonment in place	N
Tank(s) properly purged/LEL below 5% 1%	Y	A & B forms completed and submitted	Y
All piping removed	Y	Samples taken by: Matthews to Alpha Analytical	

Soil discoloration and its location(s): None Detected (Sandy Soil)

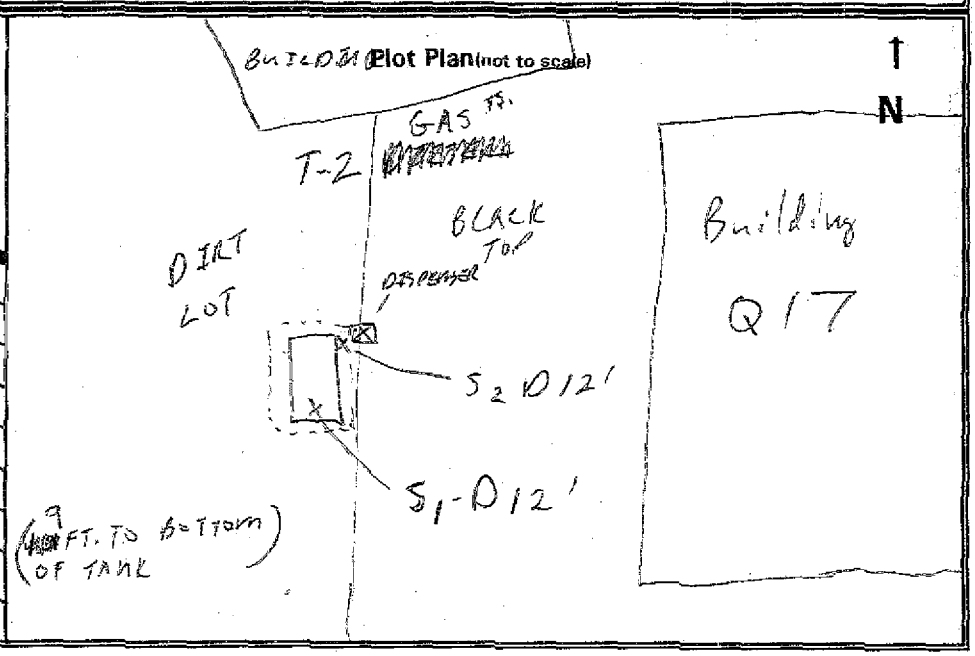
Tank condition(describe): Moderate Rust No Holes Observed

Notes:

Plot Key
X = Sample location
T_x = Tank number
S_y = Sample number
D' = Depth below grade(ft)
Note the depth of sample. eg. : S_y-D'

Analysis/Sample numbers
TPH Gas & BTXE/ S_1, S_2
TPH Diesel/ N/A
EPA 418.1/
Other:
Note: TPH by DHS-GC/FID(LUFT), BTXE by 8020

Plot Plan (not to scale)



Analyst Signature

Owner/Representative Signature, Title

CONTRACTOR CERTIFIES PROPER DECONTAMINATION OF TANKS:

TANK #3, 4

UNDERGROUND STORAGE TANK ABANDONMENT INSPECTION REPORT

FRESNO COUNTY COMMUNITY HEALTH DEPARTMENT-ENVIRONMENTAL HEALTH SYSTEM
Post Office Box 11867, Fresno, California 93775
1221 Fulton Mall--(209)445-3271

DP

Site Information Date 4/27/95

Facility California Compress PR# 032344 C.T. 7

Address 2740 W. Nielsen City Fresno Zip 93706

Tank Information Abandonment in place ___ Removal X

Tank#/size: 1. ___/___ 2. ___/___ 3. 3818/4K 4. 3817/1K 5. ___/___ 6. ___/___

Inspection Information	Y/N	Inspection Information	Y/N
Tank(s) completely emptied	Y	Groundwater/Product in excavation(circle one)	N
Tank(s) cleaned and waste manifested #952235 33	Y	Approved abandonment in place	N
Tank(s) properly purged/LEL below 5% T3- 0% T4 0%	Y	A & B forms completed and submitted T3 ABC PENDING	Y
All piping removed T-4 - YES T-3 - NO		Samples taken by: MATTHEW NUTSON TO ALPHA ANALYTICAL	

Soil discoloration and its location(s): None Noted for T3 or T4

Tank condition(describe): T3 Moderate Rust T4 Moderate to Heavy Rust

Notes: T3 product Piping still in place Call for inspection when ready to remove or abandon in place.
ODORS DETECTED IN T4 EXCAVATION AND T4 BACKHOE BUCKET FOR SAMPLE

Plot Key
- X = Sample location
- T_x = Tank number
- S_y = Sample number
- D' = Depth below grade(ft)

Note the depth of sample. eg. : S_y-D'

Analysis/Sample numbers

TPH Gas & BTXE/ S_1, S_2, S_3

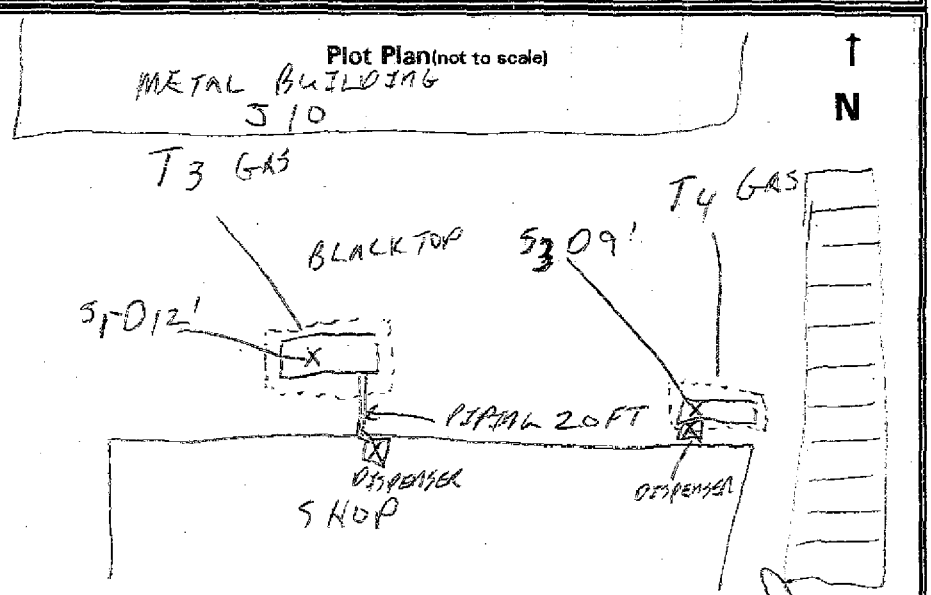
TPH Diesel/

EPA 418.1/

Other:

Note: TPH by DHS-GC/FID(LUFT), BTXE by 8020

Plot Plan(not to scale)



Tony Hampton
Analyst Signature

Owner/Representative Signature, Title

CONTRACTOR CERTIFIES PROPER DECONTAMINATION OF TANKS:

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☒ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☐ 7 PERMANENTLY CLOSED ON SITE ☒ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: California Compress

I. TANK DESCRIPTION
COMPLETE ALL ITEMS -- SPECIFY IF UNKNOWN

A. OWNER'S TANK I. D. # unk	B. MANUFACTURED BY: unk
C. DATE INSTALLED (MO/DAY/YEAR) unk	D. TANK CAPACITY IN GALLONS: 4000

II. TANK CONTENTS
IF A-1 IS MARKED, COMPLETE ITEM C.

A. ☐ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☐ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B. ☐ 1 PRODUCT ☐ 2 WASTE

C. ☐ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☐ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED Diesel C. A. S. #:

III. TANK CONSTRUCTION
MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☒ 1 DOUBLE WALL ☐ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☒ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☐ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER
IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☐ 5 CATHODIC PROTECTION ☐ 91 NONE ☒ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) unk OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) ~~unk~~

IV. PIPING INFORMATION
CIRCLE **A** IF ABOVE GROUND OR **U** IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: A (U) 1 SUCTION A U 2 PRESSURE A U 3 GRAVITY A U 99 OTHER

B. CONSTRUCTION: A (U) 1 SINGLE WALL A U 2 DOUBLE WALL A U 3 LINED TRENCH A U 95 UNKNOWN A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION: A (U) 1 BARE STEEL A U 2 STAINLESS STEEL A U 3 POLYVINYL CHLORIDE (PVC) A U 4 FIBERGLASS PIPE A U 5 ALUMINUM A U 6 CONCRETE A U 7 STEEL W/ COATING A U 8 100% METHANOL COMPATIBLE W/FRP A U 9 GALVANIZED STEEL A U 10 CATHODIC PROTECTION A U 95 UNKNOWN A U 99 OTHER ___

D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☐ 99 OTHER unk

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☐ 91 NONE ☒ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING	3. WAS TANK FILLED WITH INERT MATERIAL?
unk	100 GALLONS	YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE
STEVE HEATHMAN	4-26-95

LOCAL AGENCY USE ONLY
THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	10	000	048585	000001

PERMIT NUMBER	PERMIT APPROVED BY/DATE	PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☐ 7 PERMANENTLY CLOSED ON SITE ☒ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: Cal Coast Compress

I. TANK DESCRIPTION

COMPLETE ALL ITEMS -- SPECIFY IF UNKNOWN

A. OWNER'S TANK I. D. # Unk	B. MANUFACTURED BY: Unk
C. DATE INSTALLED (MO/DAY/YEAR) Unk	D. TANK CAPACITY IN GALLONS: 1000

II. TANK CONTENTS

IF A-1 IS MARKED, COMPLETE ITEM C.

A. ☒ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☐ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B. ☐ 1 PRODUCT ☐ 2 WASTE

C. ☒ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☐ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED C. A. S. # :

III. TANK CONSTRUCTION

MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☐ 1 DOUBLE WALL ☒ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☒ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☐ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER
IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☐ 5 CATHODIC PROTECTION ☐ 91 NONE ☒ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) Unk OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) ___

IV. PIPING INFORMATION

CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: A (U) 1 SUCTION A U 2 PRESSURE A U 3 GRAVITY A U 99 OTHER

B. CONSTRUCTION: A (U) 1 SINGLE WALL A U 2 DOUBLE WALL A U 3 LINED TRENCH A U 95 UNKNOWN A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION: A (U) 1 BARE STEEL A U 2 STAINLESS STEEL A U 3 POLYVINYL CHLORIDE (PVC) A U 4 FIBERGLASS PIPE A U 5 ALUMINUM A U 6 CONCRETE A U 7 STEEL W/ COATING A U 8 100% METHANOL COMPATIBLE W/FRP A U 9 GALVANIZED STEEL A U 10 CATHODIC PROTECTION A U 95 UNKNOWN A U 99 OTHER ___

D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☒ 99 OTHER Unk

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☐ 91 NONE ☒ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING	3. WAS TANK FILLED WITH INERT MATERIAL?
Unk	100 GALLONS	YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE
Steve Dathurst	4-26-95

LOCAL AGENCY USE ONLY

THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	10	000	048585	000002

PERMIT NUMBER	PERMIT APPROVED BY/DATE	PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☒ 7 PERMANENTLY CLOSED ON SITE ☐ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: California Compress

I. TANK DESCRIPTION

COMPLETE ALL ITEMS – SPECIFY IF UNKNOWN

A. OWNER'S TANK I. D. # : unk	B. MANUFACTURED BY: unk
C. DATE INSTALLED (MO/DAY/YEAR): unk	D. TANK CAPACITY IN GALLONS: 4000

II. TANK CONTENTS

IF A-1 IS MARKED, COMPLETE ITEM C.

A. ☐ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☐ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B. ☐ 1 PRODUCT ☐ 2 WASTE

C. ☐ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☐ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED: Diesel C. A. S. # :

III. TANK CONSTRUCTION

MARK ONE ITEM ONLY IN BOXES A, B, AND C. AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☐ 1 DOUBLE WALL ☒ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☒ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☐ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER
IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☐ 5 CATHODIC PROTECTION ☐ 91 NONE ☒ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) unk OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) ___

IV. PIPING INFORMATION

CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: (A) U 1 SUCTION; A U 2 PRESSURE; A U 3 GRAVITY; A U 99 OTHER

B. CONSTRUCTION: (A) U 1 SINGLE WALL; A U 2 DOUBLE WALL; A U 3 LINED TRENCH; A U 95 UNKNOWN; A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION: A (U) 1 BARE STEEL; A U 2 STAINLESS STEEL; A U 3 POLYVINYL CHLORIDE (PVC); A U 4 FIBERGLASS PIPE; A U 5 ALUMINUM; A U 6 CONCRETE; A U 7 STEEL W/ COATING; A U 8 100% METHANOL COMPATIBLE W/FRP; A U 9 GALVANIZED STEEL; A U 10 CATHODIC PROTECTION; A U 95 UNKNOWN; A U 99 OTHER ___

D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☐ 99 OTHER unk

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☐ 91 NONE ☒ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING	3. WAS TANK FILLED WITH INERT MATERIAL?
unk	100 GALLONS	YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE
[illegible]	4-26-95

LOCAL AGENCY USE ONLY

THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	10	000	048585	000003

PERMIT NUMBER	PERMIT APPROVED BY/DATE	PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☐ 7 PERMANENTLY CLOSED ON SITE ☒ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: California Compress

I. TANK DESCRIPTION

COMPLETE ALL ITEMS -- SPECIFY IF UNKNOWN

A. OWNER'S TANK I.D. # UNK	B. MANUFACTURED BY: UNK
C. DATE INSTALLED (MO/DAY/YEAR) UNK	D. TANK CAPACITY IN GALLONS: 10,000

II. TANK CONTENTS

IF A-1 IS MARKED, COMPLETE ITEM C.

A: ☐ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☒ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B: ☐ 1 PRODUCT ☐ 2 WASTE

C: ☐ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☐ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A-1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED HEATING OIL C. A. S. #:

III. TANK CONSTRUCTION

MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☐ 1 DOUBLE WALL ☒ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☒ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☐ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER
IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☐ 5 CATHODIC PROTECTION ☐ 91 NONE ☒ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) _____ OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) _____

IV. PIPING INFORMATION

CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: A (U) 1 SUCTION; A U 2 PRESSURE; A U 3 GRAVITY; A U 99 OTHER

B. CONSTRUCTION: A (U) 1 SINGLE WALL; A U 2 DOUBLE WALL; A U 3 LINED TRENCH; A U 95 UNKNOWN; A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION: A (U) 1 BARE STEEL; A U 2 STAINLESS STEEL; A U 3 POLYVINYL CHLORIDE (PVC); A U 4 FIBERGLASS PIPE; A U 5 ALUMINUM; A U 6 CONCRETE; A U 7 STEEL W/ COATING; A U 8 100% METHANOL COMPATIBLE W/FRP; A U 9 GALVANIZED STEEL; A U 10 CATHODIC PROTECTION; A U 95 UNKNOWN; A U 99 OTHER

D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☒ 99 OTHER UNK

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☐ 91 NONE ☒ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING	3. WAS TANK FILLED WITH INERT MATERIAL?
UNK	1500 GALLONS	YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE
Steve Deatherage	4-26-95

LOCAL AGENCY USE ONLY

THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	10	000	048585	000004

PERMIT NUMBER	PERMIT APPROVED BY/DATE	PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

HEALTH SERVICES AGENCY
COMMUNITY HEALTH DEPARTMENT
Environmental Health Application
P.O. Box 11800, Fresno, California 93775
1221 Fulton Mall - ☎ (209) 445-3357

PLEASE PRINT OR TYPE

Business Name _____

Inspection Site Address _____

_____

Date of Business Commencement _____ **Business Telephone** _____

Billing Address _____

_____

_____

Business Owner _____

Owner Address _____

_____ **Telephone** _____

The Applicant hereby agrees to abide by all applicable Federal, State, and Fresno County statutes, laws, regulations, and the Fresno County Charter Ordinances and to pay all applicable Fresno County Environmental Health Permit and Inspection Fees, and late penalties, if any, which apply to the Permit which is being applied for here. PENALTIES FOR LATE PAYMENT ARE ASSESSED AT 10% PER MONTH OR FRACTION THEREOF. Notify Environmental Health of any change in the type of business activity, name, billing address, or ownership by calling 445-3357. Failure to notify Environmental Health may result in late penalties, Permit denial or revocation, and business closure. **PERMITS AND FEES ARE NOT TRANSFERABLE.**

_____ PROJECT SUPER _____ 4-24-95
Owner / Authorized Representative — Title — Date

— DO NOT WRITE BELOW THIS LINE —

Record ID#	Prog Elem #	Fee/Activity Description	Billing Code	Fee
PR0032344	6304	UST REMOVAL w/4		$514-00

Penalty Calculation: Penalty Due _____
TOTAL AMOUNT DUE $514-00

RETURN TO: _____ Date Left: _____ ROUTE TO: ☒ Business ☒ Envision ☒ File

☐ New Business ☐ Ownership Change ☐ Business Name Change ☐ Billing Address Change ☐ Other

☒ Close(inactive) ☐ Close(delete) Closure Date 4/24/95 ☐ Site Correction/Change ☐ Activity Change

Comments _____

Business Name California Compress Owner California Compress

Inspection Site 2740 W. Nielsen Census Tract # 0070 City Code __

FACILITY Business ID # 170193 Tank # 1 Permit Code __ Designated Employee ID # 1000

Application Approved By: Howard Cecil Employee ID# 0224 Date 4/24/95

Business Office Use
Paid 4/24/95
72756
$ 514.00

Envision updated by SA Date 4/26/95

Supervisor Review OP ✓✓✓

A/R # 0005043

WP5:\DATA\FORM1D 10-8-91

(Rev. 7.93)

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM A

COMPLETE THIS FORM FOR EACH FACILITY/SITE

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☒ 7 PERMANENTLY CLOSED SITE ☐ 6 TEMPORARY SITE CLOSURE

I. FACILITY/SITE INFORMATION & ADDRESS - (MUST BE COMPLETED)

DBA OR FACILITY NAME	NAME OF OPERATOR	
CALIFORNIA COMPRESS	KEITH PAUL	
ADDRESS	NEAREST CROSS STREET	PARCEL # (OPTIONAL)
2740 W. NELSON AVE	MARKS	
CITY NAME	STATE / ZIP CODE	SITE PHONE # WITH AREA CODE
FRESNO	CA 93706	209-266-0511

✓ BOX TO INDICATE: ☒ CORPORATION ☐ INDIVIDUAL ☐ PARTNERSHIP ☐ LOCAL-AGENCY ☐ COUNTY-AGENCY * ☐ STATE-AGENCY * ☐ FEDERAL-AGENCY *

* If owner of UST is a public agency, complete the following: name of Supervisor of division, section, or office which operates the UST _____

TYPE OF BUSINESS	✓ IF INDIAN RESERVATION OR TRUST LANDS	# OF TANKS AT SITE	E. P. A. I. D. # (optional)
☐ 1 GAS STATION ☐ 2 DISTRIBUTOR ☐ 3 FARM ☒ 4 PROCESSOR ☐ 5 OTHER	☐	4	

EMERGENCY CONTACT PERSON (PRIMARY)		EMERGENCY CONTACT PERSON (SECONDARY) - optional	
DAYS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE	DAYS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE
KEITH PAUL	209-266-0511		
NIGHTS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE	NIGHTS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE
KEITH PAUL	209-266-0511		

II. PROPERTY OWNER INFORMATION - (MUST BE COMPLETED)

NAME	CARE OF ADDRESS INFORMATION		
HORMBERGER BROS			
MAILING OR STREET ADDRESS	✓ box to indicate	☐ INDIVIDUAL	☐ LOCAL-AGENCY ☐ STATE-AGENCY
PO BOX 193	☒ CORPORATION	☐ PARTNERSHIP	☐ COUNTY-AGENCY ☐ FEDERAL-AGENCY
CITY NAME	STATE / ZIP CODE		PHONE # WITH AREA CODE
MEMPHIS TN	TENN 38101		901-529-4200

III. TANK OWNER INFORMATION - (MUST BE COMPLETED)

NAME OF OWNER	CARE OF ADDRESS INFORMATION		
HORMBERGER BROS			
MAILING OR STREET ADDRESS	✓ box to indicate	☐ INDIVIDUAL	☐ LOCAL-AGENCY ☐ STATE-AGENCY
PO BOX 193	☒ CORPORATION	☐ PARTNERSHIP	☐ COUNTY-AGENCY ☐ FEDERAL-AGENCY
CITY NAME	STATE / ZIP CODE		PHONE # WITH AREA CODE
MEMPHIS	TENN 38101		901-529-4200

IV. BOARD OF EQUALIZATION UST STORAGE FEE ACCOUNT NUMBER - Call (916) 322-9669 if questions arise.

TY (TK) HQ 44- _____

V. PETROLEUM UST FINANCIAL RESPONSIBILITY - (MUST BE COMPLETED) – IDENTIFY THE METHOD(S) USED

✓ box to indicate: ☐ 1 SELF-INSURED ☐ 2 GUARANTEE ☒ 3 INSURANCE ☐ 4 SURETY BOND ☐ 5 LETTER OF CREDIT ☐ 6 EXEMPTION ☐ 99 OTHER _____

VI. LEGAL NOTIFICATION AND BILLING ADDRESS

Legal notification and billing will be sent to the tank owner unless box I or II is checked.

CHECK ONE BOX INDICATING WHICH ABOVE ADDRESS SHOULD BE USED FOR LEGAL NOTIFICATIONS AND BILLING: I. ☒ II. ☐ III. ☐

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

OWNER'S NAME (PRINTED & SIGNED)	OWNER'S TITLE	DATE MONTH/DAY/YEAR
[signature]	REP KROSKEG INC	4-25-95

LOCAL AGENCY USE ONLY

COUNTY #	JURISDICTION #	FACILITY #
10	000	048585

LOCATION CODE - *OPTIONAL*	CENSUS TRACT # - *OPTIONAL*	SUPVISOR - DISTRICT CODE - *OPTIONAL*

THIS FORM MUST BE ACCOMPANIED BY AT LEAST (1) OR MORE PERMIT APPLICATION - FORM B, UNLESS THIS IS A CHANGE OF SITE INFORMATION ONLY.

OWNER MUST FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

UNDERGROUND STORAGE TANK PERMIT APPLICATION

FRESNO COUNTY COMMUNITY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH SYSTEM
P.O. BOX 11867
FRESNO, CA. 93775

☒ ABANDONMENT/REMOVAL ☐ ABANDONMENT/IN PLACE ☐ NEW CONSTRUCTION ☐ REPAIR

FACILITY INFORMATION

Facility Name CALIFORNIA COMPRESS Facility Phone 435-0604 Job Phone 443-0385

Address 8740 W NELSON City FRESNO State CA Zip

Tank Owner HOEMBERGER BROS Phone

Address PO BOX 193 City MEMPHIS State TENN Zip 38101

CONTRACTOR INFORMATION	TANK CLEANER/TRANSPORTER	CONSULTANT INFORMATION
Company KROSKER INC	Company KROSKER INC	Company DAMES & MOORE
Address 507 W BROWARD	Address 507-W BROWARD	Address 1320 E SHAW
City FRESNO Zip 93704	City FRESNO Zip 93704	City FRESNO Zip
Phone 435-0604	Phone 209-435-0604	Phone 222-7892
Contractor Class A- CA-621 HAZ HAB	Waste Transporter ID No.	Registration Type GEO ENG
License No. 621865	Tank Destination COMMERCIAL TANK ~~WESTERN METALS~~	License No.
Site Contact Person STEVE DEATHRIAGE	Rinsate Manifested YES Tank Manifested NO (OCS - Hauled Waste Krosker cleaned tank)	

TANK INFORMATION

PERMIT #	SIZE	PRODUCT	AGE OF TANK	PREVIOUSLY STORED MATERIAL
3816	10,000	FUEL OIL	UNK	SAME
3817	~~4000~~ 1000 TS	GAS	UNK	SAME
3818	~~550~~ 4000 TS	GAS	UNK	SAME
3819	4000	~~DIESEL~~ GAS TS	UNK	SAME

DESCRIBE WORK TO BE PERFORMED

EXCAVATE & REMOVAL OF DESCRIBED TANKS. SAMPLE BOTTOMS
BACKFILL UPON APROVAL OF RESULTS

OFFICIAL USE ONLY

PR# 032-344	CT 7	APN 458-020-09	Fee $ 514-00	Application Date 4/24/95

NOTE: Permit expires ninety (90) days after the application date. The applicant has received, understands, and will comply with the attached conditions of this permit and any other State and local regulations. ☒ Permit Conditions provided ☒ State Permit Application (forms A, B, C) provided ☐ Grading Permit confirmation

Hannah Cyll — APPROVED BY

STEVE DEATHRIAGE — APPLICANT NAME (PRINT)

PROJECT MGR — APPLICANT SIGNATURE / TITLE

10/7/93

TO: COUNTY OF FRESNO

DEPARTMENT OF HEALTH
UNDERGROUND STORAGE TANK PROGRAM
P.O. Box 11867
FRESNO, CALIFORNIA 93775

GRADING PERMIT STATUS

IN CONJUNCTION WITH THE REMOVAL OF UNDERGROUND PETROLEUM STORAGE TANKS

This form is to provide the County of Fresno with information regarding the grading (or excavation / compaction) permit status relative to the proposed ***removal of underground petroleum storage tanks*** at the following site:

This form must be presented to Fresno County Environmental Health System ***prior to*** obtaining an underground storage tank abandonment permit.

Address: 2740 W NIELSEN

City/County: FRESNO

Nearest Cross Street or Road: HUGHES

COMMERCIAL TANK

A grading permit was issued on _____ for this site ☐

(OCS - Hauler Waste Kroeker cleaned tank)

A grading permit ***is not required*** by this jurisdiction for excavation and or backfilling in conjunction with the removal of underground storage tanks at this site. ☐

Comments:

~~AAAA~~ 1000 ft

4000 ft

GAS ft

CITY/COUNTY OF

DOUG EDIGER
Printed name of official

[signature]
Signature of official

X-1375
Phone number

4-24-95
Date

White Copy: Building Dept. File Yellow: County Health Dept. Blue: Applicant 6/91

FRESNO COUNTY COMMUNITY HEALTH DEPARTMENT

Environmental Health System

TELEPHONE CALL RECORD

California Compress

(Facility Name/ERT Incident Number)

(Facility Address)

~~[illegible]~~ / Keith Paul Plant manager

(Person Calling or Called)

233 [illegible]

(Phone Number)

11/1/94

(Date)

1:40 PM

(Time)

Summary of Discussion

In process of getting bids. Two tank contractors have given bids. He will have a few more and within a week or so secure permit to remove the tanks.

I told him a letter would be sent giving time deadline.

Luis J. Ledezma

(Analyst Name)

☐ ERT Report File ☐ Haz Mat File ☐ Haz Waste File ☒ UGST File

☐ Liquid Waste File ☐ Solid Waste File ☐ Tire File

REV. 2/19/93 (PHONREC#2)

OFFICIAL INSPECTION REPORT

01

FRESNO COUNTY HEALTH SERVICES AGENCY - COMMUNITY HEALTH DEPARTMENT
Post Office Box 11867, Fresno, California 93775
1221 Fulton Mall - (209) 445-3357

Facility: California Compress **Date:** August 23, 1994

Location: 2740 W Nielsen **Record ID #:**

Mailing Address: **Census Tract:**

Owner/Operator: **Phone:**

Program: ☐ ROUTINE ☐ REINSPECTION ☐ COMPLAINT ☐ CONSTRUCTION ☒ UST Disclosure

VIOLATIONS LISTED BELOW SHALL BE CORRECTED WITHIN 30 DAYS / *IMMEDIATELY

An inspection was conducted today to determine compliance with the California Underground Storage Tank Law and other Hazardous Materials laws. Contact was made with Abe Kahn, Superintendent.

Please correct all violations, including those marked on page 2. Observations are noted below.

(1) Tanks are empty and not being used according to Mr. Kahn. Bids are being sought to remove the tanks.

(2) Photographs were taken.

Received By: X

Analyst:

REINSPECTION DATE:

Reset Date:

NOTICE: REINSPECTION FEES WILL BE CHARGED IF MULTIPLE REINSPECTIONS BECOME NECESSARY DUE TO UNCORRECTED VIOLATIONS

( ) **INTERIM PERMIT TO OPERATE** VALID FOR 90 DAYS. Authorized by:

( ) Building permits are required for correction of these items and can be obtained at the location shown on the back of this report. Corrections will not be approved until permits are finaled.

OFFICIAL INSPECTION REPORT

FRESNO COUNTY DEPARTMENT OF HEALTH - ENVIRONMENTAL HEALTH SYSTEM
Post Office Box 11867, Fresno, California 93775
1221 Fulton Mall - (209)445-3271

FACILITY: California Compress DATE: August 23, 1994

LOCATION: 2740 W. Nielsen CENSUS TRACT: 7

VIOLATIONS LISTED BELOW SHALL BE CORRECTED WITHIN 30 DAYS/IMMEDIATELY

As an owner/operator of an Underground Storage Tank (UGST) System you must comply with the following: California Health & Safety Code, Chapter 6.7 and 6.95. Listed below are the violations which must be corrected for this facility to be in compliance.

✓ Operating permit has not been obtained. Owner/operator must have a valid operating permit. [Section 25284]

___ Environmental Health and/or State Surcharge Fees have not been paid. Fees must be paid to this office. You will be billed by our Business Office. [Section 25287]

✓ Annual tank/line tightness test(s) have not been performed. Tests must be performed annually. [Section 25292, 25291]

___ Line leak detectors have not been installed/maintained/tested. Detectors must be installed, maintained and tested annually. [Section 25292]

___ Inventory reconciliation (IR) is not being performed. IR must be performed daily. [Section 25292]

___ Tank gauging is not being performed. Tank gauging must be performed. [Section 25292]

✓ Inventory reconciliation or tank gauging annual summary reports are not being submitted. Annual summary reports must be submitted to this office. [Section 25292]

___ UGST monitoring system is not functional. Monitoring system must be operating properly. [Section 25291]

✓ A Hazardous Materials Business Plan has not been submitted/updated. A current Business Plan must be submitted to this office. [Section 25503.5] A Monitoring Program for the UST system shall be included. (Section 25291, 25292)

___ Dispenser meters have not been calibrated. Dispenser meters must be calibrated.

✓ State Underground Storage Tank Permit Application (forms A, B, C) have not been submited. (Section 25286)

___ The UGST system is in compliance at this time. An operating permit will be issued to the facility.

Comments: Either bring tanks into compliance or secure permit to abandon from our office.

Received by: X [signature] Analyst: [signature]

GUIDELINES FOR INSPECTION OF PUBLIC RECORDS

All public records of the Fresno County Department of Health, Environmental Health System, which are subject to disclosure under the provisions of the California Public Records Act (Government Code Sections 6250 - 6260), are open to inspection by the public during normal office hours of the office at which those records are located. However, certain records are confidential, and the Department may not release these records to the public. They include all complaint files, inter-office memos, all material in "Confidential" air pollution folders, personnel records, well logs, field notes and preliminary drafts for use by the Department.

Any person who wishes to inspect a public record may present his request to the clerk on duty where the public record is located. A particular record, or if not known, the particular type or class of records, may be requested.

No record may be removed from the office unless subpoenaed. Copies can be made at a charge of 10¢ for each original copy for copies 1 - 8. A charge of .05¢ per copy will be made on copies of 9 or more. The requestor may reproduce a copy by his own means, subject to the limitations that no record is removed from the office and that the record is not damaged by the reproduction equipment.

The Department may temporarily deny or restrict inspection of public records under the following circumstances:

1. Records are at the particular time required by staff or other officials in performing their duties.
2. Supervision of inspection is at that particular moment not possible.
3. Other members of the public are waiting to inspect those records.

REQUEST TO INSPECT PUBLIC RECORDS

Signature	Representing	Date
Nathaniel Stoops	BSK	11/12/92

I have read the Department's guidelines and wish to inspect the following public record.

Complete Description:

2740 W. Nielsen - California Compruss
UST FILE

To be completed by Departmental Office:

☐ Approved
Inspected _____

☐ Disclosure of requested record is prohibited _____

Departmental Representative

Date 11/19/92

GUIDELINES FOR INSPECTION OF PUBLIC RECORDS

All public records of the Fresno County Department of Health, Environmental Health System, which are subject to disclosure under the provisions of the California Public Records Act (Government Code Sections 6250 - 6260), are open to inspection by the public during normal office hours of the office at which those records are located. However, certain records are confidential, and the Department may not release these records to the public. They include all complaint files, inter-office memos, all material in "Confidential" air pollution folders, personnel records, well logs, field notes and preliminary drafts for use by the Department.

Any person who wishes to inspect a public record may present his request to the clerk on duty where the public record is located. A particular record, or if not known, the particular type or class of records, may be requested.

No record may be removed from the office unless subpoenaed. Copies can be made at a charge of 10¢ for each original copy for copies 1 - 8. A charge of .05¢ per copy will be made on copies of 9 or more. The requestor may reproduce a copy by his own means, subject to the limitations that no record is removed from the office and that the record is not damaged by the reproduction equipment.

The Department may temporarily deny or restrict inspection of public records under the following circumstances:

1. Records are at the particular time required by staff or other officials in performing their duties.
2. Supervision of inspection is at that particular moment not possible.
3. Other members of the public are waiting to inspect those records.

REQUEST TO INSPECT PUBLIC RECORDS

Signature	Representing	Date
Mark Connell	BSK & Associates	7-31-92

I have read the Department's guidelines and wish to inspect the following public record.

Complete Description:

California Compress (UST Files)
2740 W. Nielsen
Fresno CA 93706

To be completed by Departmental Office:

☒ Approved
Inspected OH

☐ Disclosure of requested record is prohibited _____

Departmental Representative — Date

Oscar Hernandez — 8/11/92

FRESNO COUNTY COMMUNITY HEALTH DEPARTMENT

Environmental Health System

TELEPHONE CALL RECORD

CALIFORNIA COMPRESS

(Facility Name/ERT Incident Number)

2740 W. Nielson

(Facility Address)

Keith Paul

(Person Calling or Called)

233-1725

(Phone Number)

2/21/95

(Date)

10:30 A.M.

(Time)

Summary of Discussion

I talked to Keith Paul about current status. He still intends to remove the tanks soon, but they have been extremely busy. I will call at the end of March. Keith said he'll know more then. 3 contractors have bid the job.

(Analyst Name)

☐ ERT Report File ☐ Haz Mat File ☐ Haz Waste File ☐ UGST File

quid Waste File ☐ Solid Waste File ☐ Tire File

(PHONREC#2)

APPENDIX A
QUARTERLY INVENTORY RECONCILIATION
SUMMARY REPORT

Facility: CALIFORNIA COMPRESS
Address: 2740 W. NIELSEN AVE
FRESNO, CA 93706

Tank #	Size	Product
1	1000	REGULAR

I hereby certify under penalty of perjury that:

✓ All inventory variations for this facility were within allowable limits for this quarter (No in Column 13 of the Inventory Reconciliation Sheet).

____ Inventory variation(s) exceeded the allowable limits during this quarter (Yes in Column 13 of the Inventory Reconciliation Sheet). The source of the variation(s) is not due to an unreported, unauthorized release.

List the date, tank number, and amount of variation for all variations which exceeded the allowable limits during this quarter:

	Date	Tank #	Amount of Variation
1.			
2.			
3.			
4.			
5.			

RECEIVED
OCT 23 1991
ENVIRONMENTAL HEALTH SYSTEM
FRESNO COUNTY DEPT. OF HEALTH

Additional incidents shall be listed on a separate, attached sheet of paper. Indicate here if continued: ____

If the cause of the variation(s) which exceeded allowable limits was a leak, the incident(s) shall be reported no later than the next business day to the Environmental Health System at (209) 445-3271. An Unauthorized Release Report shall be submitted to the EHS within five days.

The Quarterly Summary Report shall be submitted within 15 days of the end of each quarter. Indicate the quarter applicable to this report:

____ 1st Quarter--Jan/Feb/Mar
____ 2nd Quarter--Apr/May/June
✓ 3rd Quarter--Jul/Aug/Sept
____ 4th Quarter--Oct/Nov/Dec

Send to: Fresno County Department of Health
Environmental Health System--UST Program
P.O. Box 11867
Fresno, CA 93775

Keith Paul
Authorized Signature

10-11-91
Date

KEITH PAUL G/MANAGER
Name, Title (PRINT)

RECEIVED
JUL 23 1991
ENVIRONMENTAL HEALTH SYSTEM
FRESNO COUNTY DEPT. OF HEALTH

APPENDIX A
QUARTERLY INVENTORY RECONCILIATION
SUMMARY REPORT

Facility: CALIFORNIA COMPRESS
Address: 2740 W. NIELSEN AVE
FRESNO, CA 93706

Tank #	Size	Product
1	1000	REGULAR

I hereby certify under penalty of perjury that:

✓ All inventory variations for this facility were within allowable limits for this quarter (No in Column 13 of the Inventory Reconciliation Sheet).

____ Inventory variation(s) exceeded the allowable limits during this quarter (Yes in Column 13 of the Inventory Reconciliation Sheet). The source of the variation(s) is not due to an unreported, unauthorized release.

List the date, tank number, and amount of variation for all variations which exceeded the allowable limits during this quarter:

	Date	Tank #	Amount of Variation
1.			
2.			
3.			
4.			
5.			

Additional incidents shall be listed on a separate, attached sheet of paper. Indicate here if continued: ____

If the cause of the variation(s) which exceeded allowable limits was a leak, the incident(s) shall be reported no later than the next business day to the Environmental Health System at (209) 445-3271. An Unauthorized Release Report shall be submitted to the EHS within five days.

The Quarterly Summary Report shall be submitted within 15 days of the end of each quarter. Indicate the quarter applicable to this report:

✓ 1st Quarter--Jan/Feb/Mar
✓ 2nd Quarter--Apr/May/June
____ 3rd Quarter--Jul/Aug/Sept
____ 4th Quarter--Oct/Nov/Dec

Send to: Fresno County Department of Health
Environmental Health System--UST Program
P.O. Box 11867
Fresno, CA 93775

Keith Paul — Authorized Signature
7-15-91 — Date
KEITH PAUL G. MANAGER — Name, Title (PRINT)

OKPH

RECEIVED

APR 22 1991

ENVIRONMENTAL HEALTH SYSTEM
FRESNO COUNTY DEPT. OF HEALTH

APPENDIX A
QUARTERLY INVENTORY RECONCILIATION SUMMARY REPORT

Facility: CALIFORNIA COMPRESS
Address: 2740 W. NIELSEN AVE
FRESNO CA 93706

Tank #	Size	Product
1	1000	REGULAR

I hereby certify under penalty of perjury that:

✓ All inventory variations for this facility were within allowable limits for this quarter (No in Column 13 of the Inventory Reconciliation Sheet).

___ Inventory variation(s) exceeded the allowable limits during this quarter (Yes in Column 13 of the Inventory Reconciliation Sheet). The source of the variation(s) is not due to an unreported, unauthorized release.

List the date, tank number, and amount of variation for all variations which exceeded the allowable limits during this quarter:

	Date	Tank #	Amount of Variation
1.			
2.			
3.			
4.			
5.			

Additional incidents shall be listed on a separate, attached sheet of paper. Indicate here if continued: ___

If the cause of the variation(s) which exceeded allowable limits was a leak, the incident(s) shall be reported no later than the next business day to the Environmental Health System at (209) 445-3271. An Unauthorized Release Report shall be submitted to the EHS within five days.

The Quarterly Summary Report shall be submitted within 15 days of the end of each quarter. Indicate the quarter applicable to this report:

✓ 1st Quarter--Jan/Feb/Mar
___ 2nd Quarter--Apr/May/June
___ 3rd Quarter--Jul/Aug/Sept
___ 4th Quarter--Oct/Nov/Dec

Send to: Fresno County Department of Health
Environmental Health System--UST Program
P.O. Box 11867
Fresno, CA 93775

Keith Paul — **Authorized Signature**

4-15-91 — **Date**

KEITH PAUL G/MANAGER — **Name, Title (PRINT)**

APPENDIX E

INVENTORY RECONCILIATION SHEET

Facility: CALIFORNIA CONGRESS | Tank #: 1 | Size: 1000 | Product: REGULAR | Month/Year: 3-1991

	1	2	3	4	5		6	7	8	9	10	11	12		13
	Opening Inventory From Yesterdays Column 4	Deliveries	Metered Sales	Total Column 1+2-3	Closing Inventory Dipstick Reading		Metered Sales From Colum 3	Accumulated Metered Sales Accumulate Colum 6	x .0015 =	Throughput Error	** Measurement Error	Allowable Variation Column 9+10	Actual Variation Column 4&5 Subtract Smaller # from Larger #		Exceed Allowable Variation **** Is Colum 12 greater than 11?
Date	gallons	gallons	gallons	gallons	inches	gallons	gallons	gallons	x .0015 =	gallons	gallons	gallons	+/-	gallons	yes/no
1	* 156.8	—	46.2	110.6	6 1/2	90	46.2	46.2	x .0015 =	25	.07	+/- 25.07	*** —	20.6	NO
2	110.6	—	—	110.6	6 1/2	90	—	46.2	x .0015 =		.07	+/- 25.07	—	20.6	NO
3	110.6	—	—	110.6	6 1/2	90	—	46.2	x .0015 =		.07	+/- 25.07	—	20.6	NO
4	110.6	300	60.0	350.6	16	327	60.0	106.2	x .0015 =		.16	+/- 25.16	—	23.6	NO
5	350.6	—	27.8	322.8	15 1/8	300	27.8	134.0	x .0015 =		.20	+/- 25.20	—	22.8	NO
6	322.8	—	2.9	319.9	15	297	2.9	136.9	x .0015 =		.21	+/- 25.21	—	22.9	NO
7	319.9	—	11.0	308.9	14 3/4	290	11.0	147.9	x .0015 =		.22	+/- 25.22	—	18.9	NO
8	308.9	—	—	308.9	14 3/4	290	—	147.9	x .0015 =		.22	+/- 25.22	—	18.9	NO
9	308.9	—	—	308.9	14 3/4	290	—	147.9	x .0015 =		.22	+/- 25.22	—	18.9	NO
10	308.9	—	—	308.9	14 3/4	290	—	147.9	x .0015 =		.22	+/- 25.22	—	18.9	NO
11	308.9	—	—	308.9	14 3/4	290	—	147.9	x .0015 =		.22	+/- 25.22	—	18.9	NO
12	308.9	—	24.2	284.7	13 3/4	263	24.2	172.1	x .0015 =		.26	+/- 25.26	—	21.7	NO
13	284.7	—	12.2	272.5	13 1/4	250	12.2	184.3	x .0015 =		.28	+/- 25.28	—	22.5	NO
14	272.5	—	10.5	262.0	12 7/8	241	10.5	194.8	x .0015 =		.29	+/- 25.29	—	21.0	NO
15	262.0	—	20.6	241.4	12	218	20.6	215.4	x .0015 =		.32	+/- 25.32	—	23.4	NO
16	241.4	—	—	241.4	12	218	—	215.4	x .0015 =		.32	+/- 25.32	—	23.4	NO
17	241.4	—	—	241.4	12	218	—	215.4	x .0015 =		.32	+/- 25.32	—	23.4	NO
18	241.4	—	53.2	188.2	9 3/4	164	53.2	268.6	x .0015 =		.40	+/- 25.40	—	24.2	NO
19	188.2	300	66.2	422.0	18 5/8	399	66.2	334.8	x .0015 =		.50	+/- 25.50	—	23.0	NO
20	422.0	—	42.5	379.5	17	356	42.5	377.3	x .0015 =		.57	+/- 25.57	—	23.5	NO
21	379.5	—	12.1	367.4	16 3/4	346	12.1	389.4	x .0015 =		.58	+/- 25.58	—	21.4	NO
22	367.4	—	15.8	351.6	16 1/8	328	15.8	405.2	x .0015 =		.61	+/- 25.61	—	23.6	NO
23	351.6	—	—	351.6	15 3/8	328	—	405.2	x .0015 =		.61	+/- 25.61	—	23.6	NO
24	351.6	—	—	351.6	15 3/8	328	—	405.2	x .0015 =		.61	+/- 25.61	—	23.6	NO
25	351.6	—	20.0	331.6	15 3/8	308	20.0	425.2	x .0015 =		.64	+/- 25.64	—	23.6	NO
26	331.6	—	—	331.6	15 3/8	308	—	425.2	x .0015 =		.64	+/- 25.64	—	23.6	NO
27	331.6	—	9.5	322.1	15 1/8	300	9.5	434.7	x .0015 =		.65	+/- 25.65	—	22.1	NO
28	322.1	—	—	322.1	15 1/8	300	—	434.7	x .0015 =		.65	+/- 25.65	—	22.1	NO
29	322.1	—	—	322.1	15 1/8	300	—	434.7	x .0015 =		.65	+/- 25.65	—	22.1	NO
30	322.1	—	—	322.1	15 1/8	300	—	434.7	x .0015 =		.65	+/- 25.65	—	22.1	NO
31	322.1	—	—	322.1	15 1/8	300	—	434.7	x .0015 =		.65	+/- 25.65	—	22.1	NO

* Opening Dipstick Reading

** Measurement Error is based on tank size:

Tank Size	Measurement Error
< 4,000	25 Gallons
4,000 to < 8,000	50 Gallons
8,000 to ≤ 12,000	75 Gallons
> 12,000	100 Gallons

*** If Colum 4 is less than 5 (+) If Colum 5 is less than 4 (-)

**** If you answered yes in Colum 13 refer to Release (leak) Evaluation Action Chart

I certify this to be a true and accurate report: Keith Paul 4-15-91 KEITH PAUL, GM

APPENDIX E

INVENTORY RECONCILIATION SHEET

Facility: CALIFORNIA COMPRESS | Tank #: 1 | Size: 1000 | Product: REGULAR | Month/Year: 1-1991

	1	2	3	4	5		6	7	8	9	10	11	12		13
	Opening Inventory From Yesterdays Column 4	Deliveries	Metered Sales	Total Column 1+2-3	Closing Inventory Dipstick Reading		Metered Sales From Column 3	Accumulated Metered Sales Accumulate Column 6	x .0015 = x .0015 =	Throughput Error	** Measurement Error	Allowable Variation Column 9+10	Actual Variation Column 4&5 Subtract Smaller # from Larger #		Exceed Allowable Variation **** Is Column 12 greater than 11?
Date	gallons	gallons	gallons	gallons	inches	gallons	gallons	gallons	x .0015 =	gallons	gallons	gallons	+/-	gallons	yes/no
1	* 534.4	–	–	534.4	22 3/4	519	–	–	x .0015 =	–	2.5	+/- 25.0	***	15.4	NO
2	534.4	–	10.9	523.5	22 3/8	505	10.9	10.9	x .0015 =	.01		+/- 25.01	–	18.5	NO
3	523.5	–	9.4	514.1	22	497	9.4	20.3	x .0015 =	.03		+/- 25.03	–	17.1	NO
4	514.1	–	11.2	502.9	21 3/4	490	11.2	31.5	x .0015 =	.05		+/- 25.05	–	12.9	NO
5	502.9	–	–	502.9	21 3/4	490	–	31.5	x .0015 =	.05		+/- 25.05	–	12.9	NO
6	502.9	–	–	502.9	21 3/4	490	–	31.5	x .0015 =	.05		+/- 25.05	–	12.9	NO
7	502.9	–	–	502.9	21 3/4	490	–	31.5	x .0015 =	.05		+/- 25.05	–	12.9	NO
8	502.7	–	.70	495.7	21	480	7.0	38.5	x .0015 =	.06		+/- 25.06	–	15.7	NO
9	495.7	–	–	495.7	21	480	–	38.5	x .0015 =	.06		+/- 25.06	–	15.7	NO
10	495.7	–	–	495.7	21	480	–	38.5	x .0015 =	.06		+/- 25.06	–	15.7	NO
11	495.7	–	26.5	469.2	20 3/8	454	26.5	75.0	x .0015 =	.11		+/- 25.11	–	15.2	NO
12	469.2	–	~~14.9~~	~~469.2~~	~~19 7/8~~	~~454~~	~~14.9~~	~~89.9~~ 75.0	x .0015 =	~~.13~~ .11		+/- 25.~~13~~	–	~~19.3~~ 15.2	NO
13	469.2	–	–	469.2	20 3/8	454	–	75.0	x .0015 =	.11		+/- 25.11	–	15.2	NO
14	469.2	–	14.9	454.3	19 7/8	435	14.9	89.9	x .0015 =	.13		+/- 25.13	–	19.3	NO
15	454.3	–	11.0	443.3	19 3/4	432	11.0	100.9	x .0015 =	.15		+/- 25.15	–	11.3	NO
16	443.3	–	13.0	430.3	19 1/8	413	13.0	113.9	x .0015 =	.17		+/- 25.17	–	17.3	NO
17	430.3	–	11.9	418.4	18 3/4	403	11.9	125.8	x .0015 =	.19		+/- 25.19	–	15.4	NO
18	418.4	–	16.1	402.3	18 1/4	388	16.1	141.9	x .0015 =	.21		+/- 25.21	–	14.3	NO
19	~~402.3~~	–	–	~~402.3~~	18 1/4	388	–	141.9	x .0015 =	.21		+/- 25.21	–	14.3	NO
20	~~402.3~~	–	–	402.3	18 1/4	388	–	141.9	x .0015 =	.21		+/- 25.21	–	14.3	NO
21	~~402.3~~	–	–	402.3	18 1/4	388	–	141.9	x .0015 =	.21		+/- 25.21	–	14.3	NO
22	~~402.3~~	–	23.2	379.1	17 3/8	365	23.2	165.1	x .0015 =	.25		+/- 25.25	–	14.1	NO
23	379.1	–	4.7	374.4	17 1/4	360	4.7	169.8	x .0015 =	.25		+/- 25.24	–	14.4	NO
24	374.4	–	12.4	362.0	16 5/8	345	12.4	182.2	x .0015 =	.27		+/- 25.27	–	17.0	NO
25	362.0	–	5.8	356.2	16 1/2	335	5.8	188.0	x .0015 =	.28		+/- 25.28	–	21.2	NO
26	356.2	–	–	356.2	16 1/2	335	–	188.0	x .0015 =	.28		+/- 25.28	–	21.2	NO
27	356.2	–	–	356.2	16 1/2	335	–	188.0	x .0015 =	.28		+/- 25.28	–	21.2	NO
28	356.2	–	12.5	343.7	16 1/4	332	12.5	200.5	x .0015 =	.30		+/- 25.30	–	11.7	NO
29	343.7	–	6.4	337.3	15 7/8	320	6.4	206.9	x .0015 =	.31		+/- 25.31	–	17.3	NO
30	337.3	–	4.7	332.6	15 1/4	314	4.7	211.6	x .0015 =	.32		+/- 25.32	–	18.6	NO
31	332.6	–	15.0	317.6	15	297	15.0	226.6	x .0015 =	.34		+/- 25.34	–	20.6	NO

* Opening Dipstick Reading

** Measurement Error is based on tank size:

Tank Size	Measurement Error
< 4,000	25 Gallons
4,000 to < 8,000	50 Gallons
8,000 to < 12,000	75 Gallons
> 12,000	100 Gallons

*** If Column 4 is less than 5 (+) If Column 5 is less than 4 (–)

**** If you answered yes in Column 13 refer to Release (leak) Evaluation Action Chart

I certify this to be a true and accurate report: Keith Paul 4/15/91 KEITH PAUL G/M

Signature Date Name (PRINT)

APPENDIX E

INVENTORY RECONCILIATION SHEET

Facility: CALIFORNIA COMPRESS | Tank #: 1 | Size: 1000 | Product: REGULAR | Month/Year: 2-1991

	1	2	3	4	5		6	7	8	9	10	11	12		13
	Opening Inventory	Deliveries	Metered Sales	Total	Closing Inventory		Metered Sales	Accumulated Metered Sales	x .0015 =	Throughput Error	** Measurement Error	Allowable Variation	Actual Variation		Exceed Allowable Variation
	From Yesterday's Column 4			Column 1+2-3	Dipstick Reading		From Column 3	Accumulate Column 6	x .0015 =			Column 9+10	Column 4&5 Subtract Smaller # from Larger #		**** Is Column 12 greater than 11?
Date	gallons	gallons	gallons	gallons	inches	gallons	gallons	gallons	x .0015 =	gallons	gallons	gallons	+/-	gallons	yes/no
1	* 317.6	—	—	317.6	15	297	—	—	x .0015 =	—	25	+/- 25.0	***	20.6	NO
2	317.6	—	—	317.6	15	297	—	—	x .0015 =	—		+/- 25.0	—	20.6	NO
3	317.6	—	—	317.6	15	297	—	—	x .0015 =	—		+/- 25.0	—	20.6	NO
4	317.6	—	5.1	312.5	14 3/4	292	5.1	5.1	x .0015 =	.01		+/- 25.01	—	20.5	NO
5	312.5	—	15.9	296.6	14 3/8	280	15.9	21.0	x .0015 =	.03		+/- 25.03	—	16.6	NO
6	296.6	—	16.5	280.1	13 3/4	266	16.5	37.5	x .0015 =	.06		+/- 25.06	—	14.1	NO
7	280.1	—	10.5	269.6	13 3/8	254	10.5	48.0	x .0015 =	.07		+/- 25.07	—	15.6	NO
8	269.6	—	—	269.6	13 3/8	254	—	48.0	x .0015 =	.07		+/- 25.07	—	15.6	NO
9	269.6	—	—	269.6	13 3/8	254	—	48.0	x .0015 =	.07		+/- 25.07	—	15.6	NO
10	269.6	—	—	269.6	13 3/8	254	—	48.0	x .0015 =	.07		+/- 25.07	—	15.6	NO
11	269.6	—	6.2	263.4	13 1/8	247	6.2	54.2	x .0015 =	.08		+/- 25.08	—	16.4	NO
12	263.4	—	9.0	254.4	12 3/4	235	9.0	63.2	x .0015 =	.09		+/- 25.09	—	19.4	NO
13	254.4	—	18.8	235.6	12	218	18.8	82.0	x .0015 =	.12		+/- 25.12	—	17.6	NO
14	235.6	—	6.0	229.6	11 1/8	215	6.0	88.0	x .0015 =	.13		+/- 25.13	—	14.6	NO
15	229.6	—	4.2	225.4	11 5/8	208	4.2	92.2	x .0015 =	.14		+/- 25.14	—	17.4	NO
16	225.4	—	—	225.4	11 5/8	208	—	92.2	x .0015 =	.14		+/- 25.14	—	17.4	NO
17	225.4	—	—	225.4	11 5/8	208	—	92.2	x .0015 =	.14		+/- 25.14	—	17.4	NO
18	225.4	—	—	225.4	11 5/8	208	—	92.2	x .0015 =	.14		+/- 25.14	—	17.4	NO
19	225.4	—	—	225.4	11 5/8	208	—	92.2	x .0015 =	.14		+/- 25.14	—	17.4	NO
20	225.4	—	4.2	221.2	11 1/2	205	4.2	96.4	x .0015 =	.14		+/- 25.14	—	16.2	NO
21	221.2	—	11.0	210.2	11 1/8	196	11.0	107.4	x .0015 =	.16		+/- 25.16	—	14.2	NO
22	210.2	—	11.2	199.0	10 5/8	183	11.2	118.6	x .0015 =	.18		+/- 25.18	—	16.0	NO
23	199.0	—	—	199.0	10 5/8	183	—	118.6	x .0015 =	.18		+/- 25.18	—	16.0	NO
24	199.0	—	—	199.0	10 5/8	183	—	118.6	x .0015 =	.18		+/- 25.18	—	16.0	NO
25	199.0	—	11.6	187.4	10 1/8	171	14.6	130.2	x .0015 =	.20		+/- 25.20	—	16.4	NO
26	187.4	—	17.9	169.5	9 3/8	155	17.9	148.1	x .0015 =	.22		+/- 25.22	—	14.5	NO
27	169.5	—	6.3	163.2	9	145	6.3	154.4	x .0015 =	.23		+/- 25.23	—	18.2	NO
28	163.2	—	6.4	156.8	8 3/4	137	6.4	160.8	x .0015 =	.24		+/- 25.24	—	19.8	NO
									x .0015 =			+/-			
									x .0015 =			+/-			
									x .0015 =			+/-			

* Opening Dipstick Reading

** Measurement Error is based on tank size:

Tank Size	Measurement Error
< 4,000	25 Gallons
4,000 to < 8,000	50 Gallons
8,000 to < 12,000	75 Gallons
> 12,000	100 Gallons

*** If Column 4 is less than 5 (+) If Column 5 is less than 4 (–)

**** If you answered yes in Column 13 refer to Release (leak) Evaluation Action Chart

I certify this to be a true and accurate report: Keith Paul 4-15-91 | KEITH PAUL G/M

Author's Signature Date | Name, Title (PRINT)

RECEIVED
JAN 24 1991
ENVIRONMENTAL HEALTH SYSTEM
FRESNO COUNTY DEPT. OF HEALTH

APPENDIX A
QUARTERLY INVENTORY RECONCILIATION SUMMARY REPORT

Facility: CALIFORNIA COMPRESS
Address: 2740 W. NIELSEN AVE
FRESNO CA 93706

Tank #	Size	Product
1	1000	REGULAR

I hereby certify under penalty of perjury that:

✓ All inventory variations for this facility were within allowable limits for this quarter (No in Column 13 of the Inventory Reconciliation Sheet).

____ Inventory variation(s) exceeded the allowable limits during this quarter (Yes in Column 13 of the Inventory Reconciliation Sheet). The source of the variation(s) is not due to an unreported, unauthorized release.

List the date, tank number, and amount of variation for all variations which exceeded the allowable limits during this quarter:

	Date	Tank #	Amount of Variation
1.			
2.			
3.			
4.			
5.			

Additional incidents shall be listed on a separate, attached sheet of paper. Indicate here if continued: ____

If the cause of the variation(s) which exceeded allowable limits was a leak, the incident(s) shall be reported no later than the next business day to the Environmental Health System at (209) 445-3271. An Unauthorized Release Report shall be submitted to the EHS within five days.

The Quarterly Summary Report shall be submitted within 15 days of the end of each quarter. Indicate the quarter applicable to this report:

____ 1st Quarter--Jan/Feb/Mar
____ 2nd Quarter--Apr/May/June
____ 3rd Quarter--Jul/Aug/Sept
✓ 4th Quarter--Oct/Nov/Dec

Send to: Fresno County Department of Health
Environmental Health System--UST Program
P.O. Box 11867
Fresno, CA 93775

Keith Paul — 1-15-91 — KEITH PAUL C/MANAGER

Authorized Signature **Date** **Name, Title (PRINT)**

APPENDIX E

INVENTORY RECONCILIATION SHEET

Facility: CALIFORNIA COMPRESS | **Tank #:** 1 | **Size:** 1000 | **Product:** REGULAR | **Month/Year:** DEC 1990

	1	2	3	4	5		6	7	8	9	10	11	12		13
	Opening Inventory From Yesterdays Column 4	Deliveries	Metered Sales	Total Column 1+2-3	Closing Inventory Dipstick Reading		Metered Sales From Column 3	Accumulated Metered Sales Accumulate Column 6	x .0015 =	Throughput Error	** Measurement Error	Allowable Variation Column 9+10	Actual Variation Column 4&5 Subtract Smaller # from Larger #		Exceed Allowable Variation **** Is Column 12 greater than 11?
Date	gallons	gallons	gallons	gallons	inches	gallons	gallons	gallons	x .0015 =	gallons	gallons	gallons	+/-	gallons	yes/no
1	* 724.6	—	—	724.6	29 3/8	712	—	—	x .0015 =	—	25.0	+/- 25.0	***	12.6	NO
2	724.6	—	—	724.6	29 3/8	712	—	—	x .0015 =	—	25.0	+/- 25.0	—	18.6	NO
3	724.6	—	5.3	719.3	29 1/4	707	5.3	5.3	x .0015 =	.01	25.0	+/- 25.01	—	12.3	NO
4	719.3	—	—	719.3	29 1/4	707	—	5.3	x .0015 =	.01	25.0	+/- 25.01	—	12.3	NO
5	719.3	—	23.9	695.4	28 1/2	686	23.9	29.2	x .0015 =	.04	25.0	+/- 25.04	—	9.4	NO
6	695.4	—	—	695.4	28 1/2	686	—	29.2	x .0015 =	.04	25.0	+/- 25.04	—	9.4	NO
7	695.4	—	17.6	677.8	28	670	17.6	46.8	x .0015 =	.07	25.0	+/- 25.07	—	7.8	NO
8	677.8	—	—	677.8	28	670	—	46.8	x .0015 =	.07	25.0	+/- 25.07	—	7.8	NO
9	677.8	—	—	677.8	28	670	—	46.8	x .0015 =	.07	25.0	+/- 25.07	—	7.8	NO
10	677.8	—	13.5	664.3	27 1/4	650	13.5	60.3	x .0015 =	.09	25.0	+/- 25.09	—	14.3	NO
11	664.3	—	20.5	643.8	26 1/2	630	20.5	80.8	x .0015 =	.12	25.0	+/- 25.12	—	13.8	NO
12	643.8	—	6.0	637.8	26 3/8	626	6.0	86.8	x .0015 =	.13	25.0	+/- 25.13	—	11.8	NO
13	637.8	—	9.1	628.7	26	614	9.1	95.9	x .0015 =	.14	25.0	+/- 25.14	—	14.7	NO
14	628.7	—	11.5	617.2	25 5/8	603	11.5	107.4	x .0015 =	.16	25.0	+/- 25.16	—	14.2	NO
15	617.2	—	—	617.2	25 5/8	603	—	107.4	x .0015 =	.16	25.0	+/- 25.16	—	14.2	NO
16	617.2	—	—	617.2	25 5/8	603	—	107.4	x .0015 =	.16	25.0	+/- 25.16	—	14.2	NO
17	617.2	—	11.3	605.9	25 1/4	594	11.3	118.7	x .0015 =	.18	25.0	+/- 25.18	—	11.9	NO
18	605.9	—	4.8	601.1	25 1/8	590	4.8	123.5	x .0015 =	.19	25.0	+/- 25.19	—	11.1	NO
19	601.1	—	—	601.1	25 1/8	590	—	123.5	x .0015 =	.19	25.0	+/- 25.19	—	11.1	NO
20	601.1	—	25.7	575.4	24 1/8	560	25.7	149.2	x .0015 =	.22	25.0	+/- 25.22	—	15.4	NO
21	575.4	—	12.1	563.3	23 3/4	550	12.1	161.3	x .0015 =	.24	25.0	+/- 25.24	—	13.3	NO
22	563.3	—	—	563.3	23 3/4	550	—	161.3	x .0015 =	.24	25.0	+/- 25.24	—	13.3	NO
23	563.3	—	—	563.3	23 3/4	550	—	161.3	x .0015 =	.24	25.0	+/- 25.24	—	13.3	NO
24	563.3	—	—	563.3	23 3/4	550	—	161.3	x .0015 =	.24	25.0	+/- 25.24	—	13.3	NO
25	563.3	—	—	563.3	23 3/4	550	—	161.3	x .0015 =	.24	25.0	+/- 25.24	—	13.3	NO
26	563.3	—	—	563.3	23 3/4	550	—	161.3	x .0015 =	.24	25.0	+/- 25.24	—	13.3	NO
27	563.3	—	10.9	552.4	23 3/8	537	10.9	172.2	x .0015 =	.26	25.0	+/- 25.26	—	15.4	NO
28	552.4	—	18.0	534.4	23 1/4	519	18.0	190.2	x .0015 =	.29	25.0	+/- 25.29	—	15.4	NO
29	534.4	—	—	534.4	23 1/4	519	—	190.2	x .0015 =	.29	25.0	+/- 25.29	—	15.4	NO
30	534.4	—	—	534.4	23 1/4	519	—	190.2	x .0015 =	.29	25.0	+/- 25.29	—	15.4	NO
31	534.4	—	—	534.4	23 1/4	519	—	190.2	x .0015 =	.29	25.0	+/- 25.29	—	15.4	NO

* Opening Dipstick Reading

** Measurement Error is based on tank size:

Tank Size	Measurement Error
≤ 4,000	25 Gallons
4,000 to ≤ 8,000	50 Gallons
8,000 to ≤ 12,000	75 Gallons
> 12,000	100 Gallons

*** If Column 4 is less than 5 (+) If Column 5 is less than 4 (-)

**** If you answered yes in Column 13 refer to Release (leak) Evaluation Action Chart

I certify this to be a true and accurate report: Keith Paul 1-15-91 KEITH PAUL G/MANAGER

Authorized Signature Date Management Title (PRINT)

APPENDIX E

INVENTORY RECONCILIATION SHEET

Facility: CALIF COMPRESS | Tank #: 1 | Size: 1000 | Product: REGULAR | Month/Year: NOV 1990

	1	2	3	4	5		6	7	8	9	10	11	12		13
	Opening Inventory	Deliveries	Metered Sales	Total	Closing Inventory		Metered Sales	Accumulated Metered Sales	x .0015 =	Throughput Error	** Measurement Error	Allowable Variation	Actual Variation		Exceed Allowable Variation
	From Yesterday's Column 4			Column 1+2-3	Dipstick Reading		From Column 3	Accumulate Column 6	x .0015 =			Column 9+10	Column 4&5 Subtract Smaller # from Larger #		**** Is Column 12 greater than 11?
Date	gallons	gallons	gallons	gallons	inches	gallons	gallons	gallons	x .0015 =	gallons	gallons	gallons	+/-	gallons	yes/no
1	* 966.7	—	22.7	944.0	38	944	22.7	22.7	x .0015 =	.03	25	+/- 25.03	***	0	NO
2	944.0	—	—	944.0	38	944	—	22.7	x .0015 =	.03		+/- 25.03		0	NO
3	944.0	—	—	944.0	38	944	—	22.7	x .0015 =	.03		+/- 25.03		0	NO
4	944.0	—	—	944.0	38	944	—	22.7	x .0015 =	.03		+/- 25.03		0	NO
5	944.0	—	21.4	922.6	37 1/8	923	21.4	44.1	x .0015 =	.07		+/- 25.07	+	.04	NO
6	922.6	—	5.2	917.4	36 7/8	918	5.2	49.3	x .0015 =	.07		+/- 25.07	+	.06	NO
7	917.4	—	5.2	912.2	36 5/8	913	5.2	54.5	x .0015 =	.08		+/- 25.08	+	.08	NO
8	912.2	—	—	912.2	36 5/8	913	—	54.5	x .0015 =	.08		+/- 25.08	+	.08	NO
9	912.2	—	12.0	900.2	36 3/8	901	12.0	66.5	x .0015 =	.10		+/- 25.10	+	.08	NO
10	900.2	—	—	900.2	36 3/8	901	—	66.5	x .0015 =	.10		+/- 25.10	+	.08	NO
11	900.2	—	—	900.2	36 3/8	901	—	66.5	x .0015 =	.10		+/- 25.10	+	.08	NO
12	900.2	—	—	900.2	36 3/8	901	—	66.5	x .0015 =	.10		+/- 25.10	+	.08	NO
13	900.2	—	35.4	864.8	34 7/8	885	35.4	101.9	x .0015 =	.15		+/- 25.15	+	.02	NO
14	864.8	—	12.0	852.8	34 1/4	853	12.0	113.9	x .0015 =	.17		+/- 25.17	+	.02	NO
15	852.8	—	23.4	829.4	33 3/8	821	23.4	137.3	x .0015 =	.21		+/- 25.21	—	8.4	NO
16	829.4	—	17.0	812.4	32 3/4	804	17.0	154.3	x .0015 =	.23		+/- 25.23	—	8.4	NO
17	812.4	—	—	812.4	32 3/4	804	—	154.3	x .0015 =	.23		+/- 25.23	—	8.4	NO
18	812.4	—	—	812.4	32 3/4	804	—	154.3	x .0015 =	.23		+/- 2523	—	8.4	NO
19	812.4	—	10.9	801.5	32 1/4	792	10.9	165.2	x .0015 =	.25		+/- 25.25	—	9.5	NO
20	801.5	—	—	801.5	32 1/4	792	—	165.2	x .0015 =	.25		+/- 25.25	—	9.5	NO
21	801.5	—	22.8	778.7	31 3/8	767	22.8	188.0	x .0015 =	.28		+/- 25.28	—	11.7	NO
22	778.7	—	—	778.7	31 3/8	767	—	188.0	x .0015 =	.28		+/- 25.28	—	11.7	NO
23	778.7	—	—	778.7	31 3/8	767	—	188.0	x .0015 =	.28		+/- 25.28	—	11.7	NO
24	778.7	—	—	778.7	31 3/8	767	—	188.0	x .0015 =	.28		+/- 25.28	—	11.7	NO
25	778.7	—	—	778.7	31 1/8	767	—	188.0	x .0015 =	.28		+/- 25.28	—	11.7	NO
26	778.7	—	6.4	772.3	31 1/8	761	6.4	194.4	x .0015 =	.29		+/- 25.29	—	11.3	NO
27	772.3	—	13.2	759.1	30 5/8	748	13.2	207.6	x .0015 =	.31		+/- 25.31	—	11.1	NO
28	759.1	—	20.2	738.9	30	729	20.2	227.8	x .0015 =	.34		+/- 25.34	—	9.9	NO
29	738.9	—	—	738.9	30	729	—	227.8	x .0015 =	.34		+/- 25.34	—	9.9	NO
30	738.9	—	14.3	724.6	29 3/8	712	14.3	242.1	x .0015 =	.36		+/- 25.36	—	12.6	NO
									x .0015 =			+/-			

* Opening Dipstick Reading

** Measurement Error is based on tank size:

Tank Size	Measurement Error
< 4,000	25 Gallons
4,000 to < 8,000	50 Gallons
8,000 to < 12,000	75 Gallons
> 12,000	100 Gallons

*** If Colum 4 is less than 5 (+) If Colum 5 is less than 4 (-)

**** If you answered yes in Colum 13 refer to Release (leak) Evaluation Action Chart

I certify this to be a true and accurate report: Keith Paul 1-15-91 KEITH PAUL C/MANAGER

Author's Signature Date Name (PRINT)

APPENDIX B

INVENTORY RECONCILIATION SHEET

Facility: CALIFORNIA COMPRESS | Tank #: 1 | Size: 1000 | Product: REGULAR | Month/Year: ~~SEPT~~ OCT 1990

	1	2	3	4	5		6	7	8	9	10	11	12		13
	Opening Inventory From Yesterdays Column 4	Deliveries	Metered Sales	Total Column 1+2-3	Closing Inventory Dipstick Reading		Metered Sales From Column 3	Accumulated Metered Sales Accumulate Column 6	x .0015 =	* Throughput Error	** Measurement Error	Allowable Variation Column 9+10	Actual Variation Column 4&5 Subtract Smaller # from Larger #		Exceed Allowable Variation **** Is Column 12 greater than 11?
Date	gallons	gallons	gallons	gallons	inches	gallons	gallons	gallons	x .0015 =	gallons	gallons	gallons	+/- ***	gallons	yes/no
1	* 1082.0	—	—	1082.0	47	1082	—	—	x .0015 =	—	25	+/- 25		0	NO
2	1082.0	—		1082.0	47	1082	—	—	x .0015 =	—	25	+/- 25		0	NO
3	1082.0	—	11.1	1070.9	45 5/8	1071	11.1	11.1	x .0015 =	.02	25	+/- 25.02	+	.1	NO
4	1070.9	—	12.9	1058.0	44½	1059	12.9	24.0	x .0015 =	.04	25	+/- 25.04	+	1.0	NO
5	1058.0	—	—	1058.0	44½	1059	—	24.0	x .0015 =	.04		+/- 25.04	+	1.0	NO
6	1058.0	—	—	1058.0	44½	1059	—	24.0	x .0015 =	.04		+/- 25.04	+	1.0	NO
7	1058.0	—	—	1058.0	44½	1059	—	24.0	x .0015 =	.04		+/- 25.04	+	1.0	NO
8	1058.0	—	—	1058.0	44½	1059	—	24.0	x .0015 =	.04		+/- 25.04	+	1.0	NO
9	1058.0	—	—	1058.0	44½	1059	—	24.0	x .0015 =	.04		+/- 25.04	+	1.0	NO
10	1058.0	—	—	1058.0	44½	1059	—	24.0	x .0015 =	.04		+/- 25.04	+	1.0	NO
11	1058.0	—	—	1058.0	44½	1059	—	24.0	x .0015 =	.04		+/- 25.04	+	1.0	NO
12	1058.0	—	—	1058.0	44½	1059	—	24.0	x .0015 =	.04		+/- 25.04	+	1.0	NO
13	1058.0	—	—	1058.0	44½	1059	—	24.0	x .0015 =	.04		+/- 25.04	+	1.0	NO
14	1058.0	—	—	1058.0	44½	1059	—	24.0	x .0015 =	.04		+/- 25.04	+	1.0	NO
15	1058.0	—	—	1058.0	44½	1059	—	24.0	x .0015 =	.04		+/- 25.04	+	1.0	NO
16	1058.0	—	6.9	1051.1	44	1052	6.9	30.9	x .0015 =	.05		+/- 25.05	+	0.9	NO
17	1051.1	—	.7	1050.4	43 7/8	1051	.7	31.6	x .0015 =	.05		+/- 25.05	+	0.6	NO
18	1050.4	—	—	1050.4	43 7/8	1051	—	31.6	x .0015 =	.05		+/- 25.05	+	0.6	NO
19	1050.4	—	—	1050.4	43 7/8	1051	—	31.6	x .0015 =	.05		+/- 25.05	+	0.6	NO
20	1050.4	—	—	1050.4	43 7/8	1051	—	31.6	x .0015 =	.05		+/- 25.05	+	0.6	NO
21	1050.4	—	—	1050.4	43 7/8	1051	—	31.6	x .0015 =	.05		+/- 25.05	+	0.6	NO
22	1050.4	—	24.9	1025.5	42½	1029	24.9	56.5	x .0015 =	.08		+/- 25.08	+	3.5	NO
23	1025.5	—	4.9	1020.6	42	1025	4.9	61.4	x .0015 =	.09		+/- 25.09	+	4.4	NO
24	1020.6	—	6.5	1014.1	41 3/8	1015	6.5	67.9	x .0015 =	.10		+/- 25.10	+	.9	NO
25	1014.1	—	16.5	997.6	40 3/4	998	16.5	84.4	x .0015 =	.13		+/- 25.13	+	.4	NO
26	997.6	—	10.3	987.3	40 1/4	988	10.3	94.7	x .0015 =	.14		+/- 25.14	+	.7	NO
27	987.3	—	—	987.3	40 1/4	988	—	94.7	x .0015 =	.14		+/- 25.14	+	.7	NO
28	987.3	—	—	987.3	40 1/4	988	—	94.7	x .0015 =	.14		+/- 25.14	+	.7	NO
29	987.3	—	8.7	978.6	39 3/4	979	8.7	103.4	x .0015 =	.16		+/- 25.16	+	.4	NO
30	978.6	—	11.9	966.7	39 1/8	967	11.9	115.3	x .0015 =	.17		+/- 25.17	+	.3	NO
31	966.7	—	—	966.7	39 1/8	967	—	115.3	x .0015 =	.17		+/- 25.17	+	.3	NO

Opening Dipstick Reading

** Measurement Error is based on tank size:

Tank Size	Measurement Error
≤ 4,000	25 Gallons
4,000 to ≤ 8,000	50 Gallons
8,000 to ≤ 12,000	75 Gallons
> 12,000	100 Gallons

*** If Column 4 is less than 5 (+)
If Column 5 is less than 4 (-)

**** If you answered yes in Column 13 refer to Release (leak) Evaluation Action Chart

I certify this to be a true and accurate report: Keith Pace 1-15-91

Author Signature Date

KEITH PACE G/MANAGER

Name Title (PRINT)

9/16/12 D/N

When completed return to
County of Fresno Dept. of Health
P.O. Box 11800
Fresno, California 93775

APPLICATION
ENVIRONMENTAL HEALTH FEE RECEIPT

CTO7

Date 8-13-90

Business I.D. No. 90412

1. Business CALIFORNIA COMPRESS

2. Inspection Site 2740 W. NEILSON AV. 233-1725
Street Phone
FRESNO CA 93726
City State Zip

3. Billing address SAME
Street
SAME
City State Zip

4. List all activities the business is to be engage in. (e.g.; Bar, Restaurant, Meat Market, Pool, etc.)
4 TANKS - EXISTING NON UPGRADED; 4 TANKS - STATE SURCHARGE

5. Number of units, square footage, or seating capacity.

6. Date of business commencement

7. If this business is seasonal or temporary, how many months of the year will it operate?

8. Name of applicant KEITH PELL

9. Signature

NOTICE: Notify the Environmental Health Department of any change in the type of business activity, name or ownership by calling 445-3357. Failure to notify the Environmental Health Department may result in late fee penalties and/or referral of past due account to a collections agency.

FOR OFFICE USE ONLY

Fee calculated as follows: COST CENTER

1. No. ____ Units 4 TANKS , Fee 167.00
Activity EXISTING NON UPGRADED

2. No. ____ Units 4 TANKS , Fee 224.00
Activity STATE SURCHARGE

3. No. ____ Units ____ , Fee ____
Activity ____

Penalty ____

Total ____

H-429 (7/85)
HBO # 133

RECEIVED
OCT 12 1990
ENVIRONMENTAL HEALTH SYSTEM
FRESNO COUNTY DEPT. OF HEALTH

APPENDIX A
QUARTERLY INVENTORY RECONCILIATION
SUMMARY REPORT

Facility: CALIFORNIA COMPRESS CO INC
Address: P.O. BOX 11966
FRESNO, CA 93776

Tank #	Size	Product
1	1000	REGULAR

I hereby certify under penalty of perjury that:

✓ All inventory variations for this facility were within allowable limits for this quarter (No in Column 13 of the Inventory Reconciliation Sheet).

____ Inventory variation(s) exceeded the allowable limits during this quarter (Yes in Column 13 of the Inventory Reconciliation Sheet). The source of the variation(s) is not due to an unreported, unauthorized release.

List the date, tank number, and amount of variation for all variations which exceeded the allowable limits during this quarter:

	Date	Tank #	Amount of Variation
1.			
2.			
3.			
4.			
5.			

Additional incidents shall be listed on a separate, attached sheet of paper. Indicate here if continued: ____

If the cause of the variation(s) which exceeded allowable limits was a leak, the incident(s) shall be reported no later than the next business day to the Environmental Health System at (209) 445-3271. An Unauthorized Release Report shall be submitted to the EHS within five days.

The Quarterly Summary Report shall be submitted within 15 days of the end of each quarter. Indicate the quarter applicable to this report:

____ 1st Quarter--Jan/Feb/Mar
____ 2nd Quarter--Apr/May/June
✓ 3rd Quarter--Jul/Aug/Sept
____ 4th Quarter--Oct/Nov/Dec

Send to: Fresno County Department of Health
Environmental Health System--UST Program
P.O. Box 11867
Fresno, CA 93775

Keith Paul
Authorized Signature

10/10/90
Date

KEITH PAUL
GENERAL MANAGER
Name, Title (PRINT)

APPENDIX E

INVENTORY RECONCILIATION SHEET

Facility: CALIFORNIA COMPRESS | Tank #: | Size: 1,000 | Product: REGULAR | Month/Year: SEPT 1990

	1	2	3	4	5		6	7	8	9	10	11	12		13
	Opening Inventory From Yesterdays Column 4	Deliveries	Metered Sales	Total Column 1+2−3	Closing Inventory Dipstick Reading		Metered Sales From Column 3	Accumulated Metered Sales Accumulate Column 6	x .0015 = x .0015 =	Throughput Error	** Measurement Error	Allowable Variation Column 9+10	Actual Variation Column 4&5 Subtract Smaller # from Larger #		Exceed Allowable Variation **** Is Colum 12 greater than 11?
Date	gallons	gallons	gallons	gallons	inches	gallons	gallons	gallons	x .0015 =	gallons	gallons	gallons	+/−	gallons	yes/no
1	* 101	—	—	101		101	—	—	x .0015 =		25	+/− 25.0		0	NO
2	101	—	—	101		101	—		x .0015 =			+/− 25.0		0	
3	101	—	—	101		101	—		x .0015 =			+/− 25.0		0	
4	101	—	7.5	93.5		93.5	7.5	7.5	x .0015 =	.01		+/− 25.01		0	
5	93.5	—	13.0	80.5		80.5	13.0	20.5	x .0015 =	.03		+/− 25.03		0	
6	80.5	—	25.5	55.0		55.0	25.5	46.0	x .0015 =	.07		+/− 25.07		0	
7	55.0	200.0	10.9	244.1		244.1	10.9	56.9	x .0015 =	.08		+/− 25.08		0	
8	244.1	—	—	244.1		244.1	—	56.9	x .0015 =	.08		+/− 25.08		0	
9	244.1	—	—	244.1		244.1	—	56.9	x .0015 =	.08		+/− 25.08		0	
10	244.1	—	—	244.1		244.1	—	56.9	x .0015 =	.08		+/− 25.08		0	
11	244.1	—	4.0	240.1		240.1	4	60.9	x .0015 =	.08		+/− 25.09		0	
12	240.1	—	12.5	227.6		227.6	12.5	73.4	x .0015 =	.11		+/− 25.11		0	
13	227.6	—	—	227.6		227.6	—	73.4	x .0015 =	.11		+/− 25.11		0	
14	227.6	—	—	227.6		227.6	—	73.4	x .0015 =	.11		+/− 25.11		0	
15	227.6	—	—	227.6		227.6	—	73.4	x .0015 =	.11		+/− 25.11		0	
16	227.6	—	—	227.6		227.6	—	73.4	x .0015 =	.11		+/− 25.11		0	
17	227.6	—	12.2	215.4		215.4	12.2	85.6	x .0015 =	.13		+/− 25.13		0	
18	215.4	—	—	215.4		215.4	—	85.6	x .0015 =	.13		+/− 25.13		0	
19	215.4	—	11.6	203.8		203.8	11.6	97.2	x .0015 =	.14		+/− 25.14		0	
20	203.8	—	3.0	200.8		200.8	3.0	100.2	x .0015 =	.15		+/− 25.15		0	
21	200.8	—	—	200.8		200.8	—	100.2	x .0015 =	.15		+/− 25.15		0	
22	200.8	—	—	200.8		200.8	—	100.2	x .0015 =	.15		+/− 25.15		0	
23	200.8	—	—	200.8		200.8	—	100.2	x .0015 =	.15		+/− 25.15		0	
24	200.8	—	—	200.8		200.8	—	100.2	x .0015 =	.15		+/− 25.15		0	
25	200.8	—	8.9	191.9		191.9	8.9	109.1	x .0015 =	.16		+/− 25.16		0	
26	191.9	—	6.1	185.8		185.8	6.1	115.2	x .0015 =	.17		+/− 25.17		0	
27	185.8	—	33.8	152.0		152.0	33.8	149.0	x .0015 =	.22		+/− 25.22		0	
28	152.0	930.0	—	1082.0		1082.0	—	149.0	x .0015 =	.22		+/− 25.22		0	
29	1082.0	—	—	1082.0		1082.0	—	149.0	x .0015 =	.22		+/− 25.22		0	✓
30	1082.0	—	—	1082.0		1082.0	—	149.0	x .0015 =	.22		+/− 25.22		0	✓
									x .0015 =			+/−			

Opening Dipstick Reading

** Measurement Error is based on tank size:

Tank Size	Measurement Error
< 4,000	25 Gallons
4,000 to < 8,000	50 Gallons
8,000 to < 12,000	75 Gallons
≥ 12,000	100 Gallons

*** If Colum 4 is less than 5 (+)
If Colum 5 is less than 4 (−)

**** If you answered yes in Column 13 refer to Release (leak) Evaluation Action Chart

I certify this to be a true and accurate report: Keith Paul

KEITH PAUL GENERAL MANAGER

Author Signature Date — Name Title (PRINT)

FRESNO COUNTY DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH SYSTEM
P. O. BOX 11867, FRESNO, CALIFORNIA 721
TELEPHONE (209) 445-3271
PERMIT APPLICATION FOR UNDERGROUND STORAGE TANKS

☐ ABANDONMENT/REMOVAL ☐ NEW CONSTRUCTION ☐ SUBSURFACE ASSESSMENT/REMEDIATION
☐ ABANDONMENT/IN PLACE ☐ REPAIR OR REPLACE ☑ PRECISION TEST: DATE 10/1/90

SITE INFORMATION:

Site Address 2240 W Nielsen City Fresno Zip 93706
Facility Name Cal. Comp CC. Inc Cross Street Marks
Owner/Operator Cal. Comp CC Inc Phone 271-4225
Mailing Address 2240 W Nielsen City Fresno Zip 93706

CONTRACTOR INFORMATION:

Company
Address
City Phone
Contractor Lic. No./Class

CONSULTANT INFORMATION:

Company
Address
City Phone
Registration Lic. No/Type

TANK CLEANING/TRANSPORTER INFORMATION:

Company
Address
City Phone
Waste Transporter ID No.
Tank Destination
Rinsate Manifested ☐ Tank Manifested ☐

PRECISION TESTER INFORMATION:

Company ABLE SERVICE CO INC.
Address P.O. Box 1392
City Fresno Phone 445-1041
Type of Test Pres. Vac
Tester Name LARRY GOERINGER
CA State Cert. No. CA-92-1019

TANK INFORMATION

PERMIT #	SIZE	PRODUCT	AGE OF TANK	PREVIOUSLY STORED MATERIAL
	1,000	UL	UK	

DESCRIBE WORK TO BE PERFORMED

(Use Reverse Side if Necessary)

OFFICIAL USE ONLY

Site I.D. 90412 CT 07 APN Fee $ 0 Application Date 9/27/90

NOTE: Permit expires ninety (90) days after the application date. The applicant has received, understands, and will comply with the attached conditions of this permit and any other State and local regulations.

Priscilla Ward
Approved by:

LARRY GOERINGER
Applicant Name (Please Print)

Larry Goeringer
Applicant Signature/Title

FRESNO COUNTY DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH SYSTEM

CONDITIONS FOR PRECISION TESTING
UNDERGROUND STORAGE TANKS

1. A permit application for an UST precision test shall be obtained prior to commencement of work.

2. You must contact our office if there are <u>any</u> changes to the attached permit.

3. Test results shall be sent to our office within 30 days from the date of the test and shall include worksheets, computer print outs, graphs and all relevant information derived from the test.

4. A permit shall be obtained no later than 24 hours prior to testing.

5. Failed tests shall be reported to the local enforcement agency within 24 hours or the next business day. The tester shall notify owner/ operator of such failure and recommend appropriate actions.

EHS #2466

FRESNO COUNTY DEPARTMENT OF HEALTH — ENVIRONMENTAL HEALTH SYSTEM

Post Office Box 11867, Fresno, California
1221 Fulton Mall, Fresno, California
(209) 445-3357 3271

Prog/Elem 2210
Comp No./I.D. 90412
C.T. 07
Date 8-8-90
Page ____ of ____
Recheck Date ____

UNDERGROUND TANK INSPECTION REPORT

Facility: CALIF COMPRESS
Location: 2740 W. NIELSON AV 93706
Owner/Operator: DON ROBINSON / KEITH PAUL
Mailing Address: P.O. BOX 11966

APN: ____
Phone ____
Phone 233-1725
Zip 93774

( ) INTERIM PERMIT TO OPERATE VALID FOR NINTEY (90) DAYS. Authorized by ____

THE FOLLOWING ITEMS SHALL BE CORRECTED WITHIN 30 DAYS. ( ) IMMEDIATELY:

MET DON ROBINSON PT. SUPT, 4-TANKS: 5K REG. 3K-UL 4K REG 5K-D.
& KEITH PAUL-BRANCH MGR.

COMPLIANCE IN THE UNDERGROUND STORAGE TANK LAWS. (W/O. SECONDARY CONTA

THE CONDITIONS ARE:

1. MUST PERFORM ANNUAL PRECISION TEST. IF A TURBINE SYST. (PRESSURIZ MUST BE CHECKED/TESTED OR REPLACED ANNUALLY.
2. MUST USE F.C.D.H. FORMS & PERFORM INVENTORY RECONCILIATION - DAILY
3. MUST SUBMIT INVENTORY RECONCILIATION QUARTERLY SUMMARY REPORTS TO THIS OFFICE.
4. MUST PAY STATE SURCHARGE FEE & ANNUAL OPERATING PERMIT FEE.

CONTACT OFFICE FOR THE DISCLOSURE REGISTRATION - BUSINESS PLAN

GAVE TO KEITH PAUL INVENTORY RECONCILIATION PROCEDURE MANUAL.

Received By: Keith Paul Analyst: Rican Hernandez

White — Office/File
Canary — Operator
Pink — Sanitarian

H-479 (Rev. 11/88)

NOTICE: Reinspection fees will be charged if multiple reinspections become necessary due to uncorrected violations.

FEE

STATE OF CALIFORNIA — WATER RESOURCES CONTROL BOARD

FORM 'A': SITE

UNDERGROUND STORAGE TANK PROGRAM
FACILITY/SITE, INFORMATION and/or PERMIT APPLICATION

COMPLETE THIS FORM FOR EACH FACILITY/SITE

MARK ONLY ONE ITEM							
	[X] 1 NEW PERMIT	[ ] 2 INTERIM PERMIT	[ ] 3 RENEWAL PERMIT	[ ] 4 AMENDED PERMIT	[ ] 5 CHANGE OF INFORMATION	[ ] 6 TEMPORARY SITE CLOSURE	[ ] 7 PERMANENTLY CLOSED SITE

I. FACILITY/SITE INFORMATION & ADDRESS — (MUST BE COMPLETED)

FACILITY/SITE NAME	CARE OF ADDRESS INFORMATION	
CALIFORNIA EXPRESS		
ADDRESS: 2740 W. NIELSEN AV.	NEAREST CROSS STREET	[✓] CORPORATION [ ] INDIVIDUAL [ ] PARTNERSHIP [ ] LOCAL-AGENCY [ ] COUNTY-AGENCY [ ] STATE-AGENCY [ ] FEDERAL-AGENCY
CITY NAME: FRESNO	STATE: CA / ZIP CODE: 93706	SITE PHONE # WITH AREA CODE: 233-1725 (209)
TYPE OF BUSINESS: [ ] 1 GAS STATION [ ] 2 DISTRIBUTOR [ ] 3 FARM [ ] 4 PROCESSOR [X] 5 OTHER	[✓] Box if INDIAN RESERVATION or TRUST LANDS [ ]	EPA ID # / # of TANK's AT THIS SITE: 4

EMERGENCY CONTACT PERSON (PRIMARY)		EMERGENCY CONTACT PERSON (SECONDARY)	
DAYS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE	DAYS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE
NIGHTS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE	NIGHTS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE

II. PROPERTY OWNER INFORMATION & ADDRESS — (MUST BE COMPLETED)

NAME	CARE OF ADDRESS INFORMATION		
CALIFORNIA EXPRESS			
MAILING or STREET ADDRESS: P.O. BOX 9095	[✓] Box to indicate [ ] CORPORATION [ ] INDIVIDUAL	[ ] PARTNERSHIP [ ] LOCAL-AGENCY [ ] COUNTY-AGENCY	[ ] STATE-AGENCY [ ] FEDERAL-AGENCY
CITY NAME: FRESNO	STATE: CA / ZIP CODE: 93790	PHONE #, WITH AREA CODE: 266-2511 (209)	

III. TANK OWNER INFORMATION & ADDRESS — (MUST BE COMPLETED)

NAME	CARE OF ADDRESS INFORMATION		
MAILING or STREET ADDRESS	[✓] Box to indicate [ ] CORPORATION [ ] INDIVIDUAL	[ ] PARTNERSHIP [ ] LOCAL-AGENCY [ ] COUNTY-AGENCY	[ ] STATE-AGENCY [ ] FEDERAL-AGENCY
CITY NAME	STATE / ZIP CODE	PHONE #, WITH AREA CODE	

IV. LEGAL NOTIFICATION AND BILLING ADDRESS

CHECK ONE (1) BOX INDICATING WHICH ABOVE ADDRESS SHOULD BE USED FOR BOTH LEGAL NOTIFICATION AND BILLING: I. [ ] II. [X] III. [ ]

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT.

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE

LOCAL AGENCY USE ONLY

COUNTY #	JURISDICTION #	AGENCY #	FACILITY ID #	# of TANKS at SITE
10				0004

CURRENT LOCAL AGENCY FACILITY ID #	APPROVED BY NAME	PHONE # WITH AREA CODE
0009C412	C. HERNANDEZ	445-5271 (209)

PERMIT NUMBER	PERMIT APPROVAL DATE	PERMIT EXPIRATION DATE

LOCATION CODE	CENSUS TRACT #	SUPERVISOR-DISTRICT CODE	BUSINESS PLAN FILED YES [ ] NO [ ]	DATE FILED
	07			4/24/90

CHECK #	PERMIT AMOUNT	SURCHARGE AMOUNT	FEE CODE	RECEIPT #	BY:

THIS FORM MUST BE ACCOMPANIED BY AT LEAST (1) OR MORE TANK PERMIT FORM 'B' APPLICATION(S), UNLESS THIS IS A CHANGE OF SITE INFORMATION ONLY.

FORM A (3-2-88)

FILE COPY

NEW 19988

STATE OF CALIFORNIA — WATER RESOURCES CONTROL BOARD

FORM 'B': TANK

UNDERGROUND STORAGE TANK PROGRAM
TANK PERMIT APPLICATION INFORMATION

COMPLETE A SEPARATE FORM WITH THE FOLLOWING INFORMATION FOR EACH TANK.

MARK ONLY ONE ITEM				
[X] 1 NEW PERMIT	[ ] 3 RENEWAL PERMIT	[ ] 5 CHANGE OF INFORMATION	[ ] 7 PERMANENTLY CLOSED TANK
[ ] 2 INTERIM PERMIT	[ ] 4 AMENDED PERMIT	[ ] 6 TEMPORARY TANK CLOSURE	[ ] 8 TANK REMOVED

FACILITY/SITE NAME WHERE TANK IS INSTALLED: CALIF. CANNERS — **FARM TANK - YES** [ ] **NO** [X]

I. TANK DESCRIPTION — COMPLETE ALL ITEMS - IF UNKNOWN — SO SPECIFY

A. OWNERS TANK ID # UNKNOWN	B. MANUFACTURED BY: UNKNOWN
C. YEAR INSTALLED UNKNOWN	D. TANK CAPACITY IN GALLONS: 5 000

II. TANK CONTENTS — IF (A.1), IS MARKED, COMPLETE ITEM C. IF (A.1), IS NOT MARKED, COMPLETE ITEM D.

A.	B.	C.
[X] 1 MOTOR VEHICLE FUEL	[X] 1 PRODUCT	[ ] 1 UNLEADED
[ ] 2 PETROLEUM	[ ] 2 WASTE	[ ] 2 LEADED
[X] 3 DIESEL		[ ] 4 GASAHOL
[ ] 5 JET FUEL		[ ] 6 AVIATION GAS
[ ] 7 METHANOL		[ ] 99 OTHER (DESCRIBE IN ITEM D, BELOW)
[ ] 3 CHEMICAL PRODUCT		
[ ] 4 OIL		
[ ] 5 HAZARDOUS		
[ ] 80 EMPTY		
[ ] 95 UNKNOWN		

D. IF NOT MOTOR VEHICLE FUEL, ENTER NAME OF HAZARDOUS SUBSTANCE STORED & C.A.S. # — C.A.S. #:

III. TANK CONSTRUCTION — MARK ONE ITEM ONLY IN BOX A, B, C, & D

A. TYPE OF SYSTEM	[ ] 1 DOUBLE WALLED	[ ] 3 SINGLE WALLED WITH EXTERIOR LINER		[ ] 95 UNKNOWN
	[X] 2 SINGLE WALLED	[ ] 4 SECONDARY CONTAINMENT		[ ] 99 OTHER
B. TANK MATERIAL	[X] 1 STEEL/IRON	[ ] 2 STAINLESS STEEL	[ ] 3 FIBERGLASS	[ ] 4 STEEL CLAD W/FIBERGLASS REINFORCED PLASTIC
	[ ] 5 CONCRETE	[ ] 6 POLYVINYL CHLORIDE	[ ] 7 ALUMINUM	[ ] 8 100% METHANOL COMPATIBLE FRP
	[ ] 9 BRONZE	[ ] 10 GALVANIZED STEEL	[ ] 95 UNKNOWN	[ ] 99 OTHER
C. INTERIOR LINING	[ ] 1 RUBBER LINED	[ ] 2 ALKYD LINING	[ ] 3 EPOXY LINING	[ ] 4 PHENOLIC LINING
	[ ] 5 GLASS LINING	[X] 6 UNLINED		[ ] 95 UNKNOWN
	[ ] IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL?	[ ] YES [ ] NO		[ ] 99 OTHER
D. CORROSION PROTECTION	[ ] 1 POLYETHLENE WRAP	[X] 2 TAR OR ASPHALT	[ ] 3 VINYL WRAP	[ ] 4 FIBERGLASS REINFORCED PLASTIC
	[ ] 5 CATHODIC PROTECTION	[ ] 91 NONE	[ ] 95 UNKNOWN	[ ] 99 OTHER

IV. PIPING INFORMATION — CIRCLE **A** IF ABOVE GROUND, **U** IF UNDERGROUND, **BOTH IF APPLICABLE**

A. SYSTEM TYPE	A (U) 1 SUCTION	A U 2 PRESSURE	A U 3 GRAVITY	A U 91 NONE	A U 95 UNKNOWN A U 99 OTHER
B. CONSTRUCTION	A (U) 1 SINGLE WALLED	A U 2 DOUBLE WALLED	A U 3 LINED TRENCH	A U 91 NONE	A U 95 UNKNOWN A U 99 OTHER
C. MATERIAL	A (U) 1 STEEL/IRON	A U 2 STAINLESS STEEL	A U 3 POLYVINYL CHLORIDE (PVC)	A U 4 FIBERGLASS PIPE	A U 91 NONE
	A U 5 ALUMINUM	A U 6 CONCRETE	A U 7 STEEL CLAD W/FRP	A U 8 100% METHANOL COMPATIBLE FRP	
	A U 9 GALVANIZED STEEL	A U 95 UNKNOWN	A U 99 OTHER		

V. LEAK DETECTION SYSTEM — CIRCLE **P** FOR PRIMARY, OR **S** FOR SECONDARY, **A PRIMARY LEAK DETECTION SYSTEM MUST BE CIRCLED.**

P S 1 VISUAL CHECK — (P) S 2 INVENTORY RECONCILIATION — P S 3 VADOSE WELLS — P S 4 ELECTRONIC MONITOR — P S 5 GROUND WATER MONITORING WELLS
P (S) 6 PRECISION TESTING — P S 7 PRESSURE TESTING — P S 91 NONE — P S 95 UNKNOWN — P S 99 OTHER

VI. INFORMATION ON TANK PERMANENTLY CLOSED IN PLACE

1. ESTIMATED DATE LAST USED (MO/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING IN GALLONS	3. WAS TANK FILLED WITH INERT MATERIAL?
		[ ] YES [ ] NO

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT.

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE

LOCAL AGENCY USE ONLY

COUNTY #	JURISDICTION #	AGENCY #	FACILITY ID #	TANK ID #
39				001

CURRENT LOCAL AGENCY FACILITY ID #	APPROVED BY NAME	PHONE # WITH AREA CODE
00090412	C. HEINKNDEL	445-3271 (209)

PERMIT NUMBER	PERMIT APPROVAL DATE	PERMIT EXPIRATION DATE

CHECK #	PERMIT AMOUNT	SURCHARGE AMT.	FEE CODE	RECEIPT #	BY:

FORM B (6-29-88) **THIS FORM MUST BE ACCOMPANIED BY A FACILITY/SITE APPLICATION, FORM 'A', UNLESS A CURRENT FORM 'A' HAS BEEN FILED**

STATE OF CALIFORNIA — WATER RESOURCES CONTROL BOARD

FORM 'B': TANK

UNDERGROUND STORAGE TANK PROGRAM
TANK PERMIT APPLICATION INFORMATION

COMPLETE A SEPARATE FORM WITH THE FOLLOWING INFORMATION FOR EACH TANK.

MARK ONLY ONE ITEM

- [X] 1 NEW PERMIT
- [ ] 2 INTERIM PERMIT
- [ ] 3 RENEWAL PERMIT
- [ ] 4 AMENDED PERMIT
- [ ] 5 CHANGE OF INFORMATION
- [ ] 6 TEMPORARY TANK CLOSURE
- [ ] 7 PERMANENTLY CLOSED TANK
- [ ] 8 TANK REMOVED

FACILITY/SITE NAME WHERE TANK IS INSTALLED: CALIF. CAMPERS — **FARM TANK - YES** [ ] **NO** [X]

I. TANK DESCRIPTION — COMPLETE ALL ITEMS - IF UNKNOWN — SO SPECIFY

A. OWNERS TANK ID # UNKNOWN	B. MANUFACTURED BY: UNKNOWN
C. YEAR INSTALLED UNKNOWN	D. TANK CAPACITY IN GALLONS: 5000

II. TANK CONTENTS — IF (A.1), IS MARKED, COMPLETE ITEM C. IF (A.1), IS NOT MARKED, COMPLETE ITEM D.

A.
- [X] 1 MOTOR VEHICLE FUEL
- [ ] 2 PETROLEUM
- [ ] 3 CHEMICAL PRODUCT
- [ ] 4 OIL
- [ ] 5 HAZARDOUS
- [ ] 80 EMPTY
- [ ] 95 UNKNOWN

B.
- [X] 1 PRODUCT
- [ ] 2 WASTE

C.
- [X] 1 UNLEADED
- [ ] 2 LEADED
- [ ] 3 DIESEL
- [ ] 4 GASAHOL
- [ ] 5 JET FUEL
- [ ] 6 AVIATION GAS
- [ ] 7 METHANOL
- [ ] 99 OTHER (DESCRIBE IN ITEM D, BELOW)

D. IF NOT MOTOR VEHICLE FUEL, ENTER NAME OF HAZARDOUS SUBSTANCE STORED & C.A.S. # — C.A.S. #:

III. TANK CONSTRUCTION — MARK ONE ITEM ONLY IN BOX A, B, C, & D

A. TYPE OF SYSTEM
- [ ] 1 DOUBLE WALLED
- [X] 2 SINGLE WALLED
- [ ] 3 SINGLE WALLED WITH EXTERIOR LINER
- [ ] 4 SECONDARY CONTAINMENT
- [ ] 95 UNKNOWN
- [ ] 99 OTHER

B. TANK MATERIAL
- [X] 1 STEEL/IRON
- [ ] 2 STAINLESS STEEL
- [ ] 3 FIBERGLASS
- [ ] 4 STEEL CLAD W/FIBERGLASS REINFORCED PLASTIC
- [ ] 5 CONCRETE
- [ ] 6 POLYVINYL CHLORIDE
- [ ] 7 ALUMINUM
- [ ] 8 100% METHANOL COMPATIBLE FRP
- [ ] 9 BRONZE
- [ ] 10 GALVANIZED STEEL
- [ ] 95 UNKNOWN
- [ ] 99 OTHER

C. INTERIOR LINING
- [ ] 1 RUBBER LINED
- [ ] 2 ALKYD LINING
- [ ] 3 EPOXY LINING
- [ ] 4 PHENOLIC LINING
- [ ] 5 GLASS LINING
- [X] 6 UNLINED
- [ ] 95 UNKNOWN
- [ ] IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? [ ] YES [ ] NO
- [ ] 99 OTHER

D. CORROSION PROTECTION
- [ ] 1 POLYETHLENE WRAP
- [X] 2 TAR OR ASPHALT
- [ ] 3 VINYL WRAP
- [ ] 4 FIBERGLASS REINFORCED PLASTIC
- [ ] 5 CATHODIC PROTECTION
- [ ] 91 NONE
- [ ] 95 UNKNOWN
- [ ] 99 OTHER

IV. PIPING INFORMATION — CIRCLE **A** IF ABOVE GROUND, **U** IF UNDERGROUND, **BOTH IF APPLICABLE**

A. SYSTEM TYPE	A (U) 1 SUCTION	A U 2 PRESSURE	A U 3 GRAVITY	A U 91 NONE	A U 95 UNKNOWN	A U 99 OTHER			
B. CONSTRUCTION	A (U) 1 SINGLE WALLED	A U 2 DOUBLE WALLED	A U 3 LINED TRENCH	A U 91 NONE	A U 95 UNKNOWN	A U 99 OTHER			
C. MATERIAL	A (U) 1 STEEL/IRON	A U 2 STAINLESS STEEL	A U 3 POLYVINYL CHLORIDE (PVC)	A U 4 FIBERGLASS PIPE	A U 91 NONE				
	A U 5 ALUMINUM	A U 6 CONCRETE	A U 7 STEEL CLAD W/FRP	A U 8 100% METHANOL COMPATIBLE FRP					
	A U 9 GALVANIZED STEEL	A U 95 UNKNOWN	A U 99 OTHER						

V. LEAK DETECTION SYSTEM — CIRCLE **P** FOR PRIMARY, OR **S** FOR SECONDARY, **A PRIMARY LEAK DETECTION SYSTEM MUST BE CIRCLED.**

P S 1 VISUAL CHECK	(P) S 2 INVENTORY RECONCILIATION	P S 3 VADOSE WELLS	P S 4 ELECTRONIC MONITOR	P S 5 GROUND WATER MONITORING WELLS
P (S) 6 PRECISION TESTING	P S 7 PRESSURE TESTING	P S 91 NONE	P S 95 UNKNOWN	P S 99 OTHER

VI. INFORMATION ON TANK PERMANENTLY CLOSED IN PLACE

1. ESTIMATED DATE LAST USED (MO/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING IN GALLONS	3. WAS TANK FILLED WITH INERT MATERIAL? [ ] YES [ ] NO

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT.

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE

LOCAL AGENCY USE ONLY

COUNTY #	JURISDICTION #	AGENCY #	FACILITY ID #	TANK ID #
10				001

CURRENT LOCAL AGENCY FACILITY ID #	APPROVED BY NAME	PHONE # WITH AREA CODE
00004012	C. HERNANDEZ	445-2271 (209)

PERMIT NUMBER	PERMIT APPROVAL DATE	PERMIT EXPIRATION DATE

CHECK #	PERMIT AMOUNT	SURCHARGE AMT.	FEE CODE	RECEIPT #	BY:

FORM B (6-29-88) **THIS FORM MUST BE ACCOMPANIED BY A FACILITY/SITE APPLICATION, FORM 'A', UNLESS A CURRENT FORM 'A' HAS BEEN FILED**

STATE OF CALIFORNIA — WATER RESOURCES CONTROL BOARD

FORM 'B':
TANK

UNDERGROUND STORAGE TANK PROGRAM
TANK PERMIT APPLICATION INFORMATION

COMPLETE A SEPARATE FORM WITH THE FOLLOWING INFORMATION FOR EACH TANK.

MARK ONLY ONE ITEM

- [X] 1 NEW PERMIT
- [ ] 2 INTERIM PERMIT
- [ ] 3 RENEWAL PERMIT
- [ ] 4 AMENDED PERMIT
- [ ] 5 CHANGE OF INFORMATION
- [ ] 6 TEMPORARY TANK CLOSURE
- [ ] 7 PERMANENTLY CLOSED TANK
- [ ] 8 TANK REMOVED

FACILITY/SITE NAME WHERE TANK IS INSTALLED: CALIF. AQUEDUCTS — **FARM TANK - YES** [ ] **NO** [X]

I. TANK DESCRIPTION — COMPLETE ALL ITEMS - IF UNKNOWN — SO SPECIFY

A. OWNERS TANK ID # UNKNOWN	B. MANUFACTURED BY: UNKNOWN
C. YEAR INSTALLED UNKNOWN	D. TANK CAPACITY IN GALLONS: 4,000

II. TANK CONTENTS — IF (A.1), IS MARKED, COMPLETE ITEM C. IF (A.1), IS NOT MARKED, COMPLETE ITEM D.

A.
- [X] 1 MOTOR VEHICLE FUEL
- [ ] 2 PETROLEUM
- [ ] 3 CHEMICAL PRODUCT
- [ ] 4 OIL
- [ ] 5 HAZARDOUS
- [ ] 80 EMPTY
- [ ] 95 UNKNOWN

B.
- [X] 1 PRODUCT
- [ ] 2 WASTE

C.
- [X] 1 UNLEADED
- [ ] 2 LEADED
- [ ] 3 DIESEL
- [ ] 4 GASAHOL
- [ ] 5 JET FUEL
- [ ] 6 AVIATION GAS
- [ ] 7 METHANOL
- [ ] 99 OTHER (DESCRIBE IN ITEM D, BELOW)

D. IF NOT MOTOR VEHICLE FUEL, ENTER NAME OF HAZARDOUS SUBSTANCE STORED & C.A.S. # — C.A.S. #:

III. TANK CONSTRUCTION — MARK ONE ITEM ONLY IN BOX A, B, C, & D

A. TYPE OF SYSTEM
- [ ] 1 DOUBLE WALLED
- [X] 2 SINGLE WALLED
- [ ] 3 SINGLE WALLED WITH EXTERIOR LINER
- [ ] 4 SECONDARY CONTAINMENT
- [ ] 95 UNKNOWN
- [ ] 99 OTHER

B. TANK MATERIAL
- [X] 1 STEEL/IRON
- [ ] 2 STAINLESS STEEL
- [ ] 3 FIBERGLASS
- [ ] 4 STEEL CLAD W/FIBERGLASS REINFORCED PLASTIC
- [ ] 5 CONCRETE
- [ ] 6 POLYVINYL CHLORIDE
- [ ] 7 ALUMINUM
- [ ] 8 100% METHANOL COMPATIBLE FRP
- [ ] 9 BRONZE
- [ ] 10 GALVANIZED STEEL
- [ ] 95 UNKNOWN
- [ ] 99 OTHER

C. INTERIOR LINING
- [ ] 1 RUBBER LINED
- [ ] 2 ALKYD LINING
- [ ] 3 EPOXY LINING
- [ ] 4 PHENOLIC LINING
- [ ] 5 GLASS LINING
- [X] 6 UNLINED
- [ ] 95 UNKNOWN
- [ ] IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? [ ] YES [ ] NO
- [ ] 99 OTHER

D. CORROSION PROTECTION
- [ ] 1 POLYETHLENE WRAP
- [X] 2 TAR OR ASPHALT
- [ ] 3 VINYL WRAP
- [ ] 4 FIBERGLASS REINFORCED PLASTIC
- [ ] 5 CATHODIC PROTECTION
- [ ] 91 NONE
- [ ] 95 UNKNOWN
- [ ] 99 OTHER

IV. PIPING INFORMATION — CIRCLE **A** IF ABOVE GROUND, **U** IF UNDERGROUND, **BOTH IF APPLICABLE**

A. SYSTEM TYPE	A (U) 1 SUCTION	A U 2 PRESSURE	A U 3 GRAVITY	A U 91 NONE	A U 95 UNKNOWN	A U 99 OTHER			
B. CONSTRUCTION	A (U) 1 SINGLE WALLED	A U 2 DOUBLE WALLED	A U 3 LINED TRENCH	A U 91 NONE	A U 95 UNKNOWN	A U 99 OTHER			
C. MATERIAL	A (U) 1 STEEL/IRON	A U 2 STAINLESS STEEL	A U 3 POLYVINYL CHLORIDE (PVC)	A U 4 FIBERGLASS PIPE	A U 91 NONE				
	A U 5 ALUMINUM	A U 6 CONCRETE	A U 7 STEEL CLAD W/FRP	A U 8 100% METHANOL COMPATIBLE FRP					
	A U 9 GALVANIZED STEEL	A U 95 UNKNOWN	A U 99 OTHER						

V. LEAK DETECTION SYSTEM — CIRCLE **P** FOR PRIMARY, OR **S** FOR SECONDARY, **A PRIMARY LEAK DETECTION SYSTEM MUST BE CIRCLED.**

P S 1 VISUAL CHECK	(P) S 2 INVENTORY RECONCILIATION	P S 3 VADOSE WELLS	P S 4 ELECTRONIC MONITOR	P S 5 GROUND WATER MONITORING WELLS	
P (S) 6 PRECISION TESTING	P S 7 PRESSURE TESTING	P S 91 NONE	P S 95 UNKNOWN	P S 99 OTHER	

VI. INFORMATION ON TANK PERMANENTLY CLOSED IN PLACE

1. ESTIMATED DATE LAST USED (MO/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING IN GALLONS	3. WAS TANK FILLED WITH INERT MATERIAL? [ ] YES [ ] NO

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT.

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE

LOCAL AGENCY USE ONLY

COUNTY #	JURISDICTION #	AGENCY #	FACILITY ID #	TANK ID #
10				0001

CURRENT LOCAL AGENCY FACILITY ID #	APPROVED BY NAME	PHONE # WITH AREA CODE
0000(412	C. FERNANDEZ	445-2711 (209)

PERMIT NUMBER	PERMIT APPROVAL DATE	PERMIT EXPIRATION DATE

CHECK #	PERMIT AMOUNT	SURCHARGE AMT.	FEE CODE	RECEIPT #	BY:

FORM B (6-29-88) **THIS FORM MUST BE ACCOMPANIED BY A FACILITY/SITE APPLICATION, FORM 'A', UNLESS A CURRENT FORM 'A' HAS BEEN FILED**

STATE OF CALIFORNIA — WATER RESOURCES CONTROL BOARD

FORM 'B':
TANK

UNDERGROUND STORAGE TANK PROGRAM
TANK PERMIT APPLICATION INFORMATION

COMPLETE A SEPARATE FORM WITH THE FOLLOWING INFORMATION FOR EACH TANK.

MARK ONLY ONE ITEM

- [X] 1 NEW PERMIT
- [ ] 2 INTERIM PERMIT
- [ ] 3 RENEWAL PERMIT
- [ ] 4 AMENDED PERMIT
- [ ] 5 CHANGE OF INFORMATION
- [ ] 6 TEMPORARY TANK CLOSURE
- [ ] 7 PERMANENTLY CLOSED TANK
- [ ] 8 TANK REMOVED

FACILITY/SITE NAME WHERE TANK IS INSTALLED: CALIFORNIA FARMS — **FARM TANK - YES** [ ] **NO** [X]

I. TANK DESCRIPTION — COMPLETE ALL ITEMS - IF UNKNOWN — SO SPECIFY

A. OWNERS TANK ID # UNKNOWN	B. MANUFACTURED BY: UNKNOWN
C. YEAR INSTALLED UNKNOWN	D. TANK CAPACITY IN GALLONS: 3,000

II. TANK CONTENTS — IF (A.1), IS MARKED, COMPLETE ITEM C. IF (A.1), IS NOT MARKED, COMPLETE ITEM D.

A.
- [X] 1 MOTOR VEHICLE FUEL
- [ ] 2 PETROLEUM
- [ ] 3 CHEMICAL PRODUCT
- [ ] 4 OIL
- [ ] 5 HAZARDOUS
- [ ] 80 EMPTY
- [ ] 95 UNKNOWN

B.
- [X] 1 PRODUCT
- [ ] 2 WASTE

C.
- [ ] 1 UNLEADED
- [X] 2 LEADED
- [ ] 3 DIESEL
- [ ] 4 GASAHOL
- [ ] 5 JET FUEL
- [ ] 6 AVIATION GAS
- [ ] 7 METHANOL
- [ ] 99 OTHER (DESCRIBE IN ITEM D, BELOW)

D. IF NOT MOTOR VEHICLE FUEL, ENTER NAME OF HAZARDOUS SUBSTANCE STORED & C.A.S. # — C.A.S. #:

III. TANK CONSTRUCTION — MARK ONE ITEM ONLY IN BOX A, B, C, & D

A. TYPE OF SYSTEM
- [ ] 1 DOUBLE WALLED
- [X] 2 SINGLE WALLED
- [ ] 3 SINGLE WALLED WITH EXTERIOR LINER
- [ ] 4 SECONDARY CONTAINMENT
- [ ] 95 UNKNOWN
- [ ] 99 OTHER

B. TANK MATERIAL
- [X] 1 STEEL/IRON
- [ ] 2 STAINLESS STEEL
- [ ] 3 FIBERGLASS
- [ ] 4 STEEL CLAD W/FIBERGLASS REINFORCED PLASTIC
- [ ] 5 CONCRETE
- [ ] 6 POLYVINYL CHLORIDE
- [ ] 7 ALUMINUM
- [ ] 8 100% METHANOL COMPATIBLE FRP
- [ ] 9 BRONZE
- [ ] 10 GALVANIZED STEEL
- [ ] 95 UNKNOWN
- [ ] 99 OTHER

C. INTERIOR LINING
- [ ] 1 RUBBER LINED
- [ ] 2 ALKYD LINING
- [ ] 3 EPOXY LINING
- [ ] 4 PHENOLIC LINING
- [ ] 5 GLASS LINING
- [X] 6 UNLINED
- [ ] 95 UNKNOWN
- [ ] IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? [ ] YES [ ] NO
- [ ] 99 OTHER

D. CORROSION PROTECTION
- [ ] 1 POLYETHLENE WRAP
- [X] 2 TAR OR ASPHALT
- [ ] 3 VINYL WRAP
- [ ] 4 FIBERGLASS REINFORCED PLASTIC
- [ ] 5 CATHODIC PROTECTION
- [ ] 91 NONE
- [ ] 95 UNKNOWN
- [ ] 99 OTHER

IV. PIPING INFORMATION — CIRCLE **A** IF ABOVE GROUND, **U** IF UNDERGROUND, **BOTH IF APPLICABLE**

A. SYSTEM TYPE	A (U) 1 SUCTION	A U 2 PRESSURE	A U 3 GRAVITY	A U 91 NONE	A U 95 UNKNOWN	A U 99 OTHER			
B. CONSTRUCTION	A (U) 1 SINGLE WALLED	A U 2 DOUBLE WALLED	A U 3 LINED TRENCH	A U 91 NONE	A U 95 UNKNOWN	A U 99 OTHER			
C. MATERIAL	A (U) 1 STEEL/IRON	A U 2 STAINLESS STEEL	A U 3 POLYVINYL CHLORIDE (PVC)	A U 4 FIBERGLASS PIPE	A U 91 NONE				
	A U 5 ALUMINUM	A U 6 CONCRETE	A U 7 STEEL CLAD W/FRP	A U 8 100% METHANOL COMPATIBLE FRP					
	A U 9 GALVANIZED STEEL	A U 95 UNKNOWN	A U 99 OTHER						

V. LEAK DETECTION SYSTEM — CIRCLE **P** FOR PRIMARY, OR **S** FOR SECONDARY, A **PRIMARY LEAK DETECTION SYSTEM MUST BE CIRCLED.**

P S 1 VISUAL CHECK	(P) S 2 INVENTORY RECONCILIATION	P S 3 VADOSE WELLS	P S 4 ELECTRONIC MONITOR	P S 5 GROUND WATER MONITORING WELLS
P (S) 6 PRECISION TESTING	P S 7 PRESSURE TESTING	P S 91 NONE	P S 95 UNKNOWN	P S 99 OTHER

VI. INFORMATION ON TANK PERMANENTLY CLOSED IN PLACE

1. ESTIMATED DATE LAST USED (MO/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING IN GALLONS	3. WAS TANK FILLED WITH INERT MATERIAL? [ ] YES [ ] NO

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT.

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE

LOCAL AGENCY USE ONLY

COUNTY #	JURISDICTION #	AGENCY #	FACILITY ID #	TANK ID #
1 0				C P C 1

CURRENT LOCAL AGENCY FACILITY ID #	APPROVED BY NAME	PHONE # WITH AREA CODE
30095412	C. HERNANDEZ	445-5671 (209)

PERMIT NUMBER	PERMIT APPROVAL DATE	PERMIT EXPIRATION DATE

CHECK #	PERMIT AMOUNT	SURCHARGE AMT.	FEE CODE	RECEIPT #	BY:

FORM B (6-29-88) **THIS FORM MUST BE ACCOMPANIED BY A FACILITY/SITE APPLICATION, FORM 'A', UNLESS A CURRENT FORM 'A' HAS BEEN FILED**

STATE OF CALIFORNIA — WATER RESOURCES CONTROL BOARD

FORM 'B': TANK

UNDERGROUND STORAGE TANK PROGRAM
TANK PERMIT APPLICATION INFORMATION

INSTRUCTIONS FOR COMPLETING THIS FORM

GENERAL INSTRUCTIONS:

1. One FORM "B" shall be completed for each tank for all **NEW PERMITS, PERMIT CHANGES, REMOVALS,** and/or any other **TANK INFORMATION CHANGE.**
2. This form should be completed by either the **PERMIT APPLICANT,** or the **LOCAL AGENCY UNDERGROUND TANK INSPECTOR.**
3. Please type or print clearly all requested information.
4. Use a hard point writing instrument, you are making 3 copies.

TOP OF FORM: "MARK ONLY ONE ITEM"

1. Mark an (X) in the box next to the item that best describes the reason the form is being completed.
2. Indicate the Facility/Site name where the tank is installed.
3. Is this tank a farm tank? Check 'YES' or 'NO'. A farm tank is a tank located on an agricultural farm which stores motor vehicle fuel used to propel farm vehicles.

I. TANK DESCRIPTION — COMPLETE ALL ITEMS - IF UNKNOWN - SO SPECIFY

A. Indicate owners tank ID # - If there is a tank number that is used by the owner to identify the tank.(ex. AB70789)
B. Indicate the name of the company that manufactured the tank. (ex. ACME TANK MFG.)
C. Indicate the year tank was installed. (ex. 1987)
D. Indicate the tank capacity in gallons. (ex. 25,000 or 10,000, etc.)

II TANK CONTENTS

A. 1. If MOTOR VEHICLE FUEL, check box 1 and complete items B & C.
   2. If not MOTOR VEHICLE FUEL, check the appropriate box in section A and complete items B & D.
B. Check the appropriate box.
C. Check the type of MOTOR VEHICLE FUEL. (if box 1 is checked in A)
D. Print the chemical name of the hazardous substance stored in the tank and the C.A.S. #. (Chemical Abstract Service number), if box 1 is NOT checked in A.

III. TANK CONSTRUCTION — MARK ONE ITEM ONLY IN BOX A, B, C & D

1. Check only one item in TYPE OF SYSTEM, TANK MATERIAL, INTERIOR LINING and CORROSION PROTECTION.
2. If OTHER, print in the space provided.

IV. PIPING INFORMATION

1. Circle **A** if above ground, or **U** if underground; circle both if applicable.
2. If UNKNOWN, circle or if OTHER, print in space provided.

V. LEAK DETECTION SYSTEM

1. Circle **P** for PRIMARY, or **S** for SECONDARY. A primary and/or secondary leak detection system **MUST** be circled.
2. If UNKNOWN, specify or if OTHER, print in space provided.
3. If there is no SECONDARY LEAK DETECTION SYSTEM, circle NONE.

VI. INFORMATION ON TANK PERMANENTLY CLOSED IN PLACE

1. ESTIMATED DATE LAST USED - MONTH/YEAR (January, 1988 or 01/88).
2. ESTIMATED QUANTITY of SUBSTANCE remaining in tank. (in Gallons)
3. WAS TANK FILLED WITH INERT MATERIAL? Check 'YES' or 'NO'.

Applicant must sign and date form as indicated.

IT IS THE RESPONSIBLITY OF THE LOCAL AGENCY THAT INSPECTS THE FACILITY/SITE TO VERIFY THE ACCURACY OF THE INFORMATION. THE LOCAL AGENCY IS RESPONSIBLE FOR THE COMPLETION OF THE "LOCAL AGENCY USE ONLY" INFORMATION BOX AND FOR FORWARDING ONE FORM "A" AND ASSOCIATED FORM "B"(s) TO THE FOLLOWING ADDRESS:

STATE OF CALIFORNIA
WATER RESOURCES CONTROL BOARD
C/O S.W.E.E.P.S.
DATA PROCESSING CENTER
P.O. BOX 527
PARAMOUNT, CA 90723

PREC

DISPLAY IN A CONSPICUOUS PLACE

County of FRESNO

DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH FEE RECEIPT

058383

June 21, 1991
CT 7.00

RECEIVED OF CALIFORNIA COMPRESS CO INC
THE SUM OF $ 219.00 FOR ENVIRONMENTAL HEALTH FEE TO ENGAGE IN THE ACTIVITY OF

HAZ MAT DISCLOSURE INIT REGISTRATION BUS PLAN MORE THAN 10000 UNITS

FOR THE PERIOD TO

MAILING ADDRESS
CALIFORNIA COMPRESS CO INC
P.O. BOX 11966
FRESNO,CA 93776

COST CENTER 4752

BUSINESS I.D. NO. 20697W

** THANK YOU FOR YOUR PAYMENT **

TE: 2740 W NIELSON
FRESNO,CA 93706

BY GEORGE BLETH — DIRECTOR

COUNTY OF FRESNO

ENVIRONMENTAL HEALTH APPLICATION

BUSINESS ID# 20697 W/C

PLEASE PRINT OR TYPE

Business Name California Compress Co., Inc.

Inspection Site 2740 W. Nielson
Fresno, CA 93706

Billing c/o P.O. Box 11966
Fresno CA 93776

Starting Date _____ Telephone 233-1725

Business Owner California Compress Co Mgr, Inc

Owner Address same as billing

The Applicant hereby agrees to abide by all applicable Federal, State, and Fresno County statutes, laws, regulations, and the Fresno County Charter Ordinances and further agrees to pay all applicable Fresno County Environmental Health Permit and Inspection Fees, and late fees and penalties, if any, which apply to the permit which is being applied for here. Notify Environmental Health of any change in the type of business activity, name or ownership by calling 445-3357. Failure to notify Environmental Health may result in late fee penalties, Permit revocation and business closure.

Applicant Signature _____ Title _____ Date _____

Environmental Health Use Route to: ✓ Business __ Envision __ File

✓ New Business _ Close(inactive) _ Close(delete) _ Billing Address Change
_ Business Name Change _ Ownership Change _ Add Activities _ Other

Comments _____

Business Name _____ Owner _____

Business ID _____ Closure date _____ Tank # _____

Inspection Site _____ City & Census 0507.00

Desig Emp 1000 Program Elem 2240 Record ID # PR _____

Fee/Activity Description	Billing Code	Fee
MORE THAN 10,000 UNITS	YAMY6-D	210.00

Analyst SHAWN L. KLEMKAUSKAS Date 5/8/91 Supervisor _____

Envision updated by _____ Date _____

Business Office Use Reg 5/21/91 cal

County of FRESNO

BUSINESS PLAN REGISTRATION FORM

Department of Health, Environmental Health System
Hazardous Materials Disclosure Program
P.O. Box 11867
Fresno, CA 93775
(209) 445-3271

1) BUSINESS NAME: CALIFORNIA COMPRESS CO. INC. PHONE #: 209-233-1725
FACILITY ADDRESS: 2740 W. NIELSEN AVENUE
CITY: FRESNO STATE: CA ZIP CODE: 93706

2) OWNER/OPERATOR NAME: CALIFORNIA COMPRESS CO INC PHONE #: 209-233-1725
MAILING ADDRESS: P.O.BOX 11966
CITY: FRESNO STATE: CA ZIP CODE: 93776

3) DUN & BRADSTREET #: 08721689 7 4) SIC CODE: 4225

RECEIVED
SEP 24 1990
ENVIRONMENTAL HEALTH SYSTEM
FRESNO COUNTY DEPT. OF HEALTH

5) NATURE OF BUSINESS:
COTTON COMPRESS AND WAREHOUSE

6) EMERGENCY CONTACTS

NAME: KEITH PAUL
BUSINESS PHONE: 209-266-0511
24-HOUR PHONE: 209-221-7748
TITLE: GENERAL MANAGER

NAME: DON ROBINSON
BUSINESS PHONE: 209-268-0811
24-HOUR PHONE: 209-229-9020
TITLE: SUPERINTENDENT

7) PURPOSE OF SUBMISSION (check one)
- [x] Initial registration
- [ ] Annual Report
- [ ] Change of Name/Address/Owner
- [ ] 100% Increase in inventory
- [ ] Other

8) PERMITS:
EPA Hazardous Waste Generator #:
Date:
Do You Have Underground Storage Tank(s)? (Refer to Attachment C) YES [x] NO [ ]

9) FIRE DEPARTMENT COPY MAILED TO: DATE:
FRESNO FIRE DEPT. 450 "M" STREET FRESNO, CA 93721

10) EMERGENCY PLANNING INFORMATION
- YES [ ] NO [x] For State/Fed planning: We handle Acutely Hazardous Materials
- YES [ ] NO [x] School(s)/Hospital(s)/Extended Care Facilities within 1,000 feet of My Facility

11) CERTIFICATION:
I certify under penalty of law, that I have personally examined and am familiar with the information submitted and believe the submitted information is true, accurate, and complete.

PRINT NAME OF OWNER/OPERATOR: CALIFORNIA COMPRESS CO INC.
PRINT NAME OF DOCUMENT PREPARER: KEITH PAUL
SIGNATURE OF OWNER/OPERATOR: Keith Paul DATE: 9/21/90

EHS-1 rev 1/90 DF

☐ Non-trade Secret
☐ Trade Secret

CHEMICAL DESCRIPTION INVENTORY FORM

County of FRESNO

1) COMMON NAME: GASOLINE - UNLEADED

2) CHEMICAL NAME: GASOLINE - UNLEADED

3) ACUTELY HAZARDOUS MATERIAL YES ☐ NO ☒ | 4) CAS #: 8006-61-9

5) PHYSICAL STATE: Solid ☐ Liquid ☒ Gas ☐ Pure ☐ Mixture ☒ Radioactive ☐ (If radioactive, enter curies) _____
Waste ☐ (If waste, enter annual amount generated) _____

6) WASTE CLASSIFICATION (3 digit code) _____ Enter the State Waste Number DHS form 8022, Uniform Hazardous Waste Manifest

7) PHYSICAL & HEALTH HAZARD CATEGORIES
PHYSICAL: Fire ☒ Reactive ☐ Sudden Pressure Release ☐
HEALTH: Immediate Health (Acute) ☒ Delayed Health (Chronic) ☒

8) AMOUNT & TIME at FACILITY
Units of Measure: grams ☐ lbs. ☐ cu. ft. ☐ Kg. ☐ gals. ☒ ___ ☐
Maximum Daily Amount: 500
Average Daily Amount: 200
Largest Size Container: 1000
Days per Year On-site: 365

9) STORAGE CODES
(a) Container: 1
(b) Pressure: 1
(c) Temperature: 4

10) MIXTURE/WASTE: List the three most hazardous chemical components
1. Name BENZENE CAS # 71-43-2 %WT 0.1
2. Name _____ CAS # _____ %WT _____
3. Name _____ CAS # _____ %WT _____

---

1) COMMON NAME: GASOLINE - LEADED

2) CHEMICAL NAME: GASOLINE - LEADED

3) ACUTELY HAZARDOUS MATERIAL YES ☐ NO ☒ | 4) CAS #: 8006-61-9

5) PHYSICAL STATE: Solid ☐ Liquid ☒ Gas ☐ Pure ☐ Mixture ☒ Radioactive ☐ (If radioactive, enter curies) _____
Waste ☐ (If waste, enter annual amount generated) _____

6) WASTE CLASSIFICATION (3 digit code) _____ Enter the State Waste Number DHS form 8022, Uniform Hazardous Waste Manifest

7) PHYSICAL & HEALTH HAZARD CATEGORIES
PHYSICAL: Fire ☒ Reactive ☐ Sudden Pressure Release ☐
HEALTH: Immediate Health (Acute) ☒ Delayed Health (Chronic) ☒

8) AMOUNT & TIME at FACILITY
Units of Measure: grams ☐ lbs. ☐ cu. ft. ☐ Kg. ☐ gals. ☒ ___ ☐
Maximum Daily Amount: 500
Average Daily Amount: 200
Largest Size Container: 8000
Days per Year On-site: 365

9) STORAGE CODES
(a) Container: 1
(b) Pressure: 1
(c) Temperature: 4

10) MIXTURE/WASTE: List the three most hazardous chemical components
1. Name BENZENE CAS # 71-43-2 %WT < 0.1
2. Name TETRAETHYL LEAD CAS # 78-00-2 %WT < 0.1
3. Name TETRAMETHYL LEAD CAS # 75-74-1 %WT < 0.1

☐ Non-trade Secret
☐ Trade Secret

CHEMICAL DESCRIPTION INVENTORY FORM

County of FRESNO

1) COMMON NAME: DIESEL FUEL NO 2

2) CHEMICAL NAME: DIESEL FUEL NO 2

3) ACUTELY HAZARDOUS MATERIAL YES ☐ NO ☒ | 4) CAS #: 68476-34-6

5) PHYSICAL STATE: Solid ☐ Liquid ☒ Gas ☐ Pure ☐ Mixture ☒ Radioactive ☐ (If radioactive, enter curies) _____
Waste ☐ (If waste, enter annual amount generated) _____

6) WASTE CLASSIFICATION (3 digit code) _____ Enter the State Waste Number DHS form 8022, Uniform Hazardous Waste Manifest

7) PHYSICAL & HEALTH HAZARD CATEGORIES
PHYSICAL: Fire ☒ Reactive ☐ Sudden Pressure Release ☐
HEALTH: Immediate Health (Acute) ☒ Delayed Health (Chronic) ☒

8) AMOUNT & TIME at FACILITY
Units of Measure: grams ☐ lbs. ☐ cu. ft. ☐ Kg. ☐ gals. ☒ ___ ☐
Maximum Daily Amount: N/A
Average Daily Amount: 5400
Largest Size Container: 10,000
Days per Year On-site: 365

9) STORAGE CODES
(a) Container: 1
(b) Pressure: 1
(c) Temperature: 4

10) MIXTURE/WASTE: List the three most hazardous chemical components
1. Name _____ CAS # _____ %WT _____
2. Name _____ CAS # _____ %WT _____
3. Name _____ CAS # _____ %WT _____

---

1) COMMON NAME: PROPANE

2) CHEMICAL NAME: LIQUEFIED PETROLEUM GAS

3) ACUTELY HAZARDOUS MATERIAL YES ☐ NO ☒ | 4) CAS #: 74-98-6

5) PHYSICAL STATE: Solid ☐ Liquid ☐ Gas ☒ Pure ☐ Mixture ☒ Radioactive ☐ (If radioactive, enter curies) _____
Waste ☐ (If waste, enter annual amount generated) _____

6) WASTE CLASSIFICATION (3 digit code) _____ Enter the State Waste Number DHS form 8022, Uniform Hazardous Waste Manifest

7) PHYSICAL & HEALTH HAZARD CATEGORIES
PHYSICAL: Fire ☒ Reactive ☐ Sudden Pressure Release ☐
HEALTH: Immediate Health (Acute) ☒ Delayed Health (Chronic) ☒

8) AMOUNT & TIME at FACILITY
Units of Measure: grams ☐ lbs. ☐ cu. ft. ☐ Kg. ☐ gals. ☑ ___ ☐
Maximum Daily Amount: 2000
Average Daily Amount: 500
Largest Size Container: 2 @ 1000
Days per Year On-site: 365

9) STORAGE CODES
(a) Container: 2
(b) Pressure: 2
(c) Temperature: 3

10) MIXTURE/WASTE: List the three most hazardous chemical components
1. Name _____ CAS # _____ %WT _____
2. Name _____ CAS # _____ %WT _____
3. Name _____ CAS # _____ %WT _____

☐ Non-trade Secret
☐ Trade Secret

CHEMICAL DESCRIPTION INVENTORY FORM

County of FRESNO

1) COMMON NAME: ACETYLENE

2) CHEMICAL NAME: ACETYLENE

3) ACUTELY HAZARDOUS MATERIAL YES ☒ NO ☐ | 4) CAS #: 78-86-2

5) PHYSICAL STATE: Solid ☐ Liquid ☐ Gas ☒ Pure ☐ Mixture ☒ Radioactive ☐ (If radioactive, enter curies) _____
Waste ☐ (If waste, enter annual amount generated) _____

6) WASTE CLASSIFICATION (3 digit code) _____ Enter the State Waste Number DHS form 8022, Uniform Hazardous Waste Manifest

7) PHYSICAL & HEALTH HAZARD CATEGORIES
PHYSICAL: Fire ☒ Reactive ☒ Sudden Pressure Release ☐
HEALTH: Immediate Health (Acute) ☐ Delayed Health (Chronic) ☒

8) AMOUNT & TIME at FACILITY
Units of Measure: grams ☐ lbs. ☐ cu. ft. ☒ Kg. ☐ gals. ☐ ___ ☐
Maximum Daily Amount: 250
Average Daily Amount: 250
Largest Size Container: 125
Days per Year On-site: 365

9) STORAGE CODES
(a) Container: 4
(b) Pressure: 2
(c) Temperature: 2

10) MIXTURE/WASTE: List the three most hazardous chemical components
1. Name _____ CAS # _____ %WT _____
2. Name _____ CAS # _____ %WT _____
3. Name _____ CAS # _____ %WT _____

---

1) COMMON NAME: OXYGEN

2) CHEMICAL NAME: OXYGEN

3) ACUTELY HAZARDOUS MATERIAL YES ☐ NO ☒ | 4) CAS #: 7782-44-7

5) PHYSICAL STATE: Solid ☐ Liquid ☐ Gas ☒ Pure ☐ Mixture ☒ Radioactive ☐ (If radioactive, enter curies) _____
Waste ☐ (If waste, enter annual amount generated) _____

6) WASTE CLASSIFICATION (3 digit code) _____ Enter the State Waste Number DHS form 8022, Uniform Hazardous Waste Manifest

7) PHYSICAL & HEALTH HAZARD CATEGORIES
PHYSICAL: Fire ☐ Reactive ☐ Sudden Pressure Release ☐
HEALTH: Immediate Health (Acute) ☐ Delayed Health (Chronic) ☐

8) AMOUNT & TIME at FACILITY
Units of Measure: grams ☐ lbs. ☐ cu. ft. ☒ Kg. ☐ gals. ☐ ___ ☐
Maximum Daily Amount: 250
Average Daily Amount: 250
Largest Size Container: 125
Days per Year On-site: 365

9) STORAGE CODES
(a) Container: 4
(b) Pressure: 2
(c) Temperature: 2

10) MIXTURE/WASTE: List the three most hazardous chemical components
1. Name _____ CAS # _____ %WT _____
2. Name _____ CAS # _____ %WT _____
3. Name _____ CAS # _____ %WT _____

CHEMICAL DESCRIPTION INVENTORY FORM

☐ Non-trade Secret
☐ Trade Secret

County of FRESNO

1) COMMON NAME: MOGUL EQ5306

2) CHEMICAL NAME: CATALYZED SULFITE

3) ACUTELY HAZARDOUS MATERIAL YES ☒ NO ☒ | 4) CAS #: 7757-83-7

5) PHYSICAL STATE: Solid ☐ Liquid ☐ Gas ☐ Pure ☐ Mixture ☒ Radioactive ☐ (If radioactive, enter curies) _____
Waste ☐ (If waste, enter annual amount generated) _____

6) WASTE CLASSIFICATION (3 digit code) _____ Enter the State Waste Number DHS form 8022, Uniform Hazardous Waste Manifest

7) PHYSICAL & HEALTH HAZARD CATEGORIES
PHYSICAL: Fire ☐ Reactive ☒ Sudden Pressure Release ☐
HEALTH: Immediate Health (Acute) ☐ Delayed Health (Chronic) ☒

8) AMOUNT & TIME at FACILITY
Units of Measure: grams ☐ lbs. ☐ cu. ft. ☐ Kg. ☐ gals. ☑ ___ ☐
Maximum Daily Amount: N/A
Average Daily Amount: N/A
Largest Size Container: 55
Days per Year On-site: 365

9) STORAGE CODES
(a) Container: 6
(b) Pressure: 1
(c) Temperature: 4

10) MIXTURE/WASTE: List the three most hazardous chemical components

		CAS #	%WT
1. Name	SODIUM SULFITE	7757-83-7	10-15
2. Name	SODIUM BISULFATE	7631-90-5	5-10
3. Name			

1) COMMON NAME: MOGUL 7216

2) CHEMICAL NAME: PHOSPHATE/SULFITE/POLYMER/PHOSPHONATE

3) ACUTELY HAZARDOUS MATERIAL YES ☐ NO ☒ | 4) CAS #: 54193-36-1

5) PHYSICAL STATE: Solid ☐ Liquid ☐ Gas ☐ Pure ☐ Mixture ☒ Radioactive ☐ (If radioactive, enter curies) _____
Waste ☐ (If waste, enter annual amount generated) _____

6) WASTE CLASSIFICATION (3 digit code) _____ Enter the State Waste Number DHS form 8022, Uniform Hazardous Waste Manifest

7) PHYSICAL & HEALTH HAZARD CATEGORIES
PHYSICAL: Fire ☐ Reactive ☒ Sudden Pressure Release ☐
HEALTH: Immediate Health (Acute) ☐ Delayed Health (Chronic) ☒

8) AMOUNT & TIME at FACILITY
Units of Measure: grams ☐ lbs. ☐ cu. ft. ☐ Kg. ☐ gals. ☑ ___ ☐
Maximum Daily Amount: N/A
Average Daily Amount: N/A
Largest Size Container: 55
Days per Year On-site: 365

9) STORAGE CODES
(a) Container: 6
(b) Pressure: 1
(c) Temperature: 4

10) MIXTURE/WASTE: List the three most hazardous chemical components

		CAS #	%WT
1. Name			
2. Name			
3. Name			

CHEMICAL DESCRIPTION INVENTORY FORM

☐ Non-trade Secret
☐ Trade Secret

County of FRESNO

1) COMMON NAME: PENNZOIL MOTOR OIL SAE 30

2) CHEMICAL NAME: PETROLEUM LUBRICANT

3) ACUTELY HAZARDOUS MATERIAL YES ☐ NO ☒ | 4) CAS #: MIXTURE

5) PHYSICAL STATE: Solid ☐ Liquid ☐ Gas ☐ Pure ☐ Mixture ☒ Radioactive ☐ (If radioactive, enter curies) _____
Waste ☐ (If waste, enter annual amount generated) _____

6) WASTE CLASSIFICATION (3 digit code) _____ Enter the State Waste Number DHS form 8022, Uniform Hazardous Waste Manifest

7) PHYSICAL & HEALTH HAZARD CATEGORIES
PHYSICAL: Fire ☐ Reactive ☒ Sudden Pressure Release ☐
HEALTH: Immediate Health (Acute) ☐ Delayed Health (Chronic) ☒

8) AMOUNT & TIME at FACILITY — Units of Measure: grams ☐ lbs. ☐ cu. ft ☐ Kg. ☐ gals. ☑ ___ ☐
Maximum Daily Amount: 55
Average Daily Amount: N/A
Largest Size Container: 55
Days per Year On-site: 365

9) STORAGE CODES
(a) Container: 6
(b) Pressure: 1
(c) Temperature: 4

10) MIXTURE/WASTE: List the three most hazardous chemical components
1. Name BASE LUBRICATING OILS CAS # MIXTURE %WT 90-95
2. Name DETERGENT INHIBITOR CAS # ✓ %WT 5-10
3. Name POUR POINT DEPRESSANT CAS # ✓ %WT <1

---

1) COMMON NAME: PENNZOIL AW HYDRAULIC OIL 46

2) CHEMICAL NAME: PETROLEUM LUBRICANT

3) ACUTELY HAZARDOUS MATERIAL YES ☐ NO ☒ | 4) CAS #: MIXTURE

5) PHYSICAL STATE: Solid ☐ Liquid ☐ Gas ☐ Pure ☐ Mixture ☒ Radioactive ☐ (If radioactive, enter curies) _____
Waste ☐ (If waste, enter annual amount generated) _____

6) WASTE CLASSIFICATION (3 digit code) _____ Enter the State Waste Number DHS form 8022, Uniform Hazardous Waste Manifest

7) PHYSICAL & HEALTH HAZARD CATEGORIES
PHYSICAL: Fire ☐ Reactive ☒ Sudden Pressure Release ☐
HEALTH: Immediate Health (Acute) ☐ Delayed Health (Chronic) ☒

8) AMOUNT & TIME at FACILITY — Units of Measure: grams ☐ lbs. ☐ cu. ft ☐ Kg. ☐ gals. ☑ ___ ☐
Maximum Daily Amount: 55
Average Daily Amount: N/A
Largest Size Container: 55
Days per Year On-site: 365

9) STORAGE CODES
(a) Container: 6
(b) Pressure: 1
(c) Temperature: 4

10) MIXTURE/WASTE: List the three most hazardous chemical components
1. Name BASE LUBRICATING OILS CAS # MIXTURE %WT 95-100
2. Name ANTIWARE ADDITIVE CAS # ✓ %WT <1
3. Name SILICONE ANTIFOAM CAS # ✓ %WT <1

County of FRESNO

HAZARDOUS MATERIALS EMERGENCY RESPONSE FORM

BUSINESS NAME: CALIFORNIA COMPRESS CO INC. ADDRESS: 2740 W. NIELSEN FRESNO 93706

1. Describe procedures used to prevent a hazardous materials release.

COMPLETE EMPLOYEE AWARENESS AND TRAINING

2. Describe procedures to reduce/abate/prevent damage if a hazardous materials release occurs.

COMPLETE EMPLOYEE AWARENESS AND TRAINING

3. Describe procedures for immediate notification and evacuation of the business site.

EMPLOYEES NOTIFY MANAGEMENT WHO IN TURN WILL NOTIFY EMERGENCY AGENCIES.

4. What is the closest medical facility that can provide appropriate assistance in the case of an accident.

COMMUNITY HOSPITAL

5. Employee Training and Emergency Notification (EMPLOYERS ARE REQUIRED TO HAVE A PROGRAM WHICH PROVIDES EMPLOYEES WITH INITIAL AND REFRESHER TRAINING IN THE FOLLOWING AREAS) Circle Yes or No to the following questions listed below:

		INITIAL		REFRESHER	
a)	Are employees trained in methods for safe handling of hazardous materials?	(Yes)	No	Yes	No
b)	Are procedures established for coordinating activities with response agencies?	(Yes)	No	Yes	No
c)	Are employees trained in proper use of safety equipment?	(Yes)	No	Yes	No
d)	Are employees trained in emergency evacuation procedures?	(Yes)	No	Yes	No
e)	Do you maintain employee training records?	(Yes)	No	Yes	No

APPENDIX

K

Former CA Compress Facility
2740 W. Nielson Ave.
Fresno, CA 93706

Inquiry Number: 6275752.2s
November 21, 2020

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	9
Orphan Summary	190
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-12
Physical Setting Source Map Findings	A-14
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

2740 W. NIELSON AVE.
FRESNO, CA 93706

COORDINATES

Latitude (North):	36.7442160 - 36° 44' 39.17''
Longitude (West):	119.8399560 - 119° 50' 23.84''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	246432.1
UTM Y (Meters):	4070056.8
Elevation:	287 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5603172 FRESNO SOUTH, CA
Version Date:	2012
North Map:	5603170 FRESNO NORTH, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140619
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
2740 W. NIELSON AVE.
FRESNO, CA 93706

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	CALIFORNIA COMPRESS	2740 NEILSON	RGA LUST		TP
A2	CALIFORNIA COMPRESS	2740 NIELSEN W	FINDS		TP
A3	CALIFORNIA COMPRESS	2740 W NIELSEN	SWEEPS UST, CA FID UST, CUPA Listings		TP
A4	CALIFORNIA COMPRESS	2740 NIELSEN	LUST, HIST UST, Cortese, HIST CORTESE, CERS		TP
A5	CALIFORNIA COMPRESS	2740 NIELSEN	HAZNET, HWTS		TP
A6	CA CONPRESS CO	2740 W NIELSEN AVE	NPDES, CIWQS		TP
A7	GEORGE DAOUDIAN	2740 W NIELSEN AVE	HAZNET, HWTS		TP
A8		2740 W. NEILSON AVE	CHMIRS		TP
A9	CALIFORNIA COMPRESS	2740 WEST NIELSEN AV	HIST UST		TP
A10	CALIFORNIA COMPRESS	2740 NIELSEN W	RGA LUST		TP
B11	INDIVIDUAL LAUNDRY	2820 W NIELSON AV	EDR Hist Cleaner	Higher	1 ft.
12	AMERICAN RIVER PACKA	2650 W NIELSEN AVE	HAZNET, HWTS	Higher	1 ft.
B13	JENSEN FARMS	2829 W NIELSEN	SWEEPS UST, HIST UST, CA FID UST	Higher	74, 0.014, WSW
B14	JENSEN FARMS	2829 W NIELSEN AVE	HIST UST	Higher	74, 0.014, WSW
C15	KEMMER AGRICULTRUAL	88 N.HUGHES	RCRA-SQG, HIST UST, FINDS, ECHO, HAZNET, HWTS	Higher	90, 0.017, East
C16	KEMMER AGRICULTURE	88 N HUGHES	CERS HAZ WASTE, SWEEPS UST, CA FID UST, CUPA...	Higher	90, 0.017, East
C17	TOM MALLOY CORP DBA	88 N HUGHES AVE	RCRA NonGen / NLR	Higher	90, 0.017, East
B18	FRESNO IRRIGATION DI	MARKS & NIELSON	CPS-SLIC, CERS	Higher	133, 0.025, WSW
19	CRUSH RECYCLING	495 N MARKS AVE	CUPA Listings, EMI, HAZNET, HWTS	Lower	138, 0.026, West
D20	BRENNTAG PACIFIC INC	175 N.HUGHES AVE.	RCRA-LQG	Higher	217, 0.041, ENE
D21	BRENNTAG PACIFIC	175 N HUGHES AVE	CUPA Listings	Higher	217, 0.041, ENE
D22	BRENNTAG PACIFIC, IN	175 N HUGHES AVE	CERS HAZ WASTE, CERS TANKS, EMI, CERS	Higher	217, 0.041, ENE
E23	HOOD BROS. PALLETS &	3040 W NIELSEN AVE	HIST UST	Higher	278, 0.053, WSW
E24	HOOD BROS. PALLETS &	3040 W NIELSEN	SWEEPS UST, HIST UST, CA FID UST	Higher	278, 0.053, WSW
E25	FRESNO IRRIGATION DI	3075 W NIELSEN	LUST, SWEEPS UST, CA FID UST, Cortese, CUPA...	Higher	366, 0.069, WSW
E26	FRESNO IRR. DIST. CO	3075 W. NIELSON AVE.	WMUDS/SWAT	Higher	366, 0.069, WSW
E27	1X FRESNO IRRIGATION	3075 W NIELSON	SWF/LF, HAZNET, CERS, HWTS	Higher	366, 0.069, WSW
E28	SHOP/YARD	3075 W NIELSEN	HIST UST	Higher	366, 0.069, WSW
E29	NORTH CENTRAL FIRE D	3031 W NIELSEN	CUPA Listings	Higher	369, 0.070, WSW
F30	CENTRAL CALIF SPCA	103 S HUGHES AVE	HIST UST	Lower	446, 0.084, ESE
F31	CENTRAL CALIFORNIA S	103 S HUGHES AVE	RCRA NonGen / NLR	Lower	446, 0.084, ESE
F32	CENTRAL CALIFORNIA S	103 S HUGHES AVE	CUPA Listings	Lower	446, 0.084, ESE
F33	CENTRAL CALIF. SPCA	103 S HUGHES AVE	SWEEPS UST, CA FID UST, NPDES	Lower	446, 0.084, ESE
E34	FRESNO IRRIGATION DI	3051 W NIELSEN AVE	CUPA Listings	Higher	482, 0.091, WSW
G35	AMAYA KC	620 N MARKS AVE	CUPA Listings	Lower	505, 0.096, NW
G36	JNB TRUCK AND TRAILE	620 N MARKS AVE	RCRA NonGen / NLR	Lower	505, 0.096, NW
H37	REIMER TRANSPORT	2002 W NIELSEN	LUST, SWEEPS UST, Cortese, CUPA Listings, WDS,...	Lower	529, 0.100, East
H38	WELDON TRUCKING INC	2002 W NIELSEN AVE	RCRA NonGen / NLR	Lower	529, 0.100, East
H39	WELDON TRUCKING INC	2002 W NIELSON	CA FID UST	Lower	529, 0.100, East

MAPPED SITES SUMMARY

Target Property Address:
2740 W. NIELSON AVE.
FRESNO, CA 93706

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
H40	REIMER TRANSPORT/WEL	2002 W NIELSEN	CERS HAZ WASTE, CERS TANKS, CERS	Lower	529, 0.100, East
I41	MANHEIM CENTRAL CALI	278 N MARKS AVE	CUPA Listings	Lower	564, 0.107, SW
I42	FRESNO AUTO DEALERS	278 N MARKS	SWEEPS UST, CA FID UST	Lower	564, 0.107, SW
I43	CALIFORNIA CUISINE C	278 N MARKS AVE	CUPA Listings	Lower	564, 0.107, SW
I44	FRESNO AUTO DEALERS	278 N MARKS	HIST UST	Lower	564, 0.107, SW
I45	MANHEIM CENTRAL CALI	278 N MARKS AVE	RCRA NonGen / NLR	Lower	564, 0.107, SW
I46	R M KING CO	315 N MARKS AVE	RCRA NonGen / NLR	Lower	684, 0.130, SW
I47	R M KING COMPANY	315 N MARKS	CERS HAZ WASTE, CUPA Listings, EMI, HAZNET, CERS,...	Lower	684, 0.130, SW
I48	D-K-P	275 N MARKS	CUPA Listings, CERS	Lower	690, 0.131, SW
49	ARARAT ARMENIAN CEME	250 N HUGHES AVE	RCRA NonGen / NLR	Higher	765, 0.145, NE
J50	FRESNO COUNTY EOC CO	3110 W NIELSEN	CERS HAZ WASTE, CUPA Listings, CERS	Higher	791, 0.150, WSW
K51	JV'S TOWING SERVICE	170 S HUGHES AVE	CUPA Listings	Lower	791, 0.150, SE
52	CRAYCROFT BRICK COMP		US MINES	Lower	900, 0.170, NW
J53	ECONOMIC OPPORTUNITI	3120 W NEILSEN	CA FID UST	Higher	913, 0.173, WSW
J54	FRESNO COUNTY EOC	3120 W NIELSEN #191	CUPA Listings	Higher	913, 0.173, WSW
J55	FRESNO COUNTY EOC	3120 W NEILSEN AVE	SWEEPS UST	Higher	913, 0.173, WSW
K56	M. K. WIGHT	224 S HUGHES AVE	HIST UST	Lower	986, 0.187, SE
K57	M.K. WIGHT	224 S HUGHES	SWEEPS UST, HIST UST, CA FID UST, CUPA Listings	Lower	986, 0.187, SE
L58	CALIFORNIA PUMP AND	215 N MARKS AVE	RCRA-SQG, FINDS, ECHO	Lower	1162, 0.220, SW
L59	J&L IRRIGATION	215 N MARKS	CUPA Listings	Lower	1162, 0.220, SW
60	FRESNO IRRIGATION DI	3075 & 3051 W. NIELS	SWF/LF, CERS	Higher	1181, 0.224, WSW
61	NICK'S TRUCKING, INC	SW CORNER N. MARKS A	SWF/LF, CERS	Lower	1513, 0.287, NW
62	CALTRANS	MARKS AVENUE & HIGHW	LUST, CERS	Lower	1540, 0.292, SSW
63	CRAYCROFT BRICK CO	2301 W BELMONT AVE	ENVIROSTOR, NPDES, CIWQS	Lower	1749, 0.331, North
64	KEMMER RESIDENCE	511 HUGHES S	LUST, Cortese, HIST CORTESE, CERS	Lower	1974, 0.374, SSE
65	BETH RAMACHER EDUCAT	650 NORTH HUGHES AVE	ENVIROSTOR, SCH	Higher	2461, 0.466, NNE
66	ART'S MERCANTILE	2082 W WHITESBRIDGE	LUST, Cortese, CUPA Listings, HIST CORTESE	Lower	2632, 0.498, SSE
67	MUNICIPAL SERVICE CE	3187 BELMONT AVENUE	SWF/LF, CERS	Lower	2633, 0.499, WNW
68	WESTSIDE AUTO DISMAN	2640 WEST WHITEBRIDG	ENVIROSTOR, VCP, DEED	Lower	2654, 0.503, South
69	FRESNO DRUM	700 AND 733 SOUTH HU	ENVIROSTOR	Lower	3371, 0.638, SSE
70	SCHOOL ALTERNATIVE S	HUGHES AND OLIVE AVE	ENVIROSTOR, SCH	Lower	4068, 0.770, NNE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 9 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
CALIFORNIA COMPRESS 2740 NEILSON FRESNO, CA	RGA LUST	N/A
CALIFORNIA COMPRESS 2740 NIELSEN W FRESNO, CA 93706	FINDS Registry ID:: 110066201862	N/A
CALIFORNIA COMPRESS 2740 W NIELSEN FRESNO, CA 93706	SWEEPS UST Status: A Tank Status: A Comp Number: 48585 CA FID UST Facility Id: 10007614 Status: A CUPA Listings Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0170193	N/A
CALIFORNIA COMPRESS 2740 NIELSEN FRESNO, CA 93706	LUST Database: LUST REG 5, Date of Government Version: 07/01/2008 Database: LUST, Date of Government Version: 06/08/2020 Status: Completed - Case Closed Status: Case Closed Global Id: T0601900544 HIST UST Facility Id: 00000048585 Cortese Cleanup Status: COMPLETED - CASE CLOSED HIST CORTESE Reg Id: 5T10000561 CERS	N/A
CALIFORNIA COMPRESS 2740 NIELSEN FRESNO, CA 93706	HAZNET GEPAID: CAL000122762 HWTS	N/A
CA CONPRESS CO 2740 W NIELSEN AVE FRESNO, CA 93706	NPDES CIWQS	N/A
GEORGE DAOUDIAN 2740 W NIELSEN AVE FRESNO, CA 93706	HAZNET	N/A

EXECUTIVE SUMMARY

	GEPAID: CAC002697120 HWTS	
2740 W. NEILSON AVE 2740 W. NEILSON AVE FRESNO, CA	CHMIRS OES Incident Number: 12-2017	N/A
CALIFORNIA COMPRESS 2740 WEST NIELSEN AV FRESNO, CA 93706	HIST UST	N/A
CALIFORNIA COMPRESS 2740 NIELSEN W FRESNO, CA	RGA LUST	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

EXECUTIVE SUMMARY

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-VSQG---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS---------- Land Use Control Information System
US ENG CONTROLS---------- Engineering Controls Sites List
US INST CONTROLS---------- Institutional Controls Sites List

Federal ERNS list

ERNS---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE---------- State Response Sites

State and tribal leaking storage tank lists

INDIAN LUST---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST---------- Underground Storage Tank Listing
UST---------- Active UST Facilities
AST---------- Aboveground Petroleum Storage Tank Facilities
INDIAN UST---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP---------- Voluntary Cleanup Priority Listing
VCP---------- Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS---------- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY---------- Recycler Database
HAULERS---------- Registered Waste Tire Haulers Listing

INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands
ODI ---- Open Dump Inventory
DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ---- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---- Delisted National Clandestine Laboratory Register
HIST Cal-Sites ---- Historical Calsites Database
SCH ---- School Property Evaluation Program
CDL ---- Clandestine Drug Labs
Toxic Pits ---- Toxic Pits Cleanup Act Sites
US CDL ---- National Clandestine Laboratory Register
PFAS ---- PFAS Contamination Site Location Listing

Local Land Records

LIENS ---- Environmental Liens Listing
LIENS 2 ---- CERCLA Lien Information
DEED ---- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
LDS ---- Land Disposal Sites Listing
MCS ---- Military Cleanup Sites Listing
SPILLS 90 ---- SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS ---- Formerly Used Defense Sites
DOD ---- Department of Defense Sites
SCRD DRYCLEANERS ---- State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ---- Financial Assurance Information
EPA WATCH LIST ---- EPA WATCH LIST
2020 COR ACTION ---- 2020 Corrective Action Program List
TSCA ---- Toxic Substances Control Act
TRIS ---- Toxic Chemical Release Inventory System
SSTS ---- Section 7 Tracking Systems
ROD ---- Records Of Decision
RMP ---- Risk Management Plans
RAATS ---- RCRA Administrative Action Tracking System
PRP ---- Potentially Responsible Parties
PADS ---- PCB Activity Database System
ICIS ---- Integrated Compliance Information System
FTTS ---- FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ---- Material Licensing Tracking System
COAL ASH DOE ---- Steam-Electric Plant Operation Data
COAL ASH EPA ---- Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ---- PCB Transformer Registration Database
RADINFO ---- Radiation Information Database
HIST FTTS ---- FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ---- Incident and Accident Data
CONSENT ---- Superfund (CERCLA) Consent Decrees

INDIAN RESERV---------- Indian Reservations
FUSRAP---------- Formerly Utilized Sites Remedial Action Program
UMTRA---------- Uranium Mill Tailings Sites
LEAD SMELTERS---------- Lead Smelter Sites
US AIRS---------- Aerometric Information Retrieval System Facility Subsystem
ABANDONED MINES---------- Abandoned Mines
ECHO---------- Enforcement & Compliance History Information
DOCKET HWC---------- Hazardous Waste Compliance Docket Listing
UXO---------- Unexploded Ordnance Sites
FUELS PROGRAM---------- EPA Fuels Program Registered Listing
CA BOND EXP. PLAN---------- Bond Expenditure Plan
DRYCLEANERS---------- Cleaner Facilities
EMI---------- Emissions Inventory Data
ENF---------- Enforcement Action Listing
Financial Assurance---------- Financial Assurance Information Listing
ICE---------- ICE
HWP---------- EnviroStor Permitted Facilities Listing
HWT---------- Registered Hazardous Waste Transporter Database
MINES---------- Mines Site Location Listing
MWMP---------- Medical Waste Management Program Listing
PEST LIC---------- Pesticide Regulation Licenses Listing
PROC---------- Certified Processors Database
Notify 65---------- Proposition 65 Records
UIC---------- UIC Listing
UIC GEO---------- UIC GEO (GEOTRACKER)
WASTEWATER PITS---------- Oil Wastewater Pits Listing
WDS---------- Waste Discharge System
WIP---------- Well Investigation Program Case List
MILITARY PRIV SITES---------- MILITARY PRIV SITES (GEOTRACKER)
PROJECT---------- PROJECT (GEOTRACKER)
WDR---------- Waste Discharge Requirements Listing
NON-CASE INFO---------- NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS---------- OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS---------- PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT---------- SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ---------- Well Stimulation Project (GEOTRACKER)
MINES MRDS---------- Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP---------- EDR Proprietary Manufactured Gas Plants
EDR Hist Auto---------- EDR Exclusive Historical Auto Stations

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF---------- Recovered Government Archive Solid Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-LQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

A review of the RCRA-LQG list, as provided by EDR, and dated 06/15/2020 has revealed that there is 1 RCRA-LQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BRENNTAG PACIFIC INC EPA ID:: CAR000254987	175 N.HUGHES AVE.	ENE 0 - 1/8 (0.041 mi.)	D20	75

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 06/15/2020 has revealed that there are 2 RCRA-SQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KEMMER AGRICULTRUAL EPA ID:: CAT080012057	***88 N.HUGHES***	***E 0 - 1/8 (0.017 mi.)***	***C15***	***49***

Lower Elevation	Address	Direction / Distance	Map ID	Page
CALIFORNIA PUMP AND EPA ID:: CAD983592486	***215 N MARKS AVE***	***SW 1/8 - 1/4 (0.220 mi.)***	***L58***	***155***

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 07/27/2020 has revealed that there are 5 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BETH RAMACHER EDUCAT	***650 NORTH HUGHES AVE***	***NNE 1/4 - 1/2 (0.466 mi.)***	***65***	***170***
Facility Id: 10000003				
Status: No Action Required				

Lower Elevation	Address	Direction / Distance	Map ID	Page
CRAYCROFT BRICK CO	***2301 W BELMONT AVE***	***N 1/4 - 1/2 (0.331 mi.)***	***63***	***163***
Facility Id: 10320022				
Status: Refer: Other Agency				
WESTSIDE AUTO DISMAN	***2640 WEST WHITEBRIDG***	***S 1/2 - 1 (0.503 mi.)***	***68***	***181***
Facility Id: 70000017				
Status: Certified O&M - Land Use Restrictions Only				
FRESNO DRUM	700 AND 733 SOUTH HU	SSE 1/2 - 1 (0.638 mi.)	69	185
Facility Id: 60001570				
Status: Inactive - Needs Evaluation				
SCHOOL ALTERNATIVE S	***HUGHES AND OLIVE AVE***	***NNE 1/2 - 1 (0.770 mi.)***	***70***	***186***
Facility Id: 60000201				
Status: Inactive - Needs Evaluation				

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the Integrated Waste Management Board's Solid Waste Information System (SWIS) database.

A review of the SWF/LF list, as provided by EDR, has revealed that there are 4 SWF/LF sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
1X FRESNO IRRIGATION	***3075 W NIELSON***	***WSW 0 - 1/8 (0.069 mi.)***	***E27***	***99***
Database: SWF/LF (SWIS), Date of Government Version: 05/11/2020				
Facility ID: 10-CR-0061				
Operational Status: Closed				

Regulation Status: Pre-regulations

FRESNO IRRIGATION DI	***3075 & 3051 W. NIELS***	***WSW 1/8 - 1/4 (0.224 mi.)***	***60***	***159***

Database: SWF/LF (SWIS), Date of Government Version: 05/11/2020
Facility ID: 10-CR-0053
Operational Status: Closed
Regulation Status: Unpermitted

Lower Elevation	Address	Direction / Distance	Map ID	Page
NICK'S TRUCKING, INC	***SW CORNER N. MARKS A***	***NW 1/4 - 1/2 (0.287 mi.)***	***61***	***160***

Database: SWF/LF (SWIS), Date of Government Version: 05/11/2020
Facility ID: 10-AA-0198
Operational Status: Active
Regulation Status: Notification

MUNICIPAL SERVICE CE	***3187 BELMONT AVENUE***	***WNW 1/4 - 1/2 (0.499 mi.)***	***67***	***180***

Database: SWF/LF (SWIS), Date of Government Version: 05/11/2020
Facility ID: 10-AA-0217
Operational Status: Active
Regulation Status: Notification

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 5 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FRESNO IRRIGATION DI	***3075 W NIELSEN***	***WSW 0 - 1/8 (0.069 mi.)***	***E25***	***93***

Database: LUST REG 5, Date of Government Version: 07/01/2008
Database: LUST, Date of Government Version: 06/08/2020
Status: Completed - Case Closed
Status: Case Closed
Global Id: T0601900617

Lower Elevation	Address	Direction / Distance	Map ID	Page
REIMER TRANSPORT	***2002 W NIELSEN***	***E 0 - 1/8 (0.100 mi.)***	***H37***	***115***

Database: LUST REG 5, Date of Government Version: 07/01/2008
Database: LUST, Date of Government Version: 06/08/2020
Status: Completed - Case Closed
Status: Case Closed
Global Id: T0601989710

CALTRANS	***MARKS AVENUE & HIGHW***	***SSW 1/4 - 1/2 (0.292 mi.)***	***62***	***161***

Database: LUST, Date of Government Version: 06/08/2020
Status: Completed - Case Closed
Global Id: T0601908368

KEMMER RESIDENCE	***511 HUGHES S***	***SSE 1/4 - 1/2 (0.374 mi.)***	***64***	***166***

Database: LUST REG 5, Date of Government Version: 07/01/2008
Database: LUST, Date of Government Version: 06/08/2020

Status: Completed - Case Closed
Status: Case Closed
Global Id: T0601900431

ART'S MERCANTILE	***2082 W WHITESBRIDGE***	***SSE 1/4 - 1/2 (0.498 mi.)***	***66***	***173***

Database: LUST REG 5, Date of Government Version: 07/01/2008
Database: LUST, Date of Government Version: 06/08/2020
Status: Completed - Case Closed
Status: Case Closed
Global Id: T0601900146

CPS-SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the CPS-SLIC list, as provided by EDR, has revealed that there is 1 CPS-SLIC site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FRESNO IRRIGATION DI	***MARKS & NIELSON***	***WSW 0 - 1/8 (0.025 mi.)***	***B18***	***70***

Database: CPS-SLIC, Date of Government Version: 06/08/2020
Facility Status: Completed - Case Closed
Global Id: SLT5FS244442

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: The Waste Management Unit Database System is used for program tracking and inventory of waste management units. The source is the State Water Resources Control Board.

A review of the WMUDS/SWAT list, as provided by EDR, and dated 04/01/2000 has revealed that there is 1 WMUDS/SWAT site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FRESNO IRR. DIST. CO	3075 W. NIELSON AVE.	WSW 0 - 1/8 (0.069 mi.)	E26	98

Local Lists of Hazardous waste / Contaminated Sites

CERS HAZ WASTE: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 07/20/2020 has revealed that there are 5 CERS HAZ WASTE sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KEMMER AGRICULTURE	***88 N HUGHES***	***E 0 - 1/8 (0.017 mi.)***	***C16***	***63***

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BRENNTAG PACIFIC, IN	*175 N HUGHES AVE*	*ENE 0 - 1/8 (0.041 mi.)*	*D22*	*81*
FRESNO COUNTY EOC CO	*3110 W NIELSEN*	*WSW 1/8 - 1/4 (0.150 mi.)*	*J50*	*147*

Lower Elevation	Address	Direction / Distance	Map ID	Page
REIMER TRANSPORT/WEL	*2002 W NIELSEN*	*E 0 - 1/8 (0.100 mi.)*	*H40*	*123*
R M KING COMPANY	*315 N MARKS*	*SW 1/8 - 1/4 (0.130 mi.)*	*I47*	*133*

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are 9 SWEEPS UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JENSEN FARMS Status: A Tank Status: A Comp Number: 37998	*2829 W NIELSEN*	*WSW 0 - 1/8 (0.014 mi.)*	*B13*	*47*
KEMMER AGRICULTURE Comp Number: 3383	*88 N HUGHES*	*E 0 - 1/8 (0.017 mi.)*	*C16*	*63*
HOOD BROS. PALLETS & Status: A Tank Status: A Comp Number: 64363	*3040 W NIELSEN*	*WSW 0 - 1/8 (0.053 mi.)*	*E24*	*91*
FRESNO IRRIGATION DI Status: A Tank Status: A Comp Number: 31522	*3075 W NIELSEN*	*WSW 0 - 1/8 (0.069 mi.)*	*E25*	*93*
FRESNO COUNTY EOC Comp Number: 346	3120 W NEILSEN AVE	WSW 1/8 - 1/4 (0.173 mi.)	J55	152

Lower Elevation	Address	Direction / Distance	Map ID	Page
CENTRAL CALIF. SPCA Comp Number: 1309	*103 S HUGHES AVE*	*ESE 0 - 1/8 (0.084 mi.)*	*F33*	*110*
REIMER TRANSPORT Status: A Tank Status: A Comp Number: 344	*2002 W NIELSEN*	*E 0 - 1/8 (0.100 mi.)*	*H37*	*115*
FRESNO AUTO DEALERS Comp Number: 18	*278 N MARKS*	*SW 0 - 1/8 (0.107 mi.)*	*I42*	*126*
M.K. WIGHT Status: A	*224 S HUGHES*	*SE 1/8 - 1/4 (0.187 mi.)*	*K57*	*153*

EXECUTIVE SUMMARY

Tank Status: A
Comp Number: 4440

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 10 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JENSEN FARMS	***2829 W NIELSEN***	***WSW 0 - 1/8 (0.014 mi.)***	***B13***	***47***
JENSEN FARMS Facility Id: 00000037998	2829 W NIELSEN AVE	WSW 0 - 1/8 (0.014 mi.)	B14	49
KEMMER AGRICULTRUAL Facility Id: 00000003383	***88 N.HUGHES***	***E 0 - 1/8 (0.017 mi.)***	***C15***	***49***
HOOD BROS. PALLETS & Facility Id: 00000064363	3040 W NIELSEN AVE	WSW 0 - 1/8 (0.053 mi.)	E23	91
HOOD BROS. PALLETS &	***3040 W NIELSEN***	***WSW 0 - 1/8 (0.053 mi.)***	***E24***	***91***
SHOP/YARD Facility Id: 00000031522	3075 W NIELSEN	WSW 0 - 1/8 (0.069 mi.)	E28	104

Lower Elevation	Address	Direction / Distance	Map ID	Page
CENTRAL CALIF SPCA Facility Id: 00000001309	103 S HUGHES AVE	ESE 0 - 1/8 (0.084 mi.)	F30	106
FRESNO AUTO DEALERS Facility Id: 00000000018	278 N MARKS	SW 0 - 1/8 (0.107 mi.)	I44	127
M. K. WIGHT Facility Id: 00000004440	224 S HUGHES AVE	SE 1/8 - 1/4 (0.187 mi.)	K56	153
M.K. WIGHT	***224 S HUGHES***	***SE 1/8 - 1/4 (0.187 mi.)***	***K57***	***153***

CERS TANKS: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

A review of the CERS TANKS list, as provided by EDR, and dated 07/20/2020 has revealed that there are 2 CERS TANKS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BRENNTAG PACIFIC, IN	***175 N HUGHES AVE***	***ENE 0 - 1/8 (0.041 mi.)***	***D22***	***81***

Lower Elevation	Address	Direction / Distance	Map ID	Page
REIMER TRANSPORT/WEL	***2002 W NIELSEN***	***E 0 - 1/8 (0.100 mi.)***	***H40***	***123***

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there are 9 CA FID UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JENSEN FARMS Facility Id: 10006927 Status: A	***2829 W NIELSEN***	***WSW 0 - 1/8 (0.014 mi.)***	***B13***	***47***
KEMMER AGRICULTURE Facility Id: 10004438 Status: I	***88 N HUGHES***	***E 0 - 1/8 (0.017 mi.)***	***C16***	***63***
HOOD BROS. PALLETS & Facility Id: 10008424 Status: A	***3040 W NIELSEN***	***WSW 0 - 1/8 (0.053 mi.)***	***E24***	***91***
FRESNO IRRIGATION DI Facility Id: 10002948 Status: A	***3075 W NIELSEN***	***WSW 0 - 1/8 (0.069 mi.)***	***E25***	***93***
ECONOMIC OPPORTUNITI Facility Id: 10004910 Status: A	3120 W NEILSEN	WSW 1/8 - 1/4 (0.173 mi.)	J53	151

Lower Elevation	Address	Direction / Distance	Map ID	Page
CENTRAL CALIF. SPCA Facility Id: 10001502 Status: I	***103 S HUGHES AVE***	***ESE 0 - 1/8 (0.084 mi.)***	***F33***	***110***
WELDON TRUCKING INC Facility Id: 10002940 Status: A	2002 W NIELSON	E 0 - 1/8 (0.100 mi.)	H39	123
FRESNO AUTO DEALERS Facility Id: 10003174 Status: A	***278 N MARKS***	***SW 0 - 1/8 (0.107 mi.)***	***I42***	***126***
M.K. WIGHT Facility Id: 10005052 Status: A	***224 S HUGHES***	***SE 1/8 - 1/4 (0.187 mi.)***	***K57***	***153***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 06/15/2020 has revealed that there are 7 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
TOM MALLOY CORP DBA	88 N HUGHES AVE	E 0 - 1/8 (0.017 mi.)	C17	67

EPA ID:: CAL000411447				
ARARAT ARMENIAN CEME EPA ID:: CAL000354281	250 N HUGHES AVE	NE 1/8 - 1/4 (0.145 mi.)	49	145

Lower Elevation	Address	Direction / Distance	Map ID	Page
CENTRAL CALIFORNIA S EPA ID:: CAL000297944	103 S HUGHES AVE	ESE 0 - 1/8 (0.084 mi.)	F31	107
JNB TRUCK AND TRAILE EPA ID:: CAL000445254	620 N MARKS AVE	NW 0 - 1/8 (0.096 mi.)	G36	112
WELDON TRUCKING INC EPA ID:: CAL000014761	2002 W NIELSEN AVE	E 0 - 1/8 (0.100 mi.)	H38	120
MANHEIM CENTRAL CALI EPA ID:: CAL000034209	278 N MARKS AVE	SW 0 - 1/8 (0.107 mi.)	I45	128
R M KING CO EPA ID:: CAL000004314	315 N MARKS AVE	SW 1/8 - 1/4 (0.130 mi.)	I46	130

US MINES: Mines Master Index File. The source of this database is the Dept. of Labor, Mine Safety and Health Administration.

A review of the US MINES list, as provided by EDR, has revealed that there is 1 US MINES site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CRAYCROFT BRICK COMP Database: US MINES, Date of Government Version: 08/04/2020 Mine ID:: 0400548		NW 1/8 - 1/4 (0.170 mi.)	52	150

Cortese: The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

A review of the Cortese list, as provided by EDR, and dated 06/22/2020 has revealed that there are 4 Cortese sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FRESNO IRRIGATION DI Cleanup Status: COMPLETED - CASE CLOSED	***3075 W NIELSEN***	***WSW 0 - 1/8 (0.069 mi.)***	***E25***	***93***

Lower Elevation	Address	Direction / Distance	Map ID	Page
REIMER TRANSPORT Cleanup Status: COMPLETED - CASE CLOSED	***2002 W NIELSEN***	***E 0 - 1/8 (0.100 mi.)***	***H37***	***115***
KEMMER RESIDENCE Cleanup Status: COMPLETED - CASE CLOSED	***511 HUGHES S***	***SSE 1/4 - 1/2 (0.374 mi.)***	***64***	***166***
ART'S MERCANTILE Cleanup Status: COMPLETED - CASE CLOSED	***2082 W WHITESBRIDGE***	***SSE 1/4 - 1/2 (0.498 mi.)***	***66***	***173***

EXECUTIVE SUMMARY

CUPA Listings: A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

A review of the CUPA Listings list, as provided by EDR, has revealed that there are 18 CUPA Listings sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KEMMER AGRICULTURE	***88 N HUGHES***	***E 0 - 1/8 (0.017 mi.)***	***C16***	***63***
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0169818				
BRENNTAG PACIFIC	175 N HUGHES AVE	ENE 0 - 1/8 (0.041 mi.)	D21	80
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0284674				
FRESNO IRRIGATION DI	***3075 W NIELSEN***	***WSW 0 - 1/8 (0.069 mi.)***	***E25***	***93***
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0170195				
NORTH CENTRAL FIRE D	3031 W NIELSEN	WSW 0 - 1/8 (0.070 mi.)	E29	106
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0170201				
FRESNO IRRIGATION DI	3051 W NIELSEN AVE	WSW 0 - 1/8 (0.091 mi.)	E34	111
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0285081				
FRESNO COUNTY EOC CO	***3110 W NIELSEN***	***WSW 1/8 - 1/4 (0.150 mi.)***	***J50***	***147***
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0002146				
FRESNO COUNTY EOC	3120 W NIELSEN #191	WSW 1/8 - 1/4 (0.173 mi.)	J54	151
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0170132				

Lower Elevation	Address	Direction / Distance	Map ID	Page
CRUSH RECYCLING	***495 N MARKS AVE***	***W 0 - 1/8 (0.026 mi.)***	***19***	***71***
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0276347				
CENTRAL CALIFORNIA S	103 S HUGHES AVE	ESE 0 - 1/8 (0.084 mi.)	F32	109
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0269962				
AMAYA KC	620 N MARKS AVE	NW 0 - 1/8 (0.096 mi.)	G35	112
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0286587				
REIMER TRANSPORT	***2002 W NIELSEN***	***E 0 - 1/8 (0.100 mi.)***	***H37***	***115***
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0170192				
MANHEIM CENTRAL CALI	278 N MARKS AVE	SW 0 - 1/8 (0.107 mi.)	I41	125
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0279179				
CALIFORNIA CUISINE C	278 N MARKS AVE	SW 0 - 1/8 (0.107 mi.)	I43	127
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0001924				
R M KING COMPANY	***315 N MARKS***	***SW 1/8 - 1/4 (0.130 mi.)***	***I47***	***133***
Database: CUPA FRESNO, Date of Government Version: 06/30/2020				

Facility Id: FA0272071

D-K-P	***275 N MARKS***	***SW 1/8 - 1/4 (0.131 mi.)***	***I48***	***141***
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0272072				
JV'S TOWING SERVICE	170 S HUGHES AVE	SE 1/8 - 1/4 (0.150 mi.)	K51	150
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0281512				
M.K. WIGHT	***224 S HUGHES***	***SE 1/8 - 1/4 (0.187 mi.)***	***K57***	***153***
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0268642				
J&L IRRIGATION	215 N MARKS	SW 1/8 - 1/4 (0.220 mi.)	L59	158
Database: CUPA FRESNO, Date of Government Version: 06/30/2020 Facility Id: FA0270282				

HAZNET: The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000-1,000,000 annually, representing approximately 350,000-500,000 shipments. Data from non-California manifests & continuation sheets are not included at the present time. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, & disposal method. The source is the Department of Toxic Substance Control is the agency. This database begins with calendar year 1993.

A review of the HAZNET list, as provided by EDR, and dated 12/31/2019 has revealed that there is 1 HAZNET site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AMERICAN RIVER PACKA GEPAID: CAL000096232	***2650 W NIELSEN AVE***	***0 - 1/8 (0.000 mi.)***	***12***	***34***

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 3 HIST CORTESE sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FRESNO IRRIGATION DI Reg Id: 5T10000637	***3075 W NIELSEN***	***WSW 0 - 1/8 (0.069 mi.)***	***E25***	***93***

Lower Elevation	Address	Direction / Distance	Map ID	Page
KEMMER RESIDENCE Reg Id: 5T10000441	***511 HUGHES S***	***SSE 1/4 - 1/2 (0.374 mi.)***	***64***	***166***
ART'S MERCANTILE Reg Id: 5T10000148	***2082 W WHITESBRIDGE***	***SSE 1/4 - 1/2 (0.498 mi.)***	***66***	***173***

EXECUTIVE SUMMARY

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Cleaner: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Cleaner list, as provided by EDR, has revealed that there is 1 EDR Hist Cleaner site within approximately 0.125 miles of the target property.

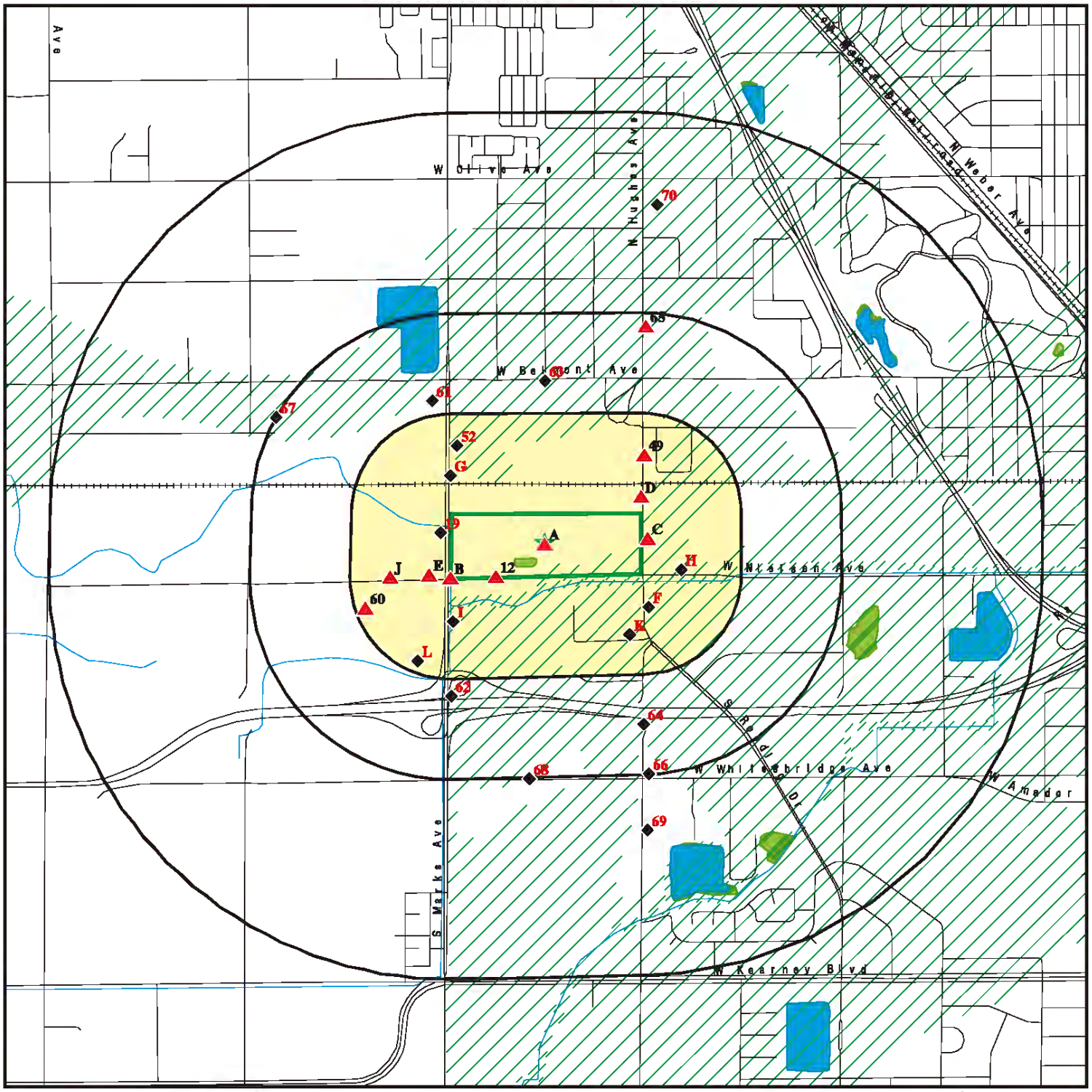
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
INDIVIDUAL LAUNDRY	2820 W NIELSON AV	0 - 1/8 (0.000 mi.)	B11	34

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 2 records.

Site Name	Database(s)
	CDL
CALTRANS	LUST, Cortese

OVERVIEW MAP - 6275752.2S



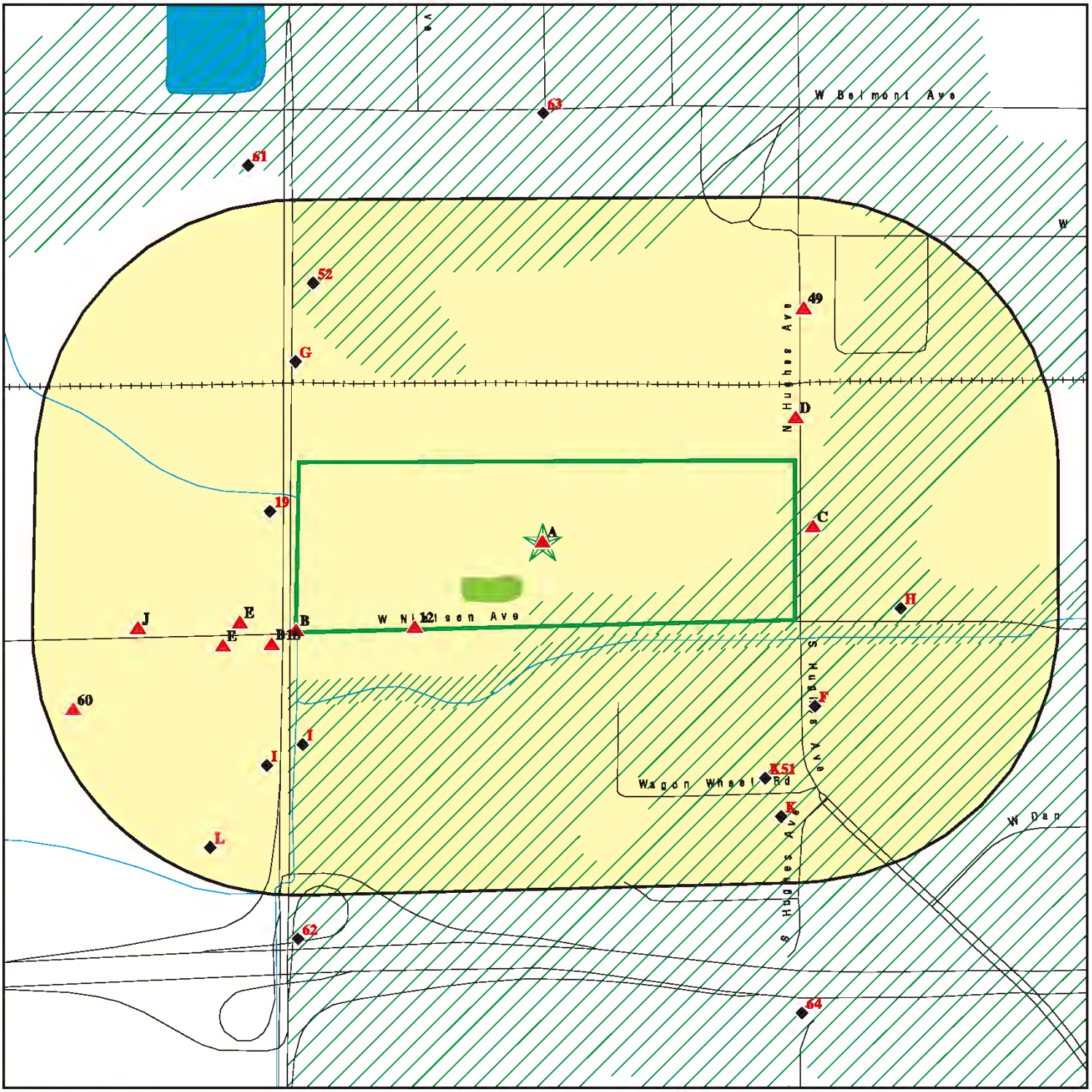
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Former CA Compress Facility	CLIENT:	Salem Engineering Group
ADDRESS:	2740 W. Nielson Ave. Fresno CA 93706	CONTACT:	Shannon Lodge
		INQUIRY #:	6275752.2s
LAT/LONG:	36.744216 / 119.839956	DATE:	November 21, 2020 7:23 am

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

DETAIL MAP - 6275752.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/8 1/4 1/2 Miles

Indian Reservations BIA

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Former CA Compress Facility	CLIENT:	Salem Engineering Group
ADDRESS:	2740 W. Nielson Ave. Fresno CA 93706	CONTACT:	Shannon Lodge
		INQUIRY #:	6275752.2s
LAT/LONG:	36.744216 / 119.839956	DATE:	November 21, 2020 7:24 am

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		1	0	NR	NR	NR	1
RCRA-SQG	0.250		1	1	NR	NR	NR	2
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	2	3	NR	5
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		1	1	2	NR	NR	4
State and tribal leaking storage tank lists								
LUST	0.500	1	2	0	3	NR	NR	6

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		1	0	0	NR	NR	1
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		1	0	0	NR	NR	1
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		3	2	NR	NR	NR	5
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250	1	7	2	NR	NR	NR	10
HIST UST	0.250	2	8	2	NR	NR	NR	12
CERS TANKS	0.250		2	0	NR	NR	NR	2
CA FID UST	0.250	1	7	2	NR	NR	NR	10
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001	1	0	NR	NR	NR	NR	1
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		5	2	NR	NR	NR	7
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	1	NR	NR	NR	1
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001	1	0	NR	NR	NR	NR	1
ECHO	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500	1	2	0	2	NR	NR	5
CUPA Listings	0.250	1	11	7	NR	NR	NR	19

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001	2	1	NR	NR	NR	NR	3
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500	1	1	0	2	NR	NR	4
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001	1	0	NR	NR	NR	NR	1
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001	1	0	NR	NR	NR	NR	1
CERS	0.001	1	0	NR	NR	NR	NR	1
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
HWTS	TP	2	NR	NR	NR	NR	NR	2
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		1	NR	NR	NR	NR	1
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001	2	0	NR	NR	NR	NR	2
- Totals --		19	55	20	11	3	0	108

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **CALIFORNIA COMPRESS** **RGA LUST** **S114589905**
Target **2740 NEILSON** **N/A**
Property **FRESNO, CA**

Site 1 of 10 in cluster A

Actual: **287 ft.**

RGA LUST:
Name: CALIFORNIA COMPRESS
Address: 2740 NEILSON
City: FRESNO
State: FRESNO
1995 CALIFORNIA COMPRESS 2740 NEILSON

A2 **CALIFORNIA COMPRESS** **FINDS** **1023325996**
Target **2740 NIELSEN W** **N/A**
Property **FRESNO, CA 93706**

Site 2 of 10 in cluster A

Actual: **287 ft.**

FINDS:
Registry ID: 110066201862

Click Here:

Environmental Interest/Information System:
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

A3 **CALIFORNIA COMPRESS** **SWEEPS UST** **S101621549**
Target **2740 W NIELSEN** **CA FID UST** **N/A**
Property **FRESNO, CA 93706** **CUPA Listings**

Site 3 of 10 in cluster A

Actual: **287 ft.**

SWEEPS UST:
Name: CALIFORNIA COMPRESS
Address: 2740 W NIELSEN AVE
City: FRESNO
Status: Active
Comp Number: 48585
Number: 1
Board Of Equalization: 44-004340
Referral Date: 10-24-90
Action Date: 10-24-90
Created Date: 02-29-88
Owner Tank Id: Not reported
SWRCB Tank Id: 10-000-048585-000001
Tank Status: A
Capacity: 4000
Active Date: 10-25-90
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: 4

Name: CALIFORNIA COMPRESS
Address: 2740 W NIELSEN AVE
City: FRESNO

CALIFORNIA COMPRESS (Continued) **S101621549**

Status: Active
Comp Number: 48585
Number: 1
Board Of Equalization: 44-004340
Referral Date: 10-24-90
Action Date: 10-24-90
Created Date: 02-29-88
Owner Tank Id: Not reported
SWRCB Tank Id: 10-000-048585-000002
Tank Status: A
Capacity: 3000
Active Date: 10-25-90
Tank Use: M.V. FUEL
STG: P
Content: LEADED
Number Of Tanks: Not reported

Name: CALIFORNIA COMPRESS
Address: 2740 W NIELSEN AVE
City: FRESNO
Status: Active
Comp Number: 48585
Number: 1
Board Of Equalization: 44-004340
Referral Date: 10-24-90
Action Date: 10-24-90
Created Date: 02-29-88
Owner Tank Id: Not reported
SWRCB Tank Id: 10-000-048585-000003
Tank Status: A
Capacity: 5000
Active Date: 10-25-90
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: Not reported

Name: CALIFORNIA COMPRESS
Address: 2740 W NIELSEN AVE
City: FRESNO
Status: Active
Comp Number: 48585
Number: 1
Board Of Equalization: 44-004340
Referral Date: 10-24-90
Action Date: 10-24-90
Created Date: 02-29-88
Owner Tank Id: Not reported
SWRCB Tank Id: 10-000-048585-000004
Tank Status: A
Capacity: 5000
Active Date: 10-25-90
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

CALIFORNIA COMPRESS (Continued) **S101621549**

CA FID UST:
Facility ID: 10007614
Regulated By: UTNKA
Regulated ID: 00048585
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 2092331725
Mail To: Not reported
Mailing Address: PO BOX 9095
Mailing Address 2: Not reported
Mailing City,St,Zip: FRESNO 93706
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

CUPA FRESNO:
Name: CALIFORNIA COMPRESS
Address: 2740 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0170193
Cross Street: Not reported
APM Number: 45802072
CERS Id: Not reported
SWIS Number: Not reported
GIS Latitude: 36.744227925
GIS Longitude: -119.83802894
Program Element: UST REMOVAL/CLOSURE W/4 TANKS

Name: CALIFORNIA COMPRESS
Address: 2740 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0170193
Cross Street: Not reported
APM Number: 45802072
CERS Id: Not reported
SWIS Number: Not reported
GIS Latitude: 36.744227925
GIS Longitude: -119.83802894
Program Element: FORMER CONTAMINATED SITE/NO FURTHER ACTION

Name: CALIFORNIA COMPRESS
Address: 2740 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0170193
Cross Street: Not reported
APM Number: 45802072
CERS Id: Not reported
SWIS Number: Not reported
GIS Latitude: 36.744227925
GIS Longitude: -119.83802894
Program Element: HAZ MAT DISCLOSURE/CLOSED SITE

CALIFORNIA COMPRESS (Continued) **S101621549**

Name: CALIFORNIA COMPRESS
Address: 2740 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0170193
Cross Street: Not reported
APM Number: 45802072
CERS Id: Not reported
SWIS Number: Not reported
GIS Latitude: 36.744227925
GIS Longitude: -119.83802894
Program Element: HAZARDOUS WASTE GENERATOR (CESQG)

A4 **CALIFORNIA COMPRESS** **LUST** **U001591532**
Target **2740 NIELSEN** **HIST UST** **N/A**
Property **FRESNO, CA 93706** **Cortese**
HIST CORTESE
Site 4 of 10 in cluster A **CERS**

Actual:
287 ft.

LUST:
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City,State,Zip: FRESNO, CA 93706
Lead Agency: FRESNO COUNTY
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0601900544
Global Id: T0601900544
Latitude: 36.7430371
Longitude: -119.8409525
Status: Completed - Case Closed
Status Date: 07/03/1996
Case Worker: EHD
RB Case Number: 5T10000561
Local Agency: FRESNO COUNTY
File Location: Not reported
Local Case Number: FA0170193
Potential Media Affect: Soil
Potential Contaminants of Concern: Gasoline
Site History: Not reported

LUST:
Global Id: T0601900544
Contact Type: Local Agency Caseworker
Contact Name: FRESNO COUNTY DPH, ENVIRONMENTAL HEALTH DIV
Organization Name: FRESNO COUNTY
Address: 1221 Fulton Street
City: Fresno
Email: environmentalhealth@fresnocountyca.gov
Phone Number: Not reported

LUST:
Global Id: T0601900544
Action Type: ENFORCEMENT
Date: 07/03/1996
Action: Closure/No Further Action Letter

Global Id: T0601900544
Action Type: Other
Date: 06/06/1995

CALIFORNIA COMPRESS (Continued) **U001591532**

Action: Leak Discovery

Global Id: T0601900544
Action Type: Other
Date: 04/27/1995
Action: Leak Stopped

Global Id: T0601900544
Action Type: Other
Date: 06/06/1995
Action: Leak Reported

LUST:
Global Id: T0601900544
Status: Open - Case Begin Date
Status Date: 04/27/1995

Global Id: T0601900544
Status: Open - Site Assessment
Status Date: 06/06/1995

Global Id: T0601900544
Status: Completed - Case Closed
Status Date: 07/03/1996

LUST REG 5:
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
Region: 5
Status: Case Closed
Case Number: 5T10000561
Case Type: Soil only
Substance: GASOLINE
Staff Initials: DAM
Lead Agency: Local
Program: LUST
MTBE Code: N/A

HIST UST:
Name: CALIFORNIA COMPRESS COMPANY, I
Address: 2740 W NIELSEN AVE
City,State,Zip: FRESNO, CA 93706
File Number: Not reported
URL: Not reported
Region: STATE
Facility ID: 00000048585
Facility Type: Other
Other Type: BALED COTTON COMPRES
Contact Name: Not reported
Telephone: 2092660511
Owner Name: CALIFORNIA COMPRESS COMPANY, I
Owner Address: 2740 WEST NIELSEN AVENUE
Owner City,St,Zip: FRESNO, CA 93706
Total Tanks: 0004

CALIFORNIA COMPRESS (Continued) **U001591532**

Tank Num:	001
Container Num:	1
Year Installed:	Not reported
Tank Capacity:	00001000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Tank Num:	002
Container Num:	2
Year Installed:	Not reported
Tank Capacity:	00005000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Tank Num:	003
Container Num:	3
Year Installed:	Not reported
Tank Capacity:	00004000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Tank Num:	004
Container Num:	4
Year Installed:	1951
Tank Capacity:	00010000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

CORTESE:

Name:	CALIFORNIA COMPRESS
Address:	2740 NIELSEN W
City,State,Zip:	FRESNO, CA 93706
Region:	CORTESE
Envirostor Id:	Not reported
Global ID:	T0601900544
Site/Facility Type:	LUST CLEANUP SITE
Cleanup Status:	COMPLETED - CASE CLOSED
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	active
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	Not reported

CALIFORNIA COMPRESS (Continued) **U001591532**

WID Id: Not reported
Solid Waste Id No: Not reported
Waste Management Uit Name: Not reported
File Name: Active Open

HIST CORTESE:
edr_fname: CALIFORNIA COMPRESS
edr_fadd1: 2740 NIELSEN
City,State,Zip: FRESNO, CA 93706
Region: CORTESE
Facility County Code: 10
Reg By: LTNKA
Reg Id: 5T10000561

CERS:
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City,State,Zip: FRESNO, CA 93706
Site ID: 249279
CERS ID: T0601900544
CERS Description: Leaking Underground Storage Tank Cleanup Site

Affiliation:
Affiliation Type Desc: Local Agency Caseworker
Entity Name: FRESNO COUNTY DPH, ENVIRONMENTAL HEALTH DIV - FRESNO COUNTY
Entity Title: Not reported
Affiliation Address: 1221 Fulton Street
Affiliation City: Fresno
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

A5 **CALIFORNIA COMPRESS** **HAZNET** **S113069102**
Target **2740 NIELSEN** **HWTS** **N/A**
Property **FRESNO, CA 93706**

Site 5 of 10 in cluster A

Actual:
287 ft.

HAZNET:
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN
Address 2: Not reported
City,State,Zip: FRESNO, CA 937060000
Contact: MOHAMMAD IBRAHIM KHAN
Telephone: 2092660511
Mailing Name: Not reported
Mailing Address: PO BOX 11966

Year: 2008
Gepaid: CAL000122762
TSD EPA ID: NVT330010000
CA Waste Code: 352 - Other organic solids
Disposal Method: H132 - Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 0.0375

CALIFORNIA COMPRESS (Continued) **S113069102**

Year:	2008
Gepaid:	CAL000122762
TSD EPA ID:	TXD077603371
CA Waste Code:	181 - Other inorganic solid waste
Disposal Method:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.01

Year:	2008
Gepaid:	CAL000122762
TSD EPA ID:	TXD077603371
CA Waste Code:	221 - Waste oil and mixed oil
Disposal Method:	H061 - Fuel Blending Prior To Energy Recovery At Another Site
Tons:	0.05

Year:	2008
Gepaid:	CAL000122762
TSD EPA ID:	TXD077603371
CA Waste Code:	223 - Unspecified oil-containing waste
Disposal Method:	H061 - Fuel Blending Prior To Energy Recovery At Another Site
Tons:	0.055

Year:	2003
Gepaid:	CAL000122762
TSD EPA ID:	CAT080013352
CA Waste Code:	223 - Unspecified oil-containing waste
Disposal Method:	R01 - Recycler
Tons:	0.2125

Year:	2001
Gepaid:	CAL000122762
TSD EPA ID:	CAD980884183
CA Waste Code:	141 - Off-specification, aged or surplus inorganics
Disposal Method:	D99 - Disposal, Other
Tons:	0.075

Year:	2001
Gepaid:	CAL000122762
TSD EPA ID:	CAD009452657
CA Waste Code:	223 - Unspecified oil-containing waste
Disposal Method:	R01 - Recycler
Tons:	0.1875

Year:	1999
Gepaid:	CAL000122762
TSD EPA ID:	CAD009452657
CA Waste Code:	223 - Unspecified oil-containing waste
Disposal Method:	R01 - Recycler
Tons:	0.1876

Year:	1998
Gepaid:	CAL000122762
TSD EPA ID:	CAD990794133
CA Waste Code:	151 - Asbestos containing waste
Disposal Method:	D80 - Disposal, Land Fill
Tons:	48.0396

CALIFORNIA COMPRESS (Continued) **S113069102**

Year: 1997
Gepaid: CAL000122762
TSD EPA ID: CAD009452657
CA Waste Code: 223 - Unspecified oil-containing waste
Disposal Method: R01 - Recycler
Tons: 0.221

Click this hyperlink while viewing on your computer to access
5 additional CA HAZNET: record(s) in the EDR Site Report.

Additional Info:
Year: 2008
Gen EPA ID: CAL000122762

Shipment Date: 20080829
Creation Date: 1/28/2009 18:30:18
Receipt Date: 20080919
Manifest ID: 001083785SKS
Trans EPA ID: TXR000050930
Trans Name: SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID: OKD981588791
Trans 2 Name: TRIAD
TSDF EPA ID: TXD077603371
Trans Name: SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code Description: 223 - Unspecified oil-containing waste
RCRA Code: D001
Meth Code: H061 - Fuel Blending Prior To Energy Recovery At Another Site
Quantity Tons: 0.055
Waste Quantity: 110
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Shipment Date: 20080829
Creation Date: 1/28/2009 18:30:18
Receipt Date: 20080919
Manifest ID: 001083785SKS
Trans EPA ID: TXR000050930
Trans Name: SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID: OKD981588791
Trans 2 Name: TRIAD
TSDF EPA ID: TXD077603371
Trans Name: SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code Description: 181 - Other inorganic solid waste Organics
RCRA Code: Not reported
Meth Code: H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons: 0.01
Waste Quantity: 20

CALIFORNIA COMPRESS (Continued) **S113069102**

Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20080829
Creation Date:	1/28/2009 18:30:18
Receipt Date:	20080919
Manifest ID:	001083785SKS
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	OKD981588791
Trans 2 Name:	TRIAD
TSDF EPA ID:	TXD077603371
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	221 - Waste oil and mixed oil
RCRA Code:	Not reported
Meth Code:	H061 - Fuel Blending Prior To Energy Recovery At Another Site
Quantity Tons:	0.05
Waste Quantity:	100
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20080516
Creation Date:	10/30/2008 18:30:46
Receipt Date:	20080530
Manifest ID:	000693931SKS
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	OKD981588791
Trans 2 Name:	TRIAD
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY NEVADA
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	Not reported
Meth Code:	H132 - Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Quantity Tons:	0.0375
Waste Quantity:	75
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

CALIFORNIA COMPRESS (Continued) **S113069102**

Additional Info:

Year:	1995
Gen EPA ID:	CAL000122762
Shipment Date:	19950602
Creation Date:	4/2/1996 0:00:00
Receipt Date:	19950608
Manifest ID:	95360368
Trans EPA ID:	CAD981382849
Trans Name:	Not reported
Trans 2 EPA ID:	CAD010925576
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD009452657
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD009452657
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	R01 - Recycler
Quantity Tons:	0.2085
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	19950427
Creation Date:	3/29/1996 0:00:00
Receipt Date:	19950428
Manifest ID:	95223533
Trans EPA ID:	CAD980673842
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980883177
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD980883177
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	R01 - Recycler
Quantity Tons:	1.251
Waste Quantity:	300
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	19950425
Creation Date:	3/29/1996 0:00:00
Receipt Date:	19950428
Manifest ID:	95223529
Trans EPA ID:	CAD980673842

CALIFORNIA COMPRESS (Continued) **S113069102**

Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980883177
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD980883177
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	R01 - Recycler
Quantity Tons:	8.34
Waste Quantity:	2000
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	1999
Gen EPA ID:	CAL000122762
Shipment Date:	19991006
Creation Date:	1/4/2000 0:00:00
Receipt Date:	19991014
Manifest ID:	98466390
Trans EPA ID:	CAD981382849
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD009452657
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD009452657
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	R01 - Recycler
Quantity Tons:	0.1876
Waste Quantity:	45
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2001
Gen EPA ID:	CAL000122762
Shipment Date:	20011004
Creation Date:	12/17/2001 0:00:00
Receipt Date:	20011004
Manifest ID:	21158709
Trans EPA ID:	CAD981382849

CALIFORNIA COMPRESS (Continued) **S113069102**

Trans Name:	Not reported
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD009452657
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	R01 - Recycler
Quantity Tons:	0.1875
Waste Quantity:	375
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20011002
Creation Date:	1/16/2002 0:00:00
Receipt Date:	20011010
Manifest ID:	21182613
Trans EPA ID:	CAD981382849
Trans Name:	Not reported
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	141 - Off-specification, aged, or surplus inorganics
RCRA Code:	D002
Meth Code:	D99 - Disposal, Other
Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	1996
Gen EPA ID:	CAL000122762

Shipment Date:	19961003
Creation Date:	9/12/1997 0:00:00
Receipt Date:	19961008
Manifest ID:	96418403
Trans EPA ID:	CAD041656851
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD009452657
Trans Name:	Not reported

CALIFORNIA COMPRESS (Continued) **S113069102**

TSDF Alt EPA ID:	CAD009452657
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	Not reported
Meth Code:	R01 - Recycler
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	19961003
Creation Date:	9/12/1997 0:00:00
Receipt Date:	19961008
Manifest ID:	96418403
Trans EPA ID:	CAD041656851
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD009452657
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD009452657
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	R01 - Recycler
Quantity Tons:	0.2293
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2003
Gen EPA ID:	CAL000122762

Shipment Date:	20031027
Creation Date:	10/12/2004 10:35:20
Receipt Date:	20031107
Manifest ID:	22750822
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO/KERDOON
TSDF Alt EPA ID:	CAT080013352
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	R01 - Recycler

CALIFORNIA COMPRESS (Continued) **S113069102**

Quantity Tons:	0.2125
Waste Quantity:	425
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	1998
Gen EPA ID:	CAL000122762
Shipment Date:	19981203
Creation Date:	1/13/1999 0:00:00
Receipt Date:	19981203
Manifest ID:	98199159
Trans EPA ID:	CAT982507154
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD990794133
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	151 - Asbestos-containing waste
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	48.0396
Waste Quantity:	57
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	1997
Gen EPA ID:	CAL000122762
Shipment Date:	19970905
Creation Date:	4/23/1998 0:00:00
Receipt Date:	19970911
Manifest ID:	96788922
Trans EPA ID:	CAD981382849
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD009452657
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD009452657
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	R01 - Recycler

CALIFORNIA COMPRESS (Continued) **S113069102**

Quantity Tons:	0.221
Waste Quantity:	53
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	1994
Gen EPA ID:	CAL000122762
Shipment Date:	19940907
Creation Date:	3/26/1996 0:00:00
Receipt Date:	19940927
Manifest ID:	93705195
Trans EPA ID:	CAD980673842
Trans Name:	Not reported
Trans 2 EPA ID:	CAD028277036
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	Not reported
TSDF Alt EPA ID:	CAT080013352
TSDF Alt Name:	Not reported
Waste Code Description:	221 - Waste oil and mixed oil
RCRA Code:	Not reported
Meth Code:	R01 - Recycler
Quantity Tons:	0.418
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

HWTS:

Name:	CALIFORNIA COMPRESS
Address:	2740 NIELSEN
Address 2:	Not reported
City,State,Zip:	FRESNO, CA 937060000
EPA ID:	CAL000122762
Inactive Date:	06/30/2008
Create Date:	09/02/1994
Last Act Date:	09/10/2009
Mailing Name:	Not reported
Mailing Address:	PO BOX 11966
Mailing Address 2:	Not reported
Mailing City,State,Zip:	FRESNO, CA 937761966
Owner Name:	CALIFORNIA COMPRESS
Owner Address:	2740 NIELSEN
Owner Address 2:	Not reported
Owner City,State,Zip:	FRESNO, CA 937060000
Contact Name:	MOHAMMAD IBRAHIM KHAN
Contact Address:	2740 NIELSEN

CALIFORNIA COMPRESS (Continued) **S113069102**

Contact Address 2:	Not reported
City,State,Zip:	FRESNO, CA 937060000

NAICS:

EPA ID:	CAL000122762
Create Date:	2002-03-14 16:36:28.000
NAICS Code:	49313
NAICS Description:	Farm Product Warehousing and Storage
Issued EPA ID Date:	1994-09-02 00:00:00
Inactive Date:	2008-06-30 00:00:00
Facility Name:	CALIFORNIA COMPRESS
Facility Address:	2740 NIELSEN
Facility Address 2:	Not reported
Facility City:	FRESNO
Facility County:	Not reported
Facility State:	CA
Facility Zip:	937060000

A6 **CA CONPRESS CO** **NPDES S117696450**
Target **2740 W NIELSEN AVE** **CIWQS N/A**
Property **FRESNO, CA 93706**

Site 6 of 10 in cluster A

Actual:
287 ft.

NPDES:

Name:	CA CONPRESS CO
Address:	2740 W NIELSEN AVE
City,State,Zip:	FRESNO, CA 93706
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5F10I004509
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Terminated
Status Date:	04/06/1992
Operator Name:	California Conpress Co
Operator Address:	PO Box 11966
Operator City:	Fresno
Operator State:	California
Operator Zip:	93776

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported

CA CONPRESS CO (Continued) **S117696450**

Agency Number:	Not reported
Region:	5F
Regulatory Measure ID:	281091
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5F10I004509
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	04/06/1992
Status:	Terminated
Status Date:	04/06/1992
Place Size:	68
Place Size Unit:	Acres
Contact:	Keith Paul
Contact Title:	Not reported
Contact Phone:	559-266-0511
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	California Conpress Co
Operator Address:	PO Box 11966
Operator City:	Fresno
Operator State:	California
Operator Zip:	93776
Operator Contact:	Keith Paul
Operator Contact Title:	Not reported
Operator Contact Phone:	559-266-0511
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	559-266-0511
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported

CA CONPRESS CO (Continued) **S117696450**

Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Fresno Irrigation
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	4221-Farm Product Warehousing and Storage
Secondary Sic:	4225-General Warehousing and Storage
Tertiary Sic:	Not reported

CIWQS:

Name:	CA CONPRESS CO
Address:	2740 W NIELSEN AVE
City,State,Zip:	FRESNO, CA 93706
Agency:	California Conpress Co
Agency Address:	PO Box 11966, Fresno, CA 93776
Place/Project Type:	Industrial - Farm Product Warehousing and Storage
SIC/NAICS:	4221(+)
Region:	5F
Program:	INDSTW
Regulatory Measure Status:	Terminated
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	5F10I004509
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	04/06/1992
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	36.74295
Longitude:	-119.84335

A7 **GEORGE DAOUDIAN** **HAZNET S113782599**
Target **2740 W NIELSEN AVE** **HWTS N/A**
Property **FRESNO, CA 93706**

Site 7 of 10 in cluster A

Actual: 287 ft.

HAZNET:

Name:	GEORGE DAOUDIAN
Address:	2740 W NIELSEN AVE
Address 2:	Not reported
City,State,Zip:	FRESNO, CA 937061220

GEORGE DAOUDIAN (Continued) **S113782599**

Contact:	GEORGE DAOUDIAN
Telephone:	5592753842
Mailing Name:	Not reported
Mailing Address:	4790 N CORNELIA AVE
Year:	2012
Gepaid:	CAC002697120
TSD EPA ID:	CAL000190080
CA Waste Code:	151 - Asbestos containing waste
Disposal Method:	H132 - Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons:	62

Additional Info:

Year:	2012
Gen EPA ID:	CAC002697120
Shipment Date:	20120629
Creation Date:	10/3/2012 22:15:14
Receipt Date:	20120629
Manifest ID:	004502258FLE
Trans EPA ID:	CAL000174097
Trans Name:	KROEKER INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000190080
Trans Name:	FORWARD LANDFILL
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	151 - Asbestos-containing waste
RCRA Code:	Not reported
Meth Code:	H132 - Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Quantity Tons:	16
Waste Quantity:	40
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20120629
Creation Date:	10/3/2012 22:15:14
Receipt Date:	20120629
Manifest ID:	004502261FLE
Trans EPA ID:	CAL000174097
Trans Name:	KROEKER INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000190080
Trans Name:	FORWARD LANDFILL
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	151 - Asbestos-containing waste
RCRA Code:	Not reported

GEORGE DAOUDIAN (Continued) **S113782599**

Meth Code:	H132 - Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Quantity Tons:	16
Waste Quantity:	40
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20120629
Creation Date:	10/3/2012 22:15:14
Receipt Date:	20120703
Manifest ID:	004502259FLE
Trans EPA ID:	CAL000174097
Trans Name:	KROEKER INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000190080
Trans Name:	FORWARD LANDFILL
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	151 - Asbestos-containing waste
RCRA Code:	Not reported
Meth Code:	H132 - Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Quantity Tons:	16
Waste Quantity:	40
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20120625
Creation Date:	8/7/2012 22:15:26
Receipt Date:	20120625
Manifest ID:	004502260FLE
Trans EPA ID:	CAR000217513
Trans Name:	ENVIRONMENTAL LOGISTICS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000190080
Trans Name:	FORWARD LANDFILL
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	151 - Asbestos-containing waste
RCRA Code:	Not reported
Meth Code:	H132 - Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Quantity Tons:	14
Waste Quantity:	35
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported

GEORGE DAOUDIAN (Continued) **S113782599**

Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

HWTS:
Name: GEORGE DAOUDIAN
Address: 2740 W NIELSEN AVE
Address 2: Not reported
City,State,Zip: FRESNO, CA 937061220
EPA ID: CAC002697120
Inactive Date: 09/21/2012
Create Date: 06/22/2012
Last Act Date: 06/22/2012
Mailing Name: Not reported
Mailing Address: 4790 N CORNELIA AVE
Mailing Address 2: Not reported
Mailing City,State,Zip: FRESNO, CA 937223825
Owner Name: GEORGE DAOUDIAN
Owner Address: 2740 W NIELSEN AVE
Owner Address 2: Not reported
Owner City,State,Zip: FRESNO, CA 937061220
Contact Name: GEORGE DAOUDIAN
Contact Address: 2740 W NIELSEN AVE
Contact Address 2: Not reported
City,State,Zip: FRESNO, CA 937061220

A8 **CHMIRS** **S112827598**
Target Property **2740 W. NEILSON AVE** **FRESNO, CA** **N/A**

Site 8 of 10 in cluster A

Actual: 287 ft.

CHMIRS:
Name: Not reported
Address: 2740 W. NEILSON AVE
City,State,Zip: FRESNO, CA
OES Incident Number: 12-2017
OES notification: 04/05/2012
OES Date: Not reported
OES Time: Not reported
Date Completed: Not reported
Property Use: Not reported
Agency Id Number: Not reported
Agency Incident Number: Not reported
Time Notified: Not reported
Time Completed: Not reported
Surrounding Area: Not reported
Estimated Temperature: Not reported
Property Management: Not reported
More Than Two Substances Involved?: Not reported
Resp Agncy Personel # Of Decontaminated: Not reported
Responding Agency Personel # Of Injuries: Not reported
Responding Agency Personel # Of Fatalities: Not reported
Others Number Of Decontaminated: Not reported
Others Number Of Injuries: Not reported
Others Number Of Fatalities: Not reported
Vehicle Make/year: Not reported

(Continued) **S112827598**

Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	No
Waterway:	Not reported
Spill Site:	Other
Cleanup By:	Contractor
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Gal(s)
Other:	Not reported
Date/Time:	1250
Year:	2012
Agency:	PG&E
Incident Date:	4/5/2012
Admin Agency:	Fresno County Health Department
Amount:	Not reported
Contained:	Yes
Site Type:	Not reported
E Date:	Not reported
Substance:	Mineral Oil
Quantity Released:	20
Unknown:	Not reported
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	Not reported
Number of Injuries:	Not reported
Number of Fatalities:	Not reported
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	The caller is reporting a utility pole was vandalism. The transformer and cable were stolen and oil was spilled on asphalt

A9 **CALIFORNIA COMPRESS COMPANY I** **HIST UST** **S118408321**
Target **2740 WEST NIELSEN AVENUE** **N/A**
Property **FRESNO, CA 93706**

Site 9 of 10 in cluster A

Actual: **287 ft.**

HIST UST:

Name:	CALIFORNIA COMPRESS COMPANY I
Address:	2740 WEST NIELSEN AVENUE
City,State,Zip:	FRESNO, CA 93706
File Number:	00023AB4
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/00023AB4.pdf
Region:	Not reported
Facility ID:	Not reported
Facility Type:	Not reported
Other Type:	Not reported
Contact Name:	Not reported
Telephone:	Not reported
Owner Name:	Not reported
Owner Address:	Not reported
Owner City,St,Zip:	Not reported
Total Tanks:	Not reported
Tank Num:	Not reported
Container Num:	Not reported
Year Installed:	Not reported
Tank Capacity:	Not reported
Tank Used for:	Not reported
Type of Fuel:	Not reported
Container Construction Thickness:	Not reported
Leak Detection:	Not reported

Click here for Geo Tracker PDF:

A10 **CALIFORNIA COMPRESS** **RGA LUST** **S114589906**
Target **2740 NIELSEN W** **N/A**
Property **FRESNO, CA**

Site 10 of 10 in cluster A

Actual: **287 ft.**

RGA LUST:

Name:	CALIFORNIA COMPRESS
Address:	2740 NIELSEN W
City:	FRESNO
State:	FRESNO
	2012 CALIFORNIA COMPRESS 2740 NIELSEN W
Name:	CALIFORNIA COMPRESS
Address:	2740 NIELSEN W
City:	FRESNO
State:	FRESNO
	2011 CALIFORNIA COMPRESS 2740 NIELSEN W
Name:	CALIFORNIA COMPRESS
Address:	2740 NIELSEN W
City:	FRESNO
State:	FRESNO
	2010 CALIFORNIA COMPRESS 2740 NIELSEN W
Name:	CALIFORNIA COMPRESS
Address:	2740 NIELSEN W
City:	FRESNO
State:	FRESNO

CALIFORNIA COMPRESS (Continued) **S114589906**

2009 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
2008 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
2007 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
2006 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
2005 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
2004 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
2003 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
2002 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
2001 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
2000 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
1998 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS
Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
1997 CALIFORNIA COMPRESS 2740 NIELSEN W
Name: CALIFORNIA COMPRESS

CALIFORNIA COMPRESS (Continued) **S114589906**

Address: 2740 NIELSEN W
City: FRESNO
State: FRESNO
1996 CALIFORNIA COMPRESS 2740 NIELSEN W

B11 **INDIVIDUAL LAUNDRY** **EDR Hist Cleaner** **1009190654**
2820 W NIELSON AV **N/A**
< 1/8 **FRESNO, CA**
1 ft.

Site 1 of 4 in cluster B

Relative: EDR Hist Cleaner
Higher

Actual: Year: Name: Type:
287 ft. 1932 INDIVIDUAL LAUNDRY LAUNDRIES STEAM
1937 DOWIE E G LAUNDRIES HAND

---

12 **AMERICAN RIVER PACKAGING INC.** **HAZNET** **S113058493**
2650 W NIELSEN AVE **HWTS** **N/A**
< 1/8 **FRESNO, CA 93706**
1 ft.

HAZNET:

Relative: Name: AMERICAN RIVER PACKAGING INC.
Higher Address: 2650 W NIELSEN AVE
Actual: Address 2: Not reported
287 ft. City,State,Zip: FRESNO, CA 937060000
Contact: MIKE VAZUILAR, GM
Telephone: 5596732119
Mailing Name: Not reported
Mailing Address: P.O. BOX 12282

Year: 2007
Gepaid: CAL000096232
TSD EPA ID: CAD066113465
CA Waste Code: 134 - Aqueous solution with total organic residues less than 10 percent
Disposal Method: H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.2058

Year: 2006
Gepaid: CAL000096232
TSD EPA ID: CAD066113465
CA Waste Code: 134 - Aqueous solution with total organic residues less than 10 percent
Disposal Method: H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.084

Year: 2006
Gepaid: CAL000096232
TSD EPA ID: CAD066113465
CA Waste Code: 134 - Aqueous solution with total organic residues less than 10 percent
Disposal Method: T01 - Treatment, Tank

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Tons:	0.063
Year:	2006
Gepaid:	CAL000096232
TSD EPA ID:	CAD066113465
CA Waste Code:	134 - Aqueous solution with total organic residues less than 10 percent
Disposal Method:	H01 - Transfer Station
Tons:	0.1176
Year:	2005
Gepaid:	CAL000096232
TSD EPA ID:	CAD066113465
CA Waste Code:	134 - Aqueous solution with total organic residues less than 10 percent
Disposal Method:	T01 - Treatment, Tank
Tons:	0.231
Year:	2005
Gepaid:	CAL000096232
TSD EPA ID:	CAD066113465
CA Waste Code:	134 - Aqueous solution with total organic residues less than 10 percent
Disposal Method:	H01 - Transfer Station
Tons:	0.0546
Year:	2004
Gepaid:	CAL000096232
TSD EPA ID:	CAD066113465
CA Waste Code:	134 - Aqueous solution with total organic residues less than 10 percent
Disposal Method:	T01 - Treatment, Tank
Tons:	0.252
Year:	2003
Gepaid:	CAL000096232
TSD EPA ID:	CAT080012602
CA Waste Code:	221 - Waste oil and mixed oil
Disposal Method:	H01 - Transfer Station
Tons:	0.095
Year:	2003
Gepaid:	CAL000096232
TSD EPA ID:	CAD066113465
CA Waste Code:	134 - Aqueous solution with total organic residues less than 10 percent
Disposal Method:	T01 - Treatment, Tank
Tons:	0.147
Year:	2002
Gepaid:	CAL000096232
TSD EPA ID:	CAD066113465
CA Waste Code:	134 - Aqueous solution with total organic residues less than 10 percent
Disposal Method:	T01 - Treatment, Tank
Tons:	0.0756

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Click this hyperlink while viewing on your computer to access
2 additional CA HAZNET: record(s) in the EDR Site Report.

Additional Info:

Year:	2001
Gen EPA ID:	CAL000096232
Shipment Date:	20011221
Creation Date:	2/20/2002 0:00:00
Receipt Date:	20011221
Manifest ID:	21327609
Trans EPA ID:	SCR000075150
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	741 - Liquids with halogenated organic compounds > 1000 mg/l
RCRA Code:	D001
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.0291
Waste Quantity:	7
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20010928
Creation Date:	12/17/2001 0:00:00
Receipt Date:	20010928
Manifest ID:	21457698
Trans EPA ID:	SCR000075150
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	741 - Liquids with halogenated organic compounds > 1000 mg/l
RCRA Code:	D001
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.0333
Waste Quantity:	8
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20010703

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Creation Date:	8/24/2001 0:00:00
Receipt Date:	20010703
Manifest ID:	21128360
Trans EPA ID:	SCR000075150
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	741 - Liquids with halogenated organic compounds > 1000 mg/l
RCRA Code:	D001
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.0333
Waste Quantity:	8
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20010411
Creation Date:	6/12/2001 0:00:00
Receipt Date:	20010411
Manifest ID:	20627325
Trans EPA ID:	SCR000075150
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	741 - Liquids with halogenated organic compounds > 1000 mg/l
RCRA Code:	D001
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.0333
Waste Quantity:	8
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2004
Gen EPA ID:	CAL000096232

Shipment Date:	20041103
Creation Date:	1/11/2005 18:30:51
Receipt Date:	20041103
Manifest ID:	23720359
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.063
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20040810
Creation Date:	1/4/2005 18:32:14
Receipt Date:	20040810
Manifest ID:	23516452
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.063
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20040510
Creation Date:	10/15/2004 10:46:40
Receipt Date:	20040510
Manifest ID:	22581926
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Quantity Tons:	0.042
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20040220
Creation Date:	8/20/2004 9:49:45
Receipt Date:	20040220
Manifest ID:	22588681
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.084
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2003
Gen EPA ID:	CAL000096232
Shipment Date:	20031121
Creation Date:	8/5/2004 10:14:17
Receipt Date:	20031121
Manifest ID:	23302234
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.0756
Waste Quantity:	18
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20030903
Creation Date:	7/29/2004 7:46:19
Receipt Date:	20030903
Manifest ID:	22513835
Trans EPA ID:	TXR000050930
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.0714
Waste Quantity:	17
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20030730
Creation Date:	7/13/2004 10:48:19
Receipt Date:	20030801
Manifest ID:	22638596
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080012602
Trans Name:	B C STOCKING DISTRIBUTING
TSDF Alt EPA ID:	CAT080012602
TSDF Alt Name:	Not reported
Waste Code Description:	221 - Waste oil and mixed oil
RCRA Code:	Not reported
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.095
Waste Quantity:	25
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2006
Gen EPA ID:	CAL000096232
Shipment Date:	20061129

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Creation Date:	3/30/2007 13:33:18
Receipt Date:	20061129
Manifest ID:	000231739CEX
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC 701501
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.084
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20060829
Creation Date:	10/25/2006 18:31:09
Receipt Date:	20060829
Manifest ID:	25031273
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.063
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20060614
Creation Date:	8/25/2006 18:37:36
Receipt Date:	20060614
Manifest ID:	23671744
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Trans Name:	SAFETY KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.0546
Waste Quantity:	13
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20060322
Creation Date:	7/27/2006 18:32:43
Receipt Date:	20060322
Manifest ID:	24620129
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.063
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2005
Gen EPA ID:	CAL000096232

Shipment Date:	20051228
Creation Date:	3/22/2006 18:31:02
Receipt Date:	20051228
Manifest ID:	23672943
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Meth Code:	H01 - Transfer Station
Quantity Tons:	0.0546
Waste Quantity:	13
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20051005
Creation Date:	5/24/2006 18:31:13
Receipt Date:	20051005
Manifest ID:	24743702
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.0504
Waste Quantity:	12
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20050714
Creation Date:	10/11/2005 18:31:29
Receipt Date:	20050714
Manifest ID:	24502252
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.0546
Waste Quantity:	13
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Shipment Date:	20050420
Creation Date:	8/17/2005 18:31:07
Receipt Date:	20050420
Manifest ID:	23664879
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.063
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20050126
Creation Date:	4/20/2006 18:32:04
Receipt Date:	20050126
Manifest ID:	23657694
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	CAD066113465
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.063
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2007
Gen EPA ID:	CAL000096232

Shipment Date:	20071115
Creation Date:	3/4/2008 18:30:41
Receipt Date:	20071115
Manifest ID:	000696240SKS
Trans EPA ID:	TXR000050930

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.084
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20070515
Creation Date:	10/23/2007 18:30:22
Receipt Date:	20070515
Manifest ID:	000312232SKS
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.063
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20070220
Creation Date:	8/19/2007 18:30:14
Receipt Date:	20070220
Manifest ID:	000375600SKS
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	SAFETY-KLEEN SYSTEMS INC 701501
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0588
Waste Quantity:	14
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2002
Gen EPA ID:	CAL000096232
Shipment Date:	20021217
Creation Date:	3/30/2003 18:31:13
Receipt Date:	20021217
Manifest ID:	22207445
Trans EPA ID:	SCR000075150
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD066113465
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.0756
Waste Quantity:	18
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20020710
Creation Date:	2/7/2003 18:31:14
Receipt Date:	20020715
Manifest ID:	21739070
Trans EPA ID:	SCR000075150
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000613893
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	134 - Aqueous solution with <10% total organic residues
RCRA Code:	Not reported
Meth Code:	T01 - Treatment, Tank
Quantity Tons:	0.0588

AMERICAN RIVER PACKAGING INC. (Continued) **S113058493**

Waste Quantity:	14
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

HWTS:

Name:	AMERICAN RIVER PACKAGING INC.
Address:	2650 W NIELSEN AVE
Address 2:	Not reported
City,State,Zip:	FRESNO, CA 937060000
EPA ID:	CAL000096232
Inactive Date:	06/30/2002
Create Date:	01/05/1993
Last Act Date:	04/23/2009
Mailing Name:	Not reported
Mailing Address:	P.O. BOX 12282
Mailing Address 2:	Not reported
Mailing City,State,Zip:	FRESNO, CA 958380000
Owner Name:	RICHARD R LAMB
Owner Address:	P.O. BOX 38903
Owner Address 2:	Not reported
Owner City,State,Zip:	SACRAMENTO, CA 958380000
Contact Name:	MIKE VAZUILAR, GM
Contact Address:	401 S GRANADA
Contact Address 2:	Not reported
City,State,Zip:	FRESNO, CA 936390000

NAICS:

EPA ID:	CAL000096232
Create Date:	2004-10-20 10:23:57.043
NAICS Code:	322211
NAICS Description:	Corrugated and Solid Fiber Box Manufacturing
Issued EPA ID Date:	1993-01-05 00:00:00
Inactive Date:	2002-06-30 00:00:00
Facility Name:	AMERICAN RIVER PACKAGING INC.
Facility Address:	2650 W NIELSEN AVE
Facility Address 2:	Not reported
Facility City:	FRESNO
Facility County:	Not reported
Facility State:	CA
Facility Zip:	937060000

B13 **JENSEN FARMS** **SWEEPS UST** **S101621680**
WSW **2829 W NIELSEN** **HIST UST** **N/A**
< 1/8 **FRESNO, CA 93706** **CA FID UST**
0.014 mi.
74 ft. **Site 2 of 4 in cluster B**

Relative:
Higher

Actual:
287 ft.

SWEEPS UST:

Name:	JENSEN FARMS
Address:	2829 W NIELSEN
City:	FRESNO
Status:	Active
Comp Number:	37998

JENSEN FARMS (Continued) **S101621680**

Number: 9
Board Of Equalization: Not reported
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1
SWRCB Tank Id: 10-000-037998-000001
Tank Status: A
Capacity: 500
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: 1

HIST UST:
Name: JENSEN FARSM
Address: 2829 W NIELSEN
City,State,Zip: FRESNO, CA 93706
File Number: 00024739
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/00024739.pdf
Region: Not reported
Facility ID: Not reported
Facility Type: Not reported
Other Type: Not reported
Contact Name: Not reported
Telephone: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner City,St,Zip: Not reported
Total Tanks: Not reported

Tank Num: Not reported
Container Num: Not reported
Year Installed: Not reported
Tank Capacity: Not reported
Tank Used for: Not reported
Type of Fuel: Not reported
Container Construction Thickness: Not reported
Leak Detection: Not reported

Click here for Geo Tracker PDF:

CA FID UST:
Facility ID: 10006927
Regulated By: UTNKA
Regulated ID: 00037998
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 2092371309
Mail To: Not reported
Mailing Address: 2829 W NIELSEN
Mailing Address 2: Not reported
Mailing City,St,Zip: FRESNO 93706
Contact: Not reported
Contact Phone: Not reported

JENSEN FARMS (Continued) **S101621680**

DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

B14 **JENSEN FARMS** **HIST UST** **U001591701**
WSW **2829 W NIELSEN AVE** **N/A**
< 1/8 **FRESNO, CA 93706**
0.014 mi.
74 ft. **Site 3 of 4 in cluster B**

Relative:
Higher

Actual:
287 ft.

HIST UST:

Name:	JENSEN FARMS
Address:	2829 W NIELSEN AVE
City,State,Zip:	FRESNO, CA 93706
File Number:	Not reported
URL:	Not reported
Region:	STATE
Facility ID:	00000037998
Facility Type:	Other
Other Type:	FARMING
Contact Name:	Not reported
Telephone:	2092371309
Owner Name:	JOHN A. JENSEN
Owner Address:	2829 W NIELSEN
Owner City,St,Zip:	FRESNO, CA 93706
Total Tanks:	0001
Tank Num:	001
Container Num:	1
Year Installed:	Not reported
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

C15 **KEMMER AGRICULTRUAL CO.;INC.** **RCRA-SQG** **1000297899**
East **88 N.HUGHES** **HIST UST** **CAT080012057**
< 1/8 **FRESNO, CA 93706** **FINDS**
0.017 mi. **ECHO**
90 ft. **Site 1 of 3 in cluster C** **HAZNET**
HWTS

Relative:
Higher

Actual:
287 ft.

RCRA-SQG:

Date Form Received by Agency:	1996-09-01 00:00:00.0
Handler Name:	KEMMER AGRICULTRUAL CO.;INC.
Handler Address:	88 N.HUGHES
Handler City,State,Zip:	FRESNO, CA 93706
EPA ID:	CAT080012057
Contact Name:	Not reported
Contact Address:	Not reported
Contact City,State,Zip:	Not reported
Contact Telephone:	Not reported
Contact Fax:	Not reported

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Contact Email:	Not reported
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Small Quantity Generator
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	CA
State District:	5
Mailing Address:	PO BOX 11216
Mailing City,State,Zip:	FRESNO, CA 93706
Owner Name:	Not reported
Owner Type:	Not reported
Operator Name:	NOT REQUIRED
Operator Type:	Private
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	NN
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2002-09-17 13:59:01.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	Not reported
Manifest Broker:	Not reported
Sub-Part P Indicator:	Not reported

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name:	NOT REQUIRED
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	NOT REQUIRED
Owner/Operator City,State,Zip:	NOT REQUIRED, ME 99999
Owner/Operator Telephone:	415-555-1212
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name:	DONALD KEMMER & NANCY KEMMER
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	NOT REQUIRED
Owner/Operator City,State,Zip:	NOT REQUIRED, ME 99999
Owner/Operator Telephone:	415-555-1212
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	1996-09-01 00:00:00.0
Handler Name:	KEMMER AGRICULTRUAL CO.;INC.
Federal Waste Generator Description:	Small Quantity Generator
State District Owner:	CA
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Receive Date:	1980-11-03 00:00:00.0
Handler Name:	KEMMER AGRICULTRUAL CO.;INC.
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	CA
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	32532
NAICS Description:	PESTICIDE AND OTHER AGRICULTURAL CHEMICAL MANUFACTURING

Facility Has Received Notices of Violation:

Found Violation:	Yes
Agency Which Determined Violation:	EPA
Violation Short Description:	Generators - General
Date Violation was Determined:	1987-02-14 00:00:00.0
Actual Return to Compliance Date:	1992-02-14 00:00:00.0
Return to Compliance Qualifier:	Not Resolved
Violation Responsible Agency:	EPA
Scheduled Compliance Date:	Not reported
Enforcement Identifier:	002
Date of Enforcement Action:	1987-03-13 00:00:00.0
Enforcement Responsible Agency:	EPA
Enforcement Docket Number:	Not reported
Enforcement Attorney:	Not reported
Corrective Action Component:	No
Appeal Initiated Date:	Not reported
Appeal Resolution Date:	Not reported
Disposition Status Date:	Not reported
Disposition Status:	Not reported
Disposition Status Description:	Not reported
Consent/Final Order Sequence Number:	Not reported
Consent/Final Order Respondent Name:	Not reported
Consent/Final Order Lead Agency:	Not reported
Enforcement Type:	WRITTEN INFORMAL
Enforcement Responsible Person:	R9EPA
Enforcement Responsible Sub-Organization:	Not reported
SEP Sequence Number:	Not reported
SEP Expenditure Amount:	Not reported
SEP Scheduled Completion Date:	Not reported
SEP Actual Date:	Not reported
SEP Defaulted Date:	Not reported
SEP Type:	Not reported
SEP Type Description:	Not reported
Proposed Amount:	Not reported
Final Monetary Amount:	Not reported
Paid Amount:	Not reported
Final Count:	Not reported
Final Amount:	Not reported

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Found Violation:	Yes
Agency Which Determined Violation:	State
Violation Short Description:	Generators - General
Date Violation was Determined:	1985-03-29 00:00:00.0
Actual Return to Compliance Date:	1985-03-29 00:00:00.0
Return to Compliance Qualifier:	Observed
Violation Responsible Agency:	State
Scheduled Compliance Date:	Not reported
Enforcement Identifier:	001
Date of Enforcement Action:	1985-03-29 00:00:00.0
Enforcement Responsible Agency:	State
Enforcement Docket Number:	Not reported
Enforcement Attorney:	Not reported
Corrective Action Component:	No
Appeal Initiated Date:	Not reported
Appeal Resolution Date:	Not reported
Disposition Status Date:	Not reported
Disposition Status:	Not reported
Disposition Status Description:	Not reported
Consent/Final Order Sequence Number:	Not reported
Consent/Final Order Respondent Name:	Not reported
Consent/Final Order Lead Agency:	Not reported
Enforcement Type:	WRITTEN INFORMAL
Enforcement Responsible Person:	R9STA
Enforcement Responsible Sub-Organization:	Not reported
SEP Sequence Number:	Not reported
SEP Expenditure Amount:	Not reported
SEP Scheduled Completion Date:	Not reported
SEP Actual Date:	Not reported
SEP Defaulted Date:	Not reported
SEP Type:	Not reported
SEP Type Description:	Not reported
Proposed Amount:	Not reported
Final Monetary Amount:	Not reported
Paid Amount:	Not reported
Final Count:	Not reported
Final Amount:	Not reported

Found Violation:	Yes
Agency Which Determined Violation:	EPA
Violation Short Description:	Generators - General
Date Violation was Determined:	1987-02-14 00:00:00.0
Actual Return to Compliance Date:	1992-02-14 00:00:00.0
Return to Compliance Qualifier:	Not Resolved
Violation Responsible Agency:	EPA
Scheduled Compliance Date:	Not reported
Enforcement Identifier:	001
Date of Enforcement Action:	1987-02-14 00:00:00.0
Enforcement Responsible Agency:	EPA
Enforcement Docket Number:	Not reported
Enforcement Attorney:	Not reported
Corrective Action Component:	No
Appeal Initiated Date:	Not reported
Appeal Resolution Date:	Not reported
Disposition Status Date:	Not reported
Disposition Status:	Not reported
Disposition Status Description:	Not reported

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Consent/Final Order Sequence Number:Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: R9EPA
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Evaluation Action Summary:
Evaluation Date: 1987-02-14 00:00:00.0
Evaluation Responsible Agency: EPA
Found Violation: Yes
Evaluation Type Description: NON-FINANCIAL RECORD REVIEW
Evaluation Responsible Person Identifier: R9EPA
Evaluation Responsible Sub-Organization: Not reported
Actual Return to Compliance Date: 1992-02-14 00:00:00.0
Scheduled Compliance Date: Not reported
Date of Request: Not reported
Date Response Received: Not reported
Request Agency: Not reported
Former Citation: Not reported

Evaluation Date: 1985-03-29 00:00:00.0
Evaluation Responsible Agency: State
Found Violation: Yes
Evaluation Type Description: COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier: R9STA
Evaluation Responsible Sub-Organization: Not reported
Actual Return to Compliance Date: 1985-03-29 00:00:00.0
Scheduled Compliance Date: Not reported
Date of Request: Not reported
Date Response Received: Not reported
Request Agency: Not reported
Former Citation: Not reported

Evaluation Date: 1987-02-14 00:00:00.0
Evaluation Responsible Agency: EPA
Found Violation: Yes
Evaluation Type Description: NON-FINANCIAL RECORD REVIEW
Evaluation Responsible Person Identifier: R9EPA
Evaluation Responsible Sub-Organization: Not reported
Actual Return to Compliance Date: 1992-02-14 00:00:00.0
Scheduled Compliance Date: Not reported
Date of Request: Not reported
Date Response Received: Not reported
Request Agency: Not reported

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Former Citation: Not reported

HIST UST:

Name:	KEMMER AGRICULTURAL SUPPLY CO
Address:	88 N HUGHES
City,State,Zip:	FRESNO, CA 93706
File Number:	000248F2
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/000248F2.pdf
Region:	STATE
Facility ID:	00000003383
Facility Type:	Other
Other Type:	FERTILIZER DEALER
Contact Name:	DONALD A. KEMMER
Telephone:	2092330367
Owner Name:	KEMMER AGRICULTURAL SUPPLY CO.
Owner Address:	88 N. HUGHES
Owner City,St,Zip:	FRESNO, CA 93706
Total Tanks:	0003
Tank Num:	001
Container Num:	103
Year Installed:	1980
Tank Capacity:	00001000
Tank Used for:	WASTE
Type of Fuel:	Not reported
Container Construction Thickness:	Not reported
Leak Detection:	None
Tank Num:	002
Container Num:	102
Year Installed:	1980
Tank Capacity:	00001000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	10
Leak Detection:	Pressure Test
Tank Num:	003
Container Num:	101
Year Installed:	1980
Tank Capacity:	00001000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	10
Leak Detection:	Pressure Test

Click here for Geo Tracker PDF:

FINDS:
Registry ID: 110009555659

Click Here:

Environmental Interest/Information System:
NCDB (National Compliance Data Base) supports implementation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Toxic Substances Control Act (TSCA). The system tracks inspections in regions and states with cooperative agreements, enforcement actions, and settlements.
US EPA TRIS (Toxics Release Inventory System) contains information from facilities on the amounts of over 300 listed toxic chemicals that these facilities release directly to air, water, land, or that are transported off-site.
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000297899
Registry ID:	110009555659
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110009555659
Name:	CUSTOM CHEMICIDES
Address:	88 N.HUGHES
City,State,Zip:	FRESNO, CA 93706

HAZNET:

Name:	KEMMER AGRICULTRUAL CO.;INC.
Address:	88 N.HUGHES
Address 2:	Not reported
City,State,Zip:	FRESNO, CA 937060000
Contact:	--
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	PO BOX 454
Year:	2000
Gepaid:	CAT080012057
TSD EPA ID:	AZD009015389
CA Waste Code:	791 - Liquids with pH <= 2
Disposal Method:	T03 - Treatment, Incineration
Tons:	0.5
Year:	2000
Gepaid:	CAT080012057
TSD EPA ID:	AZD009015389
CA Waste Code:	343 - Unspecified organic liquid mixture
Disposal Method:	-
Tons:	1
Year:	2000
Gepaid:	CAT080012057
TSD EPA ID:	AZD009015389
CA Waste Code:	343 - Unspecified organic liquid mixture
Disposal Method:	D80 - Disposal, Land Fill
Tons:	45.01
Year:	2000

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Gepaid: CAT080012057
TSD EPA ID: AZD009015389
CA Waste Code: 331 - Off-specification, aged or surplus organics
Disposal Method: D80 - Disposal, Land Fill
Tons: 1.45

Year: 1998
Gepaid: CAT080012057
TSD EPA ID: CAD059494310
CA Waste Code: 331 - Off-specification, aged or surplus organics
Disposal Method: H01 - Transfer Station
Tons: 2.1

Year: 1985
Gepaid: CAT080012057
TSD EPA ID: CAT000646117
CA Waste Code: 511 - Empty pesticide containers 30 gallons or more
Disposal Method: D80 - Disposal, Land Fill
Tons: 1.75

Year: 1985
Gepaid: CAT080012057
TSD EPA ID: CAT000646117
CA Waste Code: 232 - Pesticides and other waste associated with pesticide production
Disposal Method: T02 - Treatment, Surface Impoundment
Tons: 12.51

Year: 1984
Gepaid: CAT080012057
TSD EPA ID: CAT000646117
CA Waste Code: 232 - Pesticides and other waste associated with pesticide production
Disposal Method: D99 - Disposal, Other
Tons: 0.2085

Year: 1984
Gepaid: CAT080012057
TSD EPA ID: CAT000646117
CA Waste Code: 212 - Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
Disposal Method: D99 - Disposal, Other
Tons: 8.5484

Additional Info:
Year: 1998
Gen EPA ID: CAT080012057

Shipment Date: 19981112
Creation Date: 1/28/1999 0:00:00
Receipt Date: 19981120
Manifest ID: 98140812
Trans EPA ID: ILD984908202
Trans Name: Not reported
Trans 2 EPA ID: SCD987574647
Trans 2 Name: Not reported
TSDF EPA ID: CAD059494310
Trans Name: Not reported
TSDF Alt EPA ID: Not reported

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

TSDF Alt Name:	Not reported
Waste Code Description:	331 - Off-specification, aged, or surplus organics
RCRA Code:	U011
Meth Code:	H01 - Transfer Station
Quantity Tons:	2.1
Waste Quantity:	4200
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2000
Gen EPA ID:	CAT080012057
Shipment Date:	20000630
Creation Date:	10/30/2000 0:00:00
Receipt Date:	20000710
Manifest ID:	96294627
Trans EPA ID:	CAL000113451
Trans Name:	Not reported
Trans 2 EPA ID:	CAD981446156
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD009015389
Trans Name:	Not reported
TSDF Alt EPA ID:	AZD009015389
TSDF Alt Name:	Not reported
Waste Code Description:	343 - Unspecified organic liquid mixture
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	0.51
Waste Quantity:	150
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20000620
Creation Date:	8/28/2000 0:00:00
Receipt Date:	20000621
Manifest ID:	97428082
Trans EPA ID:	OKD981588791
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD009015389
Trans Name:	Not reported
TSDF Alt EPA ID:	AZD009015389
TSDF Alt Name:	Not reported
Waste Code Description:	343 - Unspecified organic liquid mixture
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	3.25

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Waste Quantity:	6500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20000620
Creation Date:	8/28/2000 0:00:00
Receipt Date:	20000621
Manifest ID:	97428085
Trans EPA ID:	OKD981588791
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD009015389
Trans Name:	Not reported
TSDF Alt EPA ID:	AZD009015389
TSDF Alt Name:	Not reported
Waste Code Description:	343 - Unspecified organic liquid mixture
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	5
Waste Quantity:	10000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20000620
Creation Date:	8/28/2000 0:00:00
Receipt Date:	20000621
Manifest ID:	97428084
Trans EPA ID:	OKD981588791
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD009015389
Trans Name:	Not reported
TSDF Alt EPA ID:	AZD009015389
TSDF Alt Name:	Not reported
Waste Code Description:	791 - Liquids with pH < 2 792 Liquids with pH < 2 with metals
RCRA Code:	D002
Meth Code:	T03 - Treatment, Incineration
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20000620

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Creation Date:	8/28/2000 0:00:00
Receipt Date:	20000621
Manifest ID:	97428084
Trans EPA ID:	OKD981588791
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD009015389
Trans Name:	Not reported
TSDF Alt EPA ID:	AZD009015389
TSDF Alt Name:	Not reported
Waste Code Description:	331 - Off-specification, aged, or surplus organics
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	1.45
Waste Quantity:	2900
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20000620
Creation Date:	8/28/2000 0:00:00
Receipt Date:	20000621
Manifest ID:	97428083
Trans EPA ID:	OKD981588791
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD009015389
Trans Name:	Not reported
TSDF Alt EPA ID:	AZD009015389
TSDF Alt Name:	Not reported
Waste Code Description:	343 - Unspecified organic liquid mixture
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	5
Waste Quantity:	10000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20000619
Creation Date:	8/28/2000 0:00:00
Receipt Date:	20000620
Manifest ID:	97428079
Trans EPA ID:	OKD981588791
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD009015389
Trans Name:	Not reported

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

TSDF Alt EPA ID:	AZD009015389
TSDF Alt Name:	Not reported
Waste Code Description:	343 - Unspecified organic liquid mixture
RCRA Code:	Not reported
Meth Code:	- Not reported
Quantity Tons:	1
Waste Quantity:	2000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20000619
Creation Date:	8/28/2000 0:00:00
Receipt Date:	20000620
Manifest ID:	97428079
Trans EPA ID:	OKD981588791
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD009015389
Trans Name:	Not reported
TSDF Alt EPA ID:	AZD009015389
TSDF Alt Name:	Not reported
Waste Code Description:	343 - Unspecified organic liquid mixture
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	16.25
Waste Quantity:	32500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20000617
Creation Date:	8/28/2000 0:00:00
Receipt Date:	20000619
Manifest ID:	97428078
Trans EPA ID:	OKD981588791
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD009015389
Trans Name:	Not reported
TSDF Alt EPA ID:	AZD009015389
TSDF Alt Name:	Not reported
Waste Code Description:	343 - Unspecified organic liquid mixture
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	7.5
Waste Quantity:	15000
Quantity Unit:	P
Additional Code 1:	Not reported

KEMMER AGRICULTRUAL CO.;INC. (Continued) **1000297899**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20000617
Creation Date:	8/28/2000 0:00:00
Receipt Date:	20000619
Manifest ID:	97428080
Trans EPA ID:	OKD981588791
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD009015389
Trans Name:	Not reported
TSDF Alt EPA ID:	AZD009015389
TSDF Alt Name:	Not reported
Waste Code Description:	343 - Unspecified organic liquid mixture
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	7.5
Waste Quantity:	15000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

HWTS:

Name:	KEMMER AGRICULTRUAL CO.;INC.
Address:	88 N.HUGHES
Address 2:	Not reported
City,State,Zip:	FRESNO, CA 937060000
EPA ID:	CAT080012057
Inactive Date:	06/30/1998
Create Date:	07/23/1982
Last Act Date:	02/08/2005
Mailing Name:	Not reported
Mailing Address:	PO BOX 454
Mailing Address 2:	Not reported
Mailing City,State,Zip:	LAKE OSWEGO, OR 970340049
Owner Name:	DONALD KEMMER & NANCY KEMMER
Owner Address:	--
Owner Address 2:	Not reported
Owner City,State,Zip:	--, 99 --
Contact Name:	--
Contact Address:	INACT PER 98VQ FINAL NOTICE
Contact Address 2:	- BATCH 4/27
City,State,Zip:	--, 99 --

C16 **KEMMER AGRICULTURE** **CERS HAZ WASTE** **S101581670**
East **88 N HUGHES** **SWEEPS UST** **N/A**
< 1/8 **FRESNO, CA 93772** **CA FID UST**
0.017 mi. **CUPA Listings**
90 ft. **Site 2 of 3 in cluster C** **CERS**

Relative:
Higher

Actual:
287 ft.

CERS HAZ WASTE:

Name:	TRENCH SHORING - FRESNO
Address:	88 N HUGHES AVE
City,State,Zip:	FRESNO, CA 93706
Site ID:	358728
CERS ID:	10644685
CERS Description:	Hazardous Waste Generator

SWEEPS UST:

Name:	KEMMER AGRICULTURE
Address:	88 N HUGHES
City:	FRESNO
Status:	Not reported
Comp Number:	3383
Number:	Not reported
Board Of Equalization:	44-003477
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	10-000-003383-000001
Tank Status:	Not reported
Capacity:	100
Active Date:	Not reported
Tank Use:	CHEMICAL
STG:	WASTE
Content:	Not reported
Number Of Tanks:	3

Name:	KEMMER AGRICULTURE
Address:	88 N HUGHES
City:	FRESNO
Status:	Not reported
Comp Number:	3383
Number:	Not reported
Board Of Equalization:	44-003477
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	10-000-003383-000002
Tank Status:	Not reported
Capacity:	1000
Active Date:	Not reported
Tank Use:	M.V. FUEL
STG:	PRODUCT
Content:	LEADED
Number Of Tanks:	Not reported

Name:	KEMMER AGRICULTURE
Address:	88 N HUGHES
City:	FRESNO
Status:	Not reported

KEMMER AGRICULTURE (Continued) **S101581670**

Comp Number: 3383
Number: Not reported
Board Of Equalization: 44-003477
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 10-000-003383-000003
Tank Status: Not reported
Capacity: 1000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: REG UNLEADED
Number Of Tanks: Not reported

CA FID UST:
Facility ID: 10004438
Regulated By: UTNKI
Regulated ID: 00003383
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 2092330367
Mail To: Not reported
Mailing Address: 88 N HUGHES
Mailing Address 2: Not reported
Mailing City,St,Zip: FRESNO 93772
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Inactive

CUPA FRESNO:
Name: TRENCH SHORING COMPANY
Address: 88 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0169818
Cross Street: NIELSEN
APM Number: 45802055
CERS Id: 10644685
SWIS Number: Not reported
GIS Latitude: 36.744426713
GIS Longitude: -119.83436221
Program Element: UST REMOVAL/CLOSURE W/3 TANKS

Name: TRENCH SHORING COMPANY
Address: 88 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0169818
Cross Street: NIELSEN
APM Number: 45802055
CERS Id: 10644685
SWIS Number: Not reported

KEMMER AGRICULTURE (Continued) **S101581670**

GIS Latitude: 36.744426713
GIS Longitude: -119.83436221
Program Element: SMALL HAZARDOUS MATERIALS HANDLER

Name: TRENCH SHORING COMPANY
Address: 88 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0169818
Cross Street: NIELSEN
APM Number: 45802055
CERS Id: 10644685
SWIS Number: Not reported
GIS Latitude: 36.744426713
GIS Longitude: -119.83436221
Program Element: HAZARDOUS WASTE GENERATOR (CESQG)

CERS:
Name: TRENCH SHORING - FRESNO
Address: 88 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Site ID: 358728
CERS ID: 10644685
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 358728
Site Name: Trench Shoring - Fresno
Violation Date: 10/14/2015
Citation: HSC 6.95 25507 - California Health and Safety Code, Chapter 6.95, Section(s) 25507
Violation Description: Failure to adequately establish and implement a business plan when storing/handling a hazardous material at or above reportable quantities.
Violation Notes: Returned to compliance on 11/13/2015.
Violation Division: Fresno County Department of Public Health
Violation Program: HMRRP
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-14-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Haz waste inspection
Eval Division: Fresno County Department of Public Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-14-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: New business, BP inspection, etc.
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

KEMMER AGRICULTURE (Continued) **S101581670**

Coordinates:

Site ID:	358728
Facility Name:	Trench Shoring - Fresno
Env Int Type Code:	HWG
Program ID:	10644685
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	36.744430
Longitude:	-119.834360

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Fresno County Community Health Department
Entity Title:	Not reported
Affiliation Address:	1221 Fulton St., 3rd FloorP.O. Box 11867
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93775
Affiliation Phone:	(559) 600-3271

Affiliation Type Desc:	Document Preparer
Entity Name:	Gretchen Torrence
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Parent Corporation
Entity Name:	TRENCH SHORING
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	206 N Central Ave
Affiliation City:	COMPTON
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	90220
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	Tom Malloy Corp.
Entity Title:	Not reported
Affiliation Address:	206 N. Central Ave
Affiliation City:	COMPTON

KEMMER AGRICULTURE (Continued) **S101581670**

Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	90220
Affiliation Phone:	(310) 327-0174
Affiliation Type Desc:	Operator
Entity Name:	Trench Shoring Company
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(559) 691-4123
Affiliation Type Desc:	Property Owner
Entity Name:	Tom Malloy Corp.
Entity Title:	Not reported
Affiliation Address:	636 E. Rosecrans Ave.
Affiliation City:	Los Angeles
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	90059
Affiliation Phone:	(310) 323-9648
Affiliation Type Desc:	Environmental Contact
Entity Name:	Gretchen Torrence
Entity Title:	Not reported
Affiliation Address:	206 N Central Ave
Affiliation City:	COMPTON
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	90220
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Gretchen Torrence
Entity Title:	EHS Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

C17 **TOM MALLOY CORP DBA TRENCH SHORING COMPANY-FRESNO** **RCRA NonGen / NLR** **1024852373**
East **88 N HUGHES AVE** **CAL000411447**
< 1/8 **FRESNO, CA 93706**
0.017 mi.
90 ft. **Site 3 of 3 in cluster C**

Relative: RCRA NonGen / NLR:
Higher

Date Form Received by Agency:	2015-10-21 00:00:00.0
Handler Name:	TOM MALLOY CORP DBA TRENCH SHORING COMPANY-FRESN
Handler Address:	88 N HUGHES AVE
Handler City,State,Zip:	FRESNO, CA 93706
EPA ID:	CAL000411447

Actual:
287 ft.

TOM MALLOY CORP DBA TRENCH SHORING COMPANY-FRESNO (Continued) **1024852373**

Contact Name:	KEVIN MALLOY
Contact Address:	636 E ROSECRANS AVE
Contact City,State,Zip:	LOS ANGELES, CA 90059
Contact Telephone:	310-327-5554
Contact Fax:	000-000-0000
Contact Email:	KENGOT@TRENCHSHORING.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	636 E ROSECRANS AVE
Mailing City,State,Zip:	LOS ANGELES, CA 90059-3507
Owner Name:	THOMAS E MALLOY
Owner Type:	Other
Operator Name:	KEVIN MALLOY
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No

TOM MALLOY CORP DBA TRENCH SHORING COMPANY-FRESNO (Continued) **1024852373**

Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2018-09-06 17:06:57.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	THOMAS E MALLOY
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	636 E ROSECRANS AVE
Owner/Operator City,State,Zip:	LOS ANGELES, CA 90059-3507
Owner/Operator Telephone:	310-327-5554
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	KEVIN MALLOY
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	636 E ROSECRANS AVE
Owner/Operator City,State,Zip:	LOS ANGELES, CA 90059
Owner/Operator Telephone:	310-327-5554
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	2015-10-21 00:00:00.0
Handler Name:	TOM MALLOY CORP DBA TRENCH SHORING COMPANY-FRESNO
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No

TOM MALLOY CORP DBA TRENCH SHORING COMPANY-FRESNO (Continued) **1024852373**

Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 562991
NAICS Description: SEPTIC TANK AND RELATED SERVICES

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

B18 **FRESNO IRRIGATION DISTRICT** **CPS-SLIC** **S106486166**
WSW **MARKS & NIELSON** **CERS** **N/A**
< 1/8 **FRESNO, CA 93706**
0.025 mi.
133 ft. **Site 4 of 4 in cluster B**

Relative:
Higher

Actual:
288 ft.

CPS-SLIC:
Name: FRESNO IRRIGATION DISTRICT
Address: MARKS & NIELSON
City,State,Zip: FRESNO, CA 93706
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 09/13/2013
Global Id: SLT5FS244442
Lead Agency: CENTRAL VALLEY RWQCB (REGION 5F)
Lead Agency Case Number: Not reported
Latitude: 36.7428
Longitude: -119.8446
Case Type: Cleanup Program Site
Case Worker: GJI
Local Agency: Not reported
RB Case Number: SLT5FS024
File Location: Not reported
Potential Media Affected: Aquifer used for drinking water supply
Potential Contaminants of Concern: Not reported
Site History: The case was opened following an unauthorized release at the subject site. Fresno County Environmental Health Department oversaw final site remediation and issued a closure letter on 9/13/13.

Click here to access the California GeoTracker records for this facility:

CERS:
Name: FRESNO IRRIGATION DISTRICT
Address: MARKS & NIELSON
City,State,Zip: FRESNO, CA 93706
Site ID: 256284
CERS ID: SLT5FS244442
CERS Description: Cleanup Program Site

Affiliation:

FRESNO IRRIGATION DISTRICT (Continued) **S106486166**

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	GREG ISSINGHOFF - CENTRAL VALLEY RWQCB (REGION 5F)
Entity Title:	Not reported
Affiliation Address:	1685 E STREET
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	5594884390

19
West
< 1/8
0.026 mi.
138 ft.

CRUSH RECYCLING
495 N MARKS AVE
FRESNO, CA 93706

CUPA Listings **S105870495**
EMI **N/A**
HAZNET
HWTS

Relative:
Lower

Actual:
285 ft.

CUPA FRESNO:

Name:	CRUSH RECYCLING
Address:	495 N MARKS AVE
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0276347
Cross Street:	Not reported
APM Number:	32606034S
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.744765525
GIS Longitude:	-119.84859569
Program Element:	HAZ MAT DISCLOSURE-BELOW REPORTING QUANTITY

Name:	CRUSH RECYCLING
Address:	495 N MARKS AVE
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0276347
Cross Street:	Not reported
APM Number:	32606034S
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.744765525
GIS Longitude:	-119.84859569
Program Element:	HAZARDOUS WASTE GENERATOR (CESQG)

Name:	CRUSH RECYCLING
Address:	495 N MARKS AVE
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0276347
Cross Street:	Not reported
APM Number:	32606034S
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.744765525
GIS Longitude:	-119.84859569
Program Element:	AST STORAGE CAPACITY 1,320 TO 9,999 GAL

Name:	CRUSH RECYCLING
Address:	495 N MARKS AVE
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0276347

CRUSH RECYCLING (Continued) **S105870495**

Cross Street: Not reported
APM Number: 32606034S
CERS Id: Not reported
SWIS Number: Not reported
GIS Latitude: 36.744765525
GIS Longitude: -119.84859569
Program Element: SOLID WASTE NON-FACILITY/NON-OPERATION

Name: CRUSH RECYCLING
Address: 495 N MARKS AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0276347
Cross Street: Not reported
APM Number: 32606034S
CERS Id: Not reported
SWIS Number: Not reported
GIS Latitude: 36.744765525
GIS Longitude: -119.84859569
Program Element: UST REMOVAL/CLOSURE W/2 TANKS

EMI:

Name: ARCHIE CRIPPEN RECYCLING
Address: 495 N MARKS
City,State,Zip: FRESNO, CA 93706
Year: 2003
County Code: 10
Air Basin: SJV
Facility ID: 53
Air District Name: SJU
SIC Code: 5093
Air District Name: SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0
Reactive Organic Gases Tons/Yr: 0
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Name: ARCHIE CRIPPEN RECYCLING
Address: 495 N MARKS
City,State,Zip: FRESNO, CA 93706
Year: 2005
County Code: 10
Air Basin: SJV
Facility ID: 53
Air District Name: SJU
SIC Code: 5093
Air District Name: SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: .0209035504900086052
Reactive Organic Gases Tons/Yr: .0174900006949902
Carbon Monoxide Emissions Tons/Yr: .0189000007510185
NOX - Oxides of Nitrogen Tons/Yr: .0523800020813942

CRUSH RECYCLING (Continued) **S105870495**

SOX - Oxides of Sulphur Tons/Yr: .0010665000423789
Particulate Matter Tons/Yr: .0028739755240375922
Part. Matter 10 Micrometers and Smllr Tons/Yr: .00280500011146069

Name: ARCHIE CRIPPEN RECYCLING
Address: 495 N MARKS
City,State,Zip: FRESNO, CA 93706
Year: 2006
County Code: 10
Air Basin: SJV
Facility ID: 53
Air District Name: SJU
SIC Code: 5093
Air District Name: SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 1.006784655079842237
Reactive Organic Gases Tons/Yr: .842376720905304
Carbon Monoxide Emissions Tons/Yr: .910287022590637
NOX - Oxides of Nitrogen Tons/Yr: 2.52279546260834
SOX - Oxides of Sulphur Tons/Yr: .0513661962747574
Particulate Matter Tons/Yr: .1384202390909190573
Part. Matter 10 Micrometers and Smllr Tons/Yr: .135098153352737

Name: ARCHIE CRIPPEN RECYCLING
Address: 495 N MARKS
City,State,Zip: FRESNO, CA 96160
Year: 2007
County Code: 10
Air Basin: SJV
Facility ID: 53
Air District Name: SJU
SIC Code: 5093
Air District Name: SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: .0178109234694698219
Reactive Organic Gases Tons/Yr: .0149023996669054
Carbon Monoxide Emissions Tons/Yr: .0403135990989208
NOX - Oxides of Nitrogen Tons/Yr: .111759997501969
SOX - Oxides of Sulphur Tons/Yr: .0000678399984836578
Particulate Matter Tons/Yr: .0141838864540748053
Part. Matter 10 Micrometers and Smllr Tons/Yr: .00837100846717701

Name: ARCHIE CRIPPEN RECYCLING
Address: 495 N MARKS
City,State,Zip: FRESNO, CA 93706
Year: 2008
County Code: 10
Air Basin: SJV
Facility ID: 53
Air District Name: SJU
SIC Code: 5093
Air District Name: SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: .0178109234694698219

CRUSH RECYCLING (Continued) **S105870495**

Reactive Organic Gases Tons/Yr: .0149023996669054
Carbon Monoxide Emissions Tons/Yr: .0403135990989208
NOX - Oxides of Nitrogen Tons/Yr: .111759997501969
SOX - Oxides of Sulphur Tons/Yr: .0000678399984836578
Particulate Matter Tons/Yr: .0141838864540748053
Part. Matter 10 Micrometers and Smllr Tons/Yr:.00837100846717701

HAZNET:
Name: BLUE EAGLE TRANSPORTS INC
Address: 495 N MARKS AVE
Address 2: Not reported
City,State,Zip: FRESNO, CA 93706
Contact: OMAR BARRAGAN
Telephone: 5596475649
Mailing Name: Not reported
Mailing Address: 3455 W MCKINLEY AVE

Year: 2016
Gepaid: CAL000409575
TSD EPA ID: CAD008252405
CA Waste Code: 214 - Unspecified solvent mixture
Disposal Method: H061 - Fuel Blending Prior To Energy Recovery At Another Site
Tons: 0.198

Year: 2016
Gepaid: CAL000409575
TSD EPA ID: CAD008252405
CA Waste Code: 133 - Aqueous solution with total organic residues 10 percent or more
Disposal Method: H061 - Fuel Blending Prior To Energy Recovery At Another Site
Tons: 0.1251

HWTS:
Name: BLUE EAGLE TRANSPORTS INC
Address: 495 N MARKS AVE
Address 2: Not reported
City,State,Zip: FRESNO, CA 93706
EPA ID: CAL000409575
Inactive Date: 06/30/2016
Create Date: 08/24/2015
Last Act Date: 01/12/2017
Mailing Name: Not reported
Mailing Address: 3455 W MCKINLEY AVE
Mailing Address 2: Not reported
Mailing City,State,Zip: FRESNO, CA 93722
Owner Name: BLUE EAGLE TRANSPORTS INC
Owner Address: 3455 W MCKINLEY AVE
Owner Address 2: Not reported
Owner City,State,Zip: FRESNO, CA 93722
Contact Name: OMAR BARRAGAN
Contact Address: 3455 W MCKINLEY AVE
Contact Address 2: Not reported
City,State,Zip: FRESNO, CA 93722

NAICS:
EPA ID: CAL000409575
Create Date: 2015-08-24 09:11:02.023

CRUSH RECYCLING (Continued) **S105870495**

NAICS Code:	562119
NAICS Description:	Other Waste Collection
Issued EPA ID Date:	2015-08-24 09:11:02.01700
Inactive Date:	2016-06-30 00:00:00
Facility Name:	BLUE EAGLE TRANSPORTS INC
Facility Address:	495 N MARKS AVE
Facility Address 2:	Not reported
Facility City:	FRESNO
Facility County:	Not reported
Facility State:	CA
Facility Zip:	93706

D20 **BRENNTAG PACIFIC INC** **RCRA-LQG** **1018155120**
ENE **175 N.HUGHES AVE.** **CAR000254987**
< 1/8 **FRESNO, CA 93706**
0.041 mi.
217 ft. **Site 1 of 3 in cluster D**

Relative: **Higher**

Actual: **289 ft.**

RCRA-LQG:

Date Form Received by Agency:	2018-08-28 00:00:00.0
Handler Name:	BRENNTAG PACIFIC INC
Handler Address:	175 N.HUGHES AVE.
Handler City,State,Zip:	FRESNO, CA 93706
EPA ID:	CAR000254987
Contact Name:	BRIAN ST. PETER
Contact Address:	N. HUGHES AVENUE
Contact City,State,Zip:	FRESNO, CA 93706
Contact Telephone:	559-801-1457
Contact Fax:	Not reported
Contact Email:	BSTPETER@BRENNTAG.COM
Contact Title:	BRANCH OPERATIONS MANAGER
EPA Region:	09
Land Type:	Private
Federal Waste Generator Description:	Large Quantity Generator
Non-Notifier:	Not reported
Biennial Report Cycle:	2017
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	N. HUGHES AVENUE
Mailing City,State,Zip:	FRESNO, CA 93706
Owner Name:	BRENNTAG PACIFIC, INC.
Owner Type:	Private
Operator Name:	BRENNTAG PACIFIC, INC.
Operator Type:	Private
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes

BRENNTAG PACIFIC INC (Continued) **1018155120**

Universal Waste Destination Facility:	Yes
Federal Universal Waste:	Yes
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	NN
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2018-11-26 18:57:03.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	Not reported

Biennial: List of Years
Year: 2017

Click Here for Biennial Reporting System Data:

Hazardous Waste Summary:
Waste Code: D001
Waste Description: IGNITABLE WASTE

Waste Code: D002
Waste Description: CORROSIVE WASTE

BRENNTAG PACIFIC INC (Continued) **1018155120**

Waste Code: D003
Waste Description: REACTIVE WASTE

Waste Code: D007
Waste Description: CHROMIUM

Waste Code: F001
Waste Description: THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLORETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Waste Code: F002
Waste Description: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Waste Code: F003
Waste Description: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Waste Code: F004
Waste Description: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: CRESOLS, CRESYLIC ACID, AND NITROBENZENE; AND THE STILL BOTTOMS FROM THE RECOVERY OF THESE SOLVENTS; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Waste Code: F005
Waste Description: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

BRENNTAG PACIFIC INC (Continued) **1018155120**

Waste Code: U188
Waste Description: PHENOL

Handler - Owner Operator:
Owner/Operator Indicator: Operator
Owner/Operator Name: TOM BAJEMA
Legal Status: Private
Date Became Current: 2014-01-01 00:00:00.
Date Ended Current: Not reported
Owner/Operator Address: Not reported
Owner/Operator City,State,Zip: Not reported
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Owner
Owner/Operator Name: BRENNTAG PACIFIC, INC.
Legal Status: Private
Date Became Current: 2016-12-01 00:00:00.
Date Ended Current: Not reported
Owner/Operator Address: 10747 PATTERSON PLACE
Owner/Operator City,State,Zip: SANTA FE SPRINGS, CA 90670
Owner/Operator Telephone: 562-322-2565
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: MNASSRALLA@BRENNTAG.COM

Owner/Operator Indicator: Operator
Owner/Operator Name: BRENNTAG PACIFIC, INC.
Legal Status: Private
Date Became Current: 2016-12-01 00:00:00.
Date Ended Current: Not reported
Owner/Operator Address: 10747 PATTERSON PLACE
Owner/Operator City,State,Zip: SANTA FE SPRINGS, CA 90670
Owner/Operator Telephone: 562-322-2565
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: MNASSRALLA@BRENNTAG.COM

Owner/Operator Indicator: Owner
Owner/Operator Name: BRENNTAG PACIFIC INC
Legal Status: Private
Date Became Current: 2014-01-01 00:00:00.
Date Ended Current: Not reported
Owner/Operator Address: 10747 PATTERSON PLACE
Owner/Operator City,State,Zip: FRESNO, CA 93706
Owner/Operator Telephone: 562-903-9626
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: BRENNTAG PACIFIC, INC
Legal Status: Private
Date Became Current: 2014-01-01 00:00:00.
Date Ended Current: Not reported

BRENNTAG PACIFIC INC (Continued) **1018155120**

Owner/Operator Address:	Not reported
Owner/Operator City,State,Zip:	Not reported
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	BRENNTAG PACIFIC INC MCCALL PACIFIC LLC
Legal Status:	Private
Date Became Current:	2013-07-26 00:00:00.
Date Ended Current:	Not reported
Owner/Operator Address:	5480 NW FRONT AVE
Owner/Operator City,State,Zip:	PORTLAND, OR 97210
Owner/Operator Telephone:	562-903-9626
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	2018-08-28 00:00:00.0
Handler Name:	BRENNTAG PACIFIC INC
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	Yes
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	No
Electronic Manifest Broker:	No
Receive Date:	2015-07-01 00:00:00.0
Handler Name:	BRENNTAG PACIFIC INC
Federal Waste Generator Description:	Small Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported
Receive Date:	2017-04-27 00:00:00.0
Handler Name:	BRENNTAG PACIFIC INC
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported

BRENNTAG PACIFIC INC (Continued) **1018155120**

Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 424690
NAICS Description: OTHER CHEMICAL AND ALLIED PRODUCTS MERCHANT WHOLESALERS

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

D21 **BRENNTAG PACIFIC** **CUPA Listings** **S118489112**
ENE **175 N HUGHES AVE** **N/A**
< 1/8 **FRESNO, CA 93706**
0.041 mi.
217 ft. **Site 2 of 3 in cluster D**

Relative: **Higher**

Actual: **289 ft.**

CUPA FRESNO:
Name: BRENNTAG PACIFIC
Address: 175 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0284674
Cross Street: Not reported
APM Number: 45802070
CERS Id: 10639381
SWIS Number: Not reported
GIS Latitude: 36.7458
GIS Longitude: -119.8381
Program Element: EXTREMELY HAZARDOUS SUBSTANCE HANDLER (EPCRA)

Name: BRENNTAG PACIFIC
Address: 175 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0284674
Cross Street: Not reported
APM Number: 45802070
CERS Id: 10639381
SWIS Number: Not reported
GIS Latitude: 36.7458
GIS Longitude: -119.8381
Program Element: CALARP PROCESS - PROGRAM LEVEL 2

Name: BRENNTAG PACIFIC
Address: 175 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0284674
Cross Street: Not reported
APM Number: 45802070
CERS Id: 10639381
SWIS Number: Not reported
GIS Latitude: 36.7458
GIS Longitude: -119.8381

BRENNTAG PACIFIC (Continued) **S118489112**

Program Element: HAZARDOUS WASTE GENERATOR (SQG)

Name: BRENNTAG PACIFIC
Address: 175 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0284674
Cross Street: Not reported
APM Number: 45802070
CERS Id: 10639381
SWIS Number: Not reported
GIS Latitude: 36.7458
GIS Longitude: -119.8381
Program Element: HAZARDOUS WASTE TREATMNT-CONDITIONALLY EXEMPT

Name: BRENNTAG PACIFIC
Address: 175 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0284674
Cross Street: Not reported
APM Number: 45802070
CERS Id: 10639381
SWIS Number: Not reported
GIS Latitude: 36.7458
GIS Longitude: -119.8381
Program Element: AST STORAGE CAPACITY 1,320 TO 9,999 GAL

D22 **BRENNTAG PACIFIC, INC.** **CERS HAZ WASTE** **S121765445**
ENE **175 N HUGHES AVE** **CERS TANKS** **N/A**
< 1/8 **FRESNO, CA 93727** **EMI**
0.041 mi. **CERS**
217 ft. **Site 3 of 3 in cluster D**

Relative: Higher
Actual: 289 ft.

CERS HAZ WASTE:
Name: BRENNTAG PACIFIC, INC.
Address: 175 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Site ID: 356138
CERS ID: 10639381
CERS Description: Hazardous Chemical Management

Name: BRENNTAG PACIFIC, INC.
Address: 175 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Site ID: 356138
CERS ID: 10639381
CERS Description: Hazardous Waste Generator

Name: BRENNTAG PACIFIC, INC.
Address: 175 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Site ID: 356138
CERS ID: 10639381
CERS Description: RCRA LQ HW Generator

CERS TANKS:
Name: BRENNTAG PACIFIC, INC.
Address: 175 N HUGHES AVE

BRENNTAG PACIFIC, INC. (Continued) **S121765445**

City,State,Zip: FRESNO, CA 93706
Site ID: 356138
CERS ID: 10639381
CERS Description: Aboveground Petroleum Storage

EMI:
Name: BRENNTAG PACIFIC, INC.
Address: 175 N HUGHES AVE
City,State,Zip: FRESNO, CA 93727
Year: 2017
County Code: 10
Air Basin: SJV
Facility ID: 8733
Air District Name: SJU
SIC Code: 5169
Air District Name: SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0.00011952191235
Reactive Organic Gases Tons/Yr: 0.000105
Carbon Monoxide Emissions Tons/Yr: 0.000526
NOX - Oxides of Nitrogen Tons/Yr: 0.002
SOX - Oxides of Sulphur Tons/Yr: 3.84e-006
Particulate Matter Tons/Yr: 0.00051473360656
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0.0004697

Name: BRENNTAG PACIFIC, INC.
Address: 175 N HUGHES AVE
City,State,Zip: FRESNO, CA 93727
Year: 2018
County Code: 10
Air Basin: SJV
Facility ID: 8733
Air District Name: SJU
SIC Code: 5169
Air District Name: SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0.00011952191235
Reactive Organic Gases Tons/Yr: 0.000105
Carbon Monoxide Emissions Tons/Yr: 0.000526
NOX - Oxides of Nitrogen Tons/Yr: 0.002
SOX - Oxides of Sulphur Tons/Yr: 3.84e-006
Particulate Matter Tons/Yr: 0.00051319919517
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0.0004697

CERS:
Name: BRENNTAG PACIFIC, INC.
Address: 175 N HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Site ID: 356138
CERS ID: 10639381
CERS Description: Chemical Storage Facilities

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-13-2020

BRENNTAG PACIFIC, INC. (Continued) **S121765445**

Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: SPCC inspection. Note: facility does not store petroleum based materials in above-ground storage tanks. PE will be inactivated.
Eval Division: Fresno County Department of Public Health
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Fresno County Department of Public Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-19-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Fresno County Department of Public Health
Eval Program: CalARP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-19-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Fresno County Department of Public Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 12-12-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Fresno County Department of Public Health
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-13-2020
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: HMBP inspection.
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2016
Violations Found: No
Eval Type: Routine done by local agency

BRENNTAG PACIFIC, INC. (Continued) **S121765445**

Eval Notes: New site. CalARP obtained to do a completeness review.
Eval Division: Fresno County Department of Public Health
Eval Program: CalARP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 12-12-2017
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: attend meeting with G. Mahal re: tiered permit
Eval Division: Fresno County Department of Public Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-19-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 356138
Facility Name: Brenntag Pacific, Inc.
Env Int Type Code: CalARP
Program ID: 10639381
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 36.745040
Longitude: -119.835620

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Fresno County Community Health Department
Entity Title: Not reported
Affiliation Address: 1221 Fulton St., 3rd FloorP.O. Box 11867
Affiliation City: Fresno
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93775
Affiliation Phone: (559) 600-3271

Affiliation Type Desc: Document Preparer
Entity Name: Suzanne Miller
Entity Title: Not reported

BRENNTAG PACIFIC, INC. (Continued) **S121765445**

Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Suzanne Miller
Entity Title:	Regulatory Systems Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Brenntag Pacific, Inc
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(559) 485-4150
Affiliation Type Desc:	Parent Corporation
Entity Name:	Brenntag Pacific, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Suzanne Miller
Entity Title:	Not reported
Affiliation Address:	10747
Affiliation City:	Santa Fe Springs
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	90670
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Brenntag Pacific, Inc.
Entity Title:	Not reported
Affiliation Address:	10747 Patteson Place
Affiliation City:	Santa Fe Springs
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	90670
Affiliation Phone:	(562) 903-9626

BRENNTAG PACIFIC, INC. (Continued) **S121765445**

Affiliation Type Desc:	Parent Company
Entity Name:	BRENNTAG NORTH AMERICA INC
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	93706
Affiliation Phone:	Not reported

Affiliation Type Desc:	Technical Contact
Entity Name:	Suzanne Miller
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	93706
Affiliation Phone:	5629039626

Affiliation Type Desc:	Company Official
Entity Name:	Suzanne Miller
Entity Title:	Safety, Regulatory and Quality Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	93706
Affiliation Phone:	Not reported

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	175 N Hughes Ave
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	90706
Affiliation Phone:	Not reported

Affiliation Type Desc:	Public Contact
Entity Name:	Suzanne Miller
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	93706
Affiliation Phone:	5629039626

Name:	BRENNTAG PACIFIC, INC.
Address:	175 N HUGHES AVE
City,State,Zip:	FRESNO, CA 93706
Site ID:	356138
CERS ID:	9370WBRNNT175NH
CERS Description:	Toxic Release Inventory

BRENNTAG PACIFIC, INC. (Continued) **S121765445**

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	02-13-2020
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	SPCC inspection. Note: facility does not store petroleum based materials in above-ground storage tanks. PE will be inactivated.
Eval Division:	Fresno County Department of Public Health
Eval Program:	APSA
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-22-2016
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Fresno County Department of Public Health
Eval Program:	HW
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	10-19-2017
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Fresno County Department of Public Health
Eval Program:	CalARP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	10-19-2017
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Fresno County Department of Public Health
Eval Program:	HW
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	12-12-2017
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Fresno County Department of Public Health
Eval Program:	APSA
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	02-13-2020
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	HMBP inspection.
Eval Division:	Fresno County Department of Public Health
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection

BRENNTAG PACIFIC, INC. (Continued) **S121765445**

Eval Date: 03-22-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: New site. CalARP obtained to do a completeness review.
Eval Division: Fresno County Department of Public Health
Eval Program: CalARP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 12-12-2017
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: attend meeting with G. Mahal re: tiered permit
Eval Division: Fresno County Department of Public Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-19-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 356138
Facility Name: Brenntag Pacific, Inc.
Env Int Type Code: CalARP
Program ID: 10639381
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 36.745040
Longitude: -119.835620

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Fresno County Community Health Department
Entity Title: Not reported
Affiliation Address: 1221 Fulton St., 3rd FloorP.O. Box 11867
Affiliation City: Fresno
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93775
Affiliation Phone: (559) 600-3271

BRENNTAG PACIFIC, INC. (Continued) **S121765445**

Affiliation Type Desc:	Document Preparer
Entity Name:	Suzanne Miller
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Suzanne Miller
Entity Title:	Regulatory Systems Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	Brenntag Pacific, Inc
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(559) 485-4150

Affiliation Type Desc:	Parent Corporation
Entity Name:	Brenntag Pacific, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Environmental Contact
Entity Name:	Suzanne Miller
Entity Title:	Not reported
Affiliation Address:	10747
Affiliation City:	Santa Fe Springs
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	90670
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	Brenntag Pacific, Inc.
Entity Title:	Not reported
Affiliation Address:	10747 Patteson Place
Affiliation City:	Santa Fe Springs
Affiliation State:	CA
Affiliation Country:	United States

BRENNTAG PACIFIC, INC. (Continued) **S121765445**

Affiliation Zip: 90670
Affiliation Phone: (562) 903-9626

Affiliation Type Desc: Parent Company
Entity Name: BRENNTAG NORTH AMERICA INC
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: 93706
Affiliation Phone: Not reported

Affiliation Type Desc: Technical Contact
Entity Name: Suzanne Miller
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: 93706
Affiliation Phone: 5629039626

Affiliation Type Desc: Company Official
Entity Name: Suzanne Miller
Entity Title: Safety, Regulatory and Quality Manager
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: 93706
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 175 N Hughes Ave
Affiliation City: Fresno
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 90706
Affiliation Phone: Not reported

Affiliation Type Desc: Public Contact
Entity Name: Suzanne Miller
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: 93706
Affiliation Phone: 5629039626

E23
WSW
< 1/8
0.053 mi.
278 ft.

HOOD BROS. PALLETS & BINS INC.
3040 W NIELSEN AVE
FRESNO, CA 93711

Site 1 of 8 in cluster E

HIST UST **U001592135**
N/A

Relative:
Higher

Actual:
288 ft.

HIST UST:

Name:	HOOD BROS. PALLETS & BINS INC.
Address:	3040 W NIELSEN AVE
City,State,Zip:	FRESNO, CA 93711
File Number:	Not reported
URL:	Not reported
Region:	STATE
Facility ID:	00000064363
Facility Type:	Other
Other Type:	MFG.
Contact Name:	WALTER L. HOOD
Telephone:	2092645789
Owner Name:	HOOD BROS. PALLETS & BINS INC.
Owner Address:	3040 W. NIELSEN
Owner City,St,Zip:	FRESNO, CA 93711
Total Tanks:	0001
Tank Num:	001
Container Num:	#1
Year Installed:	Not reported
Tank Capacity:	00000550
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	None

E24
WSW
< 1/8
0.053 mi.
278 ft.

HOOD BROS. PALLETS & BINS INC.
3040 W NIELSEN
FRESNO, CA 93711

Site 2 of 8 in cluster E

SWEEPS UST **S101622009**
HIST UST **N/A**
CA FID UST

Relative:
Higher

Actual:
288 ft.

SWEEPS UST:

Name:	HOOD BROS. PALLETS & BINS INC.
Address:	3040 W NIELSEN
City:	FRESNO
Status:	Active
Comp Number:	64363
Number:	9
Board Of Equalization:	44-004669
Referral Date:	07-01-85
Action Date:	Not reported
Created Date:	02-29-88
Owner Tank Id:	#1
SWRCB Tank Id:	10-000-064363-000001
Tank Status:	A
Capacity:	550
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	LEADED
Number Of Tanks:	1

HOOD BROS. PALLETS & BINS INC. (Continued) **S101622009**

HIST UST:

Name:	HOOD BROS PALLETS AND BINS INC
Address:	3040 W NIELSEN
City,State,Zip:	FRESNO, CA 93711
File Number:	000244F1
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/000244F1.pdf
Region:	Not reported
Facility ID:	Not reported
Facility Type:	Not reported
Other Type:	Not reported
Contact Name:	Not reported
Telephone:	Not reported
Owner Name:	Not reported
Owner Address:	Not reported
Owner City,St,Zip:	Not reported
Total Tanks:	Not reported
Tank Num:	Not reported
Container Num:	Not reported
Year Installed:	Not reported
Tank Capacity:	Not reported
Tank Used for:	Not reported
Type of Fuel:	Not reported
Container Construction Thickness:	Not reported
Leak Detection:	Not reported

Click here for Geo Tracker PDF:

CA FID UST:

Facility ID:	10008424
Regulated By:	UTNKA
Regulated ID:	00064363
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	2092645789
Mail To:	Not reported
Mailing Address:	P O BOX
Mailing Address 2:	Not reported
Mailing City,St,Zip:	FRESNO 93711
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

E25
WSW
< 1/8
0.069 mi.
366 ft.

Relative:
Higher

Actual:
288 ft.

FRESNO IRRIGATION DISTRICT
3075 W NIELSEN
FRESNO, CA 93706

Site 3 of 8 in cluster E

LUST
SWEEPS UST
CA FID UST
Cortese
CUPA Listings
HIST CORTESE
CERS

S101581608
N/A

LUST:

Name:	FRESNO IRRIGATION DISTRICT
Address:	3075 NIELSEN W
City,State,Zip:	FRESNO, CA 93706
Lead Agency:	FRESNO COUNTY
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0601900617
Global Id:	T0601900617
Latitude:	36.7428834
Longitude:	-119.8465931
Status:	Completed - Case Closed
Status Date:	12/11/1998
Case Worker:	EHD
RB Case Number:	5T10000637
Local Agency:	FRESNO COUNTY
File Location:	Not reported
Local Case Number:	FA0170195
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Other Solvent or Non-Petroleum Hydrocarbon
Site History:	Not reported

LUST:

Global Id:	T0601900617
Contact Type:	Local Agency Caseworker
Contact Name:	FRESNO COUNTY DPH, ENVIRONMENTAL HEALTH DIV
Organization Name:	FRESNO COUNTY
Address:	1221 Fulton Street
City:	Fresno
Email:	environmentalhealth@fresnocountyca.gov
Phone Number:	Not reported

LUST:

Global Id:	T0601900617
Action Type:	Other
Date:	02/18/1997
Action:	Leak Discovery

Global Id:	T0601900617
Action Type:	Other
Date:	01/07/1997
Action:	Leak Stopped

Global Id:	T0601900617
Action Type:	Other
Date:	02/19/1997
Action:	Leak Reported

LUST:

Global Id:	T0601900617
Status:	Open - Case Begin Date
Status Date:	01/07/1997

FRESNO IRRIGATION DISTRICT (Continued) **S101581608**

Global Id: T0601900617
Status: Open - Site Assessment
Status Date: 02/19/1997

Global Id: T0601900617
Status: Completed - Case Closed
Status Date: 12/11/1998

LUST REG 5:
Name: FRESNO IRRIGATION DISTRICT
Address: 3075 NIELSEN W
City: FRESNO
Region: 5
Status: Case Closed
Case Number: 5T10000637
Case Type: Soil only
Substance: HYDROCARBONS
Staff Initials: DAM
Lead Agency: Local
Program: LUST
MTBE Code: N/A

SWEEPS UST:
Name: FRESNO IRRIGATION DISTRICT
Address: 3075 W NIELSEN
City: FRESNO
Status: Not reported
Comp Number: 31522
Number: Not reported
Board Of Equalization: 44-004027
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 10-000-031522-000005
Tank Status: Not reported
Capacity: 3000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: DIESEL
Number Of Tanks: 2

Name: FRESNO IRRIGATION DISTRICT
Address: 3075 W NIELSEN
City: FRESNO
Status: Not reported
Comp Number: 31522
Number: Not reported
Board Of Equalization: 44-004027
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 10-000-031522-000006

FRESNO IRRIGATION DISTRICT (Continued) **S101581608**

Tank Status: Not reported
Capacity: 3000
Active Date: Not reported
Tank Use: UNKNOWN
STG: PRODUCT
Content: Not reported
Number Of Tanks: Not reported

Name: FRESNO IRRIGATION DISTRICT
Address: 3075 W NIELSEN
City: FRESNO
Status: Active
Comp Number: 31522
Number: 1
Board Of Equalization: 44-004027
Referral Date: 02-05-93
Action Date: 06-23-93
Created Date: 02-29-88
Owner Tank Id: 1
SWRCB Tank Id: 10-000-031522-000001
Tank Status: A
Capacity: 10000
Active Date: 02-05-93
Tank Use: M.V. FUEL
STG: P
Content: PRM UNLEADED
Number Of Tanks: 4

Name: FRESNO IRRIGATION DISTRICT
Address: 3075 W NIELSEN
City: FRESNO
Status: Active
Comp Number: 31522
Number: 1
Board Of Equalization: 44-004027
Referral Date: 02-05-93
Action Date: 06-23-93
Created Date: 02-29-88
Owner Tank Id: 2
SWRCB Tank Id: 10-000-031522-000002
Tank Status: A
Capacity: 5656
Active Date: 02-05-93
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Name: FRESNO IRRIGATION DISTRICT
Address: 3075 W NIELSEN
City: FRESNO
Status: Active
Comp Number: 31522
Number: 1
Board Of Equalization: 44-004027
Referral Date: 02-05-93
Action Date: 06-23-93

FRESNO IRRIGATION DISTRICT (Continued) **S101581608**

Created Date: 02-29-88
Owner Tank Id: 3
SWRCB Tank Id: 10-000-031522-000003
Tank Status: A
Capacity: 3000
Active Date: 02-05-93
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Name: FRESNO IRRIGATION DISTRICT
Address: 3075 W NIELSEN
City: FRESNO
Status: Active
Comp Number: 31522
Number: 1
Board Of Equalization: 44-004027
Referral Date: 02-05-93
Action Date: 06-23-93
Created Date: 02-29-88
Owner Tank Id: 4
SWRCB Tank Id: 10-000-031522-000004
Tank Status: A
Capacity: 5000
Active Date: 05-15-89
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

CA FID UST:
Facility ID: 10002948
Regulated By: UTNKA
Regulated ID: 00031522
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 2092337161
Mail To: Not reported
Mailing Address: 1568 N MILLBROOK AVE
Mailing Address 2: Not reported
Mailing City,St,Zip: FRESNO 93706
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

CORTESE:
Name: FRESNO IRRIGATION DISTRICT
Address: 3075 NIELSEN W
City,State,Zip: FRESNO, CA 93706
Region: CORTESE
Envirostor Id: Not reported

FRESNO IRRIGATION DISTRICT (Continued) **S101581608**

Global ID:	T0601900617
Site/Facility Type:	LUST CLEANUP SITE
Cleanup Status:	COMPLETED - CASE CLOSED
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	active
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	Not reported
WID Id:	Not reported
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported
File Name:	Active Open

CUPA FRESNO:

Name:	FRESNO IRRIGATION DISTRICT
Address:	3075 W NIELSEN
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0170195
Cross Street:	Not reported
APM Number:	32616041T
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.7418
GIS Longitude:	-119.8462
Program Element:	UST REMOVAL/CLOSURE W/7 TANKS

Name:	FRESNO IRRIGATION DISTRICT
Address:	3075 W NIELSEN
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0170195
Cross Street:	Not reported
APM Number:	32616041T
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.7418
GIS Longitude:	-119.8462
Program Element:	HAZ MAT DISCLOSURE/CLOSED SITE

Name:	FRESNO IRRIGATION DISTRICT
Address:	3075 W NIELSEN
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0170195
Cross Street:	Not reported
APM Number:	32616041T
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.7418
GIS Longitude:	-119.8462
Program Element:	FORMER CONTAMINATED SITE/NO FURTHER ACTION

FRESNO IRRIGATION DISTRICT (Continued) **S101581608**

Name:	FRESNO IRRIGATION DISTRICT
Address:	3075 W NIELSEN
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0170195
Cross Street:	Not reported
APM Number:	32616041T
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.7418
GIS Longitude:	-119.8462
Program Element:	CONTAMINATED SITE - MISC/RWQCB LEAD

HIST CORTESE:

edr_fname:	FRESNO IRRIGATION DISTRIC
edr_fadd1:	3075 NIELSEN
City,State,Zip:	FRESNO, CA
Region:	CORTESE
Facility County Code:	10
Reg By:	LTNKA
Reg Id:	5T10000637

CERS:

Name:	FRESNO IRRIGATION DISTRICT
Address:	3075 NIELSEN W
City,State,Zip:	FRESNO, CA 93706
Site ID:	242721
CERS ID:	T0601900617
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	FRESNO COUNTY DPH, ENVIRONMENTAL HEALTH DIV - FRESNO COUNTY
Entity Title:	Not reported
Affiliation Address:	1221 Fulton Street
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

E26 **FRESNO IRR. DIST. CONCRETE DIS** **WMUDS/SWAT** **S104156411**
WSW **3075 W. NIELSON AVE.** **N/A**
< 1/8 **FRESNO, CA 93703**
0.069 mi.
366 ft. **Site 4 of 8 in cluster E**

Relative:
Higher

Actual:
288 ft.

WMUDS/SWAT:

Edit Date:	Not reported
Complexity:	Not reported
Primary Waste:	Not reported
Primary Waste Type:	Not reported
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Base Meridian:	Not reported
NPID:	Not reported
Tonnage:	0

FRESNO IRR. DIST. CONCRETE DIS (Continued) **S104156411**

Regional Board ID:	Not reported
Municipal Solid Waste:	False
Superorder:	False
Open To Public:	False
Waste List:	False
Agency Type:	Not reported
Agency Name:	FRESNO IRRIGATION DISTRICT
Agency Department:	Not reported
Agency Address:	1568 N. MILLBROOK
Agency City,St,Zip:	FRESNO 93703
Agency Contact:	Not reported
Agency Telephone:	2092337161
Land Owner Name:	FRESNO CITY
Land Owner Address:	1568 N MILLBROOK
Land Owner City,St,Zip:	FRESNO, CA 93703
Land Owner Contact:	Not reported
Land Owner Phone:	2094881563
Region:	5F
Facility Type:	Not reported
Facility Description:	Not reported
Facility Telephone:	Not reported
SWAT Facility Name:	FRESNO IRR. DIST. CONCRETE DISPOSAL SI
Primary SIC:	Not reported
Secondary SIC:	Not reported
Comments:	Not reported
Last Facility Editors:	Not reported
Waste Discharge System:	False
Solid Waste Assessment Test Program:	True
Toxic Pits Cleanup Act Program:	False
Resource Conservation Recovery Act:	False
Department of Defence:	False
Solid Waste Assessment Test Program:	FRESNO IRRIGATION DISTRICT
Threat to Water Quality:	Not reported
Sub Chapter 15:	False
Regional Board Project Officer:	JC
Number of WMUDS at Facility:	1
Section Range:	Not reported
RCRA Facility:	Not reported
Waste Discharge Requirements:	Not reported
Self-Monitoring Rept. Frequency:	Not reported
Waste Discharge System ID:	5 100008NUR
Solid Waste Information ID:	10-AA-0019

E27 **1X FRESNO IRRIGATION DISTRICT** **SWF/LF** **S112837084**
WSW **3075 W NIELSON** **HAZNET** **N/A**
< 1/8 **FRESNO, CA 93703** **CERS**
0.069 mi. **HWTS**
366 ft. **Site 5 of 8 in cluster E**

Relative:
Higher

Actual:
288 ft.

SWF/LF (SWIS):

Name:	NIELSON AVE DUMPSITE
Address:	3075 W NIELSON AVE.
City,State,Zip:	FRESNO, CA
Facility ID:	10-CR-0061
Lat/Long:	36.74196 / -119.84645
Owner Name:	Nielsen Avenue Disposal Site
Owner Telephone:	Not reported
Owner Address:	Archie Crippen

1X FRESNO IRRIGATION DISTRICT (Continued) **S112837084**

Owner Address2:	3275 West Nielsen
Owner City,St,Zip:	Fresno, CA 93706
Operational Status:	Closed
Operator:	Not reported
Operator Phone:	Not reported
Operator Address:	Not reported
Operator Address2:	Not reported
Operator City,St,Zip:	Not reported
Permit Date:	Not reported
Permit Status:	Not reported
Permitted Acreage:	$0.00
Activity:	Solid Waste Disposal Site
Regulation Status:	Pre-regulations
Landuse Name:	Not reported
GIS Source:	Map
Category:	Disposal
Unit Number:	01
Inspection Frequency:	Annual
Accepted Waste:	Not reported
Closure Date:	Not reported
Closure Type:	Not reported
Disposal Acreage:	$0.00
SWIS Num:	10-CR-0061
Waste Discharge Requirement Num:	Not reported
Program Type:	Not reported
Permitted Throughput with Units:	0
Actual Throughput with Units:	Not reported
Permitted Capacity with Units:	0
Remaining Capacity:	0
Remaining Capacity with Units:	Not reported
Lat/Long:	36.74196 / -119.84645

Name:	NIELSON AVE DUMPSITE
Address:	3075 W NIELSON AVE.
City,State,Zip:	FRESNO, CA
Facility ID:	10-CR-0061
Lat/Long:	36.74196 / -119.84645
Owner Name:	Nielsen Avenue Disposal Site
Owner Telephone:	Not reported
Owner Address:	Rene Crippen
Owner Address2:	425 S. Rolinda
Owner City,St,Zip:	Fresno, CA 93706
Operational Status:	Closed
Operator:	Not reported
Operator Phone:	Not reported
Operator Address:	Not reported
Operator Address2:	Not reported
Operator City,St,Zip:	Not reported
Permit Date:	Not reported
Permit Status:	Not reported
Permitted Acreage:	$0.00
Activity:	Solid Waste Disposal Site
Regulation Status:	Pre-regulations
Landuse Name:	Not reported
GIS Source:	Map
Category:	Disposal
Unit Number:	01

1X FRESNO IRRIGATION DISTRICT (Continued) **S112837084**

Inspection Frequency: Annual
Accepted Waste: Not reported
Closure Date: Not reported
Closure Type: Not reported
Disposal Acreage: $0.00
SWIS Num: 10-CR-0061
Waste Discharge Requirement Num: Not reported
Program Type: Not reported
Permitted Throughput with Units: 0
Actual Throughput with Units: Not reported
Permitted Capacity with Units: 0
Remaining Capacity: 0
Remaining Capacity with Units: Not reported
Lat/Long: 36.74196 / -119.84645

Name: NIELSON AVE DUMPSITE
Address: 3075 W NIELSON AVE.
City,State,Zip: FRESNO, CA
Facility ID: 10-CR-0061
Lat/Long: 36.74196 / -119.84645
Owner Name: Nielsen Avenue Disposal Site
Owner Telephone: Not reported
Owner Address: Sladen Wood
Owner Address2: P.O. Box 3187
Owner City,St,Zip: Pinedale, CA 93650
Operational Status: Closed
Operator: Not reported
Operator Phone: Not reported
Operator Address: Not reported
Operator Address2: Not reported
Operator City,St,Zip: Not reported
Permit Date: Not reported
Permit Status: Not reported
Permitted Acreage: $0.00
Activity: Solid Waste Disposal Site
Regulation Status: Pre-regulations
Landuse Name: Not reported
GIS Source: Map
Category: Disposal
Unit Number: 01
Inspection Frequency: Annual
Accepted Waste: Not reported
Closure Date: Not reported
Closure Type: Not reported
Disposal Acreage: $0.00
SWIS Num: 10-CR-0061
Waste Discharge Requirement Num: Not reported
Program Type: Not reported
Permitted Throughput with Units: 0
Actual Throughput with Units: Not reported
Permitted Capacity with Units: 0
Remaining Capacity: 0
Remaining Capacity with Units: Not reported
Lat/Long: 36.74196 / -119.84645

HAZNET:
Name: 1X FRESNO IRRIGATION DISTRICT

1X FRESNO IRRIGATION DISTRICT (Continued) **S112837084**

Address:	3075 W NIELSON
Address 2:	Not reported
City,State,Zip:	FRESNO, CA 937030000
Contact:	FRED VAN MATER
Telephone:	2092689455
Mailing Name:	Not reported
Mailing Address:	1568 NO MILLBROOK
Year:	1997
Gepaid:	CAC000093661
TSD EPA ID:	CAD099452708
CA Waste Code:	331 - Off-specification, aged or surplus organics
Disposal Method:	R01 - Recycler
Tons:	0.561
Year:	1993
Gepaid:	CAC000093661
TSD EPA ID:	CAD980883177
CA Waste Code:	223 - Unspecified oil-containing waste
Disposal Method:	R01 - Recycler
Tons:	0.6255
Year:	1988
Gepaid:	CAC000093661
TSD EPA ID:	CAD020748125
CA Waste Code:	181 - Other inorganic solid waste
Disposal Method:	D80 - Disposal, Land Fill
Tons:	0.688
Year:	1988
Gepaid:	CAC000093661
TSD EPA ID:	CAD059494310
CA Waste Code:	512 - Other empty containers 30 gallons or more
Disposal Method:	99 -
Tons:	0
Year:	1988
Gepaid:	CAC000093661
TSD EPA ID:	CAD059494310
CA Waste Code:	721 - Liquids with arsenic >= 500 Mg./L
Disposal Method:	D99 - Disposal, Other
Tons:	0.2085
Year:	1988
Gepaid:	CAC000093661
TSD EPA ID:	CAD980883177
CA Waste Code:	221 - Waste oil and mixed oil
Disposal Method:	01 -
Tons:	0
Year:	1988
Gepaid:	CAC000093661
TSD EPA ID:	CAD009452657
CA Waste Code:	222 - Oil/water separation sludge
Disposal Method:	-
Tons:	0.1251

1X FRESNO IRRIGATION DISTRICT (Continued) **S112837084**

Year:	1988
Gepaid:	CAC000093661
TSD EPA ID:	CAD009452657
CA Waste Code:	721 - Liquids with arsenic >= 500 Mg./L
Disposal Method:	01 -
Tons:	0

Additional Info:

Year:	1997
Gen EPA ID:	CAC000093661
Shipment Date:	19970228
Creation Date:	6/26/1997 0:00:00
Receipt Date:	19970310
Manifest ID:	95912677
Trans EPA ID:	CAL000094410
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD099452708
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD099452708
TSDF Alt Name:	Not reported
Waste Code Description:	331 - Off-specification, aged, or surplus organics
RCRA Code:	Not reported
Meth Code:	R01 - Recycler
Quantity Tons:	0.561
Waste Quantity:	170
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	1993
Gen EPA ID:	CAC000093661
Shipment Date:	19930120
Creation Date:	9/6/1995 0:00:00
Receipt Date:	19930120
Manifest ID:	92225759
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980883177
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	R01 - Recycler
Quantity Tons:	0.6255

1X FRESNO IRRIGATION DISTRICT (Continued) **S112837084**

Waste Quantity:	150
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

CERS:

Name:	NIELSON AVE DUMPSITE
Address:	3075 W NIELSON AVE.
City,State,Zip:	FRESNO, CA
Site ID:	510463
CERS ID:	10-CR-0061
CERS Description:	Solid Waste and Recycle Sites

HWTS:

Name:	1X FRESNO IRRIGATION DISTRICT
Address:	3075 W NIELSON
Address 2:	Not reported
City,State,Zip:	FRESNO, CA 937030000
EPA ID:	CAC000093661
Inactive Date:	10/25/2000
Create Date:	06/17/1988
Last Act Date:	10/25/2000
Mailing Name:	Not reported
Mailing Address:	1568 NO MILLBROOK
Mailing Address 2:	Not reported
Mailing City,State,Zip:	FRESNO, CA 937030000
Owner Name:	WASTE OIL
Owner Address:	--
Owner Address 2:	Not reported
Owner City,State,Zip:	--, 99 --
Contact Name:	FRED VAN MATER
Contact Address:	--
Contact Address 2:	Not reported
City,State,Zip:	--, 99 --

E28 **SHOP/YARD** **HIST UST** **U001591860**
WSW **3075 W NIELSEN** **N/A**
< 1/8 **FRESNO, CA 93706**
0.069 mi.
366 ft. **Site 6 of 8 in cluster E**

Relative:
Higher

Actual:
288 ft.

HIST UST:

Name:	SHOP/YARD
Address:	3075 W NIELSEN
City,State,Zip:	FRESNO, CA 93706
File Number:	0002414A
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002414A.pdf
Region:	STATE
Facility ID:	00000031522
Facility Type:	Other
Other Type:	SHOP
Contact Name:	FRED R. VAN MATER
Telephone:	2092337161
Owner Name:	FRESNO IRRIGATION DISTRICT

SHOP/YARD (Continued) **U001591860**

Owner Address:	1568 N. MILLBROOK AVENUE
Owner City,St,Zip:	FRESNO, CA 93703
Total Tanks:	0006
Tank Num:	001
Container Num:	001
Year Installed:	Not reported
Tank Capacity:	00010000
Tank Used for:	PRODUCT
Type of Fuel:	PREMIUM
Container Construction Thickness:	1/4
Leak Detection:	Stock Inventor
Tank Num:	002
Container Num:	002
Year Installed:	Not reported
Tank Capacity:	00000500
Tank Used for:	Not reported
Type of Fuel:	Not reported
Container Construction Thickness:	10
Leak Detection:	None
Tank Num:	003
Container Num:	003
Year Installed:	Not reported
Tank Capacity:	00004000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	10
Leak Detection:	Stock Inventor
Tank Num:	004
Container Num:	004
Year Installed:	Not reported
Tank Capacity:	00005000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	1/4
Leak Detection:	Stock Inventor
Tank Num:	005
Container Num:	005
Year Installed:	Not reported
Tank Capacity:	00003000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	10
Leak Detection:	Stock Inventor
Tank Num:	006
Container Num:	006
Year Installed:	Not reported
Tank Capacity:	00003000
Tank Used for:	PRODUCT
Type of Fuel:	Not reported
Container Construction Thickness:	10
Leak Detection:	Stock Inventor

SHOP/YARD (Continued) **U001591860**

Click here for Geo Tracker PDF:

E29 **NORTH CENTRAL FIRE DEPARTMENT** **CUPA Listings** **S106175925**
WSW **3031 W NIELSEN** **N/A**
< 1/8 **FRESNO, CA 93706**
0.070 mi.
369 ft. **Site 7 of 8 in cluster E**

Relative: **Higher**
Actual: **289 ft.**

CUPA FRESNO:

Name:	NORTH CENTRAL FIRE DEPARTMENT
Address:	3031 W NIELSEN
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0170201
Cross Street:	Not reported
APM Number:	32616010T
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.742620372
GIS Longitude:	-119.84527559
Program Element:	UST REMOVAL/CLOSURE W/1 TANK

F30 **CENTRAL CALIF SPCA** **HIST UST** **U001591539**
ESE **103 S HUGHES AVE** **N/A**
< 1/8 **FRESNO, CA 93706**
0.084 mi.
446 ft. **Site 1 of 4 in cluster F**

Relative: **Lower**
Actual: **284 ft.**

HIST UST:

Name:	CENTRAL CALIF SPCA
Address:	103 S HUGHES AVE
City,State,Zip:	FRESNO, CA 93706
File Number:	00023B6B
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/00023B6B.pdf
Region:	STATE
Facility ID:	00000001309
Facility Type:	Not reported
Other Type:	SHELTER
Contact Name:	G. L. RAMBO
Telephone:	2092370134
Owner Name:	CENTRAL CALIF. SPCA
Owner Address:	103 S HUGHES AVE.
Owner City,St,Zip:	FRESNO, CA 93706
Total Tanks:	0001
Tank Num:	001
Container Num:	1
Year Installed:	Not reported
Tank Capacity:	00001000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor, Sensor Instrument

Click here for Geo Tracker PDF:

F31 **CENTRAL CALIFORNIA SPCA** **RCRA NonGen / NLR** **1024812064**
ESE **103 S HUGHES AVE** **CAL000297944**
< 1/8 **FRESNO, CA 93706**
0.084 mi.
446 ft. **Site 2 of 4 in cluster F**

Relative: **Lower**

Actual: **284 ft.**

RCRA NonGen / NLR:

Date Form Received by Agency:	2005-08-25 00:00:00.0
Handler Name:	CENTRAL CALIFORNIA SPCA
Handler Address:	103 S HUGHES AVE
Handler City,State,Zip:	FRESNO, CA 93706
EPA ID:	CAL000297944
Contact Name:	PATTY COULTER
Contact Address:	103 S HUGHES AVE
Contact City,State,Zip:	FRESNO, CA 93706
Contact Telephone:	559-647-8939
Contact Fax:	559-233-1348
Contact Email:	PATTY@CCSPCA.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	103 S HUGHES AVE
Mailing City,State,Zip:	FRESNO, CA 93706-0000
Owner Name:	CENTRAL CALIFORNIA SPCA
Owner Type:	Other
Operator Name:	PATTY COULTER
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported

CENTRAL CALIFORNIA SPCA (Continued) **1024812064**

Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2018-09-05 20:27:35.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	CENTRAL CALIFORNIA SPCA
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	103 S HUGHES AVE
Owner/Operator City,State,Zip:	FRESNO, CA 93706-0000
Owner/Operator Telephone:	559-233-4782
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	PATTY COULTER
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	103 S HUGHES AVE
Owner/Operator City,State,Zip:	FRESNO, CA 93706
Owner/Operator Telephone:	559-647-8939
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

CENTRAL CALIFORNIA SPCA (Continued) **1024812064**

Historic Generators:
Receive Date: 2005-08-25 00:00:00.0
Handler Name: CENTRAL CALIFORNIA SPCA
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 811111
NAICS Description: GENERAL AUTOMOTIVE REPAIR

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

F32 **CENTRAL CALIFORNIA SPCA** **CUPA Listings** **S104869383**
ESE **103 S HUGHES AVE** **N/A**
< 1/8 **FRESNO, CA 93706**
0.084 mi.
446 ft. **Site 3 of 4 in cluster F**

Relative: **Lower**

Actual: **284 ft.**

CUPA FRESNO:
Name: CENTRAL CALIFORNIA SPCA
Address: 103 S HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0269962
Cross Street: NIELSEN
APM Number: 45806052
CERS Id: 10692676
SWIS Number: Not reported
GIS Latitude: 36.741740832
GIS Longitude: -119.83427353
Program Element: UST REMOVAL/CLOSURE W/1 TANK

Name: CENTRAL CALIFORNIA SPCA
Address: 103 S HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0269962
Cross Street: NIELSEN
APM Number: 45806052
CERS Id: 10692676
SWIS Number: Not reported
GIS Latitude: 36.741740832
GIS Longitude: -119.83427353
Program Element: MV FUEL/OIL/PROPANE ONLY IN AGST/UST MODEL PL

CENTRAL CALIFORNIA SPCA (Continued) **S104869383**

Name: CENTRAL CALIFORNIA SPCA
Address: 103 S HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0269962
Cross Street: NIELSEN
APM Number: 45806052
CERS Id: 10692676
SWIS Number: Not reported
GIS Latitude: 36.741740832
GIS Longitude: -119.83427353
Program Element: AST STORAGE CAPACITY 1,320 TO 9,999 GAL

Name: CENTRAL CALIFORNIA SPCA
Address: 103 S HUGHES AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0269962
Cross Street: NIELSEN
APM Number: 45806052
CERS Id: 10692676
SWIS Number: Not reported
GIS Latitude: 36.741740832
GIS Longitude: -119.83427353
Program Element: HAZARDOUS WASTE GENERATOR (CESQG)

F33 **CENTRAL CALIF. SPCA** **SWEEPS UST** **S101621554**
ESE **103 S HUGHES AVE** **CA FID UST** **N/A**
< 1/8 **FRESNO, CA 93706** **NPDES**
0.084 mi.
446 ft. **Site 4 of 4 in cluster F**

Relative: **Lower**

Actual: **284 ft.**

SWEEPS UST:
Name: CENTRAL CALIF. SPCA
Address: 103 S HUGHES AVE
City: FRESNO
Status: Not reported
Comp Number: 1309
Number: Not reported
Board Of Equalization: 44-003412
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 10-000-001309-000001
Tank Status: Not reported
Capacity: 1000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: REG UNLEADED
Number Of Tanks: 1

CA FID UST:
Facility ID: 10001502
Regulated By: UTNKI
Regulated ID: 00001309
Cortese Code: Not reported
SIC Code: Not reported

CENTRAL CALIF. SPCA (Continued) **S101621554**

Facility Phone: 2092370134
Mail To: Not reported
Mailing Address: 103 S HUGHES AVE
Mailing Address 2: Not reported
Mailing City,St,Zip: FRESNO 93706
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Inactive

NPDES:
Name: SPCA
Address: 103 S HUGHES AVENUE
City,State,Zip: FRESNO, CA 93706
Facility Status: Not reported
NPDES Number: Not reported
Region: Not reported
Agency Number: Not reported
Regulatory Measure ID: Not reported
Place ID: Not reported
Order Number: Not reported
WDID: 5F10W001475
Regulatory Measure Type: Construction
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Discharge Address: Not reported
Discharge Name: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
Status: Expired
Status Date: 09/06/2013
Operator Name: Successor Agency to the Redevelopment Agency of the City of Fresno
Operator Address: 2344 Tulare Street
Operator City: Fresno
Operator State: California
Operator Zip: 93721

E34 **FRESNO IRRIGATION DISTRICT DS** **CUPA Listings** **S120043260**
WSW **3051 W NIELSEN AVE** **N/A**
< 1/8 **FRESNO, CA 93706**
0.091 mi.
482 ft. **Site 8 of 8 in cluster E**

Relative: **Higher**

Actual: **289 ft.**

CUPA FRESNO:
Name: FRESNO IRRIGATION DISTRICT DS
Address: 3051 W NIELSEN AVE
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0285081
Cross Street: MARKS
APM Number: 32616042T

FRESNO IRRIGATION DISTRICT DS (Continued) **S120043260**

CERS Id:	Not reported
SWIS Number:	10-CR-0053
GIS Latitude:	36.7421
GIS Longitude:	-119.8479
Program Element:	SOLID WASTE FACILITY-CLOSED SITE

G35 **AMAYA KC** **CUPA Listings** **S125406837**
NW **620 N MARKS AVE** **N/A**
< 1/8 **FRESNO, CA 93728**
0.096 mi.
505 ft. **Site 1 of 2 in cluster G**

Relative: CUPA FRESNO:
Lower

Name:	AMAYA KC
Address:	620 N MARKS AVE
City,State,Zip:	FRESNO, CA 93728
Facility ID:	FA0286587
Cross Street:	Not reported
APM Number:	45802067
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.74699194
GIS Longitude:	-119.84370822
Program Element:	WASTE TIRE FACILITY

Actual:
283 ft.

G36 **JNB TRUCK AND TRAILER REPAIR SERVICE** **RCRA NonGen / NLR** **1025872134**
NW **620 N MARKS AVE** **CAL000445254**
< 1/8 **FRESNO, CA 93728**
0.096 mi.
505 ft. **Site 2 of 2 in cluster G**

Relative: RCRA NonGen / NLR:
Lower

Date Form Received by Agency:	2019-04-15 00:00:00.0
Handler Name:	JNB TRUCK AND TRAILER REPAIR SERVICE
Handler Address:	620 N MARKS AVE
Handler City,State,Zip:	FRESNO, CA 93728
EPA ID:	CAL000445254
Contact Name:	RICKY SINGH
Contact Address:	5348 W BROWN AVE
Contact City,State,Zip:	FRESNO, CA 93722
Contact Telephone:	559-999-1339
Contact Fax:	559-201-1599
Contact Email:	NTRANSPORT559@GMAIL.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	5348 W BROWN AVE
Mailing City,State,Zip:	FRESNO, CA 93722
Owner Name:	RICKY SINGH

Actual:
283 ft.

JNB TRUCK AND TRAILER REPAIR SERVICE (Continued) **1025872134**

Owner Type:	Other
Operator Name:	RICKY SINGH
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	Yes
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2019-06-28 17:26:57.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No

JNB TRUCK AND TRAILER REPAIR SERVICE (Continued) **1025872134**

Sub-Part P Indicator: No

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name:	RICKY SINGH
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	5348 W BROWN AVE
Owner/Operator City,State,Zip:	FRESNO, CA 93722
Owner/Operator Telephone:	559-999-1339
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name:	RICKY SINGH
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	5348 W BROWN AVE
Owner/Operator City,State,Zip:	FRESNO, CA 93722
Owner/Operator Telephone:	559-999-1339
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	2019-04-15 00:00:00.0
Handler Name:	JNB TRUCK AND TRAILER REPAIR SERVICE
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	811111
NAICS Description:	GENERAL AUTOMOTIVE REPAIR

Facility Has Received Notices of Violations:

Violations:	No Violations Found

Evaluation Action Summary:

Evaluations:	No Evaluations Found

H37 **REIMER TRANSPORT** **LUST** **U003787634**
East **2002 W NIELSEN** **SWEEPS UST** **N/A**
< 1/8 **FRESNO, CA 93706** **Cortese**
0.100 mi. **CUPA Listings**
529 ft. **Site 1 of 4 in cluster H** **WDS**
CIWQS
Relative: **CERS**
Lower

Actual: **286 ft.**

LUST:

Name:	WELDON TRUCKING
Address:	2002 W NIELSEN
City,State,Zip:	FRESNO, CA 93706
Lead Agency:	FRESNO COUNTY
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0601989710
Global Id:	T0601989710
Latitude:	36.743626
Longitude:	-119.83382
Status:	Completed - Case Closed
Status Date:	04/19/2004
Case Worker:	EHD
RB Case Number:	5T10000819
Local Agency:	FRESNO COUNTY
File Location:	Regional Board Warehouse
Local Case Number:	FA0170192
Potential Media Affect:	Under Investigation
Potential Contaminants of Concern:	Diesel
Site History:	Not reported

LUST:

Global Id:	T0601989710
Contact Type:	Local Agency Caseworker
Contact Name:	FRESNO COUNTY DPH, ENVIRONMENTAL HEALTH DIV
Organization Name:	FRESNO COUNTY
Address:	1221 Fulton Street
City:	Fresno
Email:	environmentalhealth@fresnocountyca.gov
Phone Number:	Not reported

LUST:

Global Id:	T0601989710
Action Type:	Other
Date:	02/13/2004
Action:	Leak Discovery
Global Id:	T0601989710
Action Type:	ENFORCEMENT
Date:	05/07/2007
Action:	Technical Correspondence / Assistance / Other
Global Id:	T0601989710
Action Type:	Other
Date:	12/23/2003
Action:	Leak Stopped
Global Id:	T0601989710
Action Type:	REMEDIATION
Date:	04/19/2004
Action:	Not reported

REIMER TRANSPORT (Continued) **U003787634**

Global Id: T0601989710
Action Type: ENFORCEMENT
Date: 02/21/2013
Action: Staff Letter

Global Id: T0601989710
Action Type: Other
Date: 02/13/2004
Action: Leak Reported

Global Id: T0601989710
Action Type: ENFORCEMENT
Date: 01/15/2013
Action: Staff Letter

LUST:
Global Id: T0601989710
Status: Open - Case Begin Date
Status Date: 12/23/2003

Global Id: T0601989710
Status: Completed - Case Closed
Status Date: 04/19/2004

LUST REG 5:
Name: WELDON TRUCKING
Address: 2002 W NIELSEN
City: FRESNO
Region: 5
Status: Case Closed
Case Number: 5T10000819
Case Type: Undefined
Substance: DIESEL
Staff Initials: DAM
Lead Agency: Local
Program: LUST
MTBE Code: N/A

SWEEPS UST:
Name: WELDON TRUCKING INC
Address: 2002 W NIELSEN
City: FRESNO
Status: Active
Comp Number: 344
Number: 1
Board Of Equalization: 44-003335
Referral Date: 06-02-94
Action Date: 06-28-94
Created Date: 06-07-89
Owner Tank Id: 3393201
SWRCB Tank Id: 10-000-000344-000001
Tank Status: A
Capacity: 10000
Active Date: 06-02-94
Tank Use: M.V. FUEL

REIMER TRANSPORT (Continued) **U003787634**

STG: P
Content: DIESEL
Number Of Tanks: 1

CORTESE:
Name: WELDON TRUCKING
Address: 2002 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Region: CORTESE
Envirostor Id: Not reported
Global ID: T0601989710
Site/Facility Type: LUST CLEANUP SITE
Cleanup Status: COMPLETED - CASE CLOSED
Status Date: Not reported
Site Code: Not reported
Latitude: Not reported
Longitude: Not reported
Owner: Not reported
Enf Type: Not reported
Swat R: Not reported
Flag: active
Order No: Not reported
Waste Discharge System No: Not reported
Effective Date: Not reported
Region 2: Not reported
WID Id: Not reported
Solid Waste Id No: Not reported
Waste Management Uit Name: Not reported
File Name: Active Open

CUPA FRESNO:
Name: REIMER TRANSPORT
Address: 2002 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0170192
Cross Street: Not reported
APM Number: 45802057
CERS Id: 10701808
SWIS Number: Not reported
GIS Latitude: 36.743581129
GIS Longitude: -119.83381946
Program Element: UST REMOVAL/CLOSURE W/1 TANK

Name: REIMER TRANSPORT
Address: 2002 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0170192
Cross Street: Not reported
APM Number: 45802057
CERS Id: 10701808
SWIS Number: Not reported
GIS Latitude: 36.743581129
GIS Longitude: -119.83381946
Program Element: AUTO REPAIR/MAINTENANCE MODEL PLAN

Name: REIMER TRANSPORT

REIMER TRANSPORT (Continued) **U003787634**

Address: 2002 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0170192
Cross Street: Not reported
APM Number: 45802057
CERS Id: 10701808
SWIS Number: Not reported
GIS Latitude: 36.743581129
GIS Longitude: -119.83381946
Program Element: HAZARDOUS WASTE GENERATOR (CESQG)

Name: REIMER TRANSPORT
Address: 2002 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0170192
Cross Street: Not reported
APM Number: 45802057
CERS Id: 10701808
SWIS Number: Not reported
GIS Latitude: 36.743581129
GIS Longitude: -119.83381946
Program Element: FORMER CONTAMINATED SITE/NO FURTHER ACTION

Name: REIMER TRANSPORT
Address: 2002 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0170192
Cross Street: Not reported
APM Number: 45802057
CERS Id: 10701808
SWIS Number: Not reported
GIS Latitude: 36.743581129
GIS Longitude: -119.83381946
Program Element: AST STORAGE CAPACITY 1,320 TO 9,999 GAL

WDS:
Name: WELDON TRUCKING
Address: 2002 W Nielsen Ave
City: FRESNO
Facility ID: 5F 10I010795
Facility Type: Industrial - Facility that treats and/or disposes of liquid or semisolid wastes from any servicing, producing, manufacturing or processing operation of whatever nature, including mining, gravel washing, geothermal operations, air conditioning, ship building and repairing, oil production, storage and disposal operations, water pumping.
Facility Status: Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number: CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion: 0
Facility Telephone: 5592643081
Facility Contact: LEE ROY WELDON
Agency Name: LEE ROY WELDON
Agency Address: 2002 W Nielsen Ave
Agency City,St,Zip: Fresno 937061337
Agency Contact: LEE ROY WELDON

REIMER TRANSPORT (Continued) **U003787634**

Agency Telephone:	5592643081
Agency Type:	Private
SIC Code:	0
SIC Code 2:	Not reported
Primary Waste Type:	Not reported
Primary Waste:	Not reported
Waste Type2:	Not reported
Waste2:	Not reported
Primary Waste Type:	Not reported
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Design Flow:	0
Baseline Flow:	0
Reclamation:	Not reported
POTW:	Not reported
Treat To Water:	Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity:	Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

CIWQS:

Name:	WELDON TRUCKING
Address:	2002 W NIELSEN AVE
City,State,Zip:	FRESNO, CA 93706
Agency:	Weldon, Lee Roy
Agency Address:	Not reported
Place/Project Type:	Industrial - Trucking, Except Local
SIC/NAICS:	4213
Region:	5F
Program:	INDSTW
Regulatory Measure Status:	Terminated
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	5F10I010795
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	12/14/1993
Termination Date:	05/31/2005
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	36.74311
Longitude:	-119.83445

REIMER TRANSPORT (Continued) **U003787634**

CERS:
- Name: WELDON TRUCKING
- Address: 2002 W NIELSEN
- City,State,Zip: FRESNO, CA 93706
- Site ID: 191954
- CERS ID: T0601989710
- CERS Description: Leaking Underground Storage Tank Cleanup Site

Affiliation:
- Affiliation Type Desc: Local Agency Caseworker
- Entity Name: FRESNO COUNTY DPH, ENVIRONMENTAL HEALTH DIV - FRESNO COUNTY
- Entity Title: Not reported
- Affiliation Address: 1221 Fulton Street
- Affiliation City: Fresno
- Affiliation State: CA
- Affiliation Country: Not reported
- Affiliation Zip: Not reported
- Affiliation Phone: Not reported

H38 **WELDON TRUCKING INC** **RCRA NonGen / NLR** **1024786267**
East **2002 W NIELSEN AVE** **CAL000014761**
< 1/8 **FRESNO, CA 93706**
0.100 mi.
529 ft. **Site 2 of 4 in cluster H**

Relative: **Lower**
Actual: **286 ft.**

RCRA NonGen / NLR:
- Date Form Received by Agency: 1989-11-14 00:00:00.0
- Handler Name: WELDON TRUCKING INC
- Handler Address: 2002 W NIELSEN AVE
- Handler City,State,Zip: FRESNO, CA 93706-1337
- EPA ID: CAL000014761
- Contact Name: BOB REIMER
- Contact Address: 2002 W NIELSEN AVE
- Contact City,State,Zip: FRESNO, CA 93706-1337
- Contact Telephone: 559-250-4540
- Contact Fax: Not reported
- Contact Email: BOB@REIMERTRANSPORT.COM
- Contact Title: Not reported
- EPA Region: 09
- Land Type: Not reported
- Federal Waste Generator Description: Not a generator, verified
- Non-Notifier: Not reported
- Biennial Report Cycle: Not reported
- Accessibility: Not reported
- Active Site Indicator: Handler Activities
- State District Owner: Not reported
- State District: Not reported
- Mailing Address: 2002 W NIELSEN AVE
- Mailing City,State,Zip: FRESNO, CA 93706-1337
- Owner Name: BOB REIMER
- Owner Type: Other
- Operator Name: BOB REIMER
- Operator Type: Other
- Short-Term Generator Activity: No
- Importer Activity: No
- Mixed Waste Generator: No
- Transporter Activity: No

WELDON TRUCKING INC (Continued) **1024786267**

Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2018-09-05 15:40:58.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name:	BOB REIMER
Legal Status:	Other

WELDON TRUCKING INC (Continued) **1024786267**

Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	2002 W NIELSEN AVE
Owner/Operator City,State,Zip:	FRESNO, CA 93706-1337
Owner/Operator Telephone:	559-250-4540
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	BOB REIMER
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	22855 E DINUBA AVE
Owner/Operator City,State,Zip:	DINUBA, CA 93618-0000
Owner/Operator Telephone:	559-250-4546
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	1989-11-14 00:00:00.0
Handler Name:	WELDON TRUCKING INC
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	4841
NAICS Description:	GENERAL FREIGHT TRUCKING
NAICS Code:	48421
NAICS Description:	USED HOUSEHOLD AND OFFICE GOODS MOVING

Facility Has Received Notices of Violations:

Violations:	No Violations Found

Evaluation Action Summary:

Evaluations:	No Evaluations Found

H39 **WELDON TRUCKING INC** **CA FID UST** **S101581607**
East **2002 W NIELSON** **N/A**
< 1/8 **FRESNO, CA 93706**
0.100 mi.
529 ft. **Site 3 of 4 in cluster H**

Relative: **Lower**
Actual: **286 ft.**

CA FID UST:

Facility ID:	10002940
Regulated By:	UTNKA
Regulated ID:	Not reported
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	2092643081
Mail To:	Not reported
Mailing Address:	232 W SAMPLE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	FRESNO 93706
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

H40 **REIMER TRANSPORT/WELDON TRUCKING** **CERS HAZ WASTE** **S123532341**
East **2002 W NIELSEN** **CERS TANKS** **N/A**
< 1/8 **FRESNO, CA 93706** **CERS**
0.100 mi.
529 ft. **Site 4 of 4 in cluster H**

Relative: **Lower**
Actual: **286 ft.**

CERS HAZ WASTE:

Name:	REIMER TRANSPORT/WELDON TRUCKING
Address:	2002 W NIELSEN
City,State,Zip:	FRESNO, CA 93706
Site ID:	519898
CERS ID:	10701808
CERS Description:	Hazardous Waste Generator

CERS TANKS:

Name:	REIMER TRANSPORT/WELDON TRUCKING
Address:	2002 W NIELSEN
City,State,Zip:	FRESNO, CA 93706
Site ID:	519898
CERS ID:	10701808
CERS Description:	Aboveground Petroleum Storage

CERS:

Name:	REIMER TRANSPORT/WELDON TRUCKING
Address:	2002 W NIELSEN
City,State,Zip:	FRESNO, CA 93706
Site ID:	519898
CERS ID:	10701808
CERS Description:	Chemical Storage Facilities

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	02-26-2015
Violations Found:	No

REIMER TRANSPORT/WELDON TRUCKING (Continued) **S123532341**

Eval Type: Routine done by local agency
Eval Notes: Haz waste inspection
Eval Division: Fresno County Department of Public Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-26-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: BP inspection/Portal consultation
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Affiliation:
Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 2002 W NIELSEN
Affiliation City: FRESNO
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93706
Affiliation Phone: Not reported

Affiliation Type Desc: CUPA District
Entity Name: Fresno County Community Health Department
Entity Title: Not reported
Affiliation Address: 1221 Fulton St., 3rd FloorP.O. Box 11867
Affiliation City: Fresno
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93775
Affiliation Phone: (559) 600-3271

Affiliation Type Desc: Document Preparer
Entity Name: Bob Reimer
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: BOB REIMER
Entity Title: Not reported
Affiliation Address: 2002 W NIELSEN AVE
Affiliation City: FRESNO
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93706
Affiliation Phone: Not reported

Affiliation Type Desc: Operator

REIMER TRANSPORT/WELDON TRUCKING (Continued) **S123532341**

Entity Name:	BOB REIMER
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(559) 264-3081
Affiliation Type Desc:	Identification Signer
Entity Name:	Bob Reimer
Entity Title:	PRESIDENT
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	REIMER, BOB
Entity Title:	Not reported
Affiliation Address:	2002 Nielsen
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93706
Affiliation Phone:	(559) 264-3081
Affiliation Type Desc:	Parent Corporation
Entity Name:	REIMER TRANSPORT/WELDON TRUCKING
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

I41 **MANHEIM CENTRAL CALIFORNIA** **CUPA Listings** **S121141343**
SW **278 N MARKS AVE** **N/A**
< 1/8 **FRESNO, CA 93706**
0.107 mi.
564 ft. **Site 1 of 8 in cluster I**

Relative: **Lower**

Actual: **283 ft.**

CUPA FRESNO:

Name:	MANHEIM CENTRAL CALIFORNIA
Address:	278 N MARKS AVE
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0279179
Cross Street:	HIGHWAY 180
APM Number:	45805041
CERS Id:	10699762
SWIS Number:	Not reported
GIS Latitude:	36.740095851
GIS Longitude:	-119.84201344
Program Element:	HAZ MAT DISCLOSURE-BELOW REPORTING QUANTITY

MANHEIM CENTRAL CALIFORNIA (Continued) **S121141343**

Name:	MANHEIM CENTRAL CALIFORNIA
Address:	278 N MARKS AVE
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0279179
Cross Street:	HIGHWAY 180
APM Number:	45805041
CERS Id:	10699762
SWIS Number:	Not reported
GIS Latitude:	36.740095851
GIS Longitude:	-119.84201344
Program Element:	HAZARDOUS WASTE GENERATOR (CESQG)

I42 **FRESNO AUTO DEALERS AUCTION** **SWEEPS UST** **S101621616**
SW **278 N MARKS** **CA FID UST** **N/A**
< 1/8 **FRESNO, CA 93706**
0.107 mi.
564 ft. **Site 2 of 8 in cluster I**

Relative:
Lower

Actual:
283 ft.

SWEEPS UST:

Name:	FRESNO AUTO DEALERS AUCTION
Address:	278 N MARKS
City:	FRESNO
Status:	Not reported
Comp Number:	18
Number:	Not reported
Board Of Equalization:	Not reported
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	10-000-000018-000001
Tank Status:	Not reported
Capacity:	3000
Active Date:	Not reported
Tank Use:	M.V. FUEL
STG:	PRODUCT
Content:	REG UNLEADED
Number Of Tanks:	1

CA FID UST:

Facility ID:	10003174
Regulated By:	UTNKA
Regulated ID:	00000018
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	2092688051
Mail To:	Not reported
Mailing Address:	278 N MARKS
Mailing Address 2:	Not reported
Mailing City,St,Zip:	FRESNO 93706
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

I43 **CALIFORNIA CUISINE CATERING CO** **CUPA Listings** **S121140082**
SW **278 N MARKS AVE** **N/A**
< 1/8 **FRESNO, CA 93706**
0.107 mi.
564 ft. **Site 3 of 8 in cluster I**

Relative: CUPA FRESNO:
Lower

Name:	CALIFORNIA CUISINE CATERING CO
Address:	278 N MARKS AVE
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0001924
Cross Street:	HIGHWAY 180
APM Number:	45805041
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.740095851
GIS Longitude:	-119.84201344
Program Element:	UST REMOVAL/CLOSURE W/1 TANK

Actual:
283 ft.

I44 **FRESNO AUTO DEALERS AUCTION** **HIST UST** **U001591628**
SW **278 N MARKS** **N/A**
< 1/8 **FRESNO, CA 93706**
0.107 mi.
564 ft. **Site 4 of 8 in cluster I**

Relative: HIST UST:
Lower

Name:	FRESNO AUTO DEALERS AUCTION
Address:	278 N MARKS
City,State,Zip:	FRESNO, CA 93706
File Number:	000240F4
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/000240F4.pdf
Region:	STATE
Facility ID:	00000000018
Facility Type:	Other
Other Type:	AUTO AUCTION
Contact Name:	AUTO AUCTION
Telephone:	2092688051
Owner Name:	FRESNO AUTO DEALERS AUCTION
Owner Address:	278 N MARKS
Owner City,St,Zip:	FRESNO, CA 93706
Total Tanks:	0001
Tank Num:	001
Container Num:	1
Year Installed:	1983
Tank Capacity:	00003000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor

Actual:
283 ft.

Click here for Geo Tracker PDF:

I45 **MANHEIM CENTRAL CALIFORNIA AUTO AUCTION** **RCRA NonGen / NLR** **1024787538**
SW **278 N MARKS AVE** **CAL000034209**
< 1/8 **FRESNO, CA 93706**
0.107 mi.
564 ft. **Site 5 of 8 in cluster I**

Relative: **Lower**

Actual: **283 ft.**

RCRA NonGen / NLR:

Date Form Received by Agency:	1990-05-16 00:00:00.0
Handler Name:	MANHEIM CENTRAL CALIFORNIA AUTO AUCTION
Handler Address:	278 N MARKS AVE
Handler City,State,Zip:	FRESNO, CA 93706-1136
EPA ID:	CAL000034209
Contact Name:	MARTIN SANDOVAL
Contact Address:	278 N MARKS AVE
Contact City,State,Zip:	FRESNO, CA 93706-1136
Contact Telephone:	559-459-5222
Contact Fax:	559-459-5297
Contact Email:	MARTIN.SANDOVAL@COXAUTOINC.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	278 N MARKS AVE
Mailing City,State,Zip:	FRESNO, CA 93706-1136
Owner Name:	MANHEIMS REMARKING AUCT SCVS INC
Owner Type:	Other
Operator Name:	MARTIN SANDOVAL
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported

MANHEIM CENTRAL CALIFORNIA AUTO AUCTION (Continued) **1024787538**

Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2018-09-05 15:41:21.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	MANHEIMS REMARKING AUCT SCVS INC
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	278 N MARKS AVE
Owner/Operator City,State,Zip:	FRESNO, CA 93706-1136
Owner/Operator Telephone:	559-268-8051
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	MARTIN SANDOVAL
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	278 N MARKS AVE
Owner/Operator City,State,Zip:	FRESNO, CA 93706-1136
Owner/Operator Telephone:	559-459-5222
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

MANHEIM CENTRAL CALIFORNIA AUTO AUCTION (Continued) **1024787538**

Historic Generators:

Receive Date:	1990-05-16 00:00:00.0
Handler Name:	MANHEIM CENTRAL CALIFORNIA AUTO AUCTION
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	42111
NAICS Description:	AUTOMOBILE AND OTHER MOTOR VEHICLE WHOLESALERS

Facility Has Received Notices of Violations:

Violations:	No Violations Found

Evaluation Action Summary:

Evaluations:	No Evaluations Found

I46 **R M KING CO** **RCRA NonGen / NLR** **1024785582**
SW **315 N MARKS AVE** **CAL000004314**
1/8-1/4 **FRESNO, CA 93706**
0.130 mi.
684 ft. **Site 6 of 8 in cluster I**

Relative: **Lower**

Actual: **283 ft.**

RCRA NonGen / NLR:

Date Form Received by Agency:	1989-11-14 00:00:00.0
Handler Name:	R M KING CO
Handler Address:	315 N MARKS AVE
Handler City,State,Zip:	FRESNO, CA 93706-0000
EPA ID:	CAL000004314
Contact Name:	DRAKE KING
Contact Address:	315 N MARKS AVE
Contact City,State,Zip:	FRESNO, CA 93706
Contact Telephone:	559-266-0258
Contact Fax:	559-266-1672
Contact Email:	SHARON.KING@RMKING.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	315 N MARKS AVE
Mailing City,State,Zip:	FRESNO, CA 93706-1103
Owner Name:	RM KING CO

R M KING CO (Continued) **1024785582**

Owner Type:	Other
Operator Name:	DRAKE KING
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2018-09-05 15:40:46.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No

R M KING CO (Continued) **1024785582**

Sub-Part P Indicator: No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	RM KING CO
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	315 N MARKS AVE
Owner/Operator City,State,Zip:	FRESNO, CA 93706-1103
Owner/Operator Telephone:	559-266-0258
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	DRAKE KING
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	315 N MARKS AVE
Owner/Operator City,State,Zip:	FRESNO, CA 93706
Owner/Operator Telephone:	559-266-0258
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	1989-11-14 00:00:00.0
Handler Name:	R M KING CO
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	332323
NAICS Description:	ORNAMENTAL AND ARCHITECTURAL METAL WORK MANUFACTURING

NAICS Code:	333922
NAICS Description:	CONVEYOR AND CONVEYING EQUIPMENT MANUFACTURING

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

I47 **R M KING COMPANY** **CERS HAZ WASTE** **S100614317**
SW **315 N MARKS** **CUPA Listings** **N/A**
1/8-1/4 **FRESNO, CA 93706** **EMI**
0.130 mi. **HAZNET**
684 ft. **Site 7 of 8 in cluster I** **CERS**
HWTS

Relative:
Lower

Actual:
283 ft.

CERS HAZ WASTE:

Name:	R M KING CO
Address:	315 N MARKS
City,State,Zip:	FRESNO, CA 93706
Site ID:	516197
CERS ID:	10701514
CERS Description:	Hazardous Waste Generator

CUPA FRESNO:

Name:	R M KING COMPANY
Address:	315 N MARKS
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0272071
Cross Street:	Not reported
APM Number:	32616036
CERS Id:	10701514
SWIS Number:	Not reported
GIS Latitude:	36.741034
GIS Longitude:	-119.845354
Program Element:	SMALL HAZARDOUS MATERIALS HANDLER

Name:	R M KING COMPANY
Address:	315 N MARKS
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0272071
Cross Street:	Not reported
APM Number:	32616036
CERS Id:	10701514
SWIS Number:	Not reported
GIS Latitude:	36.741034
GIS Longitude:	-119.845354
Program Element:	HAZARDOUS WASTE GENERATOR (SQG)

EMI:

Name:	R M KING CO
Address:	315 N MARKS
City,State,Zip:	FRESNO, CA 93706
Year:	2014
County Code:	10
Air Basin:	SJV
Facility ID:	1029
Air District Name:	SJU
SIC Code:	3479
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.46356172521
Reactive Organic Gases Tons/Yr:	0.447515
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0

R M KING COMPANY (Continued) **S100614317**

Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Name: R M KING CO
Address: 315 N MARKS
City,State,Zip: FRESNO, CA 93706
Year: 2015
County Code: 10
Air Basin: SJV
Facility ID: 1029
Air District Name: SJU
SIC Code: 3479
Air District Name: SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0.29865909091
Reactive Organic Gases Tons/Yr: 0.28822
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Name: R M KING CO
Address: 315 N MARKS
City,State,Zip: FRESNO, CA 93706
Year: 2016
County Code: 10
Air Basin: SJV
Facility ID: 1029
Air District Name: SJU
SIC Code: 3479
Air District Name: SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0.36997107438
Reactive Organic Gases Tons/Yr: 0.35725
Carbon Monoxide Emissions Tons/Yr: Not reported
NOX - Oxides of Nitrogen Tons/Yr: Not reported
SOX - Oxides of Sulphur Tons/Yr: Not reported
Particulate Matter Tons/Yr: Not reported
Part. Matter 10 Micrometers and Smllr Tons/Yr: Not reported

Name: R M KING CO
Address: 315 N MARKS
City,State,Zip: FRESNO, CA 93706
Year: 2017
County Code: 10
Air Basin: SJV
Facility ID: 1029
Air District Name: SJU
SIC Code: 3479
Air District Name: SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0.43574096074
Reactive Organic Gases Tons/Yr: 0.420805

R M KING COMPANY (Continued) **S100614317**

Carbon Monoxide Emissions Tons/Yr:	Not reported
NOX - Oxides of Nitrogen Tons/Yr:	Not reported
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	Not reported
Part. Matter 10 Micrometers and Smllr Tons/Yr:	Not reported

Name:	R M KING CO
Address:	315 N MARKS
City,State,Zip:	FRESNO, CA 93706
Year:	2018
County Code:	10
Air Basin:	SJV
Facility ID:	1029
Air District Name:	SJU
SIC Code:	3479
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.37661735537
Reactive Organic Gases Tons/Yr:	0.36344
Carbon Monoxide Emissions Tons/Yr:	Not reported
NOX - Oxides of Nitrogen Tons/Yr:	Not reported
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	Not reported
Part. Matter 10 Micrometers and Smllr Tons/Yr:	Not reported

HAZNET:

Name:	R.M. KING COMPANY
Address:	315 N. MARKS AVE.
Address 2:	Not reported
City,State,Zip:	FRESNO, CA 93706
Contact:	JORDAN KING
Telephone:	5592660258
Mailing Name:	Not reported
Mailing Address:	315 N. MARKS AVE.
Year:	2013
Gepaid:	CAC002747272
TSD EPA ID:	CAL000190080
CA Waste Code:	151 - Asbestos containing waste
Disposal Method:	H132 - Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons:	6.8

Additional Info:

Year:	2013
Gen EPA ID:	CAC002747272
Shipment Date:	20131026
Creation Date:	11/21/2013 22:15:08
Receipt Date:	20131026
Manifest ID:	001840856JJK
Trans EPA ID:	CAL000162092
Trans Name:	BOWEN ENGINEERING &ENVIRONMENTAL
Trans 2 EPA ID:	Not reported

R M KING COMPANY (Continued) **S100614317**

Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000190080
Trans Name:	FORWARD INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	151 - Asbestos-containing waste
RCRA Code:	Not reported
Meth Code:	H132 - Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Quantity Tons:	6.8
Waste Quantity:	17
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

CERS:

Name:	R M KING CO
Address:	315 N MARKS
City,State,Zip:	FRESNO, CA 93706
Site ID:	516197
CERS ID:	10701514
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	516197
Site Name:	R M KING CO
Violation Date:	5/6/2014
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 06/04/2014.
Violation Division:	Fresno County Department of Public Health
Violation Program:	HW
Violation Source:	CERS

Site ID:	516197
Site Name:	R M KING CO
Violation Date:	5/6/2014
Citation:	HSC 6.95 25503.5(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25503.5(a)
Violation Description:	Owner/Operator failed to establish and implement a Hazardous Materials Business Plan when storing hazardous materials at or above the thresholds quantities of 55 gallons/500 lbs/200 cubic feet.
Violation Notes:	Returned to compliance on 06/04/2014. HMBP has not been submitted electronically.
Violation Division:	Fresno County Department of Public Health
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	516197
Site Name:	R M KING CO

R M KING COMPANY (Continued) **S100614317**

Violation Date:	5/6/2014
Citation:	HSC 6.95 25504(c) - California Health and Safety Code, Chapter 6.95, Section(s) 25504(c)
Violation Description:	Failure to include an adequate training program in the business plan, which is reasonable and appropriate for the size of the business and the nature of the hazardous material handled.
Violation Notes:	Returned to compliance on 06/04/2014.
Violation Division:	Fresno County Department of Public Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	516197
Site Name:	R M KING CO
Violation Date:	6/15/2017
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to establish and electronically submit an adequate training program in safety procedures in the event of a release or threatened release of a hazardous material.
Violation Notes:	Returned to compliance on 07/17/2017.
Violation Division:	Fresno County Department of Public Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	516197
Site Name:	R M KING CO
Violation Date:	5/6/2014
Citation:	HSC 6.95 25504(b) - California Health and Safety Code, Chapter 6.95, Section(s) 25504(b)
Violation Description:	Failure to include adequate emergency response procedures in the business plan for a release or threatened release.
Violation Notes:	Returned to compliance on 06/04/2014.
Violation Division:	Fresno County Department of Public Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	516197
Site Name:	R M KING CO
Violation Date:	5/6/2014
Citation:	HSC 6.95 25510 - California Health and Safety Code, Chapter 6.95, Section(s) 25510
Violation Description:	Failure to update hazardous material inventory within 30 days when one of the following occurs: A 100 percent or more increase in the quantity of a previously disclosed material. Any handling of a previously undisclosed hazardous materials A change of business address, business ownership, or business name.
Violation Notes:	Returned to compliance on 06/04/2014. Annual update has not been submitted for this year.
Violation Division:	Fresno County Department of Public Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	516197
Site Name:	R M KING CO
Violation Date:	5/6/2014
Citation:	HSC 6.95 25504(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25504(a)

R M KING COMPANY (Continued) **S100614317**

Violation Description: Failure to complete and/or submit hazardous material inventory forms for all reportable hazardous materials on site.
Violation Notes: Returned to compliance on 06/04/2014.
Violation Division: Fresno County Department of Public Health
Violation Program: HMRRP
Violation Source: CERS

Site ID: 516197
Site Name: R M KING CO
Violation Date: 5/6/2014
Citation: 22 CCR 15 66265.53 - California Code of Regulations, Title 22, Chapter 15, Section(s) 66265.53
Violation Description: Failure to maintain at the facility a copy of the contingency plan and all its revisions and to submit a copy to the local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.
Violation Notes: Returned to compliance on 06/04/2014.
Violation Division: Fresno County Department of Public Health
Violation Program: HW
Violation Source: CERS

Site ID: 516197
Site Name: R M KING CO
Violation Date: 5/6/2014
Citation: 19 CCR 4 2729.2(a)(3) - California Code of Regulations, Title 19, Chapter 4, Section(s) 2729.2(a)(3)
Violation Description: Failure to complete and/or submit an annotated site map if required by CUPA.
Violation Notes: Returned to compliance on 06/04/2014.
Violation Division: Fresno County Department of Public Health
Violation Program: HMRRP
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-06-2014
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Haz waste inspection
Eval Division: Fresno County Department of Public Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-15-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Haz waste inspection
Eval Division: Fresno County Department of Public Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 01-22-2020
Violations Found: No
Eval Type: Routine done by local agency

R M KING COMPANY (Continued) **S100614317**

Eval Notes: Not reported
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-06-2014
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: BP inspection/Portal Consultation
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-15-2017
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: BP inspection
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 01-22-2020
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Fresno County Department of Public Health
Eval Program: HW
Eval Source: CERS

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: Kimber Tucker
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Operator
Entity Name: Drake King
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (559) 266-0258

Affiliation Type Desc: CUPA District
Entity Name: Fresno County Community Health Department
Entity Title: Not reported
Affiliation Address: 1221 Fulton St., 3rd FloorP.O. Box 11867

R M KING COMPANY (Continued) **S100614317**

Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93775
Affiliation Phone:	(559) 600-3271
Affiliation Type Desc:	Parent Corporation
Entity Name:	R M KING COMPANY
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Jordan King
Entity Title:	Not reported
Affiliation Address:	315 N Marks
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93706
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	315 N MARKS
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93706
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Kimber Tucker
Entity Title:	Administrative Assitant
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	RM KING COMPANY
Entity Title:	Not reported
Affiliation Address:	315 MARKS
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93706
Affiliation Phone:	(559) 266-0258

R M KING COMPANY (Continued) **S100614317**

HWTS:

Name:	R.M. KING COMPANY
Address:	315 N. MARKS AVE.
Address 2:	Not reported
City,State,Zip:	FRESNO, CA 93706
EPA ID:	CAC002747272
Inactive Date:	01/13/2014
Create Date:	10/14/2013
Last Act Date:	01/14/2014
Mailing Name:	Not reported
Mailing Address:	315 N. MARKS AVE.
Mailing Address 2:	Not reported
Mailing City,State,Zip:	FRESNO, CA 93706
Owner Name:	R.M.KING COMPANY
Owner Address:	315 N. MARKS AVE.
Owner Address 2:	Not reported
Owner City,State,Zip:	FRESNO, CA 93706
Contact Name:	JORDAN KING
Contact Address:	315 N. MARKS AVE.
Contact Address 2:	Not reported
City,State,Zip:	FRESNO, CA 93706

NAICS:

EPA ID:	CAC002747272
Create Date:	2013-10-14 10:17:58.897
NAICS Code:	99999
NAICS Description:	Not Otherwise Specified
Issued EPA ID Date:	2013-10-14 10:17:58.91700
Inactive Date:	2014-01-13 10:17:58.89300
Facility Name:	R.M. KING COMPANY
Facility Address:	315 N. MARKS AVE.
Facility Address 2:	Not reported
Facility City:	FRESNO
Facility County:	Not reported
Facility State:	CA
Facility Zip:	93706

I48 **D-K-P** **CUPA Listings** **S104870044**
SW **275 N MARKS** **CERS** **N/A**
1/8-1/4 **FRESNO, CA 93706**
0.131 mi.
690 ft. **Site 8 of 8 in cluster I**

Relative: CUPA FRESNO:
Lower

Actual: **283 ft.**

Name:	D-K-P
Address:	275 N MARKS
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0272072
Cross Street:	Not reported
APM Number:	32616036
CERS Id:	10695592
SWIS Number:	Not reported
GIS Latitude:	36.7406375
GIS Longitude:	-119.8447116
Program Element:	SMALL HAZARDOUS MATERIALS HANDLER

D-K-P (Continued) **S104870044**

CERS:
Name: D-K-P
Address: 275 N MARKS
City,State,Zip: FRESNO, CA 93706
Site ID: 517684
CERS ID: 10695592
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 517684
Site Name: D-K-P
Violation Date: 6/11/2014
Citation: HSC 6.95 25504(b) - California Health and Safety Code, Chapter 6.95, Section(s) 25504(b)
Violation Description: Failure to include adequate emergency response procedures in the business plan for a release or threatened release.
Violation Notes: Returned to compliance on 09/10/2014.
Violation Division: Fresno County Department of Public Health
Violation Program: HMRRP
Violation Source: CERS

Site ID: 517684
Site Name: D-K-P
Violation Date: 6/11/2014
Citation: HSC 6.95 25510 - California Health and Safety Code, Chapter 6.95, Section(s) 25510
Violation Description: Failure to update hazardous material inventory within 30 days when one of the following occurs: A 100 percent or more increase in the quantity of a previously disclosed material. Any handling of a previously undisclosed hazardous materials A change of business address, business ownership, or business name.
Violation Notes: Returned to compliance on 09/10/2014. Annual update has not been submitted.
Violation Division: Fresno County Department of Public Health
Violation Program: HMRRP
Violation Source: CERS

Site ID: 517684
Site Name: D-K-P
Violation Date: 6/11/2014
Citation: HSC 6.95 25503.5(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25503.5(a)
Violation Description: Owner/Operator failed to establish and implement a Hazardous Materials Business Plan when storing hazardous materials at or above the thresholds quantities of 55 gallons/500 lbs/200 cubic feet.
Violation Notes: Returned to compliance on 09/10/2014. HMBP has not been submitted electronically.
Violation Division: Fresno County Department of Public Health
Violation Program: HMRRP
Violation Source: CERS

Site ID: 517684
Site Name: D-K-P
Violation Date: 6/11/2014
Citation: HSC 6.95 25504(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25504(a)
Violation Description: Failure to complete and/or submit hazardous material inventory forms

D-K-P (Continued) **S104870044**

for all reportable hazardous materials on site.
Violation Notes: Returned to compliance on 09/10/2014.
Violation Division: Fresno County Department of Public Health
Violation Program: HMRRP
Violation Source: CERS

Site ID: 517684
Site Name: D-K-P
Violation Date: 6/11/2014
Citation: 19 CCR 4 2729.2(a)(3) - California Code of Regulations, Title 19, Chapter 4, Section(s) 2729.2(a)(3)
Violation Description: Failure to complete and/or submit an annotated site map if required by CUPA.
Violation Notes: Returned to compliance on 09/10/2014.
Violation Division: Fresno County Department of Public Health
Violation Program: HMRRP
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-13-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: BP inspection
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 01-22-2020
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-11-2014
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: BP inspection
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: Kimber Tucker
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

D-K-P (Continued) **S104870044**

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	275 N MARKS
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93706
Affiliation Phone:	Not reported

Affiliation Type Desc:	Parent Corporation
Entity Name:	D-K-P
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	CUPA District
Entity Name:	Fresno County Community Health Department
Entity Title:	Not reported
Affiliation Address:	1221 Fulton St., 3rd FloorP.O. Box 11867
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93775
Affiliation Phone:	(559) 600-3271

Affiliation Type Desc:	Identification Signer
Entity Name:	Kimber Tucker
Entity Title:	Administrative Assistant
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	D-K-P INC
Entity Title:	Not reported
Affiliation Address:	275 MARKS
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93706
Affiliation Phone:	(559) 266-2695

Affiliation Type Desc:	Operator
Entity Name:	Doug King
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported

D-K-P (Continued) **S104870044**

Affiliation Zip:	Not reported
Affiliation Phone:	(559) 266-2695
Affiliation Type Desc:	Environmental Contact
Entity Name:	Jordan King
Entity Title:	Not reported
Affiliation Address:	315 N Marks
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93706
Affiliation Phone:	Not reported

---

49 **ARARAT ARMENIAN CEMETERY ASSOCIATES** **RCRA NonGen / NLR** **1024826493**
NE **250 N HUGHES AVE** **CAL000354281**
1/8-1/4 **FRESNO, CA 93706**
0.145 mi.
765 ft.

Relative: **Higher**

Actual: **297 ft.**

RCRA NonGen / NLR:

Date Form Received by Agency:	2010-07-01 00:00:00.0
Handler Name:	ARARAT ARMENIAN CEMETERY ASSOCIATES
Handler Address:	250 N HUGHES AVE
Handler City,State,Zip:	FRESNO, CA 93706
EPA ID:	CAL000354281
Contact Name:	SHERI MANNING-CARTWRIGHT
Contact Address:	1925 W BELMONT AVE
Contact City,State,Zip:	FRESNO, CA 93728
Contact Telephone:	559-292-2415
Contact Fax:	559-486-2415
Contact Email:	ARARATCEMETERY@ATT.NET
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	1925 W BELMONT AVE
Mailing City,State,Zip:	FRESNO, CA 93728
Owner Name:	ARARAT ARMENIAN CEMETERY ASSN
Owner Type:	Other
Operator Name:	SHERI MANNING-CARTWRIGHT
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No

ARARAT ARMENIAN CEMETERY ASSOCIATES (Continued) **1024826493**

Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2018-09-05 20:32:27.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	ARARAT ARMENIAN CEMETERY ASSN
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	1925 W BELMONT AVE
Owner/Operator City,State,Zip:	FRESNO, CA 93728
Owner/Operator Telephone:	559-292-2415
Owner/Operator Telephone Ext:	Not reported

ARARAT ARMENIAN CEMETERY ASSOCIATES (Continued) **1024826493**

Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: SHERI MANNING-CARTWRIGHT
Legal Status: Other
Date Became Current: Not reported
Date Ended Current: Not reported
Owner/Operator Address: 1925 W BELMONT AVE
Owner/Operator City,State,Zip: FRESNO, CA 93728
Owner/Operator Telephone: 559-292-2415
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Historic Generators:
Receive Date: 2010-07-01 00:00:00.0
Handler Name: ARARAT ARMENIAN CEMETERY ASSOCIATES
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 81222
NAICS Description: CEMETERIES AND CREMATORIES

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

J50 **FRESNO COUNTY EOC COMMISSARY** **CERS HAZ WASTE** **S108226031**
WSW **3110 W NIELSEN** **CUPA Listings** **N/A**
1/8-1/4 **FRESNO, CA 93706** **CERS**
0.150 mi.
791 ft. **Site 1 of 4 in cluster J**

Relative:
Higher

Actual:
288 ft.

CERS HAZ WASTE:
Name: FRESNO COUNTY EOC COMMISSARY
Address: 3110 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Site ID: 519709
CERS ID: 10696810
CERS Description: Hazardous Waste Generator

CUPA FRESNO:

FRESNO COUNTY EOC COMMISSARY (Continued) **S108226031**

Name: FRESNO COUNTY EOC COMMISSARY
Address: 3110 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0002146
Cross Street: Not reported
APM Number: 32606020
CERS Id: 10696810
SWIS Number: Not reported
GIS Latitude: 36.7431337
GIS Longitude: -119.8470254
Program Element: AUTO REPAIR/MAINTENANCE MODEL PLAN

Name: FRESNO COUNTY EOC COMMISSARY
Address: 3110 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0002146
Cross Street: Not reported
APM Number: 32606020
CERS Id: 10696810
SWIS Number: Not reported
GIS Latitude: 36.7431337
GIS Longitude: -119.8470254
Program Element: HAZARDOUS WASTE GENERATOR (SQG)

CERS:
Name: FRESNO COUNTY EOC COMMISSARY
Address: 3110 W NIELSEN
City,State,Zip: FRESNO, CA 93706
Site ID: 519709
CERS ID: 10696810
CERS Description: Chemical Storage Facilities

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-18-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: BP inspection and assist operator with HMBP annual update, etc.
Eval Division: Fresno County Department of Public Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-18-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Haz waste inspection
Eval Division: Fresno County Department of Public Health
Eval Program: HW
Eval Source: CERS

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: Mark Allen
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported

FRESNO COUNTY EOC COMMISSARY (Continued) **S108226031**

Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Parent Corporation
Entity Name:	FRESNO COUNTY EOC COMMISSARY
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	CUPA District
Entity Name:	Fresno County Community Health Department
Entity Title:	Not reported
Affiliation Address:	1221 Fulton St., 3rd FloorP.O. Box 11867
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93775
Affiliation Phone:	(559) 600-3271
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	3110 W. Nielsen
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93706
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	FRESNO COUNTY EOC
Entity Title:	Not reported
Affiliation Address:	1920 MARIPOSA MALL
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	937212526
Affiliation Phone:	(559) 263-3663
Affiliation Type Desc:	Environmental Contact
Entity Name:	Monty Cox
Entity Title:	Not reported
Affiliation Address:	3110 W. Nielsen
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93706
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Monty Cox

FRESNO COUNTY EOC COMMISSARY (Continued) **S108226031**

Entity Title:	Transit Systems Director
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Fresno Economic Opportunities Commission
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(559) 263-8004

K51 **JV'S TOWING SERVICE** **CUPA Listings** **S110115266**
SE **170 S HUGHES AVE** **N/A**
1/8-1/4 **FRESNO, CA 93706**
0.150 mi.
791 ft. **Site 1 of 3 in cluster K**

Relative: CUPA FRESNO:
Lower

Name:	JV'S TOWING SERVICE
Address:	170 S HUGHES AVE
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0281512
Cross Street:	Not reported
APM Number:	45805033
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.740947171
GIS Longitude:	-119.83614174
Program Element:	HAZ MAT DISCLOSURE-BELOW REPORTING QUANTITY

Actual:
283 ft.

---

52 **CRAYCROFT BRICK COMPANY** **US MINES** **1011126076**
NW **N/A**
1/8-1/4 **FRESNO (County), CA**
0.170 mi.
900 ft.

Relative: US MINES:
Lower

Sic Code(s):	145904
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Mine ID:	0400548
Entity Name:	CRAYCROFT CLAY PIT
Company:	CRAYCROFT BRICK COMPANY
Status:	Permanently Abandoned
Status Date:	19820521

Actual:
279 ft.

CRAYCROFT BRICK COMPANY (Continued) **1011126076**

Operation Class:	3
Number of Shops:	0
Number of Plants:	0
Latitude Degree:	00
Longitude Degree:	000
Latitude Minute:	00
Latitude Seconds:	00
Longitude Minutes:	00
Longitude Seconds:	00
Number of Pits:	000

J53 **ECONOMIC OPPORTUNITIES COMM** **CA FID UST** **S106027399**
WSW **3120 W NEILSEN** **N/A**
1/8-1/4 **FRESNO, CA 93706**
0.173 mi.
913 ft. **Site 2 of 4 in cluster J**

Relative: **Higher**

Actual: **288 ft.**

CA FID UST:

Facility ID:	10004910
Regulated By:	UTNKA
Regulated ID:	Not reported
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	2094866587
Mail To:	Not reported
Mailing Address:	3120 W NEILSEN
Mailing Address 2:	Not reported
Mailing City,St,Zip:	FRESNO 93706
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

J54 **FRESNO COUNTY EOC** **CUPA Listings** **S106175297**
WSW **3120 W NIELSEN #191** **N/A**
1/8-1/4 **FRESNO, CA 93706**
0.173 mi.
913 ft. **Site 3 of 4 in cluster J**

Relative: **Higher**

Actual: **288 ft.**

CUPA FRESNO:

Name:	FRESNO COUNTY EOC
Address:	3120 W NIELSEN #191
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0170132
Cross Street:	Not reported
APM Number:	32606020
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.743680161
GIS Longitude:	-119.84647384
Program Element:	UST REMOVAL/CLOSURE W/2 TANKS
Name:	FRESNO COUNTY EOC

FRESNO COUNTY EOC (Continued) **S106175297**

Address:	3120 W NIELSEN #191
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0170132
Cross Street:	Not reported
APM Number:	32606020
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.743680161
GIS Longitude:	-119.84647384
Program Element:	HAZARDOUS WASTE SITE

J55 **FRESNO COUNTY EOC** **SWEEPS UST** **S106926471**
WSW **3120 W NEILSEN AVE** **N/A**
1/8-1/4 **FRESNO, CA 93706**
0.173 mi.
913 ft. **Site 4 of 4 in cluster J**

Relative: **Higher**
Actual: **288 ft.**

SWEEPS UST:

Name:	FRESNO COUNTY EOC
Address:	3120 W NEILSEN AVE
City:	FRESNO
Status:	Not reported
Comp Number:	346
Number:	Not reported
Board Of Equalization:	44-003337
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	10-000-000346-000001
Tank Status:	Not reported
Capacity:	1000
Active Date:	Not reported
Tank Use:	PETROLEUM
STG:	WASTE
Content:	WASTE OIL
Number Of Tanks:	2

Name:	FRESNO COUNTY EOC
Address:	3120 W NEILSEN AVE
City:	FRESNO
Status:	Not reported
Comp Number:	346
Number:	Not reported
Board Of Equalization:	44-003337
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	10-000-000346-000002
Tank Status:	Not reported
Capacity:	10000
Active Date:	Not reported
Tank Use:	PETROLEUM
STG:	PRODUCT
Content:	REGULAR UNLE
Number Of Tanks:	Not reported

K56 **M. K. WIGHT** **HIST UST** **U001591757**
SE **224 S HUGHES AVE** **N/A**
1/8-1/4 **FRESNO, CA 93706**
0.187 mi.
986 ft. **Site 2 of 3 in cluster K**

Relative: **Lower**

Actual: **283 ft.**

HIST UST:

Name:	M. K. WIGHT
Address:	224 S HUGHES AVE
City,State,Zip:	FRESNO, CA 93706
File Number:	Not reported
URL:	Not reported
Region:	STATE
Facility ID:	00000004440
Facility Type:	Other
Other Type:	Not reported
Contact Name:	Not reported
Telephone:	2092644571
Owner Name:	M. K. WIGHT
Owner Address:	224 SO. HUGHES
Owner City,St,Zip:	FRESNO, CA 93706
Total Tanks:	0002
Tank Num:	001
Container Num:	1
Year Installed:	1970
Tank Capacity:	00000300
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Visual
Tank Num:	002
Container Num:	1
Year Installed:	1960
Tank Capacity:	00000300
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Visual

K57 **M.K. WIGHT** **SWEEPS UST** **S101621725**
SE **224 S HUGHES** **HIST UST** **N/A**
1/8-1/4 **FRESNO, CA 93706** **CA FID UST**
0.187 mi. **CUPA Listings**
986 ft. **Site 3 of 3 in cluster K**

Relative: **Lower**

Actual: **283 ft.**

SWEEPS UST:

Name:	M.K. WIGHT
Address:	224 S HUGHES
City:	FRESNO
Status:	Active
Comp Number:	4440
Number:	9
Board Of Equalization:	Not reported
Referral Date:	07-01-85
Action Date:	Not reported
Created Date:	02-29-88
Owner Tank Id:	1
SWRCB Tank Id:	10-000-004440-000001

M.K. WIGHT (Continued) **S101621725**

Tank Status: A
Capacity: 300
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: 2

Name: M.K. WIGHT
Address: 224 S HUGHES
City: FRESNO
Status: Active
Comp Number: 4440
Number: 9
Board Of Equalization: Not reported
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1
SWRCB Tank Id: 10-000-004440-000002
Tank Status: A
Capacity: 300
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: Not reported

HIST UST:
Name: M K WIGHT
Address: 224 SO HUGHES
City,State,Zip: FRESNO, CA 93706
File Number: 00024B5C
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/00024B5C.pdf
Region: Not reported
Facility ID: Not reported
Facility Type: Not reported
Other Type: Not reported
Contact Name: Not reported
Telephone: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner City,St,Zip: Not reported
Total Tanks: Not reported

Tank Num: Not reported
Container Num: Not reported
Year Installed: Not reported
Tank Capacity: Not reported
Tank Used for: Not reported
Type of Fuel: Not reported
Container Construction Thickness: Not reported
Leak Detection: Not reported

Click here for Geo Tracker PDF:

M.K. WIGHT (Continued) **S101621725**

CA FID UST:
Facility ID: 10005052
Regulated By: UTNKA
Regulated ID: 00004440
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 2092644571
Mail To: Not reported
Mailing Address: 224 S HUGHES
Mailing Address 2: Not reported
Mailing City,St,Zip: FRESNO 93706
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

CUPA FRESNO:
Name: WIGHT PROPERTY
Address: 224 S HUGHES
City,State,Zip: FRESNO, CA 93706
Facility ID: FA0268642
Cross Street: Not reported
APM Number: 45805016
CERS Id: Not reported
SWIS Number: Not reported
GIS Latitude: 36.740414813
GIS Longitude: -119.835867
Program Element: CLOSED UST FACILITY/NO CLOSURE REPORT

L58 **CALIFORNIA PUMP AND REPAIR** **RCRA-SQG** **1000595317**
SW **215 N MARKS AVE** **FINDS** **CAD983592486**
1/8-1/4 **FRESNO, CA 93706** **ECHO**
0.220 mi.
1162 ft. **Site 1 of 2 in cluster L**

Relative: **Lower**
Actual: **282 ft.**

RCRA-SQG:
Date Form Received by Agency: 1992-09-04 00:00:00.0
Handler Name: CALIFORNIA PUMP AND REPAIR
Handler Address: 215 N MARKS AVE
Handler City,State,Zip: FRESNO, CA 93706
EPA ID: CAD983592486
Contact Name: MGR MANAGER
Contact Address: 215 N MARKS AVE
Contact City,State,Zip: FRESNO, CA 93706
Contact Telephone: 209-268-1228
Contact Fax: Not reported
Contact Email: Not reported
Contact Title: Not reported
EPA Region: 09
Land Type: Other
Federal Waste Generator Description: Small Quantity Generator
Non-Notifier: Not reported
Biennial Report Cycle: Not reported
Accessibility: Not reported

CALIFORNIA PUMP AND REPAIR (Continued) **1000595317**

Active Site Indicator:	Handler Activities
State District Owner:	CA
State District:	5
Mailing Address:	215 N MARKS AVE
Mailing City,State,Zip:	FRESNO, CA 93706
Owner Name:	CLOVIS PUMP AND WATER WELL INC
Owner Type:	Private
Operator Name:	NOT REQUIRED
Operator Type:	Private
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	NN
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2002-06-27 03:35:25.0

CALIFORNIA PUMP AND REPAIR (Continued) **1000595317**

Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	Not reported
Manifest Broker:	Not reported
Sub-Part P Indicator:	Not reported

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name:	NOT REQUIRED
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	NOT REQUIRED
Owner/Operator City,State,Zip:	NOT REQUIRED, ME 99999
Owner/Operator Telephone:	415-555-1212
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name:	CLOVIS PUMP AND WATER WELL INC
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	215 N MARKS AVE
Owner/Operator City,State,Zip:	FRESNO, CA 93706
Owner/Operator Telephone:	209-268-1228
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	1992-09-04 00:00:00.0
Handler Name:	CALIFORNIA PUMP AND REPAIR
Federal Waste Generator Description:	Small Quantity Generator
State District Owner:	CA
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Codes:	No NAICS Codes Found

Facility Has Received Notices of Violations:

Violations:	No Violations Found

CALIFORNIA PUMP AND REPAIR (Continued) **1000595317**

Evaluation Action Summary:
Evaluations: No Evaluations Found

FINDS:
Registry ID: 110002851254

Click Here:

Environmental Interest/Information System:
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000595317
Registry ID:	110002851254
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002851254
Name:	CALIFORNIA PUMP AND REPAIR
Address:	215 N MARKS AVE
City,State,Zip:	FRESNO, CA 93706

L59 **J&L IRRIGATION** **CUPA Listings** **S106175568**
SW **215 N MARKS** **N/A**
1/8-1/4 **FRESNO, CA 93706**
0.220 mi.
1162 ft. **Site 2 of 2 in cluster L**

Relative: **Lower**
Actual: **282 ft.**

CUPA FRESNO:

Name:	J&L IRRIGATION
Address:	215 N MARKS
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0270282
Cross Street:	Not reported
APM Number:	32616038
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.739994216
GIS Longitude:	-119.84564885
Program Element:	UST REMOVAL/CLOSURE W/1 TANK

60
WSW
1/8-1/4
0.224 mi.
1181 ft.

FRESNO IRRIGATION DISTRICT
3075 & 3051 W. NIELSEN AVE
FRESNO, CA

SWF/LF **S120834604**
CERS **N/A**

Relative:
Higher

Actual:
293 ft.

SWF/LF (SWIS):

Name:	FRESNO IRRIGATION DISTRICT
Address:	3075 & 3051 W. NIELSEN AVE
City,State,Zip:	FRESNO, CA
Facility ID:	10-CR-0053
Lat/Long:	36.7419 / -119.8481
Owner Name:	Ravinder Shergill and Pardeep Singh
Owner Telephone:	5304151925
Owner Address:	5579 N. Contessa
Owner Address2:	Owners of 3051 Nielsen_APN: 32616042T
Owner City,St,Zip:	Fresno, CA 93723
Operational Status:	Closed
Operator:	Not reported
Operator Phone:	Not reported
Operator Address:	Not reported
Operator Address2:	Not reported
Operator City,St,Zip:	Not reported
Permit Date:	Not reported
Permit Status:	Not reported
Permitted Acreage:	$0.00
Activity:	Solid Waste Disposal Site
Regulation Status:	Unpermitted
Landuse Name:	Not reported
GIS Source:	Map
Category:	Disposal
Unit Number:	01
Inspection Frequency:	Annual
Accepted Waste:	Not reported
Closure Date:	Not reported
Closure Type:	Not reported
Disposal Acreage:	$0.00
SWIS Num:	10-CR-0053
Waste Discharge Requirement Num:	Not reported
Program Type:	Not reported
Permitted Throughput with Units:	Not reported
Actual Throughput with Units:	Not reported
Permitted Capacity with Units:	Not reported
Remaining Capacity:	Not reported
Remaining Capacity with Units:	Not reported
Lat/Long:	36.7419 / -119.8481

CERS:

Name:	FRESNO IRRIGATION DISTRICT
Address:	3075 & 3051 W. NIELSEN AVE
City,State,Zip:	FRESNO, CA
Site ID:	508789
CERS ID:	10-CR-0053
CERS Description:	Solid Waste and Recycle Sites

Affiliation:

Affiliation Type Desc:	Legal Owner
Entity Name:	Ravinder Shergill and Pardeep Singh
Entity Title:	Not reported

FRESNO IRRIGATION DISTRICT (Continued) **S120834604**

Affiliation Address:	5579 N. ContessaOwners of 3051 Nielsen_APN: 32616042T
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93723
Affiliation Phone:	5304151925

---

61 **NICK'S TRUCKING, INC.** **SWF/LF** **S107030086**
NW **SW CORNER N. MARKS AND W BELMONT AVE.** **CERS** **N/A**
1/4-1/2 **FRESNO, CA**
0.287 mi.
1513 ft.

Relative:
Lower

Actual:
278 ft.

SWF/LF (SWIS):

Name:	NICK'S TRUCKING, INC.
Address:	SW CORNER N. MARKS AND W BELMONT AVE.
City,State,Zip:	FRESNO, CA
Facility ID:	10-AA-0198
Lat/Long:	36.74935 / -119.8454
Owner Name:	Visciglio, Nick
Owner Telephone:	5992812269
Owner Address:	Not reported
Owner Address2:	7420 North Van Ness
Owner City,St,Zip:	Fresno, CA 93711
Operational Status:	Active
Operator:	Visciglio, Charles
Operator Phone:	5992812267
Operator Address:	Not reported
Operator Address2:	5185 North Golden State Blvd.
Operator City,St,Zip:	Fresno, CA 93711
Permit Date:	07/06/2005
Permit Status:	Notification
Permitted Acreage:	$5.00
Activity:	Small Vol CD Wood Debris ChipGrind Op
Regulation Status:	Notification
Landuse Name:	Residential,Industrial,Commercial,Agricultural
GIS Source:	Map
Category:	Transfer/Processing
Unit Number:	01
Inspection Frequency:	Quarterly
Accepted Waste:	Construction/demolition,Inert
Closure Date:	Not reported
Closure Type:	Not reported
Disposal Acreage:	Not reported
SWIS Num:	10-AA-0198
Waste Discharge Requirement Num:	Not reported
Program Type:	Not reported
Permitted Throughput with Units:	25
Actual Throughput with Units:	Tons/day
Permitted Capacity with Units:	750
Remaining Capacity:	Not reported
Remaining Capacity with Units:	Tons/year
Lat/Long:	36.74935 / -119.8454

CERS:

Name:	NICK'S TRUCKING, INC.

NICK'S TRUCKING, INC. (Continued) **S107030086**

Address: SW CORNER N. MARKS AND W BELMONT AVE.
City,State,Zip: FRESNO, CA
Site ID: 510462
CERS ID: 10-AA-0198
CERS Description: Solid Waste and Recycle Sites

Affiliation:
Affiliation Type Desc: Legal Operator
Entity Name: Visciglio, Charles
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Fresno
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93711
Affiliation Phone: 5992812267

Affiliation Type Desc: Legal Owner
Entity Name: Visciglio, Nick
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Fresno
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93711
Affiliation Phone: 5992812269

---

62 **CALTRANS** **LUST S110654083**
SSW **MARKS AVENUE & HIGHWAY 180** **CERS N/A**
1/4-1/2 **FRESNO, CA**
0.292 mi.
1540 ft.

Relative:
Lower

Actual:
281 ft.

LUST:
Name: CALTRANS
Address: MARKS AVENUE & HIGHWAY 180
City,State,Zip: FRESNO, CA
Lead Agency: CENTRAL VALLEY RWQCB (REGION 5F)
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0601908368
Global Id: T0601908368
Latitude: 36.738727939
Longitude: -119.84414468
Status: Completed - Case Closed
Status Date: 08/22/2007
Case Worker: JWH
RB Case Number: 5T10000866
Local Agency: FRESNO COUNTY
File Location: Not reported
Local Case Number: FS0279577
Potential Media Affect: Under Investigation
Potential Contaminants of Concern: Waste Oil / Motor / Hydraulic / Lubricating
Site History: Not reported

LUST:
Global Id: T0601908368
Contact Type: Local Agency Caseworker
Contact Name: FRESNO COUNTY DPH, ENVIRONMENTAL HEALTH DIV

CALTRANS (Continued) **S110654083**

Organization Name: FRESNO COUNTY
Address: 1221 Fulton Street
City: Fresno
Email: environmentalhealth@fresnocountyca.gov
Phone Number: Not reported

Global Id: T0601908368
Contact Type: Regional Board Caseworker
Contact Name: JEFFREY HANNEL
Organization Name: CENTRAL VALLEY RWQCB (REGION 5F)
Address: 1685 E STREET
City: FRESNO
Email: jhannel@waterboards.ca.gov
Phone Number: Not reported

LUST:
Global Id: T0601908368
Action Type: Other
Date: 06/19/2007
Action: Leak Discovery

Global Id: T0601908368
Action Type: ENFORCEMENT
Date: 08/22/2007
Action: Closure/No Further Action Letter

Global Id: T0601908368
Action Type: REMEDIATION
Date: 06/20/2007
Action: Not reported

Global Id: T0601908368
Action Type: Other
Date: 06/19/2007
Action: Leak Reported

LUST:
Global Id: T0601908368
Status: Open - Case Begin Date
Status Date: 06/19/2007

Global Id: T0601908368
Status: Open - Site Assessment
Status Date: 06/20/2007

Global Id: T0601908368
Status: Completed - Case Closed
Status Date: 08/22/2007

CERS:
Name: CALTRANS
Address: MARKS AVENUE & HIGHWAY 180
City,State,Zip: FRESNO, CA
Site ID: 250123
CERS ID: T0601908368

CALTRANS (Continued) **S110654083**

CERS Description: Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	FRESNO COUNTY DPH, ENVIRONMENTAL HEALTH DIV - FRESNO COUNTY
Entity Title:	Not reported
Affiliation Address:	1221 Fulton Street
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	JEFFREY HANNEL - CENTRAL VALLEY RWQCB (REGION 5F)
Entity Title:	Not reported
Affiliation Address:	1685 E STREET
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

---

63 **CRAYCROFT BRICK CO** **ENVIROSTOR** **1001612883**
North **2301 W BELMONT AVE** **NPDES** **N/A**
1/4-1/2 **FRESNO, CA 93728** **CIWQS**
0.331 mi.
1749 ft.

Relative:
Lower

Actual:
282 ft.

ENVIROSTOR:

Name:	CRAYCROFT BRICK CO
Address:	2301 W BELMONT AVE
City,State,Zip:	FRESNO, CA 93728
Facility ID:	10320022
Status:	Refer: Other Agency
Status Date:	11/16/1994
Site Code:	Not reported
Site Type:	Historical
Site Type Detailed:	* Historical
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	Referred - Not Assigned
Division Branch:	Cleanup Sacramento
Assembly:	31
Senate:	14
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	36.75
Longitude:	-119.8375
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	* WASTE OIL & MIXED OIL

CRAYCROFT BRICK CO (Continued) **1001612883**

Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: 10320022
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 03/05/1982
Comments: FACILITY IDENTIFIED FROM PHONE BOOK.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

NPDES:
Name: CRAYCROFT BRICK CO
Address: 2301 W BELMONT AVE
City,State,Zip: FRESNO, CA 93728
Facility Status: Not reported
NPDES Number: Not reported
Region: Not reported
Agency Number: Not reported
Regulatory Measure ID: Not reported
Place ID: Not reported
Order Number: Not reported
WDID: 5F10I005555
Regulatory Measure Type: Industrial
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Discharge Address: Not reported
Discharge Name: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
Status: Terminated
Status Date: 04/07/1992
Operator Name: Craycroft Brick Co
Operator Address: 2301 W Belmont Ave
Operator City: Fresno
Operator State: California
Operator Zip: 93728

NPDES as of 03/2018:
NPDES Number: Not reported
Status: Not reported
Agency Number: Not reported
Region: 5F

CRAYCROFT BRICK CO (Continued) **1001612883**

Regulatory Measure ID:	281182
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5F10I005555
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	04/07/1992
Status:	Terminated
Status Date:	04/07/1992
Place Size:	83
Place Size Unit:	Acres
Contact:	Lee A Gholtz
Contact Title:	Not reported
Contact Phone:	559-268-5635
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Craycroft Brick Co
Operator Address:	2301 W Belmont Ave
Operator City:	Fresno
Operator State:	California
Operator Zip:	93728
Operator Contact:	Lee A Gholz
Operator Contact Title:	Not reported
Operator Contact Phone:	559-268-5635
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	559-268-5635
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported

CRAYCROFT BRICK CO (Continued) **1001612883**

Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	3251-Brick and Structural Clay Tile
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CIWQS:

Name:	CRAYCROFT BRICK CO
Address:	2301 W BELMONT AVE
City,State,Zip:	FRESNO, CA 93728
Agency:	Craycroft Brick Co
Agency Address:	2301 W Belmont Ave, Fresno, CA 93728
Place/Project Type:	Industrial - Brick and Structural Clay Tile
SIC/NAICS:	3251
Region:	5F
Program:	INDSTW
Regulatory Measure Status:	Terminated
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	5F10I005555
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	04/07/1992
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	36.75018
Longitude:	-119.83994

---

64 **KEMMER RESIDENCE** **LUST** **S102432157**
SSE **511 HUGHES S** **Cortese** **N/A**
1/4-1/2 **FRESNO, CA 93706** **HIST CORTESE**
0.374 mi. **CERS**
1974 ft.

Relative:
Lower

Actual:
280 ft.

LUST:

Name:	KEMMER RESIDENCE
Address:	511 HUGHES S
City,State,Zip:	FRESNO, CA 93706
Lead Agency:	CENTRAL VALLEY RWQCB (REGION 5F)
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0601900431

KEMMER RESIDENCE (Continued) **S102432157**

Global Id: T0601900431
Latitude: 36.7377093
Longitude: -119.83551
Status: Completed - Case Closed
Status Date: 08/06/2007
Case Worker: JWH
RB Case Number: 5T10000441
Local Agency: FRESNO COUNTY
File Location: Not reported
Local Case Number: FA0269425
Potential Media Affect: Soil
Potential Contaminants of Concern: Gasoline
Site History: Not reported

LUST:
Global Id: T0601900431
Contact Type: Local Agency Caseworker
Contact Name: FRESNO COUNTY DPH, ENVIRONMENTAL HEALTH DIV
Organization Name: FRESNO COUNTY
Address: 1221 Fulton Street
City: Fresno
Email: environmentalhealth@fresnocountyca.gov
Phone Number: Not reported

Global Id: T0601900431
Contact Type: Regional Board Caseworker
Contact Name: JEFFREY HANNEL
Organization Name: CENTRAL VALLEY RWQCB (REGION 5F)
Address: 1685 E STREET
City: FRESNO
Email: jhannel@waterboards.ca.gov
Phone Number: Not reported

LUST:
Global Id: T0601900431
Action Type: ENFORCEMENT
Date: 11/09/2006
Action: Site Visit / Inspection / Sampling

Global Id: T0601900431
Action Type: ENFORCEMENT
Date: 11/08/2006
Action: Staff Letter

Global Id: T0601900431
Action Type: ENFORCEMENT
Date: 10/31/2006
Action: Technical Correspondence / Assistance / Other

Global Id: T0601900431
Action Type: Other
Date: 07/15/1993
Action: Leak Discovery

Global Id: T0601900431
Action Type: ENFORCEMENT
Date: 08/06/2007

KEMMER RESIDENCE (Continued) **S102432157**

Action: Closure/No Further Action Letter

Global Id: T0601900431
Action Type: Other
Date: 07/01/1993
Action: Leak Stopped

Global Id: T0601900431
Action Type: ENFORCEMENT
Date: 08/31/2006
Action: Technical Correspondence / Assistance / Other

Global Id: T0601900431
Action Type: RESPONSE
Date: 02/15/2007
Action: Preliminary Site Assessment Report

Global Id: T0601900431
Action Type: Other
Date: 07/26/1993
Action: Leak Reported

Global Id: T0601900431
Action Type: RESPONSE
Date: 10/27/2006
Action: Preliminary Site Assessment Workplan

Global Id: T0601900431
Action Type: RESPONSE
Date: 10/27/2006
Action: Other Report / Document

Global Id: T0601900431
Action Type: ENFORCEMENT
Date: 08/29/2006
Action: Staff Letter

Global Id: T0601900431
Action Type: ENFORCEMENT
Date: 08/22/2006
Action: Site Visit / Inspection / Sampling

Global Id: T0601900431
Action Type: ENFORCEMENT
Date: 09/07/2006
Action: Meeting

LUST:
Global Id: T0601900431
Status: Open - Case Begin Date
Status Date: 07/01/1993

Global Id: T0601900431
Status: Open - Site Assessment
Status Date: 07/15/1993

Global Id: T0601900431

KEMMER RESIDENCE (Continued) **S102432157**

Status: Open - Site Assessment
Status Date: 11/07/2006

Global Id: T0601900431
Status: Completed - Case Closed
Status Date: 08/06/2007

LUST REG 5:
Name: KEMMER RESIDENCE
Address: 511 HUGHES S
City: FRESNO
Region: 5
Status: Case Closed
Case Number: 5T10000441
Case Type: Soil only
Substance: GASOLINE
Staff Initials: JWH
Lead Agency: Regional
Program: LUST
MTBE Code: N/A

CORTESE:
Name: KEMMER RESIDENCE
Address: 511 HUGHES S
City,State,Zip: FRESNO, CA 93706
Region: CORTESE
Envirostor Id: Not reported
Global ID: T0601900431
Site/Facility Type: LUST CLEANUP SITE
Cleanup Status: COMPLETED - CASE CLOSED
Status Date: Not reported
Site Code: Not reported
Latitude: Not reported
Longitude: Not reported
Owner: Not reported
Enf Type: Not reported
Swat R: Not reported
Flag: active
Order No: Not reported
Waste Discharge System No: Not reported
Effective Date: Not reported
Region 2: Not reported
WID Id: Not reported
Solid Waste Id No: Not reported
Waste Management Uit Name: Not reported
File Name: Active Open

HIST CORTESE:
edr_fname: KEMMER RESIDENCE
edr_fadd1: 511 HUGHES
City,State,Zip: FRESNO, CA 93722
Region: CORTESE
Facility County Code: 10
Reg By: LTNKA
Reg Id: 5T10000441

KEMMER RESIDENCE (Continued) **S102432157**

CERS:

Name:	KEMMER RESIDENCE
Address:	511 HUGHES S
City,State,Zip:	FRESNO, CA 93706
Site ID:	194004
CERS ID:	T0601900431
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	FRESNO COUNTY DPH, ENVIRONMENTAL HEALTH DIV - FRESNO COUNTY
Entity Title:	Not reported
Affiliation Address:	1221 Fulton Street
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	JEFFREY HANNEL - CENTRAL VALLEY RWQCB (REGION 5F)
Entity Title:	Not reported
Affiliation Address:	1685 E STREET
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

---

65 **BETH RAMACHER EDUCATIONAL COMPLEX** **ENVIROSTOR** **S118756441**
NNE **650 NORTH HUGHES AVENUE** **SCH** **N/A**
1/4-1/2 **FRESNO, CA 93728**
0.466 mi.
2461 ft.

Relative:
Higher

Actual:
288 ft.

ENVIROSTOR:

Name:	BETH RAMACHER EDUCATIONAL COMPLEX
Address:	650 NORTH HUGHES AVENUE
City,State,Zip:	FRESNO, CA 93728
Facility ID:	10000003
Status:	No Action Required
Status Date:	12/27/2000
Site Code:	104190
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	1.95
NPL:	NO
Regulatory Agencies:	DTSC
Lead Agency:	DTSC
Program Manager:	Not reported
Supervisor:	Juan Koponen
Division Branch:	Northern California Schools & Santa Susana
Assembly:	31
Senate:	14
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED

BETH RAMACHER EDUCATIONAL COMPLEX (Continued) **S118756441**

Funding: School District
Latitude: 36.75106
Longitude: -119.8345
APN: NONE SPECIFIED
Past Use: NONE
Potential COC: NONE SPECIFIED No Contaminants found
Confirmed COC: NONE SPECIFIED
Potential Description: NMA
Alias Name: BETH RAMACHER EDUCATIONAL COMPLEX
Alias Type: Alternate Name
Alias Name: FRESNO COE, RAMACHER ED. COMPLEX
Alias Type: Alternate Name
Alias Name: FRESNO COUNTY OFFICE OF EDUCATION
Alias Type: Alternate Name
Alias Name: 104190
Alias Type: Project Code (Site Code)
Alias Name: 10000003
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 12/27/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 03/23/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 12/19/2000
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Name: BETH RAMACHER EDUCATIONAL COMPLEX
Address: 650 NORTH HUGHES AVENUE
City,State,Zip: FRESNO, CA 93728
Facility ID: 10000003
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED

BETH RAMACHER EDUCATIONAL COMPLEX (Continued) **S118756441**

Acres:	1.95
National Priorities List:	NO
Cleanup Oversight Agencies:	DTSC
Lead Agency:	DTSC
Lead Agency Description:	* DTSC
Project Manager:	Not reported
Supervisor:	Juan Koponen
Division Branch:	Northern California Schools & Santa Susana
Site Code:	104190
Assembly:	31
Senate:	14
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	12/27/2000
Restricted Use:	NO
Funding:	School District
Latitude:	36.75106
Longitude:	-119.8345
APN:	NONE SPECIFIED
Past Use:	NONE
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	BETH RAMACHER EDUCATIONAL COMPLEX
Alias Type:	Alternate Name
Alias Name:	FRESNO COE, RAMACHER ED. COMPLEX
Alias Type:	Alternate Name
Alias Name:	FRESNO COUNTY OFFICE OF EDUCATION
Alias Type:	Alternate Name
Alias Name:	104190
Alias Type:	Project Code (Site Code)
Alias Name:	10000003
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	12/27/2000
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	03/23/2001
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	12/19/2000
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported

BETH RAMACHER EDUCATIONAL COMPLEX (Continued) **S118756441**

Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

66
SSE
1/4-1/2
0.498 mi.
2632 ft.

ART'S MERCANTILE
2082 W WHITESBRIDGE AVE
FRESNO, CA 93706

LUST **S104404042**
Cortese **N/A**
CUPA Listings
HIST CORTESE

Relative:
Lower

Actual:
279 ft.

LUST:
Name: ART'S MERCANTILE
Address: 2082 WHITESBRIDGE RD W
City,State,Zip: FRESNO, CA 93702
Lead Agency: CENTRAL VALLEY RWQCB (REGION 5F)
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0601900146
Global Id: T0601900146
Latitude: 36.7357509
Longitude: -119.8350991
Status: Completed - Case Closed
Status Date: 03/27/2006
Case Worker: Not reported
RB Case Number: 5T10000148
Local Agency: FRESNO COUNTY
File Location: Regional Board
Local Case Number: FA0001364
Potential Media Affect: Well used for drinking water supply
Potential Contaminants of Concern: Gasoline
Site History: Not reported

LUST:
Global Id: T0601900146
Contact Type: Local Agency Caseworker
Contact Name: FRESNO COUNTY DPH, ENVIRONMENTAL HEALTH DIV
Organization Name: FRESNO COUNTY
Address: 1221 Fulton Street
City: Fresno
Email: environmentalhealth@fresnocountyca.gov
Phone Number: Not reported

LUST:
Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 02/24/2004
Action: Staff Letter

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 07/09/2003
Action: Staff Letter

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 06/27/2005
Action: * Verbal Communication

ART'S MERCANTILE (Continued) **S104404042**

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 03/15/2005
Action: Staff Letter

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 06/08/2004
Action: Staff Letter

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 03/27/2006
Action: Closure/No Further Action Letter

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 10/31/2005
Action: Staff Letter

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 03/01/2006
Action: * Historical Enforcement

Global Id: T0601900146
Action Type: Other
Date: 12/05/1988
Action: Leak Discovery

Global Id: T0601900146
Action Type: RESPONSE
Date: 08/08/2003
Action: Remedial Progress Report

Global Id: T0601900146
Action Type: RESPONSE
Date: 12/31/2002
Action: Remedial Progress Report

Global Id: T0601900146
Action Type: RESPONSE
Date: 06/29/2001
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE
Date: 06/15/2001
Action: Other Report / Document

Global Id: T0601900146
Action Type: RESPONSE
Date: 03/30/2002
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE

ART'S MERCANTILE (Continued) **S104404042**

Date: 09/30/2002
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE
Date: 12/30/2002
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE
Date: 01/30/2004
Action: CAP/RAP - Final Remediation / Design Plan

Global Id: T0601900146
Action Type: RESPONSE
Date: 02/27/2004
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE
Date: 07/18/2003
Action: Other Report / Document

Global Id: T0601900146
Action Type: RESPONSE
Date: 01/30/2004
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE
Date: 07/30/2004
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE
Date: 10/24/2003
Action: CAP/RAP - Feasibility Study Report

Global Id: T0601900146
Action Type: RESPONSE
Date: 07/30/2004
Action: Remedial Progress Report

Global Id: T0601900146
Action Type: Other
Date: 11/30/1988
Action: Leak Stopped

Global Id: T0601900146
Action Type: RESPONSE
Date: 08/30/2004
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE
Date: 01/30/2005
Action: Monitoring Report - Quarterly

ART'S MERCANTILE (Continued) **S104404042**

Global Id: T0601900146
Action Type: RESPONSE
Date: 10/30/2004
Action: Remedial Progress Report

Global Id: T0601900146
Action Type: RESPONSE
Date: 04/29/2005
Action: Remedial Progress Report

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 12/03/2002
Action: * Verbal Communication

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 01/30/1989
Action: * No Action

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 01/30/1989
Action: * Historical Enforcement

Global Id: T0601900146
Action Type: RESPONSE
Date: 04/30/2005
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE
Date: 01/30/2005
Action: Remedial Progress Report

Global Id: T0601900146
Action Type: Other
Date: 01/24/1989
Action: Leak Reported

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 05/23/2001
Action: Staff Letter

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 01/01/2002
Action: * No Action

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 08/27/2003
Action: Staff Letter

Global Id: T0601900146
Action Type: ENFORCEMENT

ART'S MERCANTILE (Continued) **S104404042**

Date: 07/01/2003
Action: * No Action

Global Id: T0601900146
Action Type: RESPONSE
Date: 06/30/2002
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE
Date: 07/30/2005
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE
Date: 08/30/2003
Action: Monitoring Report - Quarterly

Global Id: T0601900146
Action Type: RESPONSE
Date: 03/21/2006
Action: Unknown

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 08/20/2003
Action: * Verbal Communication

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 03/19/2003
Action: Staff Letter

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 12/17/2003
Action: Staff Letter

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 07/17/2003
Action: * Historical Enforcement

Global Id: T0601900146
Action Type: ENFORCEMENT
Date: 07/01/2004
Action: * No Action

LUST:
Global Id: T0601900146
Status: Open - Case Begin Date
Status Date: 11/30/1988

Global Id: T0601900146
Status: Open - Site Assessment
Status Date: 01/24/1989

ART'S MERCANTILE (Continued) **S104404042**

Global Id: T0601900146
Status: Open - Site Assessment
Status Date: 04/03/1989

Global Id: T0601900146
Status: Open - Remediation
Status Date: 09/16/1999

Global Id: T0601900146
Status: Open - Remediation
Status Date: 01/17/2002

Global Id: T0601900146
Status: Open - Remediation
Status Date: 08/25/2003

Global Id: T0601900146
Status: Open - Remediation
Status Date: 01/30/2004

Global Id: T0601900146
Status: Open - Remediation
Status Date: 08/02/2004

Global Id: T0601900146
Status: Open - Remediation
Status Date: 10/25/2004

Global Id: T0601900146
Status: Open - Remediation
Status Date: 02/22/2005

Global Id: T0601900146
Status: Open - Remediation
Status Date: 04/18/2005

Global Id: T0601900146
Status: Open - Verification Monitoring
Status Date: 04/18/2005

Global Id: T0601900146
Status: Completed - Case Closed
Status Date: 03/27/2006

LUST REG 5:
Name: ART'S MERCANTILE
Address: 2082 WHITESBRIDGE RD W
City: FRESNO
Region: 5
Status: Case Closed
Case Number: 5T10000148
Case Type: Drinking water wells have been affected
Substance: GASOLINE
Staff Initials: DAM
Lead Agency: Regional
Program: LUST

ART'S MERCANTILE (Continued) **S104404042**

MTBE Code: 4

CORTESE:

Name:	ART'S MERCANTILE
Address:	2082 WHITESBRIDGE RD W
City,State,Zip:	FRESNO, CA 93702
Region:	CORTESE
Envirostor Id:	Not reported
Global ID:	T0601900146
Site/Facility Type:	LUST CLEANUP SITE
Cleanup Status:	COMPLETED - CASE CLOSED
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	active
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	Not reported
WID Id:	Not reported
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported
File Name:	Active Open

CUPA FRESNO:

Name:	ART'S MERCANTILE
Address:	2082 W WHITESBRIDGE AVE
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0001364
Cross Street:	Not reported
APM Number:	45809019
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.735966005
GIS Longitude:	-119.83526709
Program Element:	UST REMOVAL/CLOSURE W/3 TANKS

Name:	ART'S MERCANTILE
Address:	2082 W WHITESBRIDGE AVE
City,State,Zip:	FRESNO, CA 93706
Facility ID:	FA0001364
Cross Street:	Not reported
APM Number:	45809019
CERS Id:	Not reported
SWIS Number:	Not reported
GIS Latitude:	36.735966005
GIS Longitude:	-119.83526709
Program Element:	FORMER CONTAMINATED SITE/NO FURTHER ACTION

HIST CORTESE:

edr_fname:	ART'S MERCANTILE
edr_fadd1:	2082 WHITESBRIDGE

ART'S MERCANTILE (Continued) **S104404042**

City,State,Zip: FRESNO, CA 93706
Region: CORTESE
Facility County Code: 10
Reg By: LTNKA
Reg Id: 5T10000148

---

67 **MUNICIPAL SERVICE CENTER, ANNEX** **SWF/LF** **S108407537**
WNW **3187 BELMONT AVENUE** **CERS** **N/A**
1/4-1/2 **FRESNO, CA**
0.499 mi.
2633 ft.

Relative:
Lower

Actual:
280 ft.

SWF/LF (SWIS):
Name: MUNICIPAL SERVICE CENTER, ANNEX
Address: 3187 BELMONT AVENUE
City,State,Zip: FRESNO, CA
Facility ID: 10-AA-0217
Lat/Long: 36.74881 / -119.8517
Owner Name: City of Fresno, Public Works Dept.
Owner Telephone: 5596218650
Owner Address: Amber Adams
Owner Address2: 2600 Fresno St.
Owner City,St,Zip: Fresno, CA 93721
Operational Status: Active
Operator: City of Fresno: Street Maintenance Dvsn.
Operator Phone: 5596211492
Operator Address: City of Fresno; Dept. of Public Works
Operator Address2: 2101 G St.
Operator City,St,Zip: Fresno, CA 93706
Permit Date: 09/29/2009
Permit Status: Notification
Permitted Acreage: $28.30
Activity: Inert Debris Type A Proc. Operation
Regulation Status: Notification
Landuse Name: Residential,Industrial,Commercial
GIS Source: Map
Category: Transfer/Processing
Unit Number: 01
Inspection Frequency: Quarterly
Accepted Waste: Inert
Closure Date: Not reported
Closure Type: Not reported
Disposal Acreage: Not reported
SWIS Num: 10-AA-0217
Waste Discharge Requirement Num: Not reported
Program Type: Not reported
Permitted Throughput with Units: 1500
Actual Throughput with Units: Tons/day
Permitted Capacity with Units: 22000
Remaining Capacity: Not reported
Remaining Capacity with Units: Tons/year
Lat/Long: 36.74881 / -119.8517

CERS:
Name: MUNICIPAL SERVICE CENTER, ANNEX
Address: 3187 BELMONT AVENUE
City,State,Zip: FRESNO, CA

MUNICIPAL SERVICE CENTER, ANNEX (Continued) **S108407537**

Site ID: 510362
CERS ID: 10-AA-0217
CERS Description: Solid Waste and Recycle Sites

Affiliation:
Affiliation Type Desc: Legal Operator
Entity Name: City of Fresno: Street Maintenance Dvsn.
Entity Title: Not reported
Affiliation Address: City of Fresno; Dept. of Public Works2101 G St.
Affiliation City: Fresno
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93706
Affiliation Phone: 5596211492

Affiliation Type Desc: Legal Owner
Entity Name: City of Fresno, Public Works Dept.
Entity Title: Not reported
Affiliation Address: Amber Adams2600 Fresno St.
Affiliation City: Fresno
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93721
Affiliation Phone: 5596218650

68
South
1/2-1
0.503 mi.
2654 ft.

WESTSIDE AUTO DISMANTLER, AKA SR 180 REALIGNMENT **ENVIROSTOR** **S107737609**
2640 WEST WHITEBRIDGE ROAD **VCP** **N/A**
FRESNO, CA 93706 **DEED**

Relative:
Lower

Actual:
278 ft.

ENVIROSTOR:
Name: WESTSIDE AUTO DISMANTLER, AKA SR 180 REALIGNMENT
Address: 2640 WEST WHITEBRIDGE ROAD
City,State,Zip: FRESNO, CA 93706
Facility ID: 70000017
Status: Certified O&M - Land Use Restrictions Only
Status Date: 09/14/2011
Site Code: 101734
Site Type: Voluntary Cleanup
Site Type Detailed: Voluntary Cleanup
Acres: 4
NPL: NO
Regulatory Agencies: SMBRP, RWQCB 5F - Central Valley
Lead Agency: SMBRP
Program Manager: Danny Domingo
Supervisor: Joseph Tapia
Division Branch: Cleanup San Joaquin
Assembly: 31
Senate: 14
Special Program: Not reported
Restricted Use: YES
Site Mgmt Req: NONE SPECIFIED
Funding: Responsible Party
Latitude: 36.73570
Longitude: -119.8416
APN: NONE SPECIFIED

WESTSIDE AUTO DISMANTLER, AKA SR 180 REALIGNMENT (Continued) **S107737609**

Past Use: RECYCLING - OTHER, VEHICLE MAINTENANCE
Potential COC: Lead TPH-MOTOR OIL
Confirmed COC: Lead TPH-MOTOR OIL
Potential Description: SOIL
Alias Name: 110033620062
Alias Type: EPA (FRS #)
Alias Name: 101734
Alias Type: Project Code (Site Code)
Alias Name: 70000017
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: No Further Action Letter
Completed Date: 06/19/2009
Comments: No further action letter issued based upon recordation of LUC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/13/2006
Comments: PEA completed. Hazardous substance identified on site, Lead. Result of risk screening indicate site is appropriate for industrial/commerical use. Caltrans will have to obtain legal description of the 4 acres addressed by the PEA for inclusion into a Deed Restriction which will be recorded upon acquisition of the 4 acres addressed in the PEA.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 12/09/2005
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction Monitoring Report
Completed Date: 03/09/2020
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction
Completed Date: 06/17/2009
Comments: LUC Recorded with Fresno County

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Standard Voluntary Agreement
Completed Date: 02/20/2009
Comments: Task Order to Oversee Land Use Covenanent for the site. Final copies from Caltrans to be transmitted upon execution by their Chief.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported

WESTSIDE AUTO DISMANTLER, AKA SR 180 REALIGNMENT (Continued) **S107737609**

Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

VCP:
Name: WESTSIDE AUTO DISMANTLER, AKA SR 180 REALIGNMENT
Address: 2640 WEST WHITEBRIDGE ROAD
City,State,Zip: FRESNO, CA 93706
Facility ID: 70000017
Site Type: Voluntary Cleanup
Site Type Detail: Voluntary Cleanup
Site Mgmt. Req.: NONE SPECIFIED
Acres: 4
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP, RWQCB 5F - Central Valley
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Danny Domingo
Supervisor: Joseph Tapia
Division Branch: Cleanup San Joaquin
Site Code: 101734
Assembly: 31
Senate: 14
Special Programs Code: Not reported
Status: Certified O&M - Land Use Restrictions Only
Status Date: 09/14/2011
Restricted Use: YES
Funding: Responsible Party
Lat/Long: 36.73570 / -119.8416
APN: NONE SPECIFIED
Past Use: RECYCLING - OTHER, VEHICLE MAINTENANCE
Potential COC: 30013, 3002502
Confirmed COC: 30013,3002502
Potential Description: SOIL
Alias Name: 110033620062
Alias Type: EPA (FRS #)
Alias Name: 101734
Alias Type: Project Code (Site Code)
Alias Name: 70000017
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: No Further Action Letter
Completed Date: 06/19/2009
Comments: No further action letter issued based upon recordation of LUC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/13/2006
Comments: PEA completed. Hazardous substance identified on site, Lead. Result of risk screening indicate site is appropriate for industrial/commerical use. Caltrans will have to obtain legal

WESTSIDE AUTO DISMANTLER, AKA SR 180 REALIGNMENT (Continued) **S107737609**

description of the 4 acres addressed by the PEA for inclusion into a Deed Restriction which will be recorded upon acquisition of the 4 acres addressed in the PEA.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 12/09/2005
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction Monitoring Report
Completed Date: 03/09/2020
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction
Completed Date: 06/17/2009
Comments: LUC Recorded with Fresno County

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Standard Voluntary Agreement
Completed Date: 02/20/2009
Comments: Task Order to Oversee Land Use Covenanent for the site. Final copies from Caltrans to be transmitted upon execution by their Chief.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

DEED:
Name: WESTSIDE AUTO DISMANTLER, AKA SR 180 REALIGNMENT
Address: 2640 WEST WHITEBRIDGE ROAD
City,State,Zip: FRESNO, CA 93706
Envirostor ID: 70000017
Area: PROJECT WIDE
Sub Area: Not reported
Site Type: VOLUNTARY CLEANUP
Status: CERTIFIED O&M - LAND USE RESTRICTIONS ONLY
Agency: Not reported
Covenant Uploaded: Not reported
Deed Date(s): Not reported
File Name: Envirostor Land Use Restrictions

69
SSE
1/2-1
0.638 mi.
3371 ft.

FRESNO DRUM
700 AND 733 SOUTH HUGHES AVENUE
FRESNO, CA 93706

ENVIROSTOR **S111290792**
N/A

Relative:
Lower

Actual:
278 ft.

ENVIROSTOR:

Name:	FRESNO DRUM
Address:	700 AND 733 SOUTH HUGHES AVENUE
City,State,Zip:	FRESNO, CA 93706
Facility ID:	60001570
Status:	Inactive - Needs Evaluation
Status Date:	10/19/2011
Site Code:	102298
Site Type:	Evaluation
Site Type Detailed:	Evaluation
Acres:	0
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Kevin Shaddy
Division Branch:	Engineering & Special Projects
Assembly:	31
Senate:	14
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not Applicable
Latitude:	36.73448
Longitude:	-119.8356
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	102298
Alias Type:	Project Code (Site Code)
Alias Name:	60001570
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Correspondence
Completed Date:	07/03/2013
Comments:	Letter received from the RWQCB.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Correspondence
Completed Date:	09/13/2013
Comments:	Water Board letter
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	01/20/2011
Comments:	A site reassessment write-up was prepared under a US EPA Grant and was finalized on 1/20/2011.

FRESNO DRUM (Continued) **S111290792**

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	09/19/2016
Comments:	Completed - further action needed.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

70
NNE
1/2-1
0.770 mi.
4068 ft.

SCHOOL ALTERNATIVE SITE B3
HUGHES AND OLIVE AVENUES
FRESNO, CA 93728

ENVIROSTOR **S107737296**
SCH **N/A**

Relative:
Lower

Actual:
285 ft.

ENVIROSTOR:

Name:	SCHOOL ALTERNATIVE SITE B3
Address:	HUGHES AND OLIVE AVENUES
City,State,Zip:	FRESNO, CA 93728
Facility ID:	60000201
Status:	Inactive - Needs Evaluation
Status Date:	11/13/2006
Site Code:	104525
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	8.16
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Jose Luevano
Supervisor:	Mark Malinowski
Division Branch:	Northern California Schools & Santa Susana
Assembly:	31
Senate:	14
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	36.75649
Longitude:	-119.8349
APN:	449-260-01, 449-260-40, 44926001, 44926040
Past Use:	RESIDENTIAL AREA, RETAIL
Potential COC:	Lead
Confirmed COC:	Lead
Potential Description:	SOIL
Alias Name:	449-260-01
Alias Type:	APN
Alias Name:	449-260-40
Alias Type:	APN
Alias Name:	44926001
Alias Type:	APN

SCHOOL ALTERNATIVE SITE B3 (Continued) **S107737296**

Alias Name: 44926040
Alias Type: APN
Alias Name: 104525
Alias Type: Project Code (Site Code)
Alias Name: 60000201
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 12/15/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Inactive Status Letter
Completed Date: 10/16/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 05/11/2007
Comments: DTSC issued a CRU to accounting to summarize all costs asscociated with the Phase I ESA.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 04/18/2006
Comments: DTSC issued a Preliminary Environmental Assessment Required determination based on elevated lead and former roofing operations.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Name: SCHOOL ALTERNATIVE SITE B3
Address: HUGHES AND OLIVE AVENUES
City,State,Zip: FRESNO, CA 93728
Facility ID: 60000201
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 8.16
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP

SCHOOL ALTERNATIVE SITE B3 (Continued) **S107737296**

Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Jose Luevano
Supervisor:	Mark Malinowski
Division Branch:	Northern California Schools & Santa Susana
Site Code:	104525
Assembly:	31
Senate:	14
Special Program Status:	Not reported
Status:	Inactive - Needs Evaluation
Status Date:	11/13/2006
Restricted Use:	NO
Funding:	School District
Latitude:	36.75649
Longitude:	-119.8349
APN:	449-260-01, 449-260-40, 44926001, 44926040
Past Use:	RESIDENTIAL AREA, RETAIL
Potential COC:	Lead
Confirmed COC:	Lead
Potential Description:	SOIL
Alias Name:	449-260-01
Alias Type:	APN
Alias Name:	449-260-40
Alias Type:	APN
Alias Name:	44926001
Alias Type:	APN
Alias Name:	44926040
Alias Type:	APN
Alias Name:	104525
Alias Type:	Project Code (Site Code)
Alias Name:	60000201
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	12/15/2006
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Inactive Status Letter
Completed Date:	10/16/2006
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	05/11/2007
Comments:	DTSC issued a CRU to accounting to summarize all costs asscociated with the Phase I ESA.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	04/18/2006
Comments:	DTSC issued a Preliminary Environmental Assessment Required determination based on elevated lead and former roofing operations.

SCHOOL ALTERNATIVE SITE B3 (Continued) **S107737296**

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

Count: 2 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
FRESNO	S108541432	CALTRANS	MARKS AVENUE & HIGHWAY 180		LUST, Cortese
FRESNO	S107533417		3742 WEST NIELSON	93722	CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 87

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/11/2020
Number of Days to Update: 82

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/18/2020
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/18/2020
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 87

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/11/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 11/10/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land

Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/15/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 02/01/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Semi-Annually

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 05/26/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 09/15/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 85

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/03/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing

A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 74

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/15/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/29/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 75

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176
Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 10/30/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21
Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs
A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2019
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 76
Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites
Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27
Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 05/20/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/06/2020
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 08/26/2020
Date Data Arrived at EDR: 08/28/2020
Date Made Active in Reports: 11/17/2020
Number of Days to Update: 81

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/23/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 86

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 08/05/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/21/2020
Number of Days to Update: 69

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/17/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/08/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/09/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/06/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/18/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/17/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 79

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 07/24/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 10/21/2020
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/14/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 34

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/05/2020
Date Data Arrived at EDR: 08/10/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 59

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 01/31/2021
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 42
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/04/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/06/2021
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 09/24/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/27/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/15/2020
Date Made Active in Reports: 07/21/2020
Number of Days to Update: 6

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/06/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/21/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 77

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 09/10/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/04/2020
Date Data Arrived at EDR: 08/25/2020
Date Made Active in Reports: 11/18/2020
Number of Days to Update: 85
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78
Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/28/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97
Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/28/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 80
Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/03/2020
Date Data Arrived at EDR: 03/03/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 86
Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/15/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 06/27/2020
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/28/2020
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77
Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/08/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/17/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 10/21/2020
Number of Days to Update: 65
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6
Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 74
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 09/23/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64
Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 11/13/2020
Number of Days to Update: 79

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 08/19/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 14

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/28/2020
Date Made Active in Reports: 11/17/2020
Number of Days to Update: 81

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 08/24/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 06/16/2020
Date Made Active in Reports: 08/28/2020
Number of Days to Update: 73

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/18/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/05/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 79

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/04/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/05/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 07/06/2020
Date Data Arrived at EDR: 07/07/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/10/2020
Date Made Active in Reports: 10/29/2020
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/09/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 08/21/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 08/27/2020
Number of Days to Update: 6
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 08/20/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 06/06/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 11/19/2019
Date Data Arrived at EDR: 01/07/2020
Date Made Active in Reports: 03/09/2020
Number of Days to Update: 62
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 08/28/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System

DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 10/13/2020
Date Data Arrived at EDR: 10/14/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/01/2020
Date Made Active in Reports: 07/17/2020
Number of Days to Update: 16

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 05/18/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 06/01/2020
Number of Days to Update: 13

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/17/2020
Date Data Arrived at EDR: 06/18/2020
Date Made Active in Reports: 09/02/2020
Number of Days to Update: 76

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 07/16/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 78

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 70

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 70

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/01/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 78

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/13/2020
Number of Days to Update: 75

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/14/2020
Number of Days to Update: 76

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 05/11/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 71

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 09/10/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 07/06/2020
Date Data Arrived at EDR: 07/10/2020
Date Made Active in Reports: 09/28/2020
Number of Days to Update: 80

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/13/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 78

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/25/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 42
Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 10/12/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/25/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/25/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/25/2020
Date Data Arrived at EDR: 04/14/2020
Date Made Active in Reports: 07/01/2020
Number of Days to Update: 78
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/27/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/02/2019
Number of Days to Update: 64

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/05/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 09/23/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 1

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 08/20/2020
Date Data Arrived at EDR: 08/24/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 77

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 11/15/2020
Next Scheduled EDR Contact: 03/08/3021
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/15/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 16

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 09/23/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/13/2020
Number of Days to Update: 75

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 06/10/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 10/19/2020
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 07/02/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 79

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 07/01/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 10/19/2020
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/03/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/10/2020
Date Made Active in Reports: 08/24/2020
Number of Days to Update: 75

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/06/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 27

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/15/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/06/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 27

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/10/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/18/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 76

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/24/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/17/2020
Number of Days to Update: 78

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 08/04/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 08/04/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 82

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 82

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/10/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 75

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/11/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/01/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 08/20/2020
Date Data Arrived at EDR: 08/20/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 81

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 07/30/2020
Date Data Arrived at EDR: 07/31/2020
Date Made Active in Reports: 10/16/2020
Number of Days to Update: 77

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 09/16/2020
Number of Days to Update: 21

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/07/2020
Date Data Arrived at EDR: 07/08/2020
Date Made Active in Reports: 09/25/2020
Number of Days to Update: 79

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/01/2020
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/04/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 04/15/2020
Number of Days to Update: 70

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 11/17/2020
Number of Days to Update: 83

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 08/11/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 75

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/06/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 81

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 07/10/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 78

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/23/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 07/10/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 77

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 05/26/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 06/23/2020
Date Data Arrived at EDR: 06/29/2020
Date Made Active in Reports: 09/15/2020
Number of Days to Update: 78

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/07/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 80

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 11/03/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 10/20/2020
Date Made Active in Reports: 11/02/2020
Number of Days to Update: 13

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/09/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 72

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 10/30/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 12/10/2019
Number of Days to Update: 69

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/02/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

FORMER CA COMPRESS FACILITY
2740 W. NIELSON AVE.
FRESNO, CA 93706

TARGET PROPERTY COORDINATES

Latitude (North):	36.744216 - 36° 44' 39.18''
Longitude (West):	119.839956 - 119° 50' 23.84''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	246432.1
UTM Y (Meters):	4070056.8
Elevation:	287 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5603172 FRESNO SOUTH, CA
Version Date:	2012
North Map:	5603170 FRESNO NORTH, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

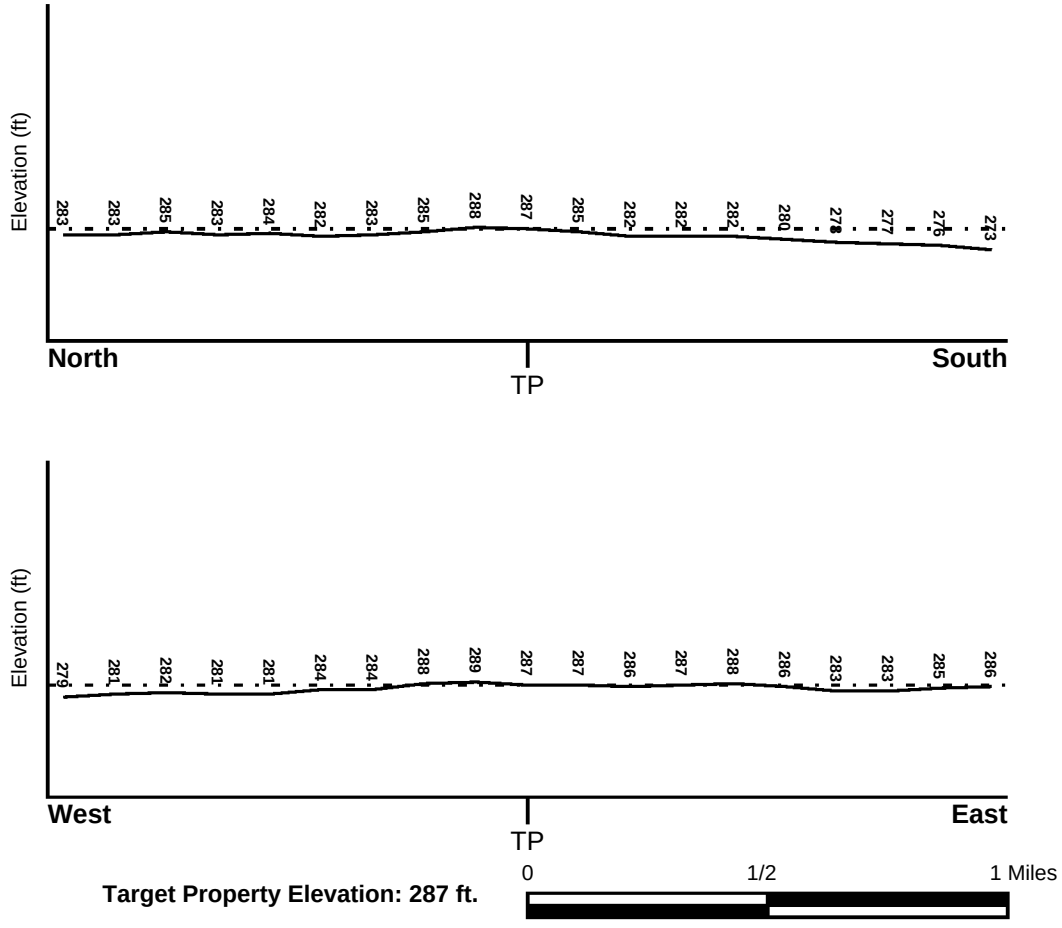
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General South

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06019C2105H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06019C1565H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
FRESNO SOUTH	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

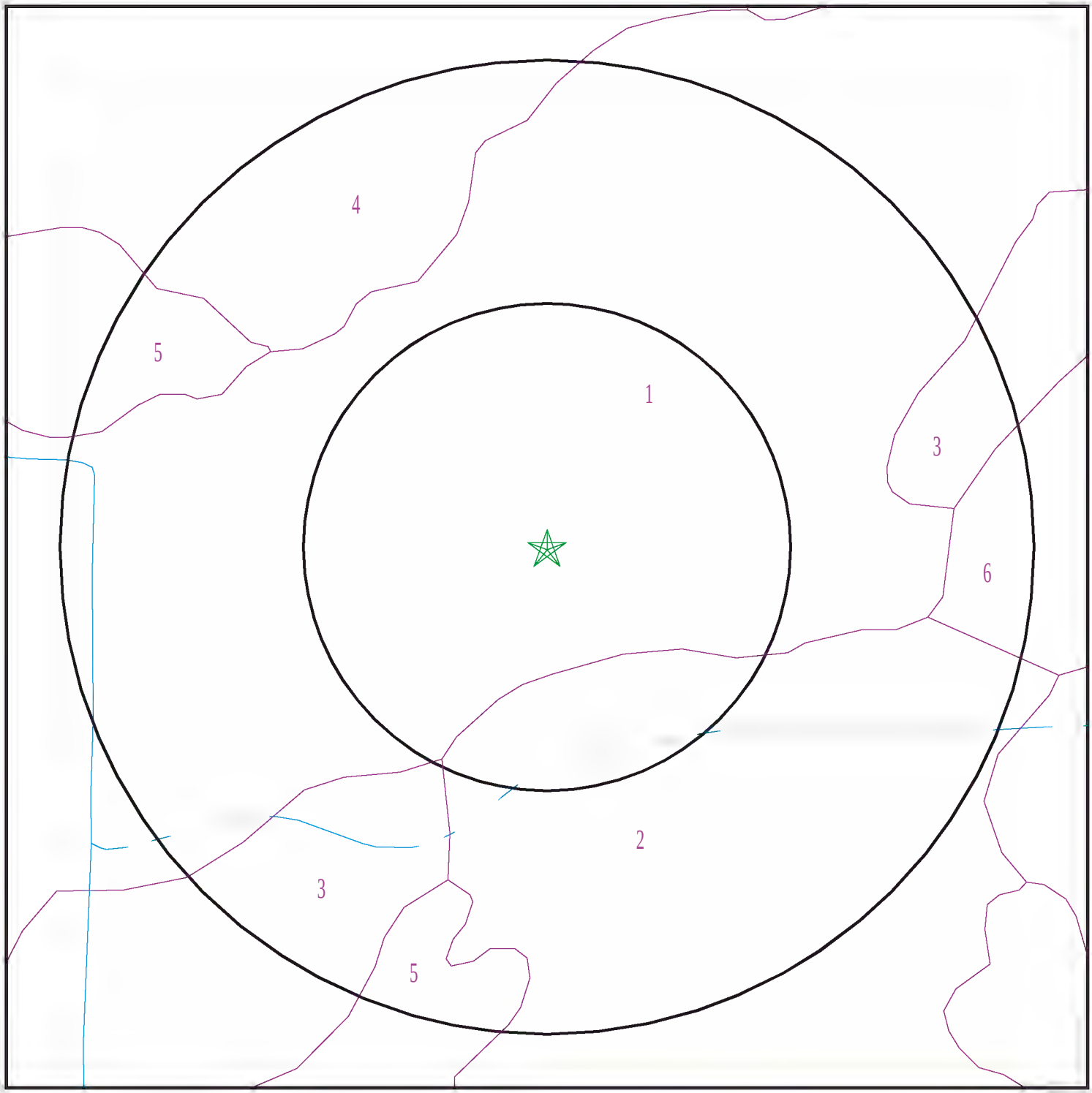
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 6275752.2s



★ Target Property
SSURGO Soil
Water

SITE NAME:	Former CA Compress Facility	CLIENT:	Salem Engineering Group
ADDRESS:	2740 W. Nielson Ave. Fresno CA 93706	CONTACT:	Shannon Lodge
LAT/LONG:	36.744216 / 119.839956	INQUIRY #:	6275752.2s
		DATE:	November 21, 2020 7:24 am

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: DELHI

Soil Surface Texture: loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Unknown

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 141 Min: 42	Max: 7.3 Min: 6.1
2	7 inches	25 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 141 Min: 42	Max: 7.3 Min: 6.1
3	25 inches	59 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 141 Min: 42	Max: 7.3 Min: 6.1

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 2

Soil Component Name: ATWATER

Soil Surface Texture: loamy sand

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	24 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	24 inches	42 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	42 inches	59 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 3

Soil Component Name: EXETER

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.1 Min: 0.01	Max: Min:
2	14 inches	29 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.1 Min: 0.01	Max: Min:
3	29 inches	33 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.1 Min: 0.01	Max: Min:

Soil Map ID: 4

Soil Component Name: SAN JOAQUIN

Soil Surface Texture: sandy clay loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	16 inches	27 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6
2	27 inches	29 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6
3	29 inches	35 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6
4	35 inches	59 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6
5	0 inches	16 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6

Soil Map ID: 5

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
2	16 inches	38 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
3	38 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1

Soil Map ID: 6

Soil Component Name: GREENFIELD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
2	16 inches	38 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
3	38 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
4	USGS40000177110	1/4 - 1/2 Mile WSW
8	USGS40000177261	1/2 - 1 Mile North

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
9	USGS40000177160	1/2 - 1 Mile WNW
23	USGS40000177305	1/2 - 1 Mile North
25	USGS40000177054	1/2 - 1 Mile ESE
26	USGS40000177095	1/2 - 1 Mile East
32	USGS40000177328	1/2 - 1 Mile North

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

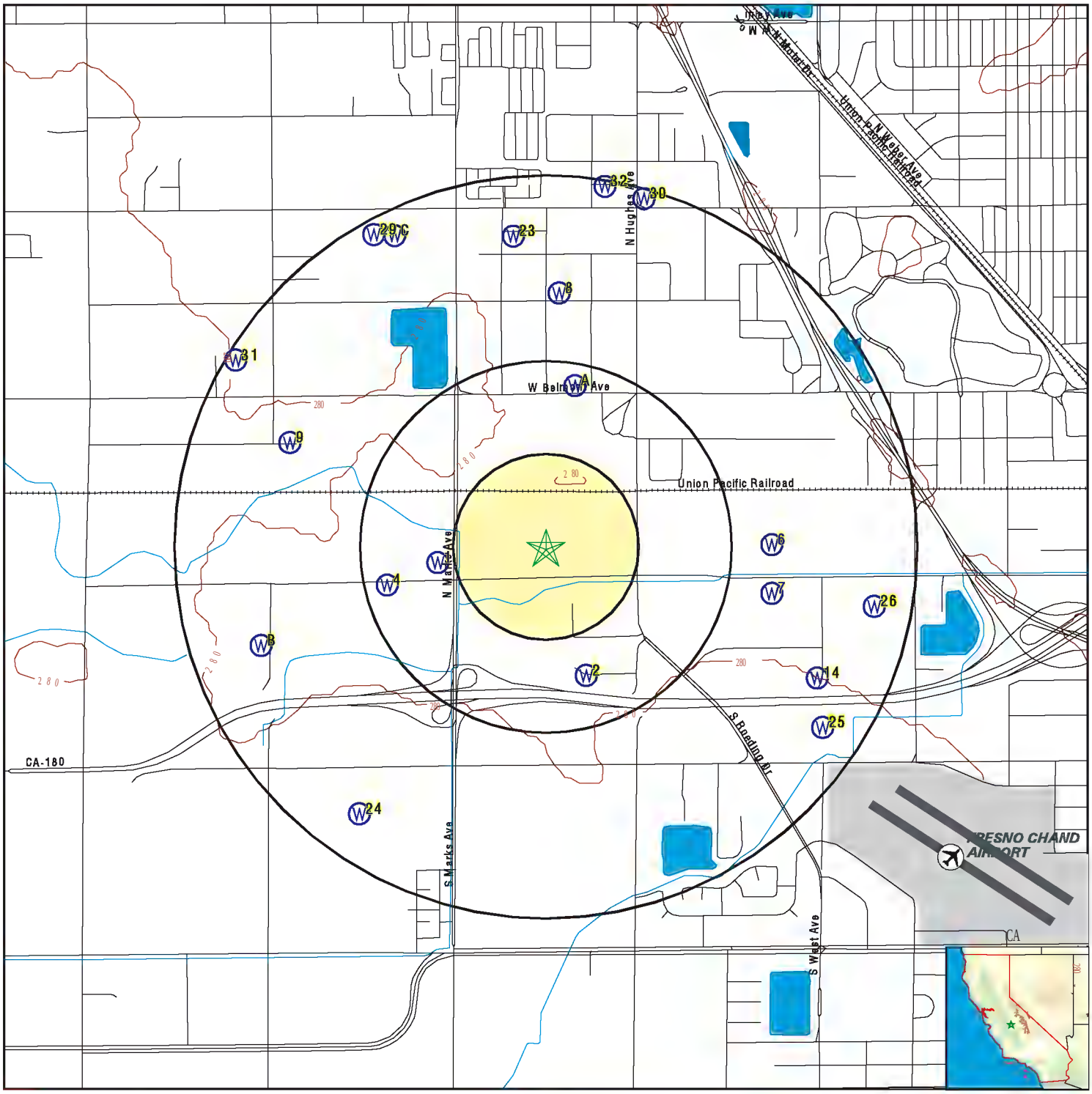
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CADPR0000004889	1/4 - 1/2 Mile West
2	CADDW0000021535	1/4 - 1/2 Mile SSE
A3	11764	1/4 - 1/2 Mile North
A5	CADDW0000004714	1/4 - 1/2 Mile NNE
6	CADWR8000029305	1/2 - 1 Mile East
7	CADWR8000029292	1/2 - 1 Mile ESE
B10	CAEDF0000037922	1/2 - 1 Mile WSW
B11	CAEDF0000037308	1/2 - 1 Mile WSW
B12	CAEDF0000033040	1/2 - 1 Mile WSW
B13	CAEDF0000048681	1/2 - 1 Mile WSW
14	CADDW0000006653	1/2 - 1 Mile ESE
B15	CAEDF0000081558	1/2 - 1 Mile WSW
B16	CAEDF0000007907	1/2 - 1 Mile WSW
B17	CAEDF0000049595	1/2 - 1 Mile WSW
B18	CAEDF0000051678	1/2 - 1 Mile WSW
B19	CAEDF0000127904	1/2 - 1 Mile WSW
B20	CAEDF0000110800	1/2 - 1 Mile WSW
B21	CAEDF0000125563	1/2 - 1 Mile WSW
B22	CAEDF0000066224	1/2 - 1 Mile WSW
24	CADWR8000029170	1/2 - 1 Mile SW
C27	CADDW0000019444	1/2 - 1 Mile NNW
C28	11604	1/2 - 1 Mile NNW
29	CADDW0000016249	1/2 - 1 Mile NNW
30	CADDW0000009710	1/2 - 1 Mile NNE
31	CADWR0000036035	1/2 - 1 Mile WNW

PHYSICAL SETTING SOURCE MAP - 6275752.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Former CA Compress Facility	CLIENT:	Salem Engineering Group
ADDRESS:	2740 W. Nielson Ave. Fresno CA 93706	CONTACT:	Shannon Lodge
		INQUIRY #:	6275752.2s
LAT/LONG:	36.744216 / 119.839956	DATE:	November 21, 2020 7:24 am

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
West
1/4 - 1/2 Mile
Higher

CA WELLS **CADPR0000004889**

Well ID:	85602	Well Type:	UNK
Source:	Department of Pesticide Regulation		
Other Name:	85602	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DPR&samp_date=&global_id=&assigned_name=85602&store_num=		
GeoTracker Data:	Not Reported		

2
SSE
1/4 - 1/2 Mile
Lower

CA WELLS **CADDW0000021535**

Well ID:	1000422-001	Well Type:	MUNICIPAL
Source:	Department of Health Services		
Other Name:	WELL	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=1000422-001&store_num=		
GeoTracker Data:	Not Reported		

A3
North
1/4 - 1/2 Mile
Lower

CA WELLS **11764**

Seq:	11764	Prim sta c:	13S/20E-31P01 M
Frds no:	1000242001	County:	10
District:	40	User id:	10C
System no:	1000242	Water type:	G
Source nam:	2706 W BELMONT FRESNO	Station ty:	WELL/AMBNT/MUN/INTAKE
Latitude:	364502.0	Longitude:	1195017.0
Precision:	3	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	1000242	System nam:	Todd'S Trailer Court
Hqname:	Not Reported	Address:	4561 E. JENSEN
City:	FRESNO	State:	CA
Zip:	93725	Zip ext:	Not Reported
Pop serv:	27	Connection:	13
Area serve:	Not Reported		

4
WSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000177110**

Organization ID:	USGS-CA
Organization Name:	USGS California Water Science Center

Monitor Location:	014S023E04M001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	35
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

A5
NNE **CA WELLS** **CADDW0000004714**
1/4 - 1/2 Mile
Lower

Well ID:	1000242-001	Well Type:	MUNICIPAL
Source:	Department of Health Services		
Other Name:	2706 W BELMONT FRESNO	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=1000242-001&store_num=		
GeoTracker Data:	Not Reported		

6
East **CA WELLS** **CADWR8000029305**
1/2 - 1 Mile
Lower

State Well #:	14S20E06H001M	Station ID:	33700
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kings	Well Completion Rpt #:	Not Reported

7
ESE **CA WELLS** **CADWR8000029292**
1/2 - 1 Mile
Lower

State Well #:	14S20E06J001M	Station ID:	15139
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kings	Well Completion Rpt #:	Not Reported

8
North **FED USGS** **USGS40000177261**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	013S020E31L001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		

Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19781027	Well Depth:	145
Well Depth Units:	ft	Well Hole Depth:	145
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	2	Level reading date:	1987-03-06
Feet below surface:	65.89	Feet to sea level:	Not Reported
Note:	Not Reported		

Level reading date:	1978-10-27	Feet below surface:	68
Feet to sea level:	Not Reported	Note:	Not Reported

9
WNW **FED USGS** **USGS40000177160**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	014S019E01D002M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1963-10-15
Feet below surface:	67.76	Feet to sea level:	Not Reported
Note:	Not Reported		

B10
WSW **CA WELLS** **CAEDF0000037922**
1/2 - 1 Mile
Higher

Well ID:	T0601900312-CS-WSW2	Well Type:	MONITORING
Source:	EDF	Other Name:	CS-WSW2
GAMA PFAS Testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-WSW2&store_num=		
GeoTracker Data:	https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-WSW2		

B11
WSW **CA WELLS** **CAEDF0000037308**
1/2 - 1 Mile
Higher

Well ID:	T0601900312-CS-MW6	Well Type:	MONITORING
Source:	EDF	Other Name:	CS-MW6
GAMA PFAS Testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-MW6&store_num=		

GeoTracker Data: https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-MW6

B12
WSW
1/2 - 1 Mile
Higher

CA WELLS **CAEDF0000033040**

Well ID: T0601900312-CS-MW4
Well Type: MONITORING
Source: EDF
Other Name: CS-MW4
GAMA PFAS Testing: Not Reported
Groundwater Quality Data: https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-MW4&store_num=
GeoTracker Data: https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-MW4

B13
WSW
1/2 - 1 Mile
Higher

CA WELLS **CAEDF0000048681**

Well ID: T0601900312-CS-MW8
Well Type: MONITORING
Source: EDF
Other Name: CS-MW8
GAMA PFAS Testing: Not Reported
Groundwater Quality Data: https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-MW8&store_num=
GeoTracker Data: https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-MW8

14
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADDW0000006653**

Well ID: 1010007-630
Well Type: MUNICIPAL
Source: Department of Health Services
Other Name: WELL 313 - RAW
GAMA PFAS Testing: Not Reported
Groundwater Quality Data: https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=1010007-630&store_num=
GeoTracker Data: Not Reported

B15
WSW
1/2 - 1 Mile
Higher

CA WELLS **CAEDF0000081558**

Well ID: T0601900312-CS-MW1
Well Type: MONITORING
Source: EDF
Other Name: CS-MW1
GAMA PFAS Testing: Not Reported
Groundwater Quality Data: https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-MW1&store_num=
GeoTracker Data: https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-MW1

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
B16 **WSW** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CAEDF0000007907**

Well ID:	T0601900312-CS-MW3	Well Type:	MONITORING
Source:	EDF	Other Name:	CS-MW3
GAMA PFAS Testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-MW3&store_num=		
GeoTracker Data:	https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-MW3		

	Database	EDR ID Number
B17 **WSW** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CAEDF0000049595**

Well ID:	T0601900312-CS-WSW4	Well Type:	MONITORING
Source:	EDF	Other Name:	CS-WSW4
GAMA PFAS Testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-WSW4&store_num=		
GeoTracker Data:	https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-WSW4		

	Database	EDR ID Number
B18 **WSW** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CAEDF0000051678**

Well ID:	T0601900312-CS-MW2	Well Type:	MONITORING
Source:	EDF	Other Name:	CS-MW2
GAMA PFAS Testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-MW2&store_num=		
GeoTracker Data:	https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-MW2		

	Database	EDR ID Number
B19 **WSW** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CAEDF0000127904**

Well ID:	T0601900312-CS-MW5	Well Type:	MONITORING
Source:	EDF	Other Name:	CS-MW5
GAMA PFAS Testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-MW5&store_num=		
GeoTracker Data:	https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-MW5		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

B20
WSW
1/2 - 1 Mile
Higher

CA WELLS **CAEDF0000110800**

Well ID:	T0601900312-CS-MW7	Well Type:	MONITORING
Source:	EDF	Other Name:	CS-MW7
GAMA PFAS Testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-MW7&store_num=		
GeoTracker Data:	https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-MW7		

B21
WSW
1/2 - 1 Mile
Higher

CA WELLS **CAEDF0000125563**

Well ID:	T0601900312-CS-WSW1	Well Type:	MONITORING
Source:	EDF	Other Name:	CS-WSW1
GAMA PFAS Testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-WSW1&store_num=		
GeoTracker Data:	https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-WSW1		

B22
WSW
1/2 - 1 Mile
Higher

CA WELLS **CAEDF0000066224**

Well ID:	T0601900312-CS-WSW3	Well Type:	MONITORING
Source:	EDF	Other Name:	CS-WSW3
GAMA PFAS Testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF&samp_date=&global_id=T0601900312&assigned_name=CS-WSW3&store_num=		
GeoTracker Data:	https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults&global_id=T0601900312&assigned_name=CS-WSW3		

23
North
1/2 - 1 Mile
Lower

FED USGS **USGS40000177305**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	013S019E36J001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported

Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1 Level reading date: 1963-10-15
Feet below surface: 67.56 Feet to sea level: Not Reported
Note: Not Reported

24
SW **CA WELLS** **CADWR8000029170**
1/2 - 1 Mile
Lower

State Well #: 14S19E12B001M Station ID: 32559
Well Name: Not Reported Well Use: Unknown
Well Type: Unknown Well Depth: 0
Basin Name: Kings Well Completion Rpt #: Not Reported

25
ESE **FED USGS** **USGS40000177054**
1/2 - 1 Mile
Lower

Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 014S020E06R001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: 19590601 Well Depth: 128
Well Depth Units: ft Well Hole Depth: 175
Well Hole Depth Units: ft

Ground water levels,Number of Measurements: 1 Level reading date: 1963-10-16
Feet below surface: 60.07 Feet to sea level: Not Reported
Note: Not Reported

26
East **FED USGS** **USGS40000177095**
1/2 - 1 Mile
Lower

Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 014S023E03G001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: Not Reported Well Depth: 70
Well Depth Units: ft Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1 Level reading date: 1963-10-30

Feet below surface:	7.74	Feet to sea level:	Not Reported
Note:	Not Reported		

C27
NNW **CA WELLS** **CADDW0000019444**
1/2 - 1 Mile
Lower

Well ID:	1000259-001	Well Type:	MUNICIPAL
Source:	Department of Health Services		
Other Name:	INACTIVE MAIN WELL	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=1000259-001&store_num=		
GeoTracker Data:	Not Reported		

C28
NNW **CA WELLS** **11604**
1/2 - 1 Mile
Lower

Seq:	11604	Prim sta c:	13S/19E-36J02 M
Frds no:	1000259001	County:	10
District:	40	User id:	10C
System no:	1000259	Water type:	G
Source nam:	3147 W OLIVE	Station ty:	WELL/AMBNT/MUN/INTAKE
Latitude:	364524.0	Longitude:	1195048.0
Precision:	3	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	1000259	System nam:	Ho Ho Mhp
Hqname:	Not Reported	Address:	Not Reported
City:	Not Reported	State:	Not Reported
Zip:	Not Reported	Zip ext:	Not Reported
Pop serv:	0	Connection:	0
Area serve:	Not Reported		

Sample date:	30-APR-13	Finding:	3.4
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		

Sample date:	30-APR-13	Finding:	120.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		

Sample date:	30-APR-13	Finding:	2.
Chemical:	2-CHLOROTOLUENE	Report units:	UG/L
Dlr:	0.5		

Sample date:	30-APR-13	Finding:	9.8
Chemical:	TOTAL TRIHALOMETHANES	Report units:	UG/L
Dlr:	0.		

Sample date:	30-APR-13	Finding:	69.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		

Sample date:	30-APR-13	Finding:	7.8
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	30-APR-13	Finding:	29.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	30-APR-13	Finding:	36.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	30-APR-13	Finding:	3.5
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	30-APR-13	Finding:	2.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	30-APR-13	Finding:	7.7
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	30-APR-13	Finding:	2.5
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	30-APR-13	Finding:	2.2
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	30-APR-13	Finding:	0.18
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	30-APR-13	Finding:	5.6
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	30-APR-13	Finding:	11.
Chemical:	BARIUM	Report units:	UG/L
Dlr:	100.		
Sample date:	30-APR-13	Finding:	420.
Chemical:	IRON	Report units:	UG/L
Dlr:	100.		
Sample date:	30-APR-13	Finding:	9.8
Chemical:	CHLOROFORM (THM)	Report units:	UG/L
Dlr:	1.		
Sample date:	30-APR-13	Finding:	12.
Chemical:	DALAPON	Report units:	UG/L
Dlr:	10.		
Sample date:	21-NOV-12	Finding:	2.7
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

29
NNW
1/2 - 1 Mile
Lower

CA WELLS **CADDW0000016249**

Well ID:	1000259-002	Well Type:	MUNICIPAL
Source:	Department of Health Services		
Other Name:	WELL 02	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=1000259-002&store_num=		
GeoTracker Data:	Not Reported		

30
NNE
1/2 - 1 Mile
Lower

CA WELLS **CADDW0000009710**

Well ID:	1010007-329	Well Type:	MUNICIPAL
Source:	Department of Health Services		
Other Name:	WELL 172 - RAW	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=1010007-329&store_num=		
GeoTracker Data:	Not Reported		

31
WNW
1/2 - 1 Mile
Lower

CA WELLS **CADWR0000036035**

Well ID:	13S19E36J002M	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	13S19E36J002M	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=13S19E36J002M&store_num=		
GeoTracker Data:	Not Reported		

32
North
1/2 - 1 Mile
Lower

FED USGS **USGS40000177328**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	013S020E31F001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19771202	Well Depth:	145
Well Depth Units:	ft	Well Hole Depth:	145
Well Hole Depth Units:	ft		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Ground water levels,Number of Measurements:	1	Level reading date:	1987-03-06
Feet below surface:	63.55	Feet to sea level:	Not Reported
Note:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93706	29	8

Federal EPA Radon Zone for FRESNO County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93706

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.150 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	2.300 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

APPENDIX

L

SHANNON LODGE
Senior Project Manager

REGISTRATION

Professional Geologist – California (#8522)

CERTIFICATION

OSHA 40-Hour Hazardous Waste Operations and Emergency Response Training (29 CFR 110.120) (HAZWOPER) and 8-Hour Refresher Courses
Qualified SWPPP Developer (QSD) & Qualified SWPPP Practitioner (QSP) #22257
American Red Cross Adult First Aid, CPR/AED

EDUCATION

Bachelor of Science in Geology, California State University, Fresno, California

EXPERIENCE

2014 to Present – Senior Project Manager, Salem Engineering Group, Inc., Fresno, California
2002 to 2014 – Professional Geologist/Project Manager, HerSchy Environmental, Inc., Bass Lake, California
2002 to 2002 – Intern Field Technician, ENTRIX, Inc.
1999 to 2002 – Intern Utility Worker, Southern California Edison, Big Creek Hydro Operations

PROFESSIONAL BACKGROUND

Environmental Geology: Conduct Phase I and Phase II environmental site assessments for industrial, commercial, and multi-unit residential properties in California. Responsible for overseeing all aspects of Phase II soil and groundwater environmental projects including client coordination, site and regulatory research, investigation technical approach and design, data analysis, and report preparation. Experience with the design, construction and operation oversight of soil and groundwater treatment systems including air stripper and carbon-based groundwater treatment, and both carbon and thermal oxidizer-based soil vapor extraction systems; remedial system design, installation, and operation; technical workplan and site assessment report preparation; indoor air sampling, data interpretation, and mitigation; management of projects for petrochemical, dry-cleaning, law firm, and insurance; and, extensive knowledge of numerous local, state, and Federal oversight programs.

SALEM

CLARENCE JIANG

Senior Geotechnical Engineer

REGISTRATION

Registered Geotechnical Engineer – California
Registered Civil Engineer - California
Registered Grading Inspector – Los Angeles

CERTIFICATION

OSHA 40-Hour Hazardous Waste Operations and Emergency Response Training (29 CFR 110.120) (HAZWOPER)
Certified Hazardous Materials Manager

EDUCATION

Masters of Science in Geotechnical Engineering, Utah State University, Logan, Utah
Bachelor of Science in Civil Engineering, Chung-Yuan University, Chung-Li, Taiwan

EXPERIENCE

2007 to Present – Senior Geotechnical Engineer, Salem Engineering Group, Inc., Rancho Cucamonga, California
2003 to 2007 – Senior Engineer, Krazan & Associates, Inc., Ontario, California
1994 to 2003 – Senior Engineer/Vice President, Morhol, Inc., Anaheim, California
1988 to 1994 – Project Engineer, Leighton & Associates, Inc., Irvine, California

PROFESSIONAL BACKGROUND

Geotechnical Investigations: Responsible for staff supervision, client relations, technical review, budget preparations, and profit/loss statements. Provided project management for geotechnical engineering projects for industrial plants, school and hospital sites, wastewater treatment plants, bridges and culverts, sewer lines, stadiums, embankments, service stations, commercial developments, industrial facilities, and landfills. Experienced in a broad range of geotechnical engineering applications such as shallow and deep foundation investigation, slope stability, pavement design, liquefaction potential, ground improvement, soil suitability and availability assessment, soil-cement treatment, soil-lime stabilization, erosion control, landfill construction, septic system design, as well as field and laboratory soil testing.

Construction Testing & Inspection Services: Responsible for overseeing Special Inspectors, testing laboratory personnel and procedures, client relations, technical review of reports, and insure conscientious cost management. Oversee the testing of concrete, post-tension cables, soil, welding, and construction materials to insure conformance to current building standards and codes. Report the results of materials tested to the appropriate agencies and companies.

Environmental Engineering: Provide detailed Phase I investigative site reports. Conduct environmental audits and provide recommendations for corrective measures. Extensive experience in lithologic logging and sampling in consolidated and unconsolidated material for environmental exploration. Provide recommendations for the management of underground storage tanks and hazardous waste.

PROFESSIONAL ORGANIZATIONS

American Society of Civil Engineers (ASCE)

SALEM

PUBLIC REVIEW DRAFT

ENVIRONMENTAL IMPACT REPORT

TECHNICAL APPENDICES – VOLUME II – APPENDICES J – M

2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

FRESNO, CALIFORNIA

LSA

February 2023

This page intentionally left blank

TECHNICAL APPENDICES
TABLE OF CONTENTS

VOLUME II:

J: PHASE II ENVIRONMENTAL SITE ASSESSMENT

K: WATER SUPPLY ASSESSMENT

L: NOISE IMPACT ANALYSIS MEMORANDUM

M: TRAFFIC IMPACT STUDY

This page intentionally left blank

APPENDIX J

PHASE II ENVIRONMENTAL SITE ASSESSMENT

This page intentionally left blank

SALEM
engineering group, inc.

4729 W. Jacquelyn Avenue
Fresno, California 93723
(559) 271-9700 Office
(559) 275-0827 Fax

February 3, 2021 **Job No. 1-420-1016**

Mr. Jake Kurth
Development Assistant
Scannell Properties
294 Grove Lane East, Suite 140
Wayzata, MN 55391

Phone: (612) 280-4088
Email: JakeK@scannellproperties.com

Subject: **PHASE II ENVIRONMENTAL SITE ASSESSMENT**
FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSON AVENUE
FRESNO, CALIFORNIA

Dear Mr. Kurth:

At your request and authorization, SALEM Engineering Group, Inc. (SALEM) has prepared this Phase II Environmental Site Assessment (ESA) for the Former California Compress Facility property located at 2740 West Nielson Avenue in Fresno, California.

We appreciate the opportunity to assist you with this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (559) 271-9700.

Respectfully submitted,

SALEM Engineering Group, Inc.

Shannon Lodge, PG, QSD
Senior Project Manager

GEOTECHNICAL • ENVIRONMENTAL • GEOLOGY • MATERIALS TESTING & INSPECTION • FORENSIC • LABORATORY

SALEM
engineering group, inc.

PHASE II ENVIRONMENTAL SITE ASSESSMENT

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSON AVENUE
FRESNO, CALIFORNIA

SALEM PROJECT NO. 1-420-1016
FEBRUARY 3, 2021

PREPARED FOR:

MR. JAKE KURTH
SCANNELL PROPERTIES
294 GROVE LANE EAST, SUITE 140
WAYZATA, MN 55391

PREPARED BY:

SALEM ENGINEERING GROUP, INC.
4729 W. JACQUELYN AVENUE
FRESNO, CA 93722
P: (559) 271-9700
F: (559) 275-0827
www.salem.net

TABLE OF CONTENTS

Job No. 1-420-1016

1.0 EXECUTIVE SUMMARY 1
2.0 INTRODUCTION AND PROJECT OBJECTIVES 3
3.0 SCOPE OF WORK 5
3.1 Pre Field Activities 5
3.1.1 Site Safety 5
3.1.2 Permits 5
3.1.3 Utility Clearance and Geophysical Survey 5
4.0 SOIL AND SOIL VAPOR INVESTIGATION METHODOLOGY 6
4.1 Soil Sampling and Soil Vapor Probe Installation Procedures 6
4.2 Soil Vapor Sampling 7
4.2.1 Shut-in Testing 7
4.2.2 Leak Testing 7
4.2.3 Soil Vapor Sample Collection and Analysis 7
5.0 FINDINGS 8
5.1 Geology and Hydrogeology 8
5.2 Field Observations 9
5.3 Analytical Results 9
5.3.1 Soil Analytical Results 9
5.3.2 Soil Vapor Analytical Results 10
6.0 CONCLUSIONS AND RECOMMENDATIONS 10
7.0 LIMITATIONS 11
8.0 REFERENCES 12

FIGURES

Site Location Map 1
Site Map with Boring Locations 2

TABLES

Soil Data, TPH-CRA, PCBs, VOCs and SVOCs 1
Soil Data, Title 22 Metals 2
Soil Vapor Quality Data 3

APPENDICES

Laboratory Analytical Reports ..... .A

SALEM
engineering group, inc.

4729 W. Jacquelyn Avenue
Fresno, California 93723
(559) 271-9700 Office
(559) 275-0827 Fax

February 3, 2021 **Job No. 1-420-1016**

PHASE II ENVIRONMENTAL SITE ASSESSMENT

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSON AVENUE
FRESNO, CALIFORNIA

1.0 EXECUTIVE SUMMARY

Salem Engineering Group, Inc. (SALEM) performed a Phase II Environmental Site Assessment (ESA) to investigate the Former California Compress Facility property located at 2740 West Nielson Avenue in Fresno, California (subject property). The subject property comprises an approximately 44.95-acre rectangular-shaped subject property and consists of two parcels (Fresno County Assessor's Parcel Numbers [APNs] 458-020-71 and 458-020-72). The investigation was performed in accordance with SALEM's Proposal No. P1-420-1899 dated December 15, 2020.

During the course of SALEM's January 29, 2021 Phase I ESA, SALEM identified the following evidence of Recognized Environmental Conditions (RECs) in connection with the subject property as defined by ASTM E1527-13:

- At least three known septic systems were associated with the former structures on the subject property, two of which were visually identified during SALEM's November 19, 2020 site reconnaissance as remaining at the subject property. The former septic systems may have acted as a conduit for contaminants to enter on-site soil from potential past unauthorized disposal of hazardous substances and/or petroleum products utilized for vehicle maintenance into drains, sinks and toilets. SALEM recommended conducting a Limited Soil Assessment (LSA) in the vicinity of the septic systems to determine if on-site soils have been impacted by unauthorized releases of the constituents of concern into the septic systems.

- Historic operations at the subject property included the handling and storage of cotton which required an extensive fire suppression system. Two water basins were historically located in the southern portion of the subject property. SALEM personnel located more than 25 features across the subject property indicative of a fire suppression system including stand pipes, traffic bollards, and fire hydrants. The system reportedly included diesel-powered water pumps supplied from an aboveground storage tank (AST) historically located in the south-central portion of the subject property. The former diesel AST location was identifiable by concrete footings and a fire extinguisher. Additional concrete footings indicative of propane ASTs were observed in the north-central portion of the subject property. No staining or signs of leakage were observed in the vicinity of the former ASTs. However, SALEM recommended conducting a LSA to assess on-site shallow soils for potential petroleum hydrocarbon impacts in the vicinity of the former diesel AST.

- A soil mound was observed in the southern portion of the subject property and was reported to have been excavation dirt and asphalt produced when the floor of a warehouse was switched from asphalt to concrete to accommodate heavy machinery. No obvious visual evidence of hazardous substances and/or petroleum products or staining was observed on the surface of the stockpile. Based upon the absence of documentation regarding the source of the stockpiled soil, SALEM recommended

collecting samples of the stockpiled soil in order to determine if the soil had been impacted by constituents of concern prior to either transporting the soil off-site for disposal or utilizing the soil on-site as clean-fill if needed during the redevelopment of the subject property.

The following Historical Recognized Environmental Condition (HREC) was identified:

- The former California Compress facility operated four underground storage tanks (USTs) consisting of a 10,000-gallon fuel oil UST historically located on what is now the north adjacent property; a 4,000-gallon double-walled steel diesel UST; a 4,000-gallon single-walled steel diesel UST; and a 1,000-gallon single-walled steel regular unleaded gasoline UST historically located in the southwest portion of the subject property. Records indicate all UST were properly permitted and removed under the regulatory agency oversight of Fresno County Environmental Health Division (FCEHD). A record of a "Hazardous Material Release" was recorded on June 5, 1995 indicating soil contamination from petroleum products discovered during removal of a UST. California Regional Water Quality Control Board (RWQCB) records indicate that FCEHD issued a "case closed" designation for the California Compress leaking underground storage tank (LUST) site on July 3, 1996.

Scannell Properties requested that SALEM perform a Phase II ESA to address the RECs and HREC identified in SALEM's January 29, 2021 Phase I ESA, to gather data regarding current site conditions, to establish baseline soil and soil vapor concentrations, and to evaluate if soil vapor conditions pose a potential vapor intrusion risk to future occupants at the subject property.

The following data summary is based on a review of field and laboratory data obtained during SALEM's investigation at the subject property:

- According to RWQCB records for the Fresno Drum, Eastern Parcel facility, located at 733 South Hughes Avenue, approximately 0.65-mile south of the subject property, groundwater in the vicinity of the subject property was reported at a depth of approximately 65 to 80 feet below ground surface (bgs) with a general direction of flow toward the northeast. However, local groundwater level and flow direction may vary due to seasonal fluctuations in precipitation, usage demands, geology, and/or surface topography. Groundwater was not encountered during the course of this investigation.

- A geophysical survey was conducted on January 4, 2021 which identified the suspected former UST pit. The pit displayed a different soil density compared to the surrounding areas and the surface area of this location displayed patched/cut concrete and asphalt. Additionally, two of the three suspected septic systems were positively identified. No other anomalies indicative of potential buried fuel USTs and associated appurtenances, additional backfilled UST cavities, or other sub-grade structures of environmental concern (hoists, clarifiers, and sumps) were identified during the performance of the geophysical survey.

- SALEM installed eight soil borings (SV-1 through SV-6, SB-7, and SB-8) to depths ranging from 10 to 15 feet bgs. Borings SV-1 through SV-6 were converted to dual-completion soil vapor sample points with probes at 5 and 10 feet bgs. Borings SV-1, SV-3, and SV-6 were located near the former and suspect septic tank locations; SV-2 and SB-7 were located near the former UST pit in the southwest portion of the subject property; SV-4 and SV-5 were located near the former diesel and propane AST locations, respectively; and SB-8 was located adjacent to a ring of traffic bollards historically associated with the fire suppression system in the south portion of the subject property.

- Generally, soil types consisted of light brown, well sorted, medium- to fine-grained sand (SP) sand to approximately 10 feet bgs, underlain by brown silt with sparse very fine-grained sand (ML) to the maximum depth drilled of 15 feet bgs. Drilling refusal was met at a depth of 7 feet bgs at location SB-8 near the fire suppression equipment in the south portion of the subject property. A subsurface manmade feature is the suspected cause; however, due to the absence of apparent contamination the area was not investigated further.

- Total petroleum hydrocarbons (TPH) were identified above laboratory method detection limits in 16 of the 18 soil samples analyzed. TPH as diesel (TPHd, carbon range C10-C24) was identified at concentrations ranging from 6.6 milligrams per kilogram (mg/kg) to 24 mg/kg. Additional TPH detected was consistent with mostly oil range hydrocarbons (TPHo) at concentrations ranging from 5.8 mg/kg to 360 mg/kg. TPH concentrations were below their respective established San Francisco Regional Water Quality Control Board (RWQCB-SF) Commercial/Industrial Environmental Screening Levels (ESLs) set at 260 mg/kg for TPHd and 1,600 mg/kg for TPHo.

- Volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs) were not identified above laboratory method detection limits in any of the soil samples analyzed. Data suggests that VOCs and PCBs are not constituents of potential concern (COPCs) in soil at the subject property.

- Semi-volatile organic compounds (SVOCs) detected in the composite soil samples collected from the soil stockpile located in the south portion of the subject property consisted of benzo(a)anthracene (0.41 to 0.49 mg/kg), chrysene (0.38 mg/kg), fluoranthene (0.49 mg/kg), phenanthrene (0.57 mg/kg), and pyrene (1.3 mg/kg). All detected concentrations of SVOCs were below their respective RWQCB-SF Commercial/Industrial ESLs.

- Arsenic was detected in soil samples collected at 5 feet bgs in SV-4 (11 mg/kg), SB-7 (14 mg/kg), and SB-8 (45 mg/kg). These values exceed the RWQCB-SF Commercial/Industrial ESL set at 0.31 mg/kg for cancer risk and appear to be slightly elevated in comparison to arsenic concentrations in Fresno County (1.8 to 6.0 mg/kg) and to regional arsenic concentrations in the San Joaquin Valley (Wilson, et al, 1990) that range from 0.8 to 20 mg/kg.

- Additional Title 22 metals detected included barium, cobalt, chromium, copper, nickel, lead, vanadium, and zinc at concentrations below their respective established RWQCB-SF Commercial/Industrial ESLs. No other Title 22/CAM 17 metals were detected above laboratory detection limits.

- VOCs were not identified above laboratory method detection limits in any of the soil vapor samples.

Based on these results, SALEM believes that no additional assessment activities are required. The subject property is suitable for unrestricted use and no engineering controls (i.e. VOC vapor barrier) are required. In the event the subject property will undergo any redevelopment which would include soil disturbance, SALEM recommends that a Soil Management Plan (SMP) be prepared to address soil management procedures that may arise based on historical use of the subject property and the known TPH and arsenic impacts.

2.0 INTRODUCTION AND PROJECT OBJECTIVES

SALEM conducted a Phase II ESA on behalf of Scannell Properties to investigate the Former California Compress Facility property located at 2740 West Nielson Avenue in Fresno, California (subject property – see Figure 1). The investigation was performed in accordance with SALEM's Proposal No. P1-420-1899 dated December 15, 2020.

The subject property comprises an approximately 44.95-acre rectangular-shaped subject property that consists of two parcels (Fresno County APNs 458-020-71 and 458-020-72), at 2740 West Nielsen Avenue, located on the north side of West Nielsen Avenue between North Marks Avenue and South Hughes Avenue in Fresno, California.

SALEM's January 29, 2021 Phase I ESA identified the following evidence of RECs in connection with the subject property as defined by ASTM E1527-13:

- At least three known septic systems were associated with the former structures on the subject property, two of which were visually identified during SALEM's November 19, 2020 site reconnaissance as remaining at the subject property. The former septic systems may have acted as a conduit for contaminants to enter on-site soil from potential past unauthorized disposal of hazardous substances and/or petroleum products utilized for vehicle maintenance into drains, sinks and toilets. SALEM recommended conducting an LSA in the vicinity of the septic systems to determine if on-site soils have been impacted by unauthorized releases of the COPCs into the septic systems.

- Historic operations at the subject property included the handling and storage of cotton which required an extensive fire suppression system. Two water basins were historically located in the southern portion of the subject property. SALEM personnel located more than 25 features across the subject property indicative of a fire suppression system including stand pipes, traffic bollards, and fire hydrants. The system reportedly included diesel-powered water pumps supplied from an AST historically located in the south-central portion of the subject property. The former diesel AST location was identifiable by concrete footings and a fire extinguisher. Additional concrete footings indicative of propane ASTs were observed in the north-central portion of the subject property. No staining or signs of leakage were observed in the vicinity of the former ASTs. However, SALEM recommended conducting an LSA to assess on-site shallow soils for potential petroleum hydrocarbon impacts in the vicinity of the former diesel AST.

- A soil mound was observed in the southern portion of the subject property and was reported to have been excavation dirt and asphalt produced when the floor of a warehouse was switched from asphalt to concrete to accommodate heavy machinery. No obvious visual evidence of hazardous substances and/or petroleum products or staining was observed on the surface of the stockpile. Based upon the absence of documentation regarding the source of the stockpiled soil, SALEM recommended collecting samples of the stockpiled soil in order to determine if the soil had been impacted by constituents of concern prior to either transporting the soil off-site for disposal or utilizing the soil on-site as clean-fill if needed during the redevelopment of the subject property.

The following HREC was identified:

- The former California Compress facility operated four USTs consisting of a 10,000-gallon fuel oil UST historically located on what is now the north adjacent property; a 4,000-gallon double-walled steel diesel UST; a 4,000-gallon single-walled steel diesel UST; and a 1,000-gallon single-walled steel regular unleaded gasoline UST historically located in the southwest portion of the subject property. Records indicate all USTs were properly permitted and removed under the regulatory agency oversight of FCEHD. A record of a "Hazardous Material Release" was recorded on June 5, 1995 indicating soil contamination from petroleum products discovered during removal of a UST. RWQCB records indicate that FCEHD issued a "case closed" designation for the California Compress LUST site on July 3, 1996.

SALEM recommended conducting a Phase II ESA to determine if the subject property has been negatively impacted by the historical facility operations, if soil vapor conditions pose a potential vapor intrusion risk to future occupants at the subject property, and to evaluate potential construction concerns (vapor barrier engineering, design, and installation and off-haul of potentially-contaminated soils) associated with the redevelopment process. In addition, SALEM recommended conducting a geophysical survey at the subject property to confirm the presence or absence of sub-grade structures of environmental concern, including the USTs associated with the former site operations.

3.0 SCOPE OF WORK

The Phase II ESA scope of services included the following:

- Coordination of pre-field activities including procurement of any necessary permits, evaluation of groundwater data, and access permission;
- Development of a site-specific Health and Safety Plan (HSP);
- Performance of private subsurface utility screening;
- Advancement of eight soil borings (SV-1 through SV-6, SB-7, and SB-8) to depths ranging from 10 to 15 feet bgs, with the collection of soil samples at 5-foot intervals from each boring;
- Installation of vapor probes at depths of 5 and 10 feet bgs in borings SV-1 through SV-6;
- Collection of twelve primary and one duplicate soil vapor sample;
- Analytical testing of soil and soil vapor; and
- Preparation of a report that documents field activities, analytical results, and summarizes the findings.

3.1 Pre Field Activities

3.1.1 Site Safety

SALEM completed a Site HSP for the work proposed at the subject property. A copy of the HSP was kept on-site during field activities. The HSP detailed the work to be performed, safety precautions, emergency response procedures, nearest hospital information, hospital route maps, emergency contact numbers, and onsite personnel responsible for managing emergency situations (intended to protect on-site workers and the public).

3.1.2 Permits

Permits for the soil borings were not required for this scope of work.

3.1.3 Utility Clearance and Geophysical Survey

The proposed soil boring locations were marked with white paint and Underground Service Alert (USA) was notified at least 48 hours before beginning field activities. USA notified its subscribed members, requesting them to mark their underground utility locations near marked boring locations as required by California State law.

On January 4, 2021 SALEM utilized GPRS of Modesto, California to conduct a private utility survey and locate potential buried fuel USTs of 500-gallon capacity or greater and associated appurtenances, or a backfilled UST cavity, as well as other sub-grade structures of environmental concern (hoists, clarifiers, and sumps). GPRS employed electromagnetic magnetic induction (EMI) and ground penetrating radar (GPR) investigation methods. The surface trace of detected features was marked on the ground with spray paint.

4.0 SOIL AND SOIL VAPOR INVESTIGATION METHODOLOGY

Field work for the soil sampling, nested vapor well installation, and soil vapor sampling was performed on January 7-8, 2021. Soil boring and vapor probe locations are shown on Figure 2.

Before arriving at the subject property, the drill rig, tools, and accessories were thoroughly decontaminated with a steam cleaner. Downhole drilling tools and sampling equipment, such as bits, rods, and sample barrels were manually washed/rinsed, pressure washed, and/or steam cleaned between borings and sample intervals at the designated decontamination area.

4.1 Soil Sampling and Soil Vapor Probe Installation Procedures

SALEM installed eight soil borings to depths ranging from 10 to 15 feet bgs depending on the feature being investigated. Borings SV-1, SV-3, and SV-6 were located near the former and suspect septic tank locations; SV-2 and SB-7 were located near the former UST pit in the southwest portion of the subject property; SV-4 and SV-5 were located near the former diesel and propane AST locations, respectively; and SB-8 was located adjacent to a ring of traffic bollards historically associated with the fire suppression system in the south portion of the subject property. The borings were advanced using an AMS Powerprobe™ direct-push rig operated by TEG of Northern California of Rancho Cordova, California. A 4-foot long Long-Bore Soil Sampler, lined with acetate sleeves, was attached to the bottom of the drive rod. Soil samples were continuously collected at each boring location and retained at 5-foot intervals for laboratory analysis. At each sample interval, the sampler was retrieved, and the acetate sleeve was removed. A portion of the acetate sleeve was cut away from the soil core, capped with Teflon sheets and rubber end caps, and labelled with the sample name, sample date and time, and sampler's initials. The samples were recorded on a chain-of-custody document, sealed in a zip-lock bag, and placed in cold storage pending submittal to Sierra Analytical Laboratory of Laguna Hills, California, for chemical analysis. A description of the soil was recorded on field boring logs in general accordance with the Unified Soil Classification System (USCS). Two soil samples from each boring location were analyzed for total petroleum hydrocarbons – carbon range analysis (TPH-CRA), VOCs and fuel oxygenates, and Title 22 metals using EPA Methods 8015B, 8260B, and 6010B/7471A, respectively.

Additionally, eight surface soil samples from the soil and asphalt debris stockpile located near the southern boundary of the subject property were collected and composited into two soil samples (SS-1 and SS-2). Each composite soil sample was analyzed for TPH-CRA, VOCs, Title 22 metals, PCBs, and SVOCs using EPA Methods 8015B, 8260B, 6010B/7471A, 8082A, and 8270C, respectively.

Soil analytical results are summarized in Tables 1 and 2. Laboratory analytical results and chain-of-custody documentation are provided in Appendix A.

Borings SV-1 through SV-6 were converted into dual-completion soil vapor sample points. Nested soil vapor probes were installed at depths of 5 and 10 feet bgs in each soil vapor sample location. A 1/8-inch diameter Nylaflow tube, attached to a sample port, was inserted into the open boring and set approximately 3 inches off the bottom. Number 3 washed aquarium sand was poured into the borehole until the sand extended from approximately 3 inches below and 3 inches above the slotted portion of the tube. Approximately 6 inches of fine bentonite crumble was placed in the hole as an annular seal and hydrated with water. Additional bentonite crumble was alternately placed in the hole and hydrated in intervals, to the ground surface. Each Nylaflow tube was labeled with the sample point identification and sample depth.

4.2 Soil Vapor Sampling

Soil vapor samples were collected from the soil vapor probes on January 7, 2021 by SALEM personnel. Soil vapor sample procedures were completed in accordance with the July 2015 Advisory, Active Soil Gas Investigations, published jointly by the Department of Toxic Substances Control (DTSC), California Environmental Protection Agency (CalEPA), and the Los Angeles and San Francisco Regional Water Quality Control Boards.

4.2.1 Shut-in Testing

Before purging and sampling of the soil vapor probes, a shut-in test was conducted on the sampling train to check for leaks in the above-ground fittings. The shut-in test was conducted by attaching the complete sample train assembly to the termination valve on the soil vapor probe. With the valve attached to the soil vapor probe in the "off" position, a plastic syringe was used to evacuate the sample train of air to a minimum measured vacuum of approximately 100 inches of water. The vacuum was observed using an in-line vacuum gauge which was positioned before the purge point. The vacuum gauge was observed for approximately 1 minute and all above ground connections were considered "air-tight" when the pressure on the gauge did not noticeably dissipate. Sampling did not commence until the above-ground fittings were deemed air-tight.

4.2.2 Leak Testing

Leak testing, using a liquid tracer, was performed on each individual soil vapor probe in order to test the integrity of the entire sampling system. Its purpose was to evaluate whether an adequate seal was established at the soil vapor probe interface with the ground surface, as well as a leak check of all above ground fittings to ensure that the samples collected are not being diluted by ambient air. The leak check compound isopropyl alcohol was used to evaluate sample integrity. The leak check compound was applied to a paper towel and kept in a closed plastic zip closure bag until it was ready to be used.

Before purging and sampling of the soil vapor probe, the zip closure bag was opened and placed directly at the point of entry of the soil vapor probe into the borehole. Additional saturated towels were also placed near the above-ground sample train connections to ensure there were no leaks in the fittings.

4.2.3 Soil Vapor Sample Collection and Analysis

A plastic syringe was used to purge each probe. The syringe was attached to a 3-way valve, which was then connected to the on/off valve on the soil vapor probe. This 3-way valve allows the sample train to be connected to one port on the valve, and the purge equipment to be attached to the other. This ensured that all of the sample train assembly being used for the collection of the sample was upstream of the purging device. Three purge volumes (calculated to include the sand pack, dry bentonite, and vapor tubing volume) were removed from probes that were able to provide a vapor response to ensure that ambient air from the sampling system was removed, and to demonstrate that samples collected were representative of subsurface conditions.

SALEM personnel practiced careful monitoring of purge volumes and flow rates. An air-tight 3-way valve was attached to the syringe that allowed the purge air to be drawn into the system and then evacuated out the syringe's side port. The syringe was attached to an in-line vacuum gauge so that probe vacuum could be monitored as the syringe drew in the purge vapor. The in-line vacuum gauge ensured that probe vacuum pressures were less than 100 inches of water during purging. During purging, the flow rate was timed so that it did not exceed 200 milliliters per minute. Please note that the syringe was used only for purging the soil vapor probes and was not used in the collection of the soil vapor samples.

Soil vapor samples were collected using appropriate gas-tight containers required for the specified analyses. The sample collection assemblies and containers were attached to the soil vapor probe via a 3-way valve before purging the device to avoid cross-contamination. SALEM utilized airtight calibrated Summa

canisters to collect vapor samples from each probe. The Summa canister was attached via a luer lock connection to a 3-way valve, which allowed the sample to be drawn into the canister and then sealed off by rotating the valve. The canister was attached to the 3-way valve connected to the soil vapor probe on/off valve, and before the purging device. After purging of the soil vapor probe was complete, the valve was rotated so that the flow path of the soil vapor probe was diverted to the Summa canister. The valve on the Summa canister was opened slowly to allow the soil vapor to flow into the canister at a rate of 200 milliliters per minute or less. When the Summa canister was full, as indicated by a negative pressure gauge, the valve on the canister was closed and the canister was then disconnected and immediately placed into a storage container to prevent photo-degradation of the target analytes from direct sunlight.

For each sample, the sample name, date, and time of collection, vapor flow information and results of QA/QC inspections were recorded on field data sheets. Sample name, date, and time were recorded on a chain-of-custody document and transferred to the stationary laboratory for analysis.

Upon submittal to H&P's analytical laboratory, the samples were injected into a gas chromatograph/mass spectrometer (GC/MS) and analyzed for VOCs and fuel oxygenates using EPA Method 8260SV. Gasoline fuel additives, and solvents that may have been utilized during auto servicing operations, contain VOCs.

Laboratory analytical results for soil vapor samples are summarized in Table 3. Laboratory analytical results and chain-of-custody documentation are provided in Appendix A.

4.2.4 Vapor Probe Abandonment

The soil vapor probe tubing was pulled from each boring after the completion of soil vapor sampling activities. Each location was resurfaced to match existing grade.

5.0 FINDINGS

5.1 Geology and Hydrogeology

The subject property is located within the San Joaquin Valley. The San Joaquin Valley, which includes the Fresno area, is a topographic and structural basin that is bounded on the east by the Sierra Nevada and on the west by the Coast Ranges. The Sierra Nevada, a fault block dipping gently southwestward, is composed of igneous and metamorphic rocks of pre-Tertiary age that form the basement complex beneath the San Joaquin Valley. The Coast Ranges contain folded and faulted sedimentary rocks of Mesozoic and Cenozoic age, which are similar to those rocks that underlie the Valley at depth and non-conformably overlie the basement complex; gently dipping to nearly horizontal sedimentary rocks of Tertiary and Quaternary age overlie the older rocks. These younger rocks are mostly of continental origin and in the Fresno area they were derived from the Sierra Nevada. The Coast Ranges evolved as a result of folding, faulting and accretion of diverse geologic terrains. They are broken by numerous faults, the San Andreas Fault being the most notable feature.

The San Joaquin Valley represents the southern portion of the Central Valley of California, also referred to as the Great Valley geomorphic province. The most extensive geomorphic units in the province include dissected uplands, low alluvial plains and fans, river floodplains and channels, and overflow lands and lake bottoms. The valley represents the alluvial, flood, and delta plains of two major rivers (the Sacramento and San Joaquin rivers) and their tributaries. The high alluvial fans are the largest geomorphic features in the Fresno area. These fans lie from 10 to 90 feet above the channels of the present day rivers and are not subject to inundation by the rivers. The Merced area alluvial fans form part of a continuum of fans along the eastern margin of the San Joaquin Valley structural trough. The sediments are derived from the Sierra

Nevada to the east — most of the sediment is of probable glacial origin. The east side fans are formed by meandering or braided stream floodplain processes that contain more well-sorted, fine-grained material and have gentler slopes than the semiarid fans on the west side of the San Joaquin Valley. The east side fans have low relief with very gentle gradients.

According to RWQCB records for the Fresno Drum, Eastern Parcel facility, located at 733 South Hughes Avenue, approximately 0.65-mile south of the subject property, groundwater in the vicinity of the subject property was reported at a depth of approximately 65 to 80 feet bgs with a general direction of flow toward the northeast. However, local groundwater level and flow direction may vary due to seasonal fluctuations in precipitation, usage demands, geology, and/or surface topography.

5.2 Field Observations

At the time of SALEM's January 2021 Phase II ESA, the subject property observed to be vacant land mostly covered in asphalt and concrete with areas of grass and remnants of former landscaping.

Exposed surface soils did not exhibit obvious signs of discoloration at the subject property. No additional obvious evidence (fill pipes, dispensers, etc.) of USTs was noted within the area observed. No standing water or major depressions were observed on the subject property. Two areas exhibited patched/cut concrete and asphalt.

The geophysical survey conducted on January 4, 2021 identified the suspected former UST pit. The pit displayed a different soil density compared to the surrounding areas and the surface area of this location displayed patched/cut concrete and asphalt. Additionally, two of the three suspected septic systems were positively identified. No other anomalies indicative of potential buried fuel USTs and associated appurtenances, additional backfilled UST cavities, or other sub-grade structures of environmental concern (hoists, clarifiers, and sumps) were identified during the performance of the geophysical survey.

Soil boring locations are shown on Figure 2. Generally, soil types consisted of light brown, well sorted, medium- to fine-grained sand (SP) to approximately 10 feet bgs, underlain by brown silt with sparse very fine-grained sand (ML) to the maximum depth drilled of 15 feet bgs. Drilling refusal was met at a depth of 7 feet bgs at location SB-8 near the fire suppression equipment in the south portion of the subject property, a subsurface manmade feature is the suspected cause; however, due to the absence of apparent contamination the area was not investigated further.

5.3 Analytical Results

Soil analytical results are summarized in Tables 1 and 2, and soil vapor analytical results are summarized in Table 3. Copies of the laboratory reports and chain-of-custody documentation are included in Appendix A.

5.3.1 Soil Analytical Results

Laboratory analytical results for soil were as follows:

- TPH was identified above laboratory method detection limits as diesel (TPHd, carbon range C10-C24) at concentrations ranging from 6.6 mg/kg to 24 mg/kg. Additional TPH detected was consistent with mostly oil range hydrocarbons (TPHo) at concentrations ranging from 5.8 mg/kg to 360 mg/kg.
- PCBs were not identified above laboratory method detection limits in the analyzed soil samples.
- VOCs were not identified above laboratory method detection limits in the analyzed soil samples.
- SVOCs detected included: benzo(a)anthracene at concentrations ranging from 0.41 to 0.49 mg/kg; chrysene at concentrations ranging from below laboratory detection limits (0.33 mg/kg) to 0.38

mg/kg; fluoranthene at concentrations ranging from below laboratory detection limits (0.33 mg/kg) to 0.49 mg/kg; phenanthrene at concentrations ranging from below laboratory detection limits (0.33 mg/kg) to 0.57 mg/kg; and pyrene at concentrations ranging from below laboratory detection limits (0.33 mg/kg) to 1.3 mg/kg.

- Title 22/CAM 17 metals detected included: arsenic at concentrations ranging from below laboratory detection limits (4.0 mg/kg) to 45 mg/kg; barium at concentrations ranging from 22 to 110 mg/kg; cobalt at concentrations ranging from 2.2 to 13 mg/kg; chromium at concentrations ranging from 5.3 to 36 mg/kg; copper at concentrations ranging from below laboratory detection limits (9.0 mg/kg) to 120 mg/kg; nickel at concentrations ranging from 5.8 to 42 mg/kg; lead at concentrations ranging from below laboratory detection limits (3.1 mg/kg) to 12 mg/kg; vanadium at concentrations ranging from 8.4 to 38 mg/kg; and zinc at concentrations ranging from 9.3 to 38 mg/kg.

5.3.2 Soil Vapor Analytical Results

Laboratory analytical results for soil vapor were as follows:

- VOCs were not identified above laboratory method detection limits in soil vapor samples.
- The sampling tracer compound isopropyl alcohol was not detected above laboratory method detection limits in any of the samples.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The following data summary is based on a review of field and laboratory data obtained during SALEM's January 7 and 8, 2020 investigation at the subject property:

- According to RWQCB records for the Fresno Drum, Eastern Parcel facility, located at 733 South Hughes Avenue, approximately 0.65-mile south of the subject property, groundwater in the vicinity of the subject property was reported at a depth of approximately 65 to 80 feet bgs with a general direction of flow toward the northeast. However, local groundwater level and flow direction may vary due to seasonal fluctuations in precipitation, usage demands, geology, and/or surface topography. Groundwater was not encountered during the course of this investigation.

- A geophysical survey was conducted on January 4, 2021 which identified the suspected former UST pit. The pit displayed a different soil density compared to the surrounding areas and the surface area of this location displayed patched/cut concrete and asphalt. Additionally, two of the three suspected septic systems were positively identified. No other anomalies indicative of potential buried fuel USTs and associated appurtenances, additional backfilled UST cavities, or other sub-grade structures of environmental concern (hoists, clarifiers, and sumps) were identified during the performance of the geophysical survey.

- SALEM installed eight soil borings (SV-1 through SV-6, SB-7, and SB-8) to depths ranging from 10 to 15 feet bgs. Borings SV-1 through SV-6 were completed converted to dual-completion soil vapor sample points with probes at 5 and 10 feet bgs. Borings SV-1, SV-3, and SV-6 were located near the former and suspect septic tank locations; SV-2 and SB-7 were located near the former UST pit in the southwest portion of the subject property; SV-4 and SV-5 were located near the former diesel and propane AST locations, respectively; and SB-8 was located adjacent to a ring of traffic bollards historically associated with the fire suppression system in the south portion of the subject property.

- Generally, soil types consisted of light brown, well sorted, medium- to fine-grained sand (SP), to approximately 10 feet bgs, underlain by brown silt with sparse very fine-grained sand (ML) to the maximum depth drilled of 15 feet bgs. Drilling refusal was met at a depth of 7 feet bgs at location SB-8 near the fire suppression equipment in the south portion of the subject property, a subsurface manmade feature is the suspected cause; however, due to the absence of apparent contamination the area was not investigated further.

- TPH was identified above laboratory method detection limits in 16 of the 18 soil samples analyzed. TPH as diesel (TPHd, carbon range C10-C24) was identified at concentrations ranging from 6.6 mg/kg to 24 mg/kg. Additional TPH detected was consistent with mostly oil range hydrocarbons (TPHo) at concentrations ranging from 5.8 mg/kg to 360 mg/kg. TPH concentrations were below their respective established RWQCB-SF Commercial/Industrial ESLs set at 260 mg/kg for TPHd and 1,600 mg/kg for TPHo.

- VOCs and PCBs were not identified above laboratory method detection limits in any of the soil samples analyzed. Data suggests that VOCs and PCBs are not COPCs in soil at the subject property.

- SVOCs detected in the composite soil samples collected from the soil stockpile located in the south portion of the subject property consisted of benzo(a)anthracene (0.41 to 0.49 mg/kg), chrysene (0.38 mg/kg), fluoranthene (0.49 mg/kg), phenanthrene (0.57 mg/kg), and pyrene 1.3 mg/kg). All detected concentrations of SVOCs were below their respective RWQCB-SF Commercial/Industrial ESLs.

- Arsenic was detected in soil samples collected at 5 feet bgs at SV-4 (11 mg/kg), SB-7 (14 mg/kg), and SB-8 (45 mg/kg). These values exceed the RWQCB-SF Commercial/Industrial ESL set at 0.31 mg/kg for cancer risk and appear to be slightly elevated in comparison to arsenic concentrations in Fresno County (1.8 to 6.0 mg/kg) and to regional arsenic concentrations in the San Joaquin Valley (Wilson, et al, 1990) that range from 0.8 to 20 mg/kg.

- Additional Title 22 metals detected included barium, cobalt, chromium, copper, nickel, lead, vanadium, and zinc at concentrations below their respective established RWQCB-SF Commercial/Industrial ESLs. No other Title 22/CAM 17 metals were detected above laboratory detection limits.

- VOCs were not identified above laboratory method detection limits in any of the soil vapor samples.

Based on these results, SALEM believes that no additional assessment activities are required. The subject property is suitable for unrestricted use and no engineering controls (i.e. VOC vapor barrier) are required. In the event the subject property will undergo any redevelopment which would include soil disturbance, SALEM recommends that an SMP be prepared to address soil management procedures that may arise based on historical use of the subject property and the known TPH and arsenic impacts.

7.0 LIMITATIONS

This Phase II ESA Report has been prepared for the exclusive use of Scannell Properties and its affiliates. Unauthorized use of or reliance on the information contained in this report, unless given express written consent by SALEM, is strictly prohibited.

The purpose of an environmental site assessment is to reasonably evaluate the potential for adverse impact from past practices at a given property or neighboring properties. In performing an environmental site assessment, it is understood that a balance must be struck between a reasonable inquiry into the environmental issues and an exhaustive analysis of each conceivable issue of potential concern. The professional opinions in this report are based in part on the interpretation of data from discrete sampling locations that may not represent conditions at locations not sampled.

The property owners are solely responsible for notifying all governmental agencies and the public of the existence, release, or disposal of any hazardous materials/wastes or petroleum products at the subject property, whether before, during, or after the performance of SALEM's services. SALEM assumes neither responsibility nor liability for any claim, loss of property value, damage, or injury which results from hazardous materials, wastes or petroleum products being present or encountered at a given site.

8.0 REFERENCES

The following list summarizes the references utilized in preparing this report:

- Department of Toxic Substances Control and Regional Water Quality Control Board, *Soil Gas Advisory*, July 2015.
- California Regional Water Quality Control Board, *Environmental Screening Levels Table*, January 2019.
- SALEM Engineering Group, Inc., *Phase I Environmental Site Assessment, Former California Compress Facility, 2740 West Nielson Avenue, Fresno, California*, January 29, 2021.
- USEPA Region 9, November 2020. *Regional Screening Levels (RSL) Summary Table*.
- Wilson, S.A., Kennedy, K.A., Gent, C.A., Briggs, P.H., Tidball, R.R., and McNeal, J.M., 1990, *Analysis of Soil Samples From the San Joaquin Valley of California, US Geological Survey Open File Report 90-214*.

If you have any questions, or if we can be of further assistance, please do not hesitate to contact our office at (559) 271-9700.

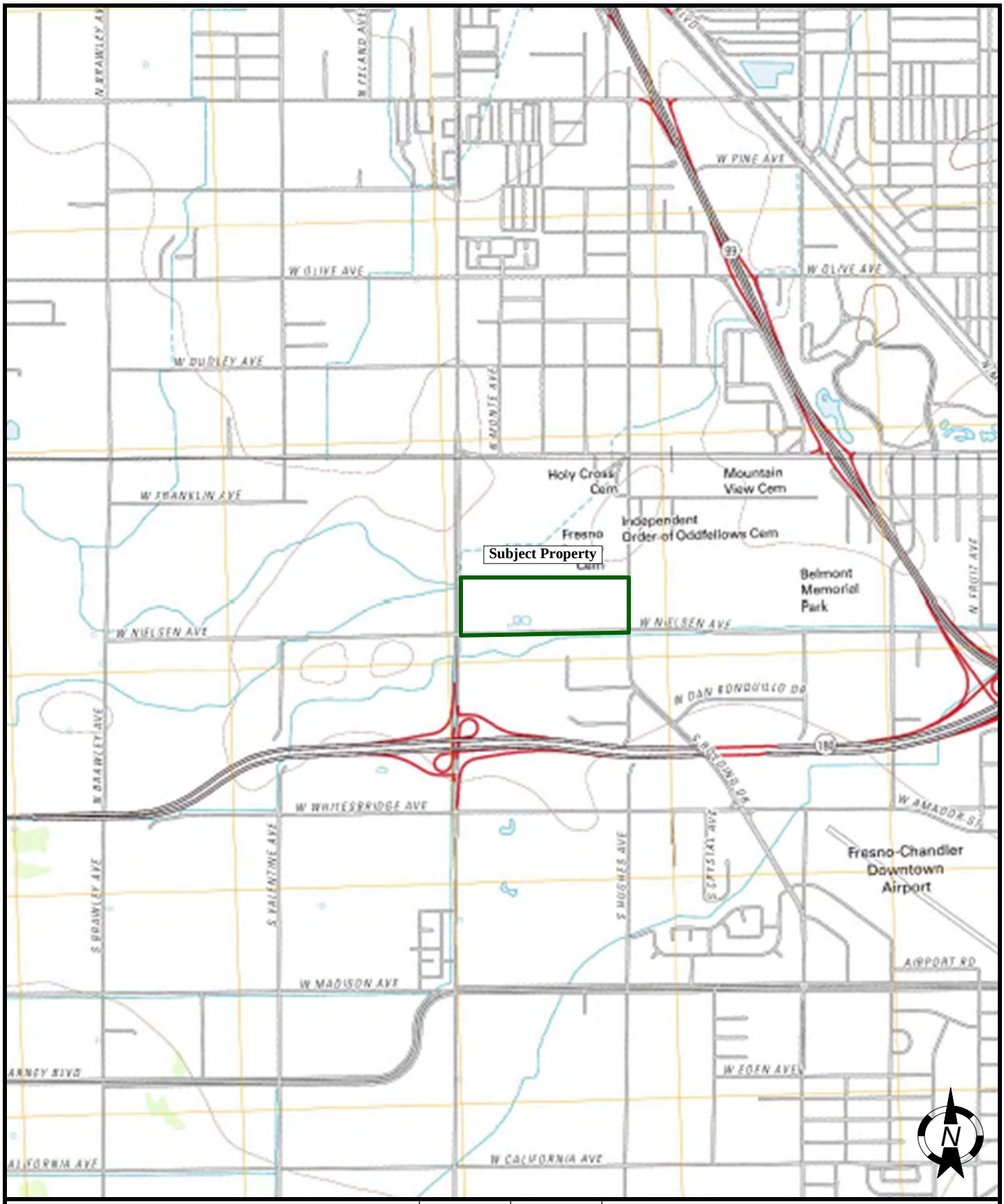
Respectfully submitted,

SALEM Engineering Group, Inc.

Shannon Lodge, PG, QSD
Senior Project Manager

James S. Robert, L.G., L.H.G.
Senior Hydrogeologist

Figures



SITE LOCATION

FORMER CALIFORNIA COMPRESS FACILITY
2740 WEST NIELSEN AVENUE
FRESNO, CALIFORNIA

SALEM engineering group, inc.

SITE MAP WITH SAMPLE LOCATIONS	SCALE: NTS	DATE: fEB. 2021
FORMER CALIFORNIA COMPRESS FACILITY 2740 WEST NIELSEN AVENUE FRESNO, CALIFORNIA	DRAWN BY: BR	APPROVED BY: SL
	PROJECT NO.: 1-420-1016	FIGURE NO.: 2

SALEM engineering group, inc.

Tables

TABLE 1
SOIL DATA, TPH-CRA AND VOCS
Former California Compress Facility
2740 West Nielson Avenue

Soil Sampling Date	Soil Sample Identification	TPH-CRA by EPA Method 8015B (mg/kg)	PCBs by EPA Method 8015B (mg/kg)	VOCs by EPA Method 8260B (µg/kg)	Benzo (a) anthracene by EPA Method 8270C (mg/kg)	Chrysene by EPA Method 8270C (mg/kg)	Fluoranthene by EPA Method 8270C (mg/kg)	Phenanthrene by EPA Method 8270C (mg/kg)	Pyrene by EPA Method 8270C (mg/kg)	SVOCs* by EPA Method 8270C (mg/kg)
CRWQCB Commercial/Industrial Environmental Screening Level		Diesel Fuel 260 mg/kg; Motor Oil 1,600 mg/kg	Varies	Varies	200 mg/kg	2,100 mg/kg	30,000 mg/kg	NE	23,000	Varies
1/7/2021	SS-1	9.8; 360	ND (0.050)	ND (5.0)	0.41	0.38	0.49	0.57	1.3	ND (5.0)
1/7/2021	SS-2	8.1; 78	ND (0.050)	ND (5.0)	0.49	ND (0.33)	ND (0.33)	ND (0.33)	ND (0.33)	ND (5.0)
1/7/2021	SV-1 @5'	24; 38	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/7/2021	SV-1 @15'	ND (5.0)	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SV-2 @10'	9.5; 10	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SV-2 @15'	ND (5.0)	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SV-3 @5'	7.6; 5.8	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SV-3 @15'	7.4; 6.6	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SV-4 @5'	8.2; 6.2	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SV-4 @10'	6.6; ND (5.0)	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SV-5 @5'	10; 8.9	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SV-5 @10'	8.6; ND (5.0)	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SV-6 @5'	10; 8.6	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SV-6 @15'	19; 16	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SB-7 @5'	11; 6.2	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SB-7 @10'	13; 12	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SB-8 @410'	6.6; 11	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)
1/8/2021	SB-8 @7'	7.7; ND (5.0)	NA	ND (5.0)	NA	NA	NA	NA	NA	ND (5.0)

@#' = depth of sample collection in feet below ground surface
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
NE = Not established
ND = not identified above stated method detection limit
TPH-CRA = Total Petroleum Hydrocarbons - Carbon Range Analysis
; = reported as: Diesel Range Organics; TPH
PCBs = Polychlorinated Biphenyls
VOCs = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
* = all other SVOCs not otherwise listed
RWQCB-SF = San Francisco Regional Water Quality Control Board
ESL = Environmental Screening Level

TABLE 2
SOIL DATA, TITLE 22 METALS*
Former California Compress Facility
2740 West Nielson Avenue
Fresno, California

Date Sampled	Sample Collection Point	Arsenic (mg/kg)	Barium (mg/kg)	Cobalt (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Lead (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
1/7/2021	SS-1	ND (4.0)	52	5.2	12	120	12	12	19	39
1/7/2021	SS-2	ND (4.0)	53	4.7	13	14	15	7.7	18	29
1/7/2021	SV-1 @5'	ND (4.0)	22	2.3	6.1	ND (9.0)	5.8	ND (3.1)	8.7	9.9
1/7/2021	SV-1 @10'	ND (4.0)	82	8.2	21	16	26	ND (3.1)	27	29
1/8/2021	SV-2 @10'	ND (4.0)	36	3.6	9.0	ND (9.0)	12	ND (3.1)	13	12
1/8/2021	SV-2 @15'	ND (4.0)	78	7.2	16	16	10	4.3	32	29
1/8/2021	SV-3 @5'	ND (4.0)	24	2.2	5.3	ND (9.0)	5.6	ND (3.1)	8.4	9.3
1/8/2021	SV-3 @15'	ND (4.0)	29	2.8	6.5	ND (9.0)	5.1	ND (3.1)	14	11
1/8/2021	SV-4 @5'	**11**	25	2.4	6.4	ND (9.0)	6.0	ND (3.1)	9.7	9.3
1/8/2021	SV-4 @10'	ND (4.0)	110	11	21	16	23	ND (3.1)	33	35
1/8/2021	SV-5 @5'	ND (4.0)	43	4.9	12	ND (9.0)	14	ND (3.1)	16	17
1/8/2021	SV-5 @10'	ND (4.0)	110	11	31	20	35	ND (3.1)	38	37
1/8/2021	SV-6 @5'	ND (4.0)	78	8.2	23	15	18	ND (3.1)	31	30
1/8/2021	SV-6 @15'	ND (4.0)	32	3.3	10	ND (9.0)	9.2	ND (3.1)	17	13
1/8/2021	SB-7 @5'	**14**	33	3.2	8.4	ND (9.0)	10	ND (3.1)	10	13
1/8/2021	SB-7 @10'	ND (4.0)	84	9.6	24	16	32	ND (3.1)	28	30
1/8/2021	SB-8 @5'	**45**	100	8.8	22	14	24	3.9	31	39
1/8/2021	SB-8 @7'	ND (4.0)	100	13	36	19	42	ND (3.1)	37	38
RWQCB-SF Commercial/Industrial ESL:		0.31	220,000	350	1,800,000	47,000	11,000	320	5,800	350,000

* = metals not listed were ND
@#' = depth of sample collection in feet below ground surface
mg/kg = milligrams per kilogram
ND = not detected above analytical method detection limit
(#) = analytical method detection limit
BOLD = concentration exceeds ESL
RWQCB-SF = San Francisco Regional Water Quality Control Board
ESL = Environmental Screening Level

TABLE 3

SOIL VAPOR QUALITY DATA

Former California Compress Facility

2740 West Nielson Avenue

Fresno, California

Date Sampled	Sample Collection Point	Volatile Organic Compounds
1/7/21	SV-1 @5'	ND
1/7/21	SV-1 @10'	ND
1/7/21	SV-2 @5'	ND
1/7/21	SV-2 @10' DUP	ND
1/7/21	SV-2 @10' DUP	ND
1/7/21	SV-3 @5'	ND
1/7/21	SV-3 @10'	ND
1/7/21	SV-4 @5'	ND
1/7/21	SV-4 @10'	ND
1/7/21	SV-5 @5'	ND
1/7/21	SV-5 @10'	ND
1/7/21	SV-6 @5'	ND
1/7/21	SV-6 @10'	ND
RWQCB-SF Commercial/Industrial Soil Vapor ESL		Varies

All samples analyzed by EPA Method 8260SV by gas chromatograph/mass spectrometer

µg/L = micrograms per liter air

ND = not detected above analytical method detection limit

DUP = duplicate sample

RWQCB-SF = San Francisco Regional Water Quality Control Board

ESL= Environmental Screening Level

APPENDIX

A

22 January 2021

Shannon Lodge
SALEM Engineering Group - Fresno
4729 West Jacquelyn Avenue
Fresno, CA 93722

RE:Former Fresno Compress

Work Order No.: 2101114

Attached are the results of the analyses for samples received by the laboratory on 01/11/21 10:30.

The samples were received by Sierra Analytical Labs, Inc. with a chain of custody record attached or completed at the submittal of the samples.

The analyses were performed according to the prescribed method as outlined by EPA, Standard Methods, and A.S.T.M.

The remaining portions of the samples will be disposed of within 30 days from the date of this report.
If you require any additional retaining time, please advise us.

Sincerely,

Richard K. Forsyth

Laboratory Director

Sierra Analytical Labs, Inc. is certified by the California Department of Health Services (DOHS),
Environmental Laboratory Accredidation Program (ELAP) No. 2320.

SIERRA ANALYTICAL

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-1	2101114-01	Soil	01/07/21 10:45	01/11/21 10:30
SS-2	2101114-02	Soil	01/07/21 10:50	01/11/21 10:30
SV-1@5	2101114-03	Soil	01/07/21 08:25	01/11/21 10:30
SV-1@10	2101114-04	Soil	01/07/21 08:40	01/11/21 10:30
SV-2@10	2101114-05	Soil	01/08/21 08:15	01/11/21 10:30
SV-2@15	2101114-06	Soil	01/08/21 08:20	01/11/21 10:30
SV-3@5	2101114-07	Soil	01/08/21 08:55	01/11/21 10:30
SV-3@10	2101114-08	Soil	01/08/21 09:00	01/11/21 10:30
SV-4@5	2101114-09	Soil	01/08/21 09:15	01/11/21 10:30
SV-4@10	2101114-10	Soil	01/08/21 09:20	01/11/21 10:30
SV-5@5'	2101114-11	Soil	01/08/21 09:35	01/11/21 10:30
SV-5@10'	2101114-12	Soil	01/08/21 09:40	01/11/21 10:30
SV-6@5'	2101114-13	Soil	01/08/21 10:00	01/11/21 10:30
SV-6@15'	2101114-14	Soil	01/08/21 10:05	01/11/21 10:30
SV-7@5'	2101114-15	Soil	01/08/21 08:30	01/11/21 10:30
SV-7@10'	2101114-16	Soil	01/08/21 08:35	01/11/21 10:30
SV-8@4'	2101114-17	Soil	01/08/21 10:20	01/11/21 10:30
SV-8@7'	2101114-18	Soil	01/08/21 10:25	01/11/21 10:30

CASE NARRATIVE

SAMPLE RECEIPT:	Samples were received intact, at 6 °C, and accompanied by chain of custody documentation.
PRESERVATION:	Samples requiring preservation were verified prior to sample preparation and analysis.
HOLDING TIMES:	All holding times were met, unless otherwise noted in the report with data qualifiers.
QA/QC CRITERIA:	All quality objective criteria were met, except as noted in the report with data qualifiers.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS-1 (2101114-01) Soil Sampled: 01/07/21 10:45 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**52**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**5.2**	0.80	"	"	"	"	"	"	
Chromium	**12**	1.2	"	"	"	"	"	"	
Copper	**120**	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**12**	3.4	"	"	"	"	"	"	
Lead	**12**	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**19**	3.9	"	"	"	"	"	"	
Zinc	**39**	2.0	"	"	"	"	"	"	
SS-2 (2101114-02) Soil Sampled: 01/07/21 10:50 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**53**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**4.7**	0.80	"	"	"	"	"	"	
Chromium	**13**	1.2	"	"	"	"	"	"	
Copper	**14**	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**15**	3.4	"	"	"	"	"	"	
Lead	**7.7**	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**18**	3.9	"	"	"	"	"	"	
Zinc	**29**	2.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-1@5 (2101114-03) Soil Sampled: 01/07/21 08:25 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**22**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**2.3**	0.80	"	"	"	"	"	"	
Chromium	**6.1**	1.2	"	"	"	"	"	"	
Copper	ND	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**5.8**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**8.7**	3.9	"	"	"	"	"	"	
Zinc	**9.9**	2.0	"	"	"	"	"	"	
SV-1@10 (2101114-04) Soil Sampled: 01/07/21 08:40 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**82**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**8.2**	0.80	"	"	"	"	"	"	
Chromium	**21**	1.2	"	"	"	"	"	"	
Copper	**16**	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**26**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**27**	3.9	"	"	"	"	"	"	
Zinc	**29**	2.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-2@10 (2101114-05) Soil Sampled: 01/08/21 08:15 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**36**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**3.6**	0.80	"	"	"	"	"	"	
Chromium	**9.0**	1.2	"	"	"	"	"	"	
Copper	ND	9.0	"	"	"	"	"	"	
Mercury	ND	0.20	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**12**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**13**	3.9	"	"	"	"	"	"	
Zinc	**12**	2.0	"	"	"	"	"	"	
SV-2@15 (2101114-06) Soil Sampled: 01/08/21 08:20 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**78**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**7.2**	0.80	"	"	"	"	"	"	
Chromium	**16**	1.2	"	"	"	"	"	"	
Copper	**16**	9.0	"	"	"	"	"	"	
Mercury	ND	0.20	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**10**	3.4	"	"	"	"	"	"	
Lead	**4.3**	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**32**	3.9	"	"	"	"	"	"	
Zinc	**29**	2.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-3@5 (2101114-07) Soil Sampled: 01/08/21 08:55 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**24**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**2.2**	0.80	"	"	"	"	"	"	
Chromium	**5.3**	1.2	"	"	"	"	"	"	
Copper	ND	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**5.6**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**8.4**	3.9	"	"	"	"	"	"	
Zinc	**9.3**	2.0	"	"	"	"	"	"	
SV-3@10 (2101114-08) Soil Sampled: 01/08/21 09:00 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**29**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**2.8**	0.80	"	"	"	"	"	"	
Chromium	**6.5**	1.2	"	"	"	"	"	"	
Copper	ND	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**5.1**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**14**	3.9	"	"	"	"	"	"	
Zinc	**11**	2.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-4@5 (2101114-09) Soil Sampled: 01/08/21 09:15 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	**11**	4.0	"	"	"	"	"	"	
Barium	**25**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**2.4**	0.80	"	"	"	"	"	"	
Chromium	**6.4**	1.2	"	"	"	"	"	"	
Copper	ND	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**6.0**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**9.7**	3.9	"	"	"	"	"	"	
Zinc	**9.3**	2.0	"	"	"	"	"	"	
SV-4@10 (2101114-10) Soil Sampled: 01/08/21 09:20 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**110**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**11**	0.80	"	"	"	"	"	"	
Chromium	**21**	1.2	"	"	"	"	"	"	
Copper	**16**	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**23**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**33**	3.9	"	"	"	"	"	"	
Zinc	**35**	2.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-5@5' (2101114-11) Soil Sampled: 01/08/21 09:35 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**43**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**4.9**	0.80	"	"	"	"	"	"	
Chromium	**12**	1.2	"	"	"	"	"	"	
Copper	ND	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**14**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**16**	3.9	"	"	"	"	"	"	
Zinc	**17**	2.0	"	"	"	"	"	"	
SV-5@10' (2101114-12) Soil Sampled: 01/08/21 09:40 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**110**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**11**	0.80	"	"	"	"	"	"	
Chromium	**31**	1.2	"	"	"	"	"	"	
Copper	**20**	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**35**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**38**	3.9	"	"	"	"	"	"	
Zinc	**37**	2.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SIERRA ANALYTICAL

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-6@5' (2101114-13) Soil Sampled: 01/08/21 10:00 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**78**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**8.2**	0.80	"	"	"	"	"	"	
Chromium	**23**	1.2	"	"	"	"	"	"	
Copper	**15**	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**18**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**31**	3.9	"	"	"	"	"	"	
Zinc	**30**	2.0	"	"	"	"	"	"	
SV-6@15' (2101114-14) Soil Sampled: 01/08/21 10:05 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**32**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**3.3**	0.80	"	"	"	"	"	"	
Chromium	**10**	1.2	"	"	"	"	"	"	
Copper	ND	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**9.2**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**17**	3.9	"	"	"	"	"	"	
Zinc	**13**	2.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-7@5' (2101114-15) Soil Sampled: 01/08/21 08:30 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	**14**	4.0	"	"	"	"	"	"	
Barium	**33**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**3.2**	0.80	"	"	"	"	"	"	
Chromium	**8.4**	1.2	"	"	"	"	"	"	
Copper	ND	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**10**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**10**	3.9	"	"	"	"	"	"	
Zinc	**13**	2.0	"	"	"	"	"	"	
SV-7@10' (2101114-16) Soil Sampled: 01/08/21 08:35 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**84**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**9.6**	0.80	"	"	"	"	"	"	
Chromium	**24**	1.2	"	"	"	"	"	"	
Copper	**16**	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**32**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**28**	3.9	"	"	"	"	"	"	
Zinc	**30**	2.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-8@4' (2101114-17) Soil Sampled: 01/08/21 10:20 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	**45**	4.0	"	"	"	"	"	"	
Barium	**100**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**8.8**	0.80	"	"	"	"	"	"	
Chromium	**22**	1.2	"	"	"	"	"	"	
Copper	**14**	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**24**	3.4	"	"	"	"	"	"	
Lead	**3.9**	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**31**	3.9	"	"	"	"	"	"	
Zinc	**39**	2.0	"	"	"	"	"	"	
SV-8@7' (2101114-18) Soil Sampled: 01/08/21 10:25 Received: 01/11/21 10:30									
Silver	ND	1.0	mg/kg	1	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Arsenic	ND	4.0	"	"	"	"	"	"	
Barium	**100**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.2	"	"	"	"	"	"	
Cadmium	ND	1.7	"	"	"	"	"	"	
Cobalt	**13**	0.80	"	"	"	"	"	"	
Chromium	**36**	1.2	"	"	"	"	"	"	
Copper	**19**	9.0	"	"	"	"	"	"	
Mercury	ND	0.23	"	"	B1A1213	01/12/21	01/12/21 14:07	EPA 7471A	
Molybdenum	ND	1.0	"	"	B1A1211	01/12/21	01/12/21 19:36	EPA 6010B	
Nickel	**42**	3.4	"	"	"	"	"	"	
Lead	ND	3.1	"	"	"	"	"	"	
Antimony	ND	9.0	"	"	"	"	"	"	
Selenium	ND	6.2	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Vanadium	**37**	3.9	"	"	"	"	"	"	
Zinc	**38**	2.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS-1 (2101114-01) Soil Sampled: 01/07/21 10:45 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*107 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	**1.2**	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**4.8**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**7.7**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**90**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**130**	1.0	"	"	"	"	"	"	
HC >= C32	**130**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**360**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**9.8**	5.0	"	"	"	"	"	"	
SS-2 (2101114-02) Soil Sampled: 01/07/21 10:50 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*151 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	**2.9**	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**2.8**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**1.1**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**12**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**29**	1.0	"	"	"	"	"	"	
HC >= C32	**30**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**78**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**8.1**	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-1@5 (2101114-03) Soil Sampled: 01/07/21 08:25 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*108 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	**1.8**	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**2.6**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**2.8**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**2.9**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	**1.2**	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**1.3**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**12**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**3.7**	1.0	"	"	"	"	"	"	
HC >= C32	**9.6**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**38**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**24**	5.0	"	"	"	"	"	"	
SV-1@10 (2101114-04) Soil Sampled: 01/07/21 08:40 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*77.8 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	ND	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-2@10 (2101114-05) Soil Sampled: 01/08/21 08:15 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*79.7 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	**1.1**	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**2.1**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**2.1**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**1.3**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**3.0**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**9.5**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**10**	5.0	"	"	"	"	"	"	
SV-2@15 (2101114-06) Soil Sampled: 01/08/21 08:20 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*73.2 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	ND	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-3@5 (2101114-07) Soil Sampled: 01/08/21 08:55 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*97.0 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**1.5**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**1.3**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**3.0**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**5.8**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**7.6**	5.0	"	"	"	"	"	"	
SV-3@10 (2101114-08) Soil Sampled: 01/08/21 09:00 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*86.5 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	**1.1**	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**1.6**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**1.2**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**1.0**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**1.7**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**6.6**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**7.4**	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-4@5 (2101114-09) Soil Sampled: 01/08/21 09:15 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*73.1 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**2.2**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**2.1**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**1.9**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**6.2**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**8.2**	5.0	"	"	"	"	"	"	
SV-4@10 (2101114-10) Soil Sampled: 01/08/21 09:20 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*61.8 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	**1.8**	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**1.3**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**1.2**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**6.6**	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-5@5' (2101114-11) Soil Sampled: 01/08/21 09:35 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*118 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**1.8**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**2.3**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**1.4**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**3.5**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**8.9**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**10**	5.0	"	"	"	"	"	"	
SV-5@10' (2101114-12) Soil Sampled: 01/08/21 09:40 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*83.1 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**2.0**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**1.7**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**2.1**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**8.6**	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-6@5' (2101114-13) Soil Sampled: 01/08/21 10:00 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*64.0 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	**1.1**	1.0	"	"	"	"	"	"	
C9 <= HC < C10	**1.1**	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**2.3**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**3.2**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**1.0**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**8.6**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**10**	5.0	"	"	"	"	"	"	
SV-6@15' (2101114-14) Soil Sampled: 01/08/21 10:05 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*107 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**3.8**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**3.4**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**2.9**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**6.0**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**16**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**19**	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-7@5' (2101114-15) Soil Sampled: 01/08/21 08:30 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*89.9 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**2.6**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**2.5**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**1.8**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**1.9**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**6.2**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**11**	5.0	"	"	"	"	"	"	
SV-7@10' (2101114-16) Soil Sampled: 01/08/21 08:35 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*73.0 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**1.7**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	**1.7**	1.0	"	"	"	"	"	"	
C14 <= HC < C16	**1.4**	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	**1.0**	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**5.8**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**12**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**13**	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-8@4' (2101114-17) Soil Sampled: 01/08/21 10:20 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*77.3 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	**1.0**	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	**3.3**	1.0	"	"	"	"	"	"	
C24 <= HC < C28	**2.8**	1.0	"	"	"	"	"	"	
C28 <= HC < C32	**2.1**	1.0	"	"	"	"	"	"	
HC >= C32	**1.9**	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	**11**	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**6.6**	5.0	"	"	"	"	"	"	
SV-8@7' (2101114-18) Soil Sampled: 01/08/21 10:25 Received: 01/11/21 10:30									
Surrogate: o-Terphenyl		*78.9 %*	*60-175*		*B1A1808*	*01/18/21*	*01/18/21 14:45*	*EPA 8015B*	
HC < C8	ND	1.0	"	"	"	"	"	"	
C8 <= HC < C9	ND	1.0	"	"	"	"	"	"	
C9 <= HC < C10	ND	1.0	"	"	"	"	"	"	
C10 <= HC < C11	ND	1.0	"	"	"	"	"	"	
C11 <= HC < C12	ND	1.0	"	"	"	"	"	"	
C12 <= HC < C14	ND	1.0	"	"	"	"	"	"	
C14 <= HC < C16	ND	1.0	"	"	"	"	"	"	
C16 <= HC < C18	ND	1.0	"	"	"	"	"	"	
C18 <= HC < C20	ND	1.0	"	"	"	"	"	"	
C20 <= HC < C24	ND	1.0	"	"	"	"	"	"	
C24 <= HC < C28	ND	1.0	"	"	"	"	"	"	
C28 <= HC < C32	ND	1.0	"	"	"	"	"	"	
HC >= C32	ND	1.0	"	"	"	"	"	"	
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"	"	"	"	"	"	
Diesel Range Organics (C10-C24)	**7.7**	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Polychlorinated Biphenyls by EPA Method 8082

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS-1 (2101114-01) Soil Sampled: 01/07/21 10:45 Received: 01/11/21 10:30									
Surrogate: Decachlorobiphenyl		*59.2 %*	*42-147*		*B1A1406*	*01/11/21*	*01/15/21 08:21*	*EPA 8082*	
Surrogate: Tetrachloro-meta-xylene		*65.1 %*	*42-147*		*"*	*"*	*"*	*"*	
PCB-1016	ND	0.050	"	"	"	"	"	"	
PCB-1221	ND	0.050	"	"	"	"	"	"	
PCB-1232	ND	0.050	"	"	"	"	"	"	
PCB-1242	ND	0.050	"	"	"	"	"	"	
PCB-1248	ND	0.050	"	"	"	"	"	"	
PCB-1254	ND	0.050	"	"	"	"	"	"	
PCB-1260	ND	0.050	"	"	"	"	"	"	
SS-2 (2101114-02) Soil Sampled: 01/07/21 10:50 Received: 01/11/21 10:30									
Surrogate: Decachlorobiphenyl		*55.1 %*	*42-147*		*B1A1406*	*01/11/21*	*01/15/21 08:21*	*EPA 8082*	
Surrogate: Tetrachloro-meta-xylene		*103 %*	*42-147*		*"*	*"*	*"*	*"*	
PCB-1016	ND	0.050	"	"	"	"	"	"	
PCB-1221	ND	0.050	"	"	"	"	"	"	
PCB-1232	ND	0.050	"	"	"	"	"	"	
PCB-1242	ND	0.050	"	"	"	"	"	"	
PCB-1248	ND	0.050	"	"	"	"	"	"	
PCB-1254	ND	0.050	"	"	"	"	"	"	
PCB-1260	ND	0.050	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS-1 (2101114-01) Soil Sampled: 01/07/21 10:45 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*96.8 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 11:47*	*EPA 8260B*	
Surrogate: Toluene-d8		*87.0 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*94.1 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS-1 (2101114-01) Soil Sampled: 01/07/21 10:45 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 11:47	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS-2 (2101114-02) Soil Sampled: 01/07/21 10:50 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*109 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*87.4 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*94.0 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS-2 (2101114-02) Soil Sampled: 01/07/21 10:50 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-1@5 (2101114-03) Soil Sampled: 01/07/21 08:25 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*104 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*91.9 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*90.7 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-1@5 (2101114-03) Soil Sampled: 01/07/21 08:25 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-1@10 (2101114-04) Soil Sampled: 01/07/21 08:40 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*110 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*91.3 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*89.0 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-1@10 (2101114-04) Soil Sampled: 01/07/21 08:40 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-2@10 (2101114-05) Soil Sampled: 01/08/21 08:15 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*99.2 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*84.4 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*88.6 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-2@10 (2101114-05) Soil Sampled: 01/08/21 08:15 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-2@15 (2101114-06) Soil Sampled: 01/08/21 08:20 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*99.0 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*89.3 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*105 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-2@15 (2101114-06) Soil Sampled: 01/08/21 08:20 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-3@5 (2101114-07) Soil Sampled: 01/08/21 08:55 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*96.7 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*92.6 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-3@5 (2101114-07) Soil Sampled: 01/08/21 08:55 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-3@10 (2101114-08) Soil Sampled: 01/08/21 09:00 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*115 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*90.0 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-3@10 (2101114-08) Soil Sampled: 01/08/21 09:00 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-4@5 (2101114-09) Soil Sampled: 01/08/21 09:15 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*109 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*96.5 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-4@5 (2101114-09) Soil Sampled: 01/08/21 09:15 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-4@10 (2101114-10) Soil Sampled: 01/08/21 09:20 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*120 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*98.9 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-4@10 (2101114-10) Soil Sampled: 01/08/21 09:20 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-5@5' (2101114-11) Soil Sampled: 01/08/21 09:35 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*113 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*96.6 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*100 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-5@5' (2101114-11) Soil Sampled: 01/08/21 09:35 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-5@10' (2101114-12) Soil Sampled: 01/08/21 09:40 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*114 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*88.0 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*107 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-5@10' (2101114-12) Soil Sampled: 01/08/21 09:40 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-6@5' (2101114-13) Soil Sampled: 01/08/21 10:00 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*104 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*85.5 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*87.4 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-6@5' (2101114-13) Soil Sampled: 01/08/21 10:00 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-6@15' (2101114-14) Soil Sampled: 01/08/21 10:05 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*106 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*91.0 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*88.7 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-6@15' (2101114-14) Soil Sampled: 01/08/21 10:05 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-7@5' (2101114-15) Soil Sampled: 01/08/21 08:30 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*102 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*103 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*90.7 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-7@5' (2101114-15) Soil Sampled: 01/08/21 08:30 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-7@10' (2101114-16) Soil Sampled: 01/08/21 08:35 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*94.8 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*87.4 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*89.4 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-7@10' (2101114-16) Soil Sampled: 01/08/21 08:35 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-8@4' (2101114-17) Soil Sampled: 01/08/21 10:20 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*114 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*86.3 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*87.8 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-8@4' (2101114-17) Soil Sampled: 01/08/21 10:20 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-8@7' (2101114-18) Soil Sampled: 01/08/21 10:25 Received: 01/11/21 10:30									
Surrogate: Dibromofluoromethane		*108 %*		*80-120*	*B1A1404*	*01/14/21*	*01/14/21 12:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*92.7 %*		*81-117*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*89.3 %*		*74-121*	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Bromobenzene	ND	5.0	"	"	"	"	"	"	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	5.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SV-8@7' (2101114-18) Soil Sampled: 01/08/21 10:25 Received: 01/11/21 10:30									
Ethylbenzene	ND	5.0	µg/kg	1	B1A1404	01/14/21	01/14/21 12:25	EPA 8260B	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	5.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	25	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Semivolatile Organic Compounds by EPA Method 8270C

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS-1 (2101114-01) Soil Sampled: 01/07/21 10:45 Received: 01/11/21 10:30									
Surrogate: 2-Fluorophenol		*116 %*		*25-121*	*B1A1405*	*01/14/21*	*01/14/21 09:42*	*EPA 8270C*	
Surrogate: Phenol-d6		*53.7 %*		*24-113*	"	"	"	"	
Surrogate: Nitrobenzene-d5		*56.3 %*		*23-120*	"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*44.6 %*		*30-115*	"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*60.3 %*		*19-122*	"	"	"	"	
Surrogate: Terphenyl-d14		*93.9 %*		*18-137*	"	"	"	"	
Acenaphthene	ND	0.33	"	"	"	"	"	"	
Acenaphthylene	ND	0.33	"	"	"	"	"	"	
Anthracene	ND	0.33	"	"	"	"	"	"	
Benzidine	ND	0.33	"	"	"	"	"	"	
Benzo (a) anthracene	**0.41**	0.33	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.33	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.33	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.33	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	0.33	"	"	"	"	"	"	
Benzyl alcohol	ND	0.33	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.33	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.33	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	0.33	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.33	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.33	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.33	"	"	"	"	"	"	
4-Chloroaniline	ND	0.33	"	"	"	"	"	"	
2-Chlorophenol	ND	0.33	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.33	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.33	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.33	"	"	"	"	"	"	
Chrysene	**0.38**	0.33	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.33	"	"	"	"	"	"	
Dibenzofuran	ND	0.33	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.33	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.33	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.33	"	"	"	"	"	"	
3,3´-Dichlorobenzidine	ND	0.33	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.33	"	"	"	"	"	"	
Diethyl phthalate	ND	0.33	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	0.33	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.33	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	0.33	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	0.33	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Semivolatile Organic Compounds by EPA Method 8270C

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS-1 (2101114-01) Soil Sampled: 01/07/21 10:45 Received: 01/11/21 10:30									
4,6-Dinitro-2-methylphenol	ND	0.33	mg/kg	1	B1A1405	01/14/21	01/14/21 09:42	EPA 8270C	
2,4-Dinitrotoluene	ND	0.33	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.33	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.33	"	"	"	"	"	"	
1,2-Diphenylhydrazine	ND	0.33	"	"	"	"	"	"	
Fluoranthene	**0.49**	0.33	"	"	"	"	"	"	
Fluorene	ND	0.33	"	"	"	"	"	"	
Hexachlorobenzene	ND	0.33	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.33	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	0.33	"	"	"	"	"	"	
Hexachloroethane	ND	0.33	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.33	"	"	"	"	"	"	
Isophorone	ND	0.33	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.33	"	"	"	"	"	"	
2-Methylphenol	ND	0.33	"	"	"	"	"	"	
4-Methylphenol	ND	0.33	"	"	"	"	"	"	
Naphthalene	ND	0.33	"	"	"	"	"	"	
2-Nitroaniline	ND	0.33	"	"	"	"	"	"	
3-Nitroaniline	ND	0.33	"	"	"	"	"	"	
4-Nitroaniline	ND	0.33	"	"	"	"	"	"	
Nitrobenzene	ND	0.33	"	"	"	"	"	"	
2-Nitrophenol	ND	0.33	"	"	"	"	"	"	
4-Nitrophenol	ND	0.33	"	"	"	"	"	"	
N-Nitrosodimethylamine	ND	0.33	"	"	"	"	"	"	
Diphenylamine	ND	0.33	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.33	"	"	"	"	"	"	
Pentachlorophenol	ND	0.33	"	"	"	"	"	"	
Phenanthrene	**0.57**	0.33	"	"	"	"	"	"	
Phenol	ND	0.33	"	"	"	"	"	"	
Pyrene	**1.3**	0.33	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.33	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.33	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.33	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Semivolatile Organic Compounds by EPA Method 8270C

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS-2 (2101114-02) Soil Sampled: 01/07/21 10:50 Received: 01/11/21 10:30									
Surrogate: 2-Fluorophenol		*55.7 %*		*25-121*	*B1A1405*	*01/14/21*	*01/14/21 10:22*	*EPA 8270C*	
Surrogate: Phenol-d6		*55.5 %*		*24-113*	"	"	"	"	
Surrogate: Nitrobenzene-d5		*29.1 %*		*23-120*	"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*57.7 %*		*30-115*	"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*56.3 %*		*19-122*	"	"	"	"	
Surrogate: Terphenyl-d14		*46.3 %*		*18-137*	"	"	"	"	
Acenaphthene	ND	0.33	"	"	"	"	"	"	
Acenaphthylene	ND	0.33	"	"	"	"	"	"	
Anthracene	ND	0.33	"	"	"	"	"	"	
Benzidine	ND	0.33	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.33	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.33	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.33	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.33	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	0.33	"	"	"	"	"	"	
Benzyl alcohol	ND	0.33	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	0.33	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	0.33	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	0.33	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	0.33	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	0.33	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	0.33	"	"	"	"	"	"	
4-Chloroaniline	ND	0.33	"	"	"	"	"	"	
2-Chlorophenol	ND	0.33	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	0.33	"	"	"	"	"	"	
2-Chloronaphthalene	ND	0.33	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	0.33	"	"	"	"	"	"	
Chrysene	ND	0.33	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.33	"	"	"	"	"	"	
Dibenzofuran	ND	0.33	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.33	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.33	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.33	"	"	"	"	"	"	
3,3´-Dichlorobenzidine	ND	0.33	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	0.33	"	"	"	"	"	"	
Diethyl phthalate	ND	0.33	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	0.33	"	"	"	"	"	"	
Dimethyl phthalate	ND	0.33	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	0.33	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	0.33	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Semivolatile Organic Compounds by EPA Method 8270C

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SS-2 (2101114-02) Soil Sampled: 01/07/21 10:50 Received: 01/11/21 10:30									
4,6-Dinitro-2-methylphenol	ND	0.33	mg/kg	1	B1A1405	01/14/21	01/14/21 10:22	EPA 8270C	
2,4-Dinitrotoluene	ND	0.33	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	0.33	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	0.33	"	"	"	"	"	"	
1,2-Diphenylhydrazine	ND	0.33	"	"	"	"	"	"	
Fluoranthene	ND	0.33	"	"	"	"	"	"	
Fluorene	ND	0.33	"	"	"	"	"	"	
Hexachlorobenzene	ND	0.33	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.33	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	0.33	"	"	"	"	"	"	
Hexachloroethane	ND	0.33	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.33	"	"	"	"	"	"	
Isophorone	ND	0.33	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.33	"	"	"	"	"	"	
2-Methylphenol	ND	0.33	"	"	"	"	"	"	
4-Methylphenol	ND	0.33	"	"	"	"	"	"	
Naphthalene	ND	0.33	"	"	"	"	"	"	
2-Nitroaniline	ND	0.33	"	"	"	"	"	"	
3-Nitroaniline	ND	0.33	"	"	"	"	"	"	
4-Nitroaniline	ND	0.33	"	"	"	"	"	"	
Nitrobenzene	ND	0.33	"	"	"	"	"	"	
2-Nitrophenol	ND	0.33	"	"	"	"	"	"	
4-Nitrophenol	ND	0.33	"	"	"	"	"	"	
N-Nitrosodimethylamine	ND	0.33	"	"	"	"	"	"	
Diphenylamine	ND	0.33	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	0.33	"	"	"	"	"	"	
Pentachlorophenol	ND	0.33	"	"	"	"	"	"	
Phenanthrene	ND	0.33	"	"	"	"	"	"	
Phenol	ND	0.33	"	"	"	"	"	"	
Pyrene	ND	0.33	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.33	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	0.33	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	0.33	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1211 - EPA 3050B										
Blank (B1A1211-BLK1)				Prepared & Analyzed: 01/12/21						
Cadmium	ND	1.7	mg/kg							
Silver	ND	1.0	"							
Nickel	ND	3.4	"							
Copper	ND	9.0	"							
Lead	ND	3.1	"							
Antimony	ND	9.0	"							
Cobalt	ND	0.80	"							
Chromium	ND	1.2	"							
Selenium	ND	6.2	"							
Molybdenum	ND	1.0	"							
Thallium	ND	4.0	"							
Beryllium	ND	1.2	"							
Vanadium	ND	3.9	"							
Barium	ND	1.0	"							
Zinc	ND	2.0	"							
Arsenic	ND	4.0	"							
LCS (B1A1211-BS1)				Prepared & Analyzed: 01/12/21						
Beryllium	107	1.2	mg/kg	100		107	80-120			
Barium	105	1.0	"	100		105	80-120			
Cobalt	106	0.80	"	100		106	80-120			
Chromium	105	1.2	"	100		105	80-120			
Arsenic	95.4	4.0	"	100		95.4	78-122			
Copper	105	9.0	"	100		105	78-122			
Silver	100	1.0	"	100		100	60-140			
Cadmium	103	1.7	"	100		103	80-120			
Selenium	98.2	6.2	"	100		98.2	76-124			
Nickel	102	3.4	"	100		102	80-120			
Zinc	106	2.0	"	100		106	80-120			
Lead	92.3	3.1	"	100		92.3	80-120			
Antimony	104	9.0	"	100		104	75-125			
Vanadium	102	3.9	"	100		102	80-120			
Molybdenum	94.0	1.0	"	100		94.0	80-120			
Thallium	95.9	4.0	"	100		95.9	80-120			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1211 - EPA 3050B										
LCS Dup (B1A1211-BSD1)				Prepared & Analyzed: 01/12/21						
Zinc	104	2.0	mg/kg	100		104	80-120	2.52	20	
Silver	97.4	1.0	"	100		97.4	60-140	2.76	40	
Vanadium	100	3.9	"	100		100	80-120	1.26	20	
Arsenic	98.7	4.0	"	100		98.7	78-122	3.32	20	
Thallium	105	4.0	"	100		105	80-120	9.23	20	
Barium	105	1.0	"	100		105	80-120	0.310	20	
Copper	107	9.0	"	100		107	78-122	1.67	20	
Beryllium	107	1.2	"	100		107	80-120	0.257	20	
Antimony	107	9.0	"	100		107	75-125	3.27	20	
Cadmium	102	1.7	"	100		102	80-120	0.878	20	
Lead	96.3	3.1	"	100		96.3	80-120	4.22	20	
Cobalt	106	0.80	"	100		106	80-120	0.0942	20	
Chromium	107	1.2	"	100		107	80-120	1.91	20	
Nickel	103	3.4	"	100		103	80-120	0.730	20	
Molybdenum	97.2	1.0	"	100		97.2	80-120	3.29	20	
Selenium	99.7	6.2	"	100		99.7	76-124	1.49	20	
Matrix Spike (B1A1211-MS1)		**Source: 2101114-01**		Prepared & Analyzed: 01/12/21						
Barium	174	1.0	mg/kg	99.2	51.7	123	70-130			
Silver	93.3	1.0	"	99.2	ND	94.1	60-140			
Arsenic	107	4.0	"	99.2	1.86	106	70-130			
Beryllium	104	1.2	"	99.2	ND	104	70-130			
Cadmium	101	1.7	"	99.2	ND	102	70-130			
Cobalt	108	0.80	"	99.2	5.16	104	70-130			
Chromium	117	1.2	"	99.2	11.6	106	70-130			
Copper	237	9.0	"	99.2	117	121	70-130			
Molybdenum	92.7	1.0	"	99.2	0.855	92.6	70-130			
Nickel	114	3.4	"	99.2	11.8	103	70-130			
Lead	113	3.1	"	99.2	12.1	102	70-130			
Antimony	105	9.0	"	99.2	ND	105	60-140			
Selenium	104	6.2	"	99.2	0.635	104	70-130			
Thallium	100	4.0	"	99.2	ND	101	70-130			
Vanadium	120	3.9	"	99.2	19.2	101	70-130			
Zinc	152	2.0	"	99.2	39.4	114	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1211 - EPA 3050B										
Matrix Spike Dup (B1A1211-MSD1)	**Source: 2101114-01**			Prepared & Analyzed: 01/12/21						
Cadmium	104	1.7	mg/kg	99.3	ND	105	70-130	2.78	20	
Vanadium	122	3.9	"	99.3	19.2	104	70-130	2.17	20	
Chromium	120	1.2	"	99.3	11.6	109	70-130	2.07	20	
Zinc	155	2.0	"	99.3	39.4	116	70-130	1.83	20	
Arsenic	108	4.0	"	99.3	1.86	107	70-130	1.14	20	
Thallium	98.7	4.0	"	99.3	ND	99.4	70-130	1.42	20	
Copper	239	9.0	"	99.3	117	123	70-130	0.841	30	
Antimony	105	9.0	"	99.3	ND	106	60-140	0.856	20	
Nickel	116	3.4	"	99.3	11.8	105	70-130	1.41	20	
Silver	90.7	1.0	"	99.3	ND	91.3	60-140	2.89	40	
Lead	114	3.1	"	99.3	12.1	103	70-130	1.08	30	
Beryllium	106	1.2	"	99.3	ND	107	70-130	2.44	20	
Cobalt	110	0.80	"	99.3	5.16	106	70-130	1.71	20	
Barium	178	1.0	"	99.3	51.7	127	70-130	1.89	20	
Selenium	105	6.2	"	99.3	0.635	105	70-130	0.718	20	
Molybdenum	94.5	1.0	"	99.3	0.855	94.3	70-130	1.96	20	
Batch B1A1213 - EPA 7471A										
Blank (B1A1213-BLK1)				Prepared & Analyzed: 01/12/21						
Mercury	ND	0.23	mg/kg							
LCS (B1A1213-BS1)				Prepared & Analyzed: 01/12/21						
Mercury	0.17	0.23	mg/kg	0.167		99.9	70-130			
Matrix Spike (B1A1213-MS1)	**Source: 2101114-01**			Prepared & Analyzed: 01/12/21						
Mercury	0.19	0.23	mg/kg	0.158	0.03	96.3	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Metals by EPA 6000/7000 Series Methods - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1213 - EPA 7471A										
Matrix Spike Dup (B1A1213-MSD1)	**Source: 2101114-01**			Prepared & Analyzed: 01/12/21						
Mercury	0.19	0.23	mg/kg	0.161	0.03	99.5	70-130	4.50	30	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project:	Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number:	1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager:	Shannon Lodge	01/22/21 12:05

Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1808 - EPA 3550B Solid Ext										
Blank (B1A1808-BLK1)				Prepared & Analyzed: 01/18/21						
Surrogate: o-Terphenyl	*2.85*		*mg/kg*	*2.50*		*114*	*60-175*			
HC < C8	ND	1.0	"							
C8 <= HC < C9	ND	1.0	"							
C9 <= HC < C10	ND	1.0	"							
C10 <= HC < C11	ND	1.0	"							
C11 <= HC < C12	ND	1.0	"							
C12 <= HC < C14	ND	1.0	"							
C14 <= HC < C16	ND	1.0	"							
C16 <= HC < C18	ND	1.0	"							
C18 <= HC < C20	ND	1.0	"							
C20 <= HC < C24	ND	1.0	"							
C24 <= HC < C28	ND	1.0	"							
C28 <= HC < C32	ND	1.0	"							
HC >= C32	ND	1.0	"							
Total Petroleum Hydrocarbons (C7-C36)	ND	5.0	"							
Diesel Range Organics (C10-C24)	ND	5.0	"							
LCS (B1A1808-BS1)				Prepared & Analyzed: 01/18/21						
Diesel Range Organics (C10-C24)	17.9	5.0	mg/kg	20.0		89.5	80-120			
Matrix Spike (B1A1808-MS1)		**Source: 2101114-06**		Prepared & Analyzed: 01/18/21						
Diesel Range Organics (C10-C24)	22.2	5.0	mg/kg	20.0	ND	111	50-150			
Matrix Spike Dup (B1A1808-MSD1)		**Source: 2101114-06**		Prepared & Analyzed: 01/18/21						
Diesel Range Organics (C10-C24)	20.4	5.0	mg/kg	20.0	ND	102	50-150	8.41	30	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project:	Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number:	1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager:	Shannon Lodge	01/22/21 12:05

Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1406 - EPA 3550B Solid Ext										
Blank (B1A1406-BLK1)				Prepared: 01/11/21 Analyzed: 01/15/21						
Surrogate: Decachlorobiphenyl	*ND*		*mg/kg*	*0.00833*		*53.4*	*42-147*			
Surrogate: Tetrachloro-meta-xylene	*ND*		*"*	*0.00833*		*48.8*	*42-147*			
PCB-1016	ND	0.050	"							
PCB-1221	ND	0.050	"							
PCB-1232	ND	0.050	"							
PCB-1242	ND	0.050	"							
PCB-1248	ND	0.050	"							
PCB-1254	ND	0.050	"							
PCB-1260	ND	0.050	"							
LCS (B1A1406-BS1)				Prepared: 01/11/21 Analyzed: 01/15/21						
Surrogate: Decachlorobiphenyl	*0.00833*		*mg/kg*	*0.00833*		*100*	*42-147*			
Surrogate: Tetrachloro-meta-xylene	*0.00833*		*"*	*0.00833*		*100*	*42-147*			
PCB-1260	0.0536	0.050	"	0.0667		80.3	80-120			
Matrix Spike (B1A1406-MS1)		**Source: 2101023-01**		Prepared: 01/11/21 Analyzed: 01/15/21						
Surrogate: Decachlorobiphenyl	*0.00833*		*mg/kg*	*0.00833*		*100*	*42-147*			
Surrogate: Tetrachloro-meta-xylene	*0.00833*		*"*	*0.00833*		*100*	*42-147*			
PCB-1260	0.0662	0.050	"	0.0667	ND	99.3	50-150			
Matrix Spike Dup (B1A1406-MSD1)		**Source: 2101023-01**		Prepared: 01/11/21 Analyzed: 01/15/21						
Surrogate: Decachlorobiphenyl	*0.00833*		*mg/kg*	*0.00833*		*100*	*42-147*			
Surrogate: Tetrachloro-meta-xylene	*0.00833*		*"*	*0.00833*		*100*	*42-147*			
PCB-1260	0.0715	0.050	"	0.0667	ND	107	50-150	7.71	30	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1404 - EPA 5035 P & T										
Blank (B1A1404-BLK1)			Prepared & Analyzed: 01/14/21							
Surrogate: Dibromofluoromethane	*52.7*		*µg/kg*	*50.0*		*105*	*80-120*			
Surrogate: Toluene-d8	*42.0*		*"*	*50.0*		*84.0*	*81-117*			
Surrogate: 4-Bromofluorobenzene	*46.4*		*"*	*50.0*		*92.9*	*74-121*			
Benzene	ND	5.0	"							
Bromobenzene	ND	5.0	"							
Bromochloromethane	ND	5.0	"							
Bromodichloromethane	ND	5.0	"							
Bromoform	ND	5.0	"							
Bromomethane	ND	5.0	"							
n-Butylbenzene	ND	5.0	"							
sec-Butylbenzene	ND	5.0	"							
tert-Butylbenzene	ND	5.0	"							
Carbon tetrachloride	ND	5.0	"							
Chlorobenzene	ND	5.0	"							
Chloroethane	ND	5.0	"							
Chloroform	ND	5.0	"							
Chloromethane	ND	5.0	"							
2-Chlorotoluene	ND	5.0	"							
4-Chlorotoluene	ND	5.0	"							
Dibromochloromethane	ND	5.0	"							
1,2-Dibromo-3-chloropropane	ND	5.0	"							
1,2-Dibromoethane (EDB)	ND	5.0	"							
Dibromomethane	ND	5.0	"							
1,2-Dichlorobenzene	ND	5.0	"							
1,3-Dichlorobenzene	ND	5.0	"							
1,4-Dichlorobenzene	ND	5.0	"							
Dichlorodifluoromethane	ND	5.0	"							
1,1-Dichloroethane	ND	5.0	"							
1,2-Dichloroethane	ND	5.0	"							
1,1-Dichloroethene	ND	5.0	"							
cis-1,2-Dichloroethene	ND	5.0	"							
trans-1,2-Dichloroethene	ND	5.0	"							
1,2-Dichloropropane	ND	5.0	"							
1,3-Dichloropropane	ND	5.0	"							
2,2-Dichloropropane	ND	5.0	"							
1,1-Dichloropropene	ND	5.0	"							
cis-1,3-Dichloropropene	ND	5.0	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

SALEM Engineering Group - Fresno	Project:	Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number:	1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager:	Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1404 - EPA 5035 P & T										
Blank (B1A1404-BLK1)				Prepared & Analyzed: 01/14/21						
trans-1,3-Dichloropropene	ND	5.0	µg/kg							
Di-isopropyl ether	ND	5.0	"							
Ethyl tert-butyl ether	ND	5.0	"							
Ethylbenzene	ND	5.0	"							
Hexachlorobutadiene	ND	5.0	"							
Isopropylbenzene	ND	5.0	"							
p-Isopropyltoluene	ND	5.0	"							
Methylene chloride	ND	5.0	"							
Methyl tert-butyl ether	ND	5.0	"							
Naphthalene	ND	5.0	"							
n-Propylbenzene	ND	5.0	"							
Styrene	ND	5.0	"							
Tert-amyl methyl ether	ND	5.0	"							
Tert-butyl alcohol	ND	25	"							
1,1,1,2-Tetrachloroethane	ND	5.0	"							
1,1,2,2-Tetrachloroethane	ND	5.0	"							
Tetrachloroethene	ND	5.0	"							
Toluene	ND	5.0	"							
1,2,3-Trichlorobenzene	ND	5.0	"							
1,2,4-Trichlorobenzene	ND	5.0	"							
1,1,1-Trichloroethane	ND	5.0	"							
1,1,2-Trichloroethane	ND	5.0	"							
Trichloroethene	ND	5.0	"							
Trichlorofluoromethane	ND	5.0	"							
1,2,3-Trichloropropane	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	5.0	"							
1,3,5-Trimethylbenzene	ND	5.0	"							
Vinyl chloride	ND	5.0	"							
m,p-Xylene	ND	5.0	"							
o-Xylene	ND	5.0	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Volatile Organics & Fuel Oxygenates (GC/MS) by EPA Method 8260B - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1404 - EPA 5035 P & T										
LCS (B1A1404-BS1)				Prepared & Analyzed: 01/14/21						
Surrogate: Dibromofluoromethane	*50.0*		*µg/kg*	*50.0*		*100*	*80-120*			
Surrogate: Toluene-d8	*50.0*		*"*	*50.0*		*100*	*81-117*			
Surrogate: 4-Bromofluorobenzene	*50.0*		*"*	*50.0*		*100*	*74-121*			
Benzene	52.2	5.0	"	50.0		104	80-120			
Chlorobenzene	47.4	5.0	"	50.0		94.8	80-120			
1,1-Dichloroethene	48.5	5.0	"	50.0		97.0	80-120			
Toluene	48.6	5.0	"	50.0		97.1	80-120			
Trichloroethene	53.4	5.0	"	50.0		107	80-120			
Matrix Spike (B1A1404-MS1)	**Source: 2101114-01**			Prepared & Analyzed: 01/14/21						
Surrogate: Dibromofluoromethane	*50.0*		*µg/kg*	*50.0*		*100*	*80-120*			
Surrogate: Toluene-d8	*50.0*		*"*	*50.0*		*100*	*81-117*			
Surrogate: 4-Bromofluorobenzene	*50.0*		*"*	*50.0*		*100*	*74-121*			
Benzene	49.8	5.0	"	50.0	ND	99.6	37-151			
Chlorobenzene	42.8	5.0	"	50.0	ND	85.6	37-160			
1,1-Dichloroethene	48.6	5.0	"	50.0	ND	97.1	50-150			
Toluene	59.3	5.0	"	50.0	ND	119	47-150			
Trichloroethene	49.1	5.0	"	50.0	ND	98.2	71-157			
Matrix Spike Dup (B1A1404-MSD1)	**Source: 2101114-01**			Prepared & Analyzed: 01/14/21						
Surrogate: Dibromofluoromethane	*50.0*		*µg/kg*	*50.0*		*100*	*80-120*			
Surrogate: Toluene-d8	*50.0*		*"*	*50.0*		*100*	*81-117*			
Surrogate: 4-Bromofluorobenzene	*50.0*		*"*	*50.0*		*100*	*74-121*			
Benzene	53.8	5.0	"	50.0	ND	108	37-151	7.67	30	
Chlorobenzene	43.0	5.0	"	50.0	ND	86.1	37-160	0.559	30	
1,1-Dichloroethene	52.1	5.0	"	50.0	ND	104	50-150	7.11	30	
Toluene	61.5	5.0	"	50.0	ND	123	47-150	3.71	30	
Trichloroethene	48.2	5.0	"	50.0	ND	96.5	71-157	1.75	30	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project:	Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number:	1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager:	Shannon Lodge	01/22/21 12:05

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1405 - EPA 3550B Solid Ext										
Blank (B1A1405-BLK1)				Prepared & Analyzed: 01/14/21						
Surrogate: 2-Fluorophenol	*0.283*		*mg/kg*	*0.500*		*56.5*	*25-121*			
Surrogate: Phenol-d6	*0.232*		*"*	*0.500*		*46.5*	*24-113*			
Surrogate: Nitrobenzene-d5	*0.267*		*"*	*0.500*		*53.4*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*0.227*		*"*	*0.500*		*45.5*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*0.188*		*"*	*0.500*		*37.6*	*19-122*			
Surrogate: Terphenyl-d14	*0.215*		*"*	*0.500*		*42.9*	*18-137*			
Acenaphthene	ND	0.33	"							
Acenaphthylene	ND	0.33	"							
Anthracene	ND	0.33	"							
Benzidine	ND	0.33	"							
Benzo (a) anthracene	ND	0.33	"							
Benzo (b) fluoranthene	ND	0.33	"							
Benzo (k) fluoranthene	ND	0.33	"							
Benzo (a) pyrene	ND	0.33	"							
Benzo (g,h,i) perylene	ND	0.33	"							
Benzyl alcohol	ND	0.33	"							
Bis(2-chloroethyl)ether	ND	0.33	"							
Bis(2-chloroethoxy)methane	ND	0.33	"							
Bis(2-ethylhexyl)phthalate	ND	0.33	"							
Bis(2-chloroisopropyl)ether	ND	0.33	"							
4-Bromophenyl phenyl ether	ND	0.33	"							
Butyl benzyl phthalate	ND	0.33	"							
4-Chloroaniline	ND	0.33	"							
2-Chlorophenol	ND	0.33	"							
4-Chloro-3-methylphenol	ND	0.33	"							
2-Chloronaphthalene	ND	0.33	"							
4-Chlorophenyl phenyl ether	ND	0.33	"							
Chrysene	ND	0.33	"							
Dibenz (a,h) anthracene	ND	0.33	"							
Dibenzofuran	ND	0.33	"							
1,3-Dichlorobenzene	ND	0.33	"							
1,2-Dichlorobenzene	ND	0.33	"							
1,4-Dichlorobenzene	ND	0.33	"							
3,3′-Dichlorobenzidine	ND	0.33	"							
2,4-Dichlorophenol	ND	0.33	"							
Diethyl phthalate	ND	0.33	"							
2,4-Dimethylphenol	ND	0.33	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1405 - EPA 3550B Solid Ext										
Blank (B1A1405-BLK1)				Prepared & Analyzed: 01/14/21						
Dimethyl phthalate	ND	0.33	mg/kg							
Di-n-butyl phthalate	ND	0.33	"							
2,4-Dinitrophenol	ND	0.33	"							
4,6-Dinitro-2-methylphenol	ND	0.33	"							
2,4-Dinitrotoluene	ND	0.33	"							
2,6-Dinitrotoluene	ND	0.33	"							
Di-n-octyl phthalate	ND	0.33	"							
1,2-Diphenylhydrazine	ND	0.33	"							
Fluoranthene	ND	0.33	"							
Fluorene	ND	0.33	"							
Hexachlorobenzene	ND	0.33	"							
Hexachlorobutadiene	ND	0.33	"							
Hexachlorocyclopentadiene	ND	0.33	"							
Hexachloroethane	ND	0.33	"							
Indeno (1,2,3-cd) pyrene	ND	0.33	"							
Isophorone	ND	0.33	"							
2-Methylnaphthalene	ND	0.33	"							
2-Methylphenol	ND	0.33	"							
4-Methylphenol	ND	0.33	"							
Naphthalene	ND	0.33	"							
2-Nitroaniline	ND	0.33	"							
3-Nitroaniline	ND	0.33	"							
4-Nitroaniline	ND	0.33	"							
Nitrobenzene	ND	0.33	"							
2-Nitrophenol	ND	0.33	"							
4-Nitrophenol	ND	0.33	"							
N-Nitrosodimethylamine	ND	0.33	"							
Diphenylamine	ND	0.33	"							
N-Nitrosodi-n-propylamine	ND	0.33	"							
Pentachlorophenol	ND	0.33	"							
Phenanthrene	ND	0.33	"							
Phenol	ND	0.33	"							
Pyrene	ND	0.33	"							
1,2,4-Trichlorobenzene	ND	0.33	"							
2,4,5-Trichlorophenol	ND	0.33	"							
2,4,6-Trichlorophenol	ND	0.33	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1405 - EPA 3550B Solid Ext										
LCS (B1A1405-BS1)				Prepared & Analyzed: 01/14/21						
Surrogate: 2-Fluorophenol	*0.500*		*mg/kg*	*0.500*		*100*	*25-121*			
Surrogate: Phenol-d6	*0.500*		*"*	*0.500*		*100*	*24-113*			
Surrogate: Nitrobenzene-d5	*0.333*		*"*	*0.500*		*66.7*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*0.333*		*"*	*0.500*		*66.7*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*0.500*		*"*	*0.500*		*100*	*19-122*			
Surrogate: Terphenyl-d14	*0.333*		*"*	*0.500*		*66.7*	*18-137*			
Acenaphthene	0.362	0.33	"	0.333		109	47-145			
2-Chlorophenol	0.790	0.33	"	0.667		118	23-134			
4-Chloro-3-methylphenol	0.644	0.33	"	0.667		96.5	22-147			
1,4-Dichlorobenzene	0.343	0.33	"	0.333		103	20-124			
2,4-Dinitrotoluene	0.202	0.33	"	0.333		60.7	39-139			
4-Nitrophenol	ND	0.33	"	0.667			0-132			
N-Nitrosodi-n-propylamine	0.304	0.33	"	0.333		91.3	0-230			
Pentachlorophenol	0.179	0.33	"	0.667		26.9	14-176			
Phenol	0.702	0.33	"	0.667		105	5-112			
Pyrene	0.367	0.33	"	0.333		110	52-115			
1,2,4-Trichlorobenzene	0.350	0.33	"	0.333		105	44-142			
Matrix Spike (B1A1405-MS1)	**Source: 2101140-01**			Prepared & Analyzed: 01/14/21						
Surrogate: 2-Fluorophenol	*0.596*		*mg/kg*	*0.500*		*119*	*25-121*			
Surrogate: Phenol-d6	*0.271*		*"*	*0.500*		*54.2*	*24-113*			
Surrogate: Nitrobenzene-d5	*0.269*		*"*	*0.500*		*53.7*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*0.215*		*"*	*0.500*		*43.0*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*0.192*		*"*	*0.500*		*38.4*	*19-122*			
Surrogate: Terphenyl-d14	*0.472*		*"*	*0.500*		*94.4*	*18-137*			
Acenaphthene	0.361	0.33	"	0.333	ND	108	47-145			
2-Chlorophenol	0.782	0.33	"	0.667	ND	117	23-134			
4-Chloro-3-methylphenol	0.625	0.33	"	0.667	ND	93.8	22-147			
1,4-Dichlorobenzene	0.326	0.33	"	0.333	ND	97.7	20-124			
2,4-Dinitrotoluene	0.159	0.33	"	0.333	ND	47.6	39-139			
4-Nitrophenol	ND	0.33	"	0.667	ND		0-132			
N-Nitrosodi-n-propylamine	0.280	0.33	"	0.333	ND	84.1	0-230			
Pentachlorophenol	0.183	0.33	"	0.667	ND	27.4	14-176			
Phenol	0.636	0.33	"	0.667	ND	95.4	5-112			
Pyrene	0.377	0.33	"	0.333	ND	113	52-115			
1,2,4-Trichlorobenzene	0.343	0.33	"	0.333	ND	103	44-142			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

Sierra Analytical Labs, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B1A1405 - EPA 3550B Solid Ext										
Matrix Spike Dup (B1A1405-MSD1)	**Source: 2101140-01**		Prepared & Analyzed: 01/14/21							
Surrogate: 2-Fluorophenol	*0.500*		*mg/kg*	*0.500*		*100*	*25-121*			
Surrogate: Phenol-d6	*0.500*		*"*	*0.500*		*100*	*24-113*			
Surrogate: Nitrobenzene-d5	*0.333*		*"*	*0.500*		*66.7*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*0.333*		*"*	*0.500*		*66.7*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*0.500*		*"*	*0.500*		*100*	*19-122*			
Surrogate: Terphenyl-d14	*0.333*		*"*	*0.500*		*66.7*	*18-137*			
Acenaphthene	0.372	0.33	"	0.333	ND	112	47-145	3.09	30	
2-Chlorophenol	0.776	0.33	"	0.667	ND	116	23-134	0.727	30	
4-Chloro-3-methylphenol	0.653	0.33	"	0.667	ND	97.9	22-147	4.28	30	
1,4-Dichlorobenzene	0.355	0.33	"	0.333	ND	107	20-124	8.71	30	
2,4-Dinitrotoluene	0.175	0.33	"	0.333	ND	52.4	39-139	9.60	30	
4-Nitrophenol	ND	0.33	"	0.667	ND		0-132		30	
N-Nitrosodi-n-propylamine	0.303	0.33	"	0.333	ND	91.0	0-230	7.88	30	
Pentachlorophenol	0.192	0.33	"	0.667	ND	28.8	14-176	4.98	30	
Phenol	0.663	0.33	"	0.667	ND	99.5	5-112	4.15	30	
Pyrene	0.336	0.33	"	0.333	ND	101	52-115	11.5	30	
1,2,4-Trichlorobenzene	0.356	0.33	"	0.333	ND	107	44-142	3.53	30	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

SALEM Engineering Group - Fresno	Project: Former Fresno Compress	
4729 West Jacquelyn Avenue	Project Number: 1-420-1016	**Reported:**
Fresno CA, 93722	Project Manager: Shannon Lodge	01/22/21 12:05

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. This report and all associated analytical data will be retained by Sierra Analytical Labs, Inc. for five years from the date reported. Requests for additional storage time must be made in writing prior to the expiration of the five year retaining period and are subject to approval by Sierra Analytical Labs, Inc.

26052 Merit Circle Suite 104, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

H&P Mobile Geochemistry Inc.

15 January 2021

Shannon Lodge
SALEM Engineering Grp, Inc. - Fresno
4729 W. Jacquelyn Ave.
Fresno, CA 93722

H&P Project: SLM010821-12
Client Project: Former Compress

Dear Shannon Lodge:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 08-Jan-21 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody
- Sampling Logs (if applicable)

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Lisa Eminhizer
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP and the National Environmental Laboratory Accreditation Conference (NELAC) for the fields of proficiency and analytes listed on those certificates. H& P is approved as an Environmental Testing Laboratory in accordance with the DoD-ELAP Program and ISO/IEC 17025:2005 programs for the fields of proficiency and analytes included in the certification process and to the extent offered by the accreditation agency . Unless otherwise noted, accreditation certificate numbers, expiration of certificates, and scope of accreditation can be found at: www.handpmg.com/about/certifications. Fields of services and analytes contained in this report that are not listed on the certificates should be considered uncertified or unavailable for certification.

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SV-1 @ 5	E101012-01	Vapor	07-Jan-21	08-Jan-21
SV-1 @ 10	E101012-02	Vapor	07-Jan-21	08-Jan-21
SV-2 @ 5	E101012-03	Vapor	07-Jan-21	08-Jan-21
SV-2 @ 10	E101012-04	Vapor	07-Jan-21	08-Jan-21
SV-2 @ 10 DUP	E101012-05	Vapor	07-Jan-21	08-Jan-21
SV-3 @ 5	E101012-06	Vapor	07-Jan-21	08-Jan-21
SV-3 @ 10	E101012-07	Vapor	07-Jan-21	08-Jan-21
SV-4 @ 5	E101012-08	Vapor	07-Jan-21	08-Jan-21
SV-4 @ 10	E101012-09	Vapor	07-Jan-21	08-Jan-21
SV-5 @ 5	E101012-10	Vapor	07-Jan-21	08-Jan-21
SV-5 @ 10	E101012-11	Vapor	07-Jan-21	08-Jan-21
SV-6 @ 5	E101012-12	Vapor	07-Jan-21	08-Jan-21
SV-6 @ 10	E101012-13	Vapor	07-Jan-21	08-Jan-21

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

DETECTIONS SUMMARY

Sample ID: **SV-1 @ 5** Laboratory ID: **E101012-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-1 @ 10** Laboratory ID: **E101012-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-2 @ 5** Laboratory ID: **E101012-03**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-2 @ 10** Laboratory ID: **E101012-04**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-2 @ 10 DUP** Laboratory ID: **E101012-05**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-3 @ 5** Laboratory ID: **E101012-06**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-3 @ 10** Laboratory ID: **E101012-07**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-4 @ 5** Laboratory ID: **E101012-08**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Sample ID: **SV-4 @ 10** Laboratory ID: **E101012-09**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-5 @ 5** Laboratory ID: **E101012-10**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-5 @ 10** Laboratory ID: **E101012-11**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-6 @ 5** Laboratory ID: **E101012-12**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

Sample ID: **SV-6 @ 10** Laboratory ID: **E101012-13**

Analyte	Result	Reporting Limit	Units	Method	Notes
No Detections Reported					

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-1 @ 5 (E101012-01) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-1 @ 5 (E101012-01) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*122 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*107 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*103 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.4 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-1 @ 10 (E101012-02) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-1 @ 10 (E101012-02) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*121 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*110 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*104 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-2 @ 5 (E101012-03) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-2 @ 5 (E101012-03) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*118 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*105 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*103 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*97.1 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-2 @ 10 (E101012-04) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-2 @ 10 (E101012-04) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*124 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*113 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*102 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-2 @ 10 DUP (E101012-05) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-2 @ 10 DUP (E101012-05) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*122 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*108 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*102 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*97.9 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-3 @ 5 (E101012-06) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-3 @ 5 (E101012-06) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*120 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*112 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*99.6 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.6 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-3 @ 10 (E101012-07) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-3 @ 10 (E101012-07) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*121 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*105 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*103 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.6 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-4 @ 5 (E101012-08) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-4 @ 5 (E101012-08) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*122 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*114 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*101 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*99.9 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-4 @ 10 (E101012-09) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-4 @ 10 (E101012-09) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*125 %*		*75-125*	"	"	"	"	*S-GC*
Surrogate: 1,2-Dichloroethane-d4		*119 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*102 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-5 @ 5 (E101012-10) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-5 @ 5 (E101012-10) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*124 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*111 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*100 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-5 @ 10 (E101012-11) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-5 @ 10 (E101012-11) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*124 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*113 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*100 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*100 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-6 @ 5 (E101012-12) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-6 @ 5 (E101012-12) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*129 %*		*75-125*	"	"	"	"	*S-GC*
Surrogate: 1,2-Dichloroethane-d4		*116 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*99.5 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-6 @ 10 (E101012-13) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
Isopropyl alcohol (LCC)	ND	8.0	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Dichlorodifluoromethane (F12)	ND	0.40	"	"	"	"	"	"	
Chloromethane	ND	0.40	"	"	"	"	"	"	
Vinyl chloride	ND	0.040	"	"	"	"	"	"	
Bromomethane	ND	0.40	"	"	"	"	"	"	
Chloroethane	ND	0.40	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	0.40	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.40	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.40	"	"	"	"	"	"	
Chloroform	ND	0.080	"	"	"	"	"	"	
Bromochloromethane	ND	0.40	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.080	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.080	"	"	"	"	"	"	
Benzene	ND	0.080	"	"	"	"	"	"	
Trichloroethene	ND	0.080	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Bromodichloromethane	ND	0.40	"	"	"	"	"	"	
Dibromomethane	ND	0.40	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
Toluene	ND	0.80	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.40	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.40	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.40	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.40	"	"	"	"	"	"	
Tetrachloroethene	ND	0.080	"	"	"	"	"	"	
Dibromochloromethane	ND	0.40	"	"	"	"	"	"	
Chlorobenzene	ND	0.080	"	"	"	"	"	"	
Ethylbenzene	ND	0.40	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
m,p-Xylene	ND	0.40	"	"	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SV-6 @ 10 (E101012-13) Vapor Sampled: 07-Jan-21 Received: 08-Jan-21									
o-Xylene	ND	0.40	ug/l	0.04	EA11402	14-Jan-21	14-Jan-21	H&P 8260SV	
Styrene	ND	0.40	"	"	"	"	"	"	
Bromoform	ND	0.40	"	"	"	"	"	"	
Isopropylbenzene (Cumene)	ND	0.40	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.40	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.40	"	"	"	"	"	"	
n-Propylbenzene	ND	0.40	"	"	"	"	"	"	
Bromobenzene	ND	0.40	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.40	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.40	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.40	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.40	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
n-Butylbenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.40	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	4.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.40	"	"	"	"	"	"	
Naphthalene	ND	0.080	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.40	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*122 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*112 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*99.7 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*103 %*		*75-125*	"	"	"	"	

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA11402 - EPA 5030										
Blank (EA11402-BLK1)				Prepared & Analyzed: 14-Jan-21						
Isopropyl alcohol (LCC)	ND	8.0	ug/l							
Dichlorodifluoromethane (F12)	ND	0.40	"							
Chloromethane	ND	0.40	"							
Vinyl chloride	ND	0.040	"							
Bromomethane	ND	0.40	"							
Chloroethane	ND	0.40	"							
Trichlorofluoromethane (F11)	ND	0.40	"							
1,1-Dichloroethene	ND	0.40	"							
1,1,2 Trichlorotrifluoroethane (F113)	ND	0.40	"							
Methylene chloride (Dichloromethane)	ND	0.40	"							
Methyl tertiary-butyl ether (MTBE)	ND	0.40	"							
trans-1,2-Dichloroethene	ND	0.40	"							
1,1-Dichloroethane	ND	0.40	"							
2,2-Dichloropropane	ND	0.40	"							
cis-1,2-Dichloroethene	ND	0.40	"							
Chloroform	ND	0.080	"							
Bromochloromethane	ND	0.40	"							
1,1,1-Trichloroethane	ND	0.40	"							
1,1-Dichloropropene	ND	0.40	"							
Carbon tetrachloride	ND	0.080	"							
1,2-Dichloroethane (EDC)	ND	0.080	"							
Benzene	ND	0.080	"							
Trichloroethene	ND	0.080	"							
1,2-Dichloropropane	ND	0.40	"							
Bromodichloromethane	ND	0.40	"							
Dibromomethane	ND	0.40	"							
cis-1,3-Dichloropropene	ND	0.40	"							
Toluene	ND	0.80	"							
trans-1,3-Dichloropropene	ND	0.40	"							
1,1,2-Trichloroethane	ND	0.40	"							
1,2-Dibromoethane (EDB)	ND	0.40	"							
1,3-Dichloropropane	ND	0.40	"							
Tetrachloroethene	ND	0.080	"							
Dibromochloromethane	ND	0.40	"							

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA11402 - EPA 5030										
Blank (EA11402-BLK1)				Prepared & Analyzed: 14-Jan-21						
Chlorobenzene	ND	0.080	ug/l							
Ethylbenzene	ND	0.40	"							
1,1,1,2-Tetrachloroethane	ND	0.40	"							
m,p-Xylene	ND	0.40	"							
o-Xylene	ND	0.40	"							
Styrene	ND	0.40	"							
Bromoform	ND	0.40	"							
Isopropylbenzene (Cumene)	ND	0.40	"							
1,1,2,2-Tetrachloroethane	ND	0.40	"							
1,2,3-Trichloropropane	ND	0.40	"							
n-Propylbenzene	ND	0.40	"							
Bromobenzene	ND	0.40	"							
1,3,5-Trimethylbenzene	ND	0.40	"							
2-Chlorotoluene	ND	0.40	"							
4-Chlorotoluene	ND	0.40	"							
tert-Butylbenzene	ND	0.40	"							
1,2,4-Trimethylbenzene	ND	0.40	"							
sec-Butylbenzene	ND	0.40	"							
p-Isopropyltoluene	ND	0.40	"							
1,3-Dichlorobenzene	ND	0.40	"							
1,4-Dichlorobenzene	ND	0.40	"							
n-Butylbenzene	ND	0.40	"							
1,2-Dichlorobenzene	ND	0.40	"							
1,2-Dibromo-3-chloropropane	ND	4.0	"							
1,2,4-Trichlorobenzene	ND	0.40	"							
Hexachlorobutadiene	ND	0.40	"							
Naphthalene	ND	0.080	"							
1,2,3-Trichlorobenzene	ND	0.40	"							
Surrogate: Dibromofluoromethane	*2.45*		*"*	*2.00*		*123*	*75-125*			
Surrogate: 1,2-Dichloroethane-d4	*2.16*		*"*	*2.00*		*108*	*75-125*			
Surrogate: Toluene-d8	*2.05*		*"*	*2.00*		*102*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*2.08*		*"*	*2.00*		*104*	*75-125*			

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project: SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number: Former Compress	Reported:
Fresno, CA 93722	Project Manager: Shannon Lodge	15-Jan-21 15:55

Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA11402 - EPA 5030										
LCS (EA11402-BS1)				Prepared & Analyzed: 14-Jan-21						
Dichlorodifluoromethane (F12)	3.7	0.50	ug/l	5.00		74.6	70-130			
Vinyl chloride	4.3	0.050	"	5.00		86.7	70-130			
Chloroethane	4.6	0.50	"	5.00		91.8	70-130			
Trichlorofluoromethane (F11)	4.5	0.50	"	5.00		90.2	70-130			
1,1-Dichloroethene	5.2	0.50	"	5.00		105	70-130			
1,1,2 Trichlorotrifluoroethane (F113)	4.8	0.50	"	5.00		96.1	70-130			
Methylene chloride (Dichloromethane)	4.2	0.50	"	5.00		84.6	70-130			
trans-1,2-Dichloroethene	4.6	0.50	"	5.00		91.3	70-130			
1,1-Dichloroethane	4.5	0.50	"	5.00		89.2	70-130			
cis-1,2-Dichloroethene	5.0	0.50	"	5.00		100	70-130			
Chloroform	4.5	0.10	"	5.00		90.1	70-130			
1,1,1-Trichloroethane	4.7	0.50	"	5.00		93.4	70-130			
Carbon tetrachloride	4.9	0.10	"	5.00		97.6	70-130			
1,2-Dichloroethane (EDC)	4.7	0.10	"	5.00		94.0	70-130			
Benzene	4.6	0.10	"	5.00		92.5	70-130			
Trichloroethene	4.9	0.10	"	5.00		97.6	70-130			
Toluene	4.5	1.0	"	5.00		90.0	70-130			
1,1,2-Trichloroethane	4.5	0.50	"	5.00		89.6	70-130			
Tetrachloroethene	4.5	0.10	"	5.00		91.0	70-130			
Ethylbenzene	4.7	0.50	"	5.00		93.1	70-130			
1,1,1,2-Tetrachloroethane	4.6	0.50	"	5.00		91.0	70-130			
m,p-Xylene	9.5	0.50	"	10.0		94.6	70-130			
o-Xylene	4.6	0.50	"	5.00		91.1	70-130			
1,1,2,2-Tetrachloroethane	4.0	0.50	"	5.00		80.4	70-130			
Surrogate: Dibromofluoromethane	*2.88*		*"*	*2.50*		*115*	*75-125*			
Surrogate: 1,2-Dichloroethane-d4	*2.50*		*"*	*2.50*		*100*	*75-125*			
Surrogate: Toluene-d8	*2.65*		*"*	*2.50*		*106*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*2.51*		*"*	*2.50*		*100*	*75-125*			

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

SALEM Engineering Grp, Inc. - Fresno	Project:	SLM010821-12	
4729 W. Jacquelyn Ave.	Project Number:	Former Compress	Reported:
Fresno, CA 93722	Project Manager:	Shannon Lodge	15-Jan-21 15:55

Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate(s).
LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

All soil results are reported in wet weight.

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP Program and ISO/IEC 17025:2005 programs through PJLA, accreditation number 69070 for EPA Method TO-15, EPA Method 8260B and H&P 8260SV.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743 & 2745.

H&P is approved by the State of Louisiana Department of Environmental Quality under the National Environmental Laboratory Accreditation Conference (NELAC) certification number 04138

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

Mobile Geochemistry, Inc.
2470 Impala Drive, Carlsbad, CA 92010
& Field Office - Signal Hill, CA
W handpmg.com E info@handpmg.com
P 760.804.9678 F 760.804.9159

VAPOR / AIR Chain of Custody

DATE: 1/7/21
Page 1 of 2

Lab Client and Project Information

Lab Client/Consultant: Salem Engineering Group	Project Name / #: Former Compressor
Lab Client Project Manager: Shannon Lodge	Project Location: Fresno
Lab Client Address: 4729 W. Jacquelyn Ave	Report E-Mail(s): shannon@salemnet
Lab Client City, State, Zip: Fresno, CA 93711	
Phone Number: (559) 907-9742	

Reporting Requirements
- [x] Standard Report [ ] Level III [ ] Level IV
- [ ] Excel EDD [ ] Other EDD:
- [ ] CA Geotracker Global ID:

Turnaround Time
- [x] **Standard** (7 days for preliminary report, 10 days for final report)
- [ ] **Rush** (specify):

Sampler Information
Sampler(s): S. Lodge
Signature:
Date: 1/7/21

Sample Receipt (Lab Use Only)

Date Rec'd: 1/8/21	Control #: 210001.01
H&P Project #	SLM010821-12
Lab Work Order #	E101012
Sample Intact: [x] Yes [ ] No [ ] See Notes Below	
Receipt Gauge ID: 30005	Temp: RT
Outside Lab:	
Receipt Notes/Tracking #: 1Z93TT619050941995 1Z93TT619049389201	
Lab PM Initials: SM	

Additional Instructions to Laboratory: LRLs

** Preferred VOC units (please choose one):*
- [x] µg/L [ ] µg/m³ [ ] ppbv [ ] ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa, Tedlar, Tube, etc.	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List [x] 8260SV [ ] TO-15	VOCs Short List / Project List [ ] 8260SV [ ] TO-15	Oxygenates [ ] 8260SV [ ] TO-15	Naphthalene [ ] 8260SV [ ] TO-15	TPHv as Gas [ ] 8260SV/m [ ] TO-15m	Aromatic/Aliphatic Fractions [ ] 8260SV/m [ ] TO-15m	Leak Check Compound [ ] DFA [x] IPA [ ] He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 [ ] CO2 [ ] O2 [ ] N2				
SV-1 @ 5		1/7/21	12:20	SV	400mL	004	.70	X						X						
SV-1 @ 10			12:30			038	.39													
SV-2 @ 5			12:40			140	.43													
SV-2 @ 10			12:45			015	.17													
SV-2 @ 10 Dup			12:50			238	.24													
SV-3 @ 5			13:00			069	.39													
SV-3 @ 10			13:05			050	.56													
SV-4 @ 5			13:20			147	.15													
SV-4 @ 10			13:25			156	.08													
SV-5 @ 5			13:35			231	.51													

Approved/Relinquished by:	Company: Salem	Date: 1/7/21	Time: 3:00	Received by:	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company: HEP	Date: 1/8/2021	Time: 1200
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

**Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back*

H&P Mobile Geochemistry, Inc.
2470 Impala Drive, Carlsbad, CA 92010
& Field Office - Signal Hill, CA
W handpmg.com E info@handpmg.com
P 760.804.9678 F 760.804.9159

VAPOR / AIR Chain of Custody

DATE: 1/7/21

Lab Client and Project Information

Lab Client/Consultant: Salem Engineering Group	Project Name / #: 1-420-1016 Former compressor
Lab Client Project Manager: Shannon Lodge	Project Location: Fresno
Lab Client Address: 4729 W. Jacquelyn Ave	Report E-Mail(s): shannon@salem.net
Lab Client City, State, Zip: Fresno, CA 93722	
Phone Number: (559) 907-9742	

Sample Receipt (Lab Use Only)

Date Rec'd: 1/8/21	Control #: 210001.01
H&P Project #	SLM 010821-12
Lab Work Order #	E101012
Sample Intact: ☑ Yes ☐ No ☐ See Notes Below	
Receipt Gauge ID: 30005	Temp: RT
Outside Lab:	
Receipt Notes/Tracking #:	
Lab PM Initials: SM	

Reporting Requirements

☒ Standard Report ☐ Level III ☐ Level IV
☐ Excel EDD ☐ Other EDD:
☐ CA Geotracker Global ID:

Turnaround Time

☒ **Standard** (7 days for preliminary report, 10 days for final report)
☐ **Rush** (specify):

Sampler Information

Sampler(s): S. Lodge
Signature:
Date: 1/7/21

Additional Instructions to Laboratory:

LRLs

* *Preferred VOC units (please choose one):*
☒ µg/L ☐ µg/m³ ☐ ppbv ☐ ppmv

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa, Tedlar, Tube, etc.	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List ☒ 8260SV ☐ TO-15	VOCs Short List / Project List ☐ 8260SV ☐ TO-15	Oxygenates ☐ 8260SV ☐ TO-15	Naphthalene ☐ 8260SV ☐ TO-15	TPHv as Gas ☐ 8260SVm ☐ TO-15m	Aromatic/Aliphatic Fractions ☐ 8260SVm ☐ TO-15m	Leak Check Compound ☐ DFA ☒ IPA ☐ He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 ☐ CO2 ☐ O2 ☐ N2				
SV-5@10		1/7/21	13:45	SV	400mL	058	.09	X						X						
SV-6@5		↓	14:00	↓	↓	199	-.35	X						X						
SV-6@10		↓	14:10	↓	↓	226	.40	X						X						

Approved/Relinquished by:	Company: Salem	Date: 1/7/21	Time: 3:00	Received by: UPS	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company: H&P	Date: 1/8/21	Time: 1200
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

Job Summary

Job Date : 1/4/2021

Customer	Salem Engineering Group	**Phone Number**	(559) 907-9742

Billing Address	City	State	Zip
4729 W. Jacquelyn Ave.	Fresno	CA	93722

Job Details

Jobsite Location	2740 WEST NEILSON AVENUE
City	FRESNO
State	CA

WA Number	238455
Job Num	
PO Num	1-420-1016

Lead Technician	TOLLESON, KODY	**Phone**	510-468-8610	**Email**	kody.tolleson@gprsinc.com

Thank you for using GPRS on your project. We appreciate the opportunity to work with you. If you have questions regarding the results of this scanning, please contact the lead GPRS technician on this project.

EQUIPMENT USED

The following equipment was used on this project:

- Underground Scanning GPR antenna. Typically capable of detecting objects up to 8' deep or more in ideal conditions but maximum effective depth can vary widely and depends on site and soil conditions. Depth penetration is most commonly limited by moisture and clay/conductive soils. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors.
- Electromagnetic Pipe and Cable Locator. Detects electromagnetic fields. Used to actively trace conductive pipes and tracer wires, or passively detect power and radio signals traveling along conductive pipes and utilities. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors.
- Magnetometer. Detects ferromagnetic objects at depths up to 8' by detecting their magnetic fields. Effective at detecting well heads, buried manholes, and other iron objects.

Work Performed

Ground Penetrating Radar Systems performed the following work on this project:

Underground Utility

The scope of work included scanning the specified area to locate underground utilities. A tracer signal was sent along any accessible metallic utility or tracer wire, and the area was scanned with GPR to locate any additional targets. The locations of any detected utilities and anomalies were marked directly at the site with paint, flags, stakes, or other appropriate means, and results were reviewed with onsite personnel unless otherwise noted.

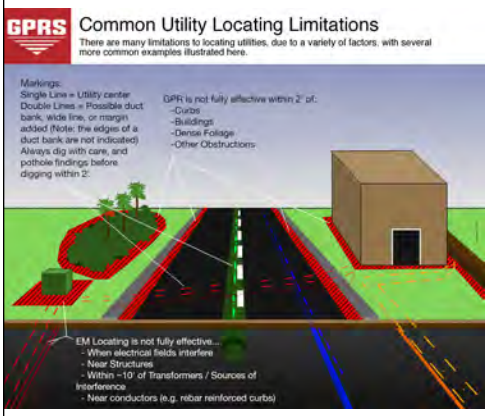
- The scope of work included scanning the areas around proposed soil borings. A radius of approximately 10' around each proposed soil boring was scanned unless otherwise noted. A total of 7 boring locations were scanned.
- The customer requested to have 7 location scanned prior to soil borings. The customer also requested to search for 3 septic tanks and a UST.

Job Summary

Job Date : 1/4/2021

- The effective depth of GPR will vary throughout a site depending on surface and soil conditions. In this area, the maximum effective GPR depth was approximately 1-4 feet.
- 2 out of 3 septic tanks were located and there was no data circular that was consistent with that of a UST. Unknown objects were located across the site and marked out. Please avoid all markings by a minimum of 2' when working.

Pictures



Utility Limitations

TERMS & CONDITIONS

http://www.gprsinc.com/termsandconditions.html

SIGNATURE

Contact Name

Shannon Lodge (559) 907-9742 Shannon@salem.net

Job Summary

Job Date : 1/4/2021

APPENDIX K

WATER SUPPLY ASSESSMENT

This page intentionally left blank

SB 610 WATER SUPPLY ASSESSMENT

2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

FRESNO, CALIFORNIA

LSA

October 2022

SB 610 WATER SUPPLY ASSESSMENT

2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

FRESNO, CALIFORNIA

Submitted to:

City of Fresno
Planning and Development Department
2600 Fresno Street
Fresno, California 93721

Prepared by:

LSA
2565 Alluvial Avenue, Suite 172
Clovis, California 93611
(559) 490-1210

Project No. SNN2102

LSA

October 2022

TABLE OF CONTENTS

TABLE OF CONTENTS i
FIGURES AND TABLES iii
LIST OF ABBREVIATIONS AND ACRONYMS iv
INTRODUCTION 1
Project Description 1
WATER SUPPLY RIGHTS AND ENTITLEMENTS 6
Groundwater 6
Basin Description 6
Groundwater Management 8
Overdraft Conditions 10
Groundwater Quality 11
Estimated Groundwater Yield 12
Historic Groundwater Pumping 14
Surface Water 15
USBR Friant Division Contract Supply 15
Fresno Irrigation District Supply 18
Stormwater 20
Wastewater and Recycled Water 20
Recycled Water Coordination 20
Wastewater Collection, Treatment, and Disposal 22
Recycled Water System Description 23
Potential, Current, and Project Recycled Water Rates 26
Actions to Encourage and Optimize Future Water Use 29
Desalinated Water opportunities 29
Water Exchanges and Transfers 30
Exchanges and Transfer Opportunities 30
Emergency Interties 30
Future Water Projects 31
Expand Recycled Water Distribution System 31
Expand Groundwater Recharge Capacity 31
Expand Surface Water Treatment Capacity 32
Beneficial Transfers and Exchanges 32
Summary of Existing and Planned Sources of Water 32
Supply Management 33
Special Conditions 33
Energy Intensity 35
WATER SUPPLY 36

CONTINGENCY ANALYSIS APPLICABLITY 40
WATER DEMAND 42
Citywide Demand Factors for Water Use 42
Proposed Project Water Demand 43
Methodology 43
Assumptions 45
Proposed Project Water Demand 45
Applicability of the Urban Water Management Plan 46
ASSESSMENT FINDINGS 49

FIGURES AND TABLES

FIGURES

Figure 1: Regional Project Location 2
Figure 2: Aerial Photograph of Project Site and Surrounding Land Uses 3
Figure 3: Site Plan 4
Figure 4: City Wells Specific Capacity 8
Figure 5: Time Series of Groundwater Levels at Representative Wells 11
Figure 6: Historic Groundwater Production 15
Figure 7: Existing and Projected Land Use 45
Figure 8: Project Site in Relation to the 2020 UWMP Water Service Area Boundaries 47
Figure 9: Project Site General Plan Land Use Designation 48

TABLES

Table A: Normal Year Supply and Demand Comparison (acre-feet per year) 13
Table B: Available USBR Simulated Allocation (1922-2003) 17
Table C: FID Diversions by Water Year Type (1964 to 2019) 19
Table D: Projected FID Kings River Allocation for City, Normal Years 20
Table E: Historic Recycled Water Used Within Service Area (AF) 24
Table F: Recycled Water within Service Area 27
Table G: Actual Water Supplies 32
Table H: Projected Water Supplies 33
Table I: Water System Energy Intensity in 2020 35
Table J: Normal Year Supply and Demand Comparison (acre-feet per year) 36
Table K: Single Dry Year Supply and Demand Comparison (acre-feet per year) 37
Table L: Multiple Dry Years Supply and Demand Comparison 37
Table M: Citywide Demands for Potable and Non-Potable Water (acre-feet per year) 42
Table N: Existing and Future Water Service Area Acreage 44

LIST OF ABBREVIATIONS AND ACRONYMS

1,2,3-TCP	1,2,3-trichloropropane
AF	acre-feet
AFY	acre-feet per year
CALGreen Code	California Green Building Standards Code
CEQA	California Environmental Quality Act
City	City of Fresno
County	County of Fresno
CPC	California Plumbing Code
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CY	calendar year
DBCP	1,2-dibromo-3-chloropropane
DDR	Department of Drinking Water
DPU	Department of Public Utilities
DWR	Department of Water Resources
FID	Fresno Irrigation District
FMFCD	Fresno Metropolitan Flood Control District
GIS	Geographic Information System
gpm	gallons per minute
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IGSM	Integrated Groundwater and Surface Water Model
Metro Plan	Fresno Metropolitan Water Resource Management Plan
mg/L	milligrams per liter
mgd	million gallons per day
NESWTF	Northeast Surface Water Treatment Facility
NFWRF	North Fresno Wastewater Reclamation Facility

PCE	perchloroethylene
PFAS	per- and polyfluoroalkyl substances
PG&E	Pacific Gas and Electric Company
project	2740 West Nielsen Avenue Office/Warehouse Project
RWMP	Recycled Water Master Plan
RWRF	Regional Wastewater Reclamation Facility
SB	Senate Bill
SESWTF	Southeast Surface Water Treatment Facility
SOI	Sphere of Influence
SR	State Route
SWRCB	State Water Resources Control Board
SWTF	surface water treatment facility
TCE	trichloroethylene
TDS	total dissolved solids
TTDF	Tertiary Treatment and Disinfection Facility
USBR	United States Bureau of Reclamation
UV	ultraviolet
UWMP	Urban Water Management Plan
WRF	Wastewater Reclamation Facility
WSA	Water Supply Assessment
WSCP	Water Shortage Contingency Plan
WSIP	Water Storage Investment Program
WY	water year

INTRODUCTION

The City of Fresno (City) is conducting an environmental review under the requirements of the California Environmental Quality Act (CEQA) for the proposed 2740 West Nielsen Avenue Office/Warehouse Project (project) in Fresno, Fresno County, California. This Water Supply Assessment (WSA) has been prepared pursuant to the requirements of Senate Bill (SB) 610, which requires public water agencies, parties, or purveyors that may supply water to certain proposed development projects to prepare a WSA for use in environmental documentation for such projects, pursuant to CEQA. This WSA contains information from the City of Fresno 2020 Urban Water Management Plan (UWMP),[1] which was adopted by the City in June 2021. A WSA is required for any project that is subject to CEQA and includes an industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupy more than 40 acres of land, or having more than 650,000 square feet of floor area.

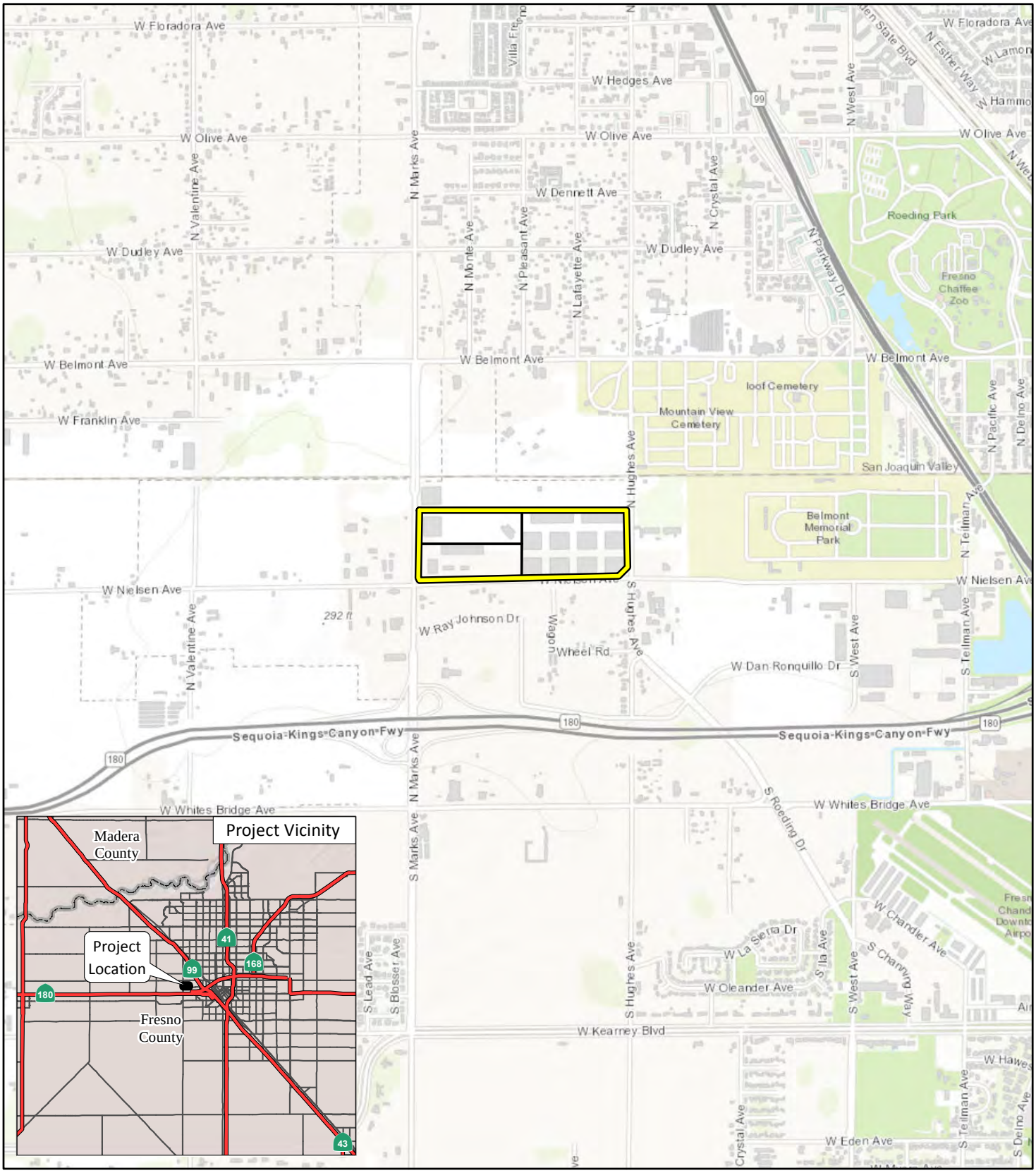
PROJECT DESCRIPTION

The 48.03-acre project site is currently vacant but previously consisted of an industrial warehouse that has since been demolished. The project site is bounded to the north by vacant, undeveloped land, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue. Regional access to the site is provided by State Route (SR) 180, which is located approximately 0.3 mile south of the project site, and SR-99, which is located approximately 0.8 mile east of the project site. Figure 1 shows the site's regional and local context. Figure 2 depicts an aerial photograph of the project site and surrounding land uses.

The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high, with an interior height of up to 36 feet, and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would consist of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. Figure 3 shows the project site plan.

The proposed project would comply with the latest California Green Building Standards Code (CALGreen Code) building measures and Title 24 standards.

[1] Fresno, City of. 2021. *City of Fresno 2020 Urban Water Management Plan*. June.



LSA

LEGEND

Project Location

Proposed Parcels

FIGURE 1

N

0 1000 2000

FEET

2740 West Nielsen Avenue Office/Warehouse Project

Regional Project Location

SOURCE: Esri Topographic Map (2021)

I:\SNN2102\GIS\MXD\Project_Location.mxd (6/7/2021)

LSA

FIGURE 2

Project Site

Proposed Parcels

N

0 500 1000

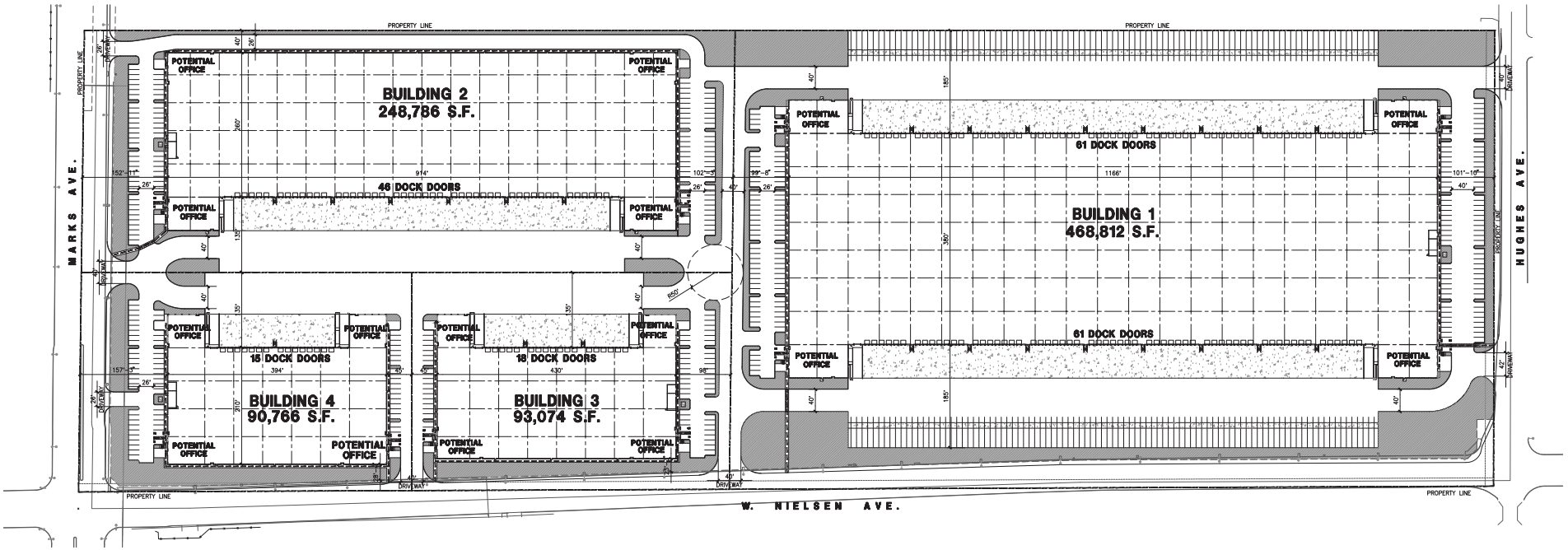
FEET

2740 West Nielsen Office/Warehouse Project

Aerial Photograph of Project Site and Surrounding Land Uses

SOURCES: Google Earth, 9/9/2019; LSA 2021

FreP:\SNN2102 2740 W. Nielsen\PRODUCTS\Graphics\Figure 2.ai (1/20/2022)



LSA

FIGURE 3

0 120 240

FEET

N

2740 West Nielsen Office/Warehouse Project
Site Plan

SOURCE: HPA Architecture, Inc., 2021

FreP:\SNN2102 2740 W. Nielsen\PRODUCTS\Graphics\Figure 3.ai (10/5/2021)

As shown in Figure 3, vehicular access to the site would be provided by North Hughes Avenue, West Nielsen Avenue, and North Marks Avenue.

A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining 188 spaces would be dedicated for trailers, would be located along the eastern and western edges of the project site, and would be behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.

Consistent with City requirements, drought-tolerant landscaping would be provided throughout the project site.

The project site is located in an urban area and is currently served by existing utilities, including: water, sanitary sewer, storm drainage, electricity, and natural gas infrastructure. Water service to the project site would be provided by the City. New water within the project site would connect to the existing 14-inch main located on North Marks Avenue and the 16-inch main on North Hughes Avenue. The project would also include an on-site 12-inch main. The City would provide wastewater collection and treatment for the proposed project, and maintains an existing 12- to 18-inch line located in West Nielsen Avenue. The proposed project includes the installation of a new on-site 8-inch wastewater line that would connect to the City's existing line. The proposed project would include construction of a new curb and gutter along North Marks Avenue, West Nielsen Avenue, and North Hughes Avenue that would connect to the existing Fresno Metropolitan Flood Control District (FMFCD) stormwater system.

Electricity and natural gas services to the site are provided by Pacific Gas and Electric Company (PG&E). Existing underground utility connections and gas mains provide electricity and gas to the project site. New underground electrical lines would be installed.

Construction of the proposed project is anticipated to occur in two phases over a total 24-month period. The first phase would include the construction of Buildings 2, 3, and 4 and would occur for 12 months. The second phase would include the construction of Building 1 and would occur for 12 months. The proposed project would comply with City standards, including the City's current building code, landscape standards, and lighting standards. In addition, the proposed project would be graded similar to other developments throughout Fresno.

WATER SUPPLY RIGHTS AND ENTITLEMENTS

The City of Fresno relies on groundwater from the North Kings Subbasin; surface water from the Central Valley Project (CVP), through a contract with the United States Bureau of Reclamation (USBR); Kings River water, through a contract with Fresno Irrigation District (FID); and recycled water to meet current and future water demands. The following pages are extracted directly from the 2020 UWMP (Pages 6-1 through 6-32) in satisfaction of Water Code sections 10910(A)(1) and 10910(D)(2). This information is applicable to the entire City of Fresno municipal water service area, including the project site.

GROUNDWATER

The City overlies the Kings Subbasin, which is part of the greater San Joaquin Valley Groundwater Basin. The City is one of many water purveyors that use groundwater from the Kings Subbasin.

The City has a network of over 270 municipal wells and currently operates approximately 202 municipal supply wells within the Kings Subbasin. Until late 2004, the City relied solely on groundwater to meet the water demands. The City's desire is to continue to use groundwater within a larger conjunctive use program that maximizes its existing water rights and surface water supply sources.

Basin Description

The Department of Water Resources (DWR) has partitioned the State into 10 major hydrologic regions (also referred to as "basins") and then further divided each basin into subbasins. The City is located in the Kings Subbasin (DWR Groundwater Subbasin Number 5-22.08) and lies within the larger San Joaquin Valley Groundwater Basin in the Central Valley of California. The Kings Subbasin covers approximately 1,530 square miles.

Basin Location

The San Joaquin Valley Groundwater Basin is bounded to the north by the Sacramento-San Joaquin Delta and Sacramento Valley, to the east by the Sierra Nevada, to the south by the San Emigdio and Tehachapi mountains, and to the west by the Coast Ranges. The Kings Subbasin, located within the southern half of the San Joaquin Valley Groundwater Basin, is bounded to the north by the San Joaquin River, to the east by the alluvium-granite rock interface of the Sierra Nevada foothills, to the south by the southern fork of the Kings River, and to the west by the Delta-Mendota and Westside Subbasins. The Kings Subbasin is split into seven Groundwater Sustainability Agency (GSA) management areas, with Fresno located in the North Kings GSA. Figure 6-1 of the 2020 UWMP illustrates the location of Fresno within the Kings Subbasin.

Area Geology

The upper several hundred feet of geology within the Kings Subbasin generally consists of highly permeable, coarse-grained deposits, which are termed older alluvium. Figure 6-2 of the 2020 UWMP presents an idealized hydrogeologic cross-section that illustrates the general depth of various lithologic features within the Kings Subbasin, near Fresno.

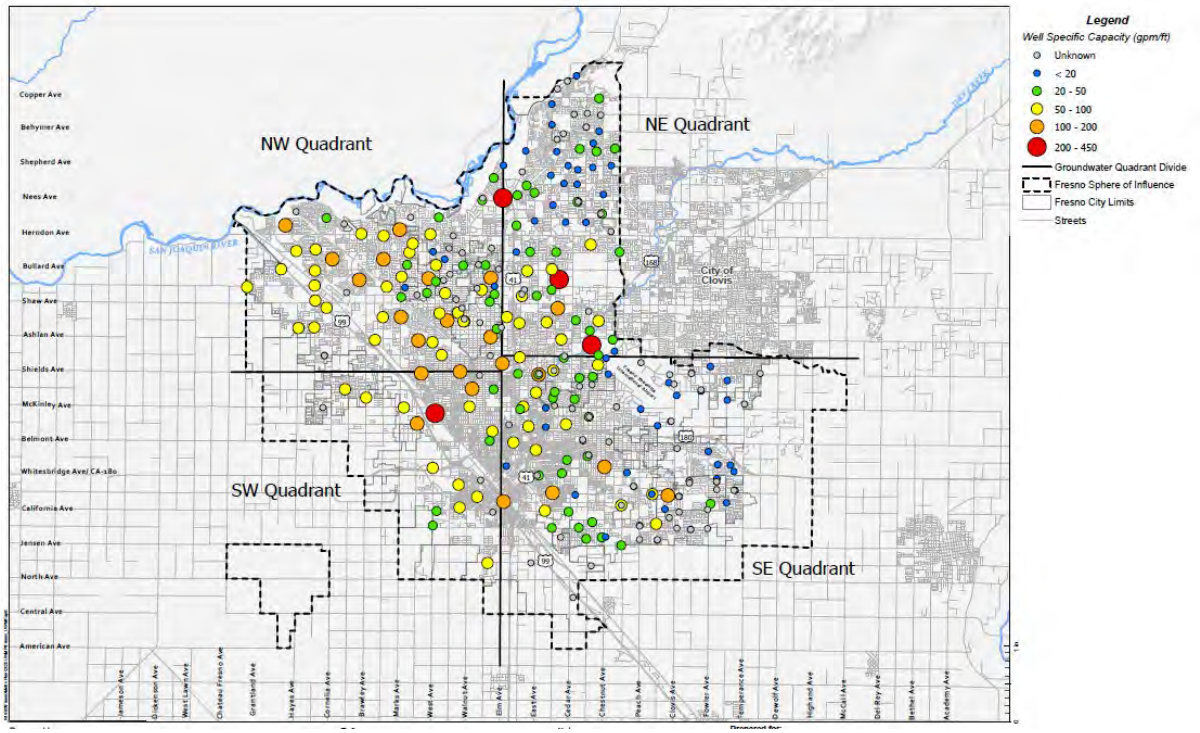
Coarse-grained stream channel deposits, associated with deposits by the ancestral San Joaquin and Kings Rivers, underlie much of northwest Fresno. There is a laterally extensive clay layer, at an average depth of approximately 250 feet below the ground surface, beneath most of the south and southeastern portions of Fresno.

Below the older alluvium, to depths ranging about 600–1,200 feet below ground surface, the finer-grained sediments of the tertiary-quaternary continental deposits are typically encountered. Substantial groundwater has been produced and utilized from these depths by the City. However, deeper deposits located in the southeastern and northern portions of Fresno have produced less groundwater.

There are also reduced deposits in the northern and eastern portions of Fresno, at depths generally below 700 or 800 feet, which are associated with high concentrations of iron, manganese, arsenic, hydrogen sulfide, and methane gas. Groundwater at these depths does not generally provide a significant source for municipal supply wells.

Aquifer Characteristics

The aquifer beneath Fresno was characterized using data compiled during aquifer tests performed at the City's production wells. As part of updating the detailed hydrogeologic evaluation, aquifer test data (pump tests) were reviewed to update the hydrogeologic analysis and evaluate the specific capacity data. The specific capacity indicates the ability of a particular well to produce water. Figure 4 shows the estimated specific capacity of each active well from early 2020 pump test data. As shown in the figure, the northwestern and southwestern portions of Fresno have wells with higher specific capacities.



Source: 2020 Urban Water Management Plan, Figure 6-3 (City of Fresno 2021).

Figure 4: City Wells Specific Capacity

Groundwater Management

In 2014, a three-bill legislative package was signed into law, composed of Assembly Bill 1739, SB 1168, and SB 1319, collectively known as the Sustainable Groundwater Management Act (SGMA) of 2014, which is codified in Section 10720 et seq. of the California Water Code. This legislation created a statutory framework for groundwater management in California that can be sustained during the planning and implementation horizon without causing undesirable results. SGMA requires governments and water agencies of "critically overdrafted" basins to reach sustainability by 2040. The Kings Subbasin was designated a critically overdrafted basin in the DWR's Bulletin 118. The North Kings GSA is working within the SGMA framework to reach groundwater sustainability.

The City was a founding member of the North Kings GSA, which consists of the following public agencies:

- FID
- City of Fresno
- City of Clovis
- City of Kerman
- County of Fresno

- Biola Community Services District
- Garfield Water District
- International Water District

The Kings Subbasin contains seven GSAs, including the North Kings GSA, as listed below and shown in Figure 6-1 of the 2020 UWMP:

- Central Kings GSA
- James Irrigation District GSA
- Kings River East GSA
- McMullin Area GSA
- North Kings GSA
- North Fork Kings GSA
- South Kings GSA

The seven GSAs operate cooperatively across the basin via a coordination agreement that ensures common approaches to sustainability items such as similarity of data usage and methodologies, consistent interpretations of the basin setting, and common assumptions and development of water budgets, monitoring networks, sustainable management criteria, and data management systems.

As required by SGMA, the North Kings GSA considers six sustainability indicators:

- Chronic lowering of groundwater levels, indicating significant and unreasonable depletion of supply
- Significant and unreasonable reduction of groundwater storage
- Significant and unreasonable seawater intrusion
- Significant and unreasonable degraded water quality
- Significant and unreasonable land subsidence
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

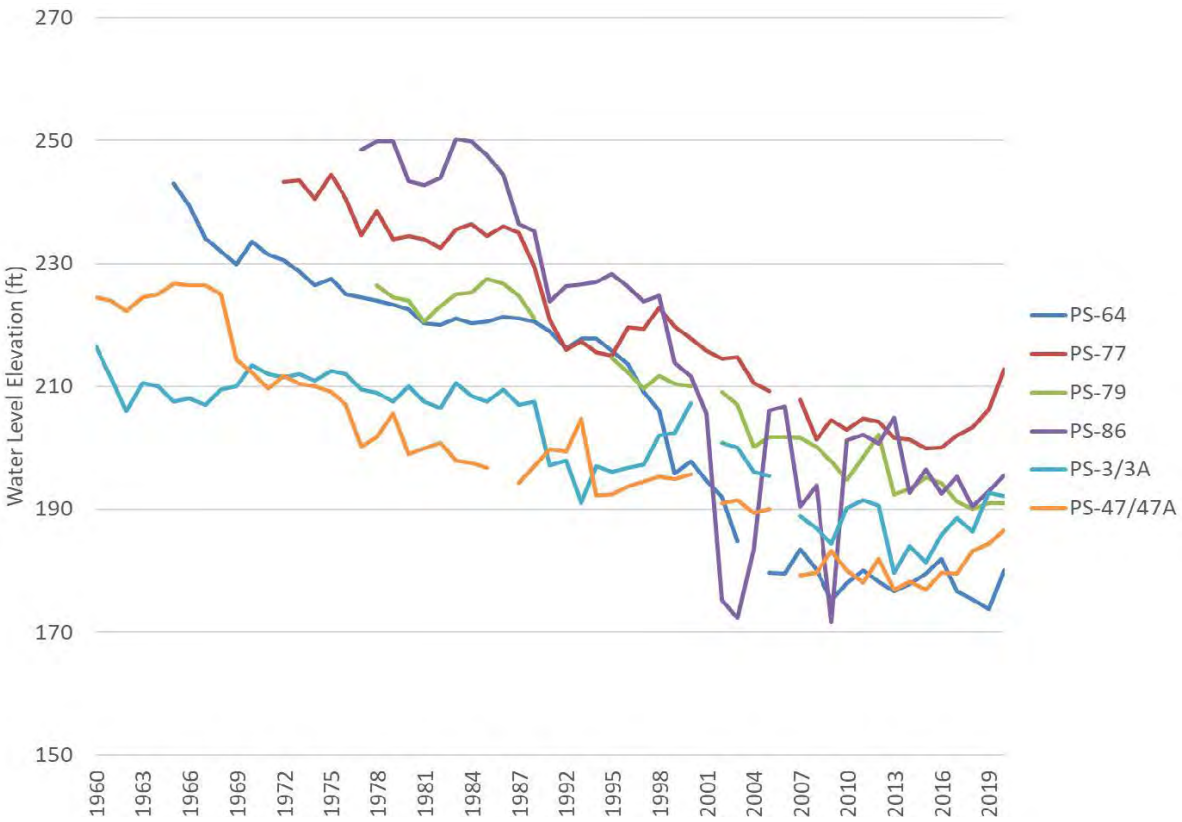
Each indicator has an identified undesirable result, measurable objective, and minimum threshold. The measurable objective and minimum threshold allow the North Kings GSA to evaluate their progress for the subject indicator and determine if conditions are improving, remaining stable or degrading. The sustainability indicators of primary concern within the City are groundwater levels, groundwater storage, and groundwater quality. The methodology for the water quality indicators has been developed and the methodology is

still being developed for the groundwater levels and groundwater storage indicators. A copy of the Groundwater Sustainability Plan (GSP) is provided in Appendix G of the 2020 UWMP.

Overdraft Conditions

SGMA directs DWR to identify groundwater basins and subbasins in conditions of critical overdraft. As defined by SGMA, "A basin is subject to critical overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts." As mentioned, DWR classifies the Kings Basin as being in a state of critical overdraft in its Bulletin 118, and the future of the groundwater basin has been projected to see continued overdraft conditions.

The Kings Subbasin groundwater aquifer supplies the City, other municipalities, agriculture, and rural residential areas with a consistent source of water. Like much of the Kings Subbasin, groundwater levels beneath Fresno were relatively shallow at 25 feet below ground surface in 1940, prior to the start of World War II. After the war, the State, including the City, began growing at a rapid rate. For the period from 1959 to 1968, it was reported groundwater levels declined at a rate of 2.8 feet per year. The City continued to rely on the groundwater aquifer for decades, monitoring groundwater levels continuously. Groundwater levels since 1990 have declined at a lower rate than previously. Rates of decline slowed further starting in 2004, when the Northeast Surface Water Treatment Facility (NESWTF) started operations and the City renewed focus on increasing groundwater recharge. In 2019 and 2020, surface water accounted for more than half of the total water supply in Fresno. With the reduced pumping due to higher reliance on surface water, the groundwater levels have begun to increase in certain areas of Fresno in the last few years. Figure 5 provides a depiction of the City's depth to groundwater for six representative wells across the Sphere of Influence (SOI) since 1960.



Source: 2020 Urban Water Management Plan, Figure 6-4 (City of Fresno 2021).

Figure 5: Time Series of Groundwater Levels at Representative Wells

The City expects to continue to operate its three surface water treatment facilities (SWTFs) and pump groundwater at a lower rate than historically so that the groundwater basin can recover. According to the 2020 UWMP, one of the City's primary objectives is to maximize the use of available surface water treatment supplies to reduce overall reliance on groundwater. Additionally, the City plans to continue its groundwater recharge program to protect the groundwater basin. Figure 6-5 of the 2020 UWMP shows the active and proposed recharge basins and FID Canals the City utilizes as part of groundwater recharge program.

Groundwater Quality

Groundwater within the North Kings Subbasin generally meets primary and secondary drinking water standards for municipal water use and is described as being bicarbonate-type water, including calcium, magnesium, and sodium as the dominant ions. Total dissolved solids (TDS) concentrations rarely exceed 600 milligrams per liter (mg/L) and range from 200 to 700 mg/L. However, the groundwater basin has been impacted by multiple chemical contaminants that affect the City's ability to fully utilize the groundwater basin resources without some type of wellhead treatment in certain areas.

Figure 6-6 of the 2020 UWMP presents the general location of regional plumes and major point sources within Fresno. The primary contaminants are nitrate, 1,2-dibromo-3-chloropropane (DBCP), 1,2,3-trichloropropane (1,2,3-TCP), and other volatile organic compounds like trichloroethylene (TCE) and perchloroethylene (PCE). The City has received settlements in a number of lawsuits related to these contaminants and has constructed wellhead treatment systems and implemented blending plans for a number of wells. Approximately 40 City wells are being treated for contaminants such as PCE, DBCP, TCE, 1,2,3-TCP, perfluorooctanoic acid, perfluorooctanesulfonic acid, ethylene dibromide, and nitrate, and an additional 20 wells include treatment for iron, manganese, and hydrogen sulfide removal or corrosion control.

As shown in Figure 6-6 of the 2020 UWMP, extensive groundwater contamination nearly covers the City's entire water service area; only areas located in the northwest appear to be relatively unaffected by regional groundwater contamination. Also, many of the City's wells are impacted by one or more of the contaminant plumes (indicated by the presence of overlapping plumes on the figure). The figure also shows the approximately 93 existing active wells that are impacted by at least one contaminant plume and the 60 existing wells with wellhead treatment. The City is also managing contamination from spreading by pumping specific wells to control the plume.

Estimated Groundwater Yield

As part of the City's ongoing preparation of the Fresno Metropolitan Water Resource Management Plan (Metro Plan) update, the City is developing a storage accounting framework to estimate groundwater yield. The storage framework will track the City's groundwater recharge, pumping, and flows into and out of the City's SOI and incorporate bi-annual monitoring of well water level readings on a grid basis.

The most recent available information on the City's groundwater yield is from a hydrologic groundwater and surface water model that was prepared for the Upper Kings Basin Integrated Regional Water Management Authority. The City contributed additional funding to the effort so the model would be more refined for its service area and capable of assisting in the development of the City's previous Metro Plan. The Kings Basin Integrated Groundwater and Surface Water Model (IGSM) was completed in 2007 and provided outputs specific to the City's SOI. The IGSM was developed and calibrated utilizing data for the period of 1964–2004. Building off the calibrated IGSM, additional modeling was conducted in 2008 to evaluate the City's proposed water supply plan and its ability to attain the balanced use of groundwater by the buildout year of 2025. The estimated groundwater yield within the City's SOI presented in this section is based on the modeling efforts to establish the various natural elements of the underlying aquifer.

Natural Recharge

As a result of the IGSM effort, the long-term average deep percolation from rainfall and irrigation-applied water for the period of 1964–2004 was found to be 42,700 acre-feet per year (AFY) for the entire SOI. However, as urbanization continues within the SOI, the amount of deep percolation will decline because of increased runoff and less open land for natural recharge. For 2005, it was estimated deep percolation would be about 37,000 AFY and would reduce annually, ultimately declining to and remaining at 27,000 AFY by buildout in 2025. The current General Plan anticipates SOI buildout will occur in 2056. Holding the 2005 value of 37,000 AFY and extending the 27,000 AFY to 2056, intermediate values were straight-line interpolated. Additionally, the City currently covers 73,500 acres of the 100,277 acres within its SOI, representing 73 percent urbanization, which would approximate the City's water system service area. Table A shows estimated natural recharge through 2045.

Table A: Normal Year Supply and Demand Comparison (acre-feet per year)

	2020	2025	2030	2035	2040	2045
Natural Recharge[1]	24,970	25,480	25,910	26,280	26,570	26,790
Net Subsurface Inflow[1]	47,510	49,910	52,320	54,720	57,120	59,530
Sustainable Yield	**72,480**	**75,390**	**78,230**	**81,000**	**83,690**	**86,320**
Intentional Recharge[2]	60,000	62,700	65,400	68,100	70,800	73,500
Total Estimated Groundwater Yield	**132,480**	**138,090**	**143,630**	**149,100**	**154,490**	**159,820**

Source: 2020 Urban Water Management Plan, Table 6-1 (City of Fresno 2021).

[1] Based on the Kings Basin Integrated Groundwater and Surface Water Model and projected City land growth.

[2] Projected normal year intentional recharge from Table 4-7 of the 2020 Urban Water Management Plan.

Net Subsurface Inflow

Again, utilizing information developed from the IGSM, average net subsurface inflow into the SOI was characterized as being 64,800 acre-feet (AF) annually for the period of 1964–2004. Applying the previously described 73 percent proportioning factor of the developed SOI area to overall SOI area, approximately 47,510 AFY would be attributed to the City's water service area in 2020. This value will increase in future years as the City annexes more land until the SOI is built out. Table A shows the estimated subsurface inflows for future

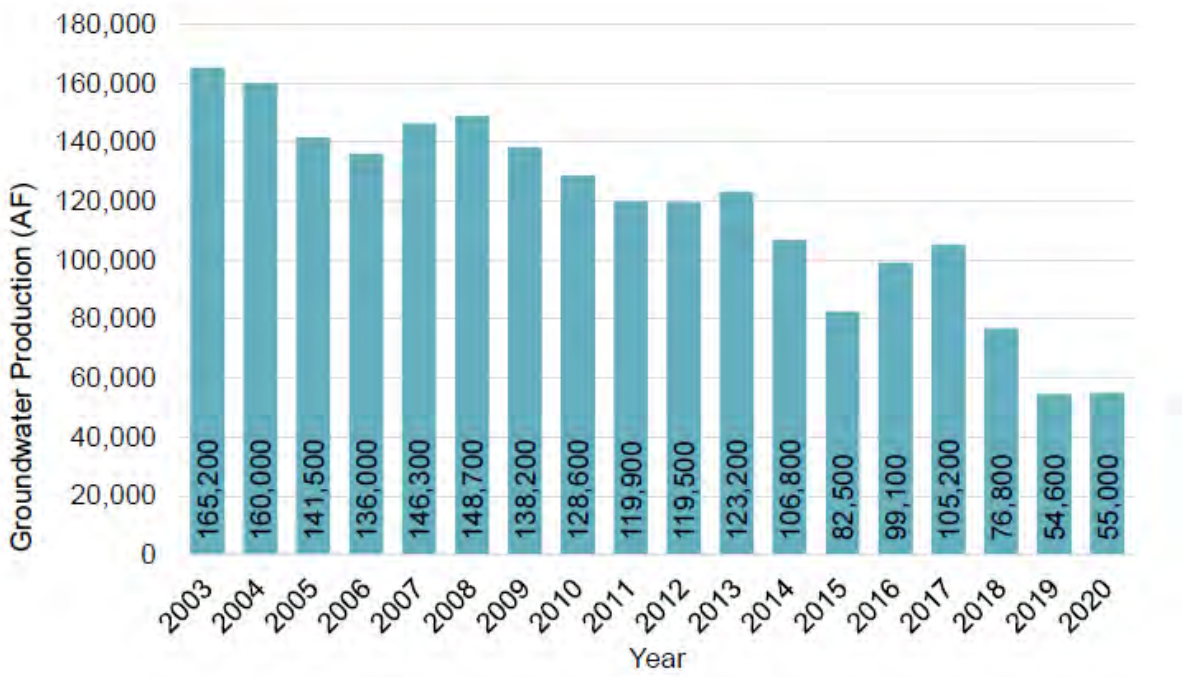
years. The City has historically benefited from the net subsurface inflows and requires these flows for replenishment necessary to maintain the sustainable yield of the groundwater aquifer system.

Intentional Groundwater Recharge

The City has long made efforts toward offsetting the decline of groundwater levels and minimizing overdraft conditions through an active intentional recharge program that started in 1971. Through cooperative agreements with FMFCD and FID, the City has access to not only City-owned basins, but also those of these two agencies. Utilizing available surface water supplies, the City recharged on average approximately 60,000 AFY from 2000 to 2019; however, with the reduction in available surface water supplies, intentional recharge declined to 34,700 AF in 2014 and 19,800 AF in 2015, followed by an increase in recharge in years 2016, 2017, and 2019 to help replenish the aquifer. In 2019, the City's recharge of 82,993 AF was the maximum annual recharge attained during this period. The City has averaged over 60,000 AFY the previous 5 years and plans to gradually increase recharge by about 540 AFY each year. However, during wet years, the City will recharge more water when it is available to allow to the City to draw on additional groundwater during dry years, when surface water is not available. Intentional recharge is included in the non-potable demand projections as well as contributing to the estimated groundwater yield presented in Table A.

Historic Groundwater Pumping

The City has historically relied on groundwater as its main supply source prior to the construction of its SWTFs. With the recent investments in surface water infrastructure, the City has been able to drastically reduce its groundwater pumping. Figure 6 shows the historic groundwater pumping since 2003. As shown, pumping has dropped significantly since 2003, the City's peak year for groundwater production.



Source: 2020 Urban Water Management Plan, Figure 6-7 (City of Fresno 2021).

Figure 6: Historic Groundwater Production

SURFACE WATER

With the completion and operation of the Southeast Surface Water Treatment Facility (SESWTF), surface water is now a primary water supply used to meet potable demands within Fresno. The City contracts with FID for Kings River water and with the USBR for CVP water from the Friant-Kern Canal. The surface water supply is used either for potable uses through treatment and distribution or delivery to recharge basins for groundwater recharge. The Kings River water year (WY) is October through September, while USBR uses a WY of March through February. The City has historically used a calendar year (CY) for its analysis, so monthly water supply information was compiled in CY format for this report.

USBR Friant Division Contract Supply

The City, through an agreement originally executed in January 1961, secured a surface water supply from the USBR CVP Friant Division. This agreement, for an annual water supply of 60,000 AF of Class 1 water, was last renewed in 2010 as a Section 9(d) contract that provides water from the San Joaquin River in perpetuity. A copy of the renewed contract is provided in Appendix H of the UWMP. The USBR CVP Friant Division facilities generally include Friant Dam (Millerton Reservoir), the Friant-Kern Canal, and the Madera Canal. The Friant-Kern Canal is maintained and operated by the Friant Water Authority. The USBR water supply is a wholesale supply.

Construction of Friant Dam was completed in 1947, and the dam began making diversions to the Friant-Kern Canal in 1949. Full operations of the CVP Friant Division did not commence until the Madera Canal was completed in 1951. Class 1 water was intended to be a supply that would be dependable in practically every year, regardless of the type of hydrologic WY. Class 2 water is essentially excess water available as determined by USBR and is less reliable than Class 1 water.

Class 1 water was historically very reliable until the 2006 San Joaquin River Restoration Settlement Agreement between the departments of the Interior and Commerce, the Natural Resources Defense Council, and the Friant Water Users Authority (which is now the Friant Water Authority). The City is a member of the Friant Water Authority. The settlement ended an 18-year legal dispute over the operation of Friant Dam brought by a coalition of conservation and fishing groups. The agreement characterized Class 1 deliveries by six hydrologic year types based on a recurrence over an 82-year simulation (1922–2003): wet, normal-wet, normal-dry, dry, critical-high, and critical-low. The projected surface water available for the City from USBR during each hydrologic year defined by the 2006 Settlement Agreement is summarized in Table B. As shown in the table, the average simulated delivery is 53,680 AFY and the median simulated delivery, which is similar to normal year delivery, is 60,000 AFY. The median value is higher than the average value because 100% allocation of 60,000 AF is simulated in 50 of 82 years but the dry and critical years result in substantial reductions, which bring down the average allocation.

Table B: Available USBR Simulated Allocation (1922-2003)

Water Year Type	Percent of Years over Simulation Period of Deliveries[1]	Number of Years in that Year Type	Range of Allocation to City (AF)	Average Allocation to City (AF)
Wet	Highest 20%	16	60,000	60,000
Normal-Wet	50% to 80%	25	60,000	60,000
Normal-Dry	20% to 50%	25	47,500 to 60,000	57,060
Dry	5% to 20%	12	28,100 to 46,800	36,575
Critical[2]	Lowest 5%	4	13,900 to 24,700	19,025
Total		**82**	**Average**	**53,680**
			Median	**60,000**

Source: 2020 Urban Water Management Plan, Table 6-2 (City of Fresno 2021).

[1] As defined in 2006 Settlement Agreement

[2] Includes both critical-high and critical-low, which are differentiated by the amount of unimpaired runoff. The simulation uses deliveries through 2006 and does not include the zero allocation years in 2014 and 2015.

AF = acre-feet

The Settlement Agreement estimates the reduced supply available to the City compared to historic supplies, most evident in dry years. Restrictions on exports from the Delta have hindered the USBR from making deliveries to the Exchange Contractors via the Delta-Mendota Canal. The Exchange Contractors allowed the formation of the CVP Friant Division by agreeing to not exercise their historic pre-1914 water rights to the San Joaquin and Kings rivers if guaranteed water deliveries continued through the Delta-Mendota Canal or other facilities. If USBR is unable to deliver water to the Exchange Contractors, they have the right to receive their water from the San Joaquin River, which reduces the Class 1 water availability.

Reduced deliveries from the Delta to the Exchange Contractors resulted in the CVP Friant Division contractors with zero allocations of Class 1 water in USBR WY 2014 and 2015, though the City received USBR deliveries in CY 2014 (prior to the USBR WY starting in March). Annual USBR deliveries since 2007 are shown in Figure 6-6 of the 2020 UWMP.

In addition to the Class 1 water available to the City, the USBR contract also makes available water classified as: recovered water account water; Section 215 water; and unreleased

restoration flows, unreleased recirculation flows, and uncontrolled season flows. The complexities of each water type are beyond the scope of this report but are mentioned here to reflect the other water acquisition opportunities afforded to the City through this contract. The San Joaquin River water supply has excellent water quality as it originates from snowmelt from the high Sierras and has not been detrimentally impacted.

Fresno Irrigation District Supply

FID is one of 28 agencies that receives an entitlement of water from the Kings River through the Kings River Water Association. Water entitlements for Kings River Water Association contract members are determined based on a methodology that was initially developed in 1917–1919 to establish entitlements for early claimed rights holders. The methodology was based on historic mean daily natural flow conditions at Piedra, which is approximately 3 miles downstream from the then yet to be built Pine Flat Dam and "at the heart of Kings River uses, regulation, and stream control and storage."

On December 20, 2016, the Revised, Amended, and Restated Cooperative Agreement was executed between FID and the City for Water Utilization and Conveyance (2016 FID Agreement). The 2016 FID Agreement replaces the 1976 Cooperative Agreement and ends in 2035. The agreement identifies the City's contracted percentage of FID's Kings River water based on the City's water service area located within the FID service area as a percentage of the FID land area. FID land area varies slightly every year because it is dependent on the acreage receiving water deliveries for that year rather than the total acreage within FID (roughly 200,000 acres). As the City incorporates new land area into its service area, the percentage of FID supply increases. However, the 2016 FID Agreement sets the maximum percentage as 29.0 percent, although the City's service area is anticipated to expand and encompass more than 29.0 percent of FID's service area between 2025 and 2030. In 2020, the City's percentage of overall FID Kings River deliveries was 25.79 percent. The FID Agreement identifies that the 29.0 percent maximum was based on moderate growth in Growth Area 1 of the City's SOI (shown in Exhibit C in the 2016 Agreement). As such, the supply projections in this plan limit the City's FID supply with the 29.0 percent cap, but if the agreement were revised in the future the City's FID allocation percentage could grow beyond 29.0 percent as the water service area expands.

The City has historically not used all of its available allocation in any given year, although it pays a flat rate for its total allocation regardless of use. Water unused by the City is reallocated by FID to its other customers.

The City's potential supply from FID was summarized using actual Kings River deliveries for CYs 1964–2019, then categorized by the same WY types used for the USBR Friant supply. The range and average FID deliveries by WY type are shown in Table C. The average of all 56 CY delivery totals of FID Kings River deliveries is 452,541 AF, which equates to an average potential City supply of 131,237 AF, assuming the maximum 29.0 percent City supply

percentage. Table D lists the historic and projected allocation of FID's Kings River water for the City in normal (average) CYs. The City percentage of FID supplies was estimated assuming the City's water service area will grow from 59,100 acres to 84,300 acres by buildout.

Table C: FID Diversions by Water Year Type (1964 to 2019)

Water Year Type	Percent of Years[1]	Number of Years between 194 and 2019	Total FID Deliveries (AF)[2]		Example Average Available to City[3]
			Range	Average	
Wet	Highest 20%	11	563,500 to 644,600	590,700	171,300
Normal-Wet	50% to 80%	17	452,800 to 563,300	513,700	149,000
Normal-Dry	20% to 50%	17	362,600 to 448,000	415,000	120,400
Dry	5% to 20%	8	253,700 to 362,000	315,700	91,600
Critical	Lowest 5%	3	158,100 to 253,300	210,200	61,000
		56	**Average**	**453,800**	**131,600**

Source: 2020 Urban Water Management Plan, Table 6-3 (City of Fresno 2021).

1 As defined in the 2006 Settlement Agreement

2 Assigns water year type defined in the 2006 Settlement Agreement to FID deliveries from 1964 to 2019.

3 Based on the maximum 29.0 percent City supply percentage to provide an example City supply amount.

AF = acre-feet

Table D: Projected FID Kings River Allocation for City, Normal Years

Year	Projected Total FID Allocation, AFY	Projected Allocation to City, AFY[1]
2025	27.55%	125,030
2030	29.00%	131,600
2035	29.00%	131,600
2040	29.00%	131,600
2045	29.00%	131,600

Source: 2020 Urban Water Management Plan, Table 6-4 (City of Fresno 2021).

[1] Projected City Allocation (%) x 453,800 AFY (estimated normal year diversion by FID, per Table 6-3 of the 2020 Urban Water Management Plan [Table G])

AFY = acre-feet per year

FID = Fresno Irrigation Dis

STORMWATER

The Fresno-Clovis Metropolitan Area and surrounding rural vicinities are within the service area boundaries of the FMFCD, which has primary responsibility for managing the local stormwater flows. Most stormwater in Fresno drains to urban stormwater basins, where the water is retained to attenuate peak-flow runoff and recharge stormwater, or is pumped to local irrigation canals for conveyance away from the municipal areas. FMFCD's operation of stormwater basins is predicated on maintaining storage capacity for rain events, which limits accessibility for recharge activities during the rainy season. FMFCD estimates the amount of stormwater that is recharged each wet season. However, recharge attained with the FMFCD basins largely occurs in May through October, when limited storage capacity is required. Dry-season recharge is accomplished by diverting surface waters from the Kings River and Millerton Reservoir using City-allocated surface water. It is difficult to estimate stormwater recharge volumes as there is no physical measurement of stormwater flows into the basins, and infiltration rates can vary with water elevation and degree of siltation in the basin. However, FMFCD estimates that stormwater recharge in urban basins during the winter months may range from 7,000 AF per year to 22,200 AF per year.

WASTEWATER AND RECYCLED WATER

Recycled Water Coordination

The City is currently expanding its recycled water supplies to increase offset use of potable water for landscape irrigation. In 2010, the City completed a Recycled Water Master Plan (adopted by the City Council in 2013) to evaluate and plan for increased recycled water use in Fresno. The City's last Metro Plan, adopted in 2014, also outlined projects to increase the use of recycled water to offset potable demands. The City is currently updating the Metro

Plan and will reevaluate recommendations and projects to increase recycled water use. The City owns and operates two water reclamation facilities (WRFs): (1) the Fresno-Clovis Regional Wastewater Reclamation Facility (RWRF) and (2) the North Fresno Wastewater Reclamation Facility (NFWRF), both of which can produce Title 22 recycled water for use within the City's service area.

Coordination with other water agencies and potential consumers within the planning area is inherently within the purview of the City's Department of Public Utilities (DPU) as this department provides both water and wastewater services. DPU has been on the forefront of numerous water supply preservation, enhancement, and development projects and programs for decades. The concept of multiagency coordination is fully embraced by the department, as is evident with the previously discussed joint agency agreements and the commitment to construct new infrastructure to further develop new resources. The endeavor to develop recycled water as a resource was a requirement of a development in north Fresno, where the developer was conditioned to have a net-zero impact on water resources. The fundamental component of this development was the construction and dedication of the NFWRF to the City.

There are only a few agencies besides the City that have wastewater collection and treatment facilities within and immediately adjacent to the plan area. These agencies include the City of Clovis, Malaga County Water District, Pinedale County Water District, and Pinedale Public Utility District.

As the City is the primary responsible agency for wastewater collection and treatment for its annexed areas and certain County islands, it has taken the lead role of developing and implementing recycled water facilities to serve the same area.

City of Clovis

The RWRF was developed under a Joint Powers Authority agreement executed in 1977 among the City of Fresno, the City of Clovis, and the County of Fresno. Both of the cities contribute to the cost of operations and maintenance and capital expenditures for the RWRF based on formulas in the agreement. This facility provides service for most of Clovis' sewer flows.

The City of Clovis recently constructed its own wastewater treatment facility that produces tertiary-level effluent and is distributed in a dedicated purple pipe system within portions of its service area.

County of Fresno

The County of Fresno, like the City of Clovis, is a party to the RWRF Joint Powers Authority for treatment of flows from unincorporated areas encompassed by the City's service area.

Malaga County Water District

Malaga County Water District provides water and sewer service to an unincorporated County area of about 2.25 square miles, which covers a small portion of the City's SOI. The district provides wastewater collection and treatment for residential and non-residential customers.

Pinedale County Water District

Pinedale County Water District provides water, sewer, and solid waste service to an area of about 2 square miles, which covers an unincorporated County island and a portion of Fresno. The district provides wastewater collection to an area of 699 acres and diverts the flow to the City's collection system for treatment at the RWRF.

Pinedale Public Utility District

Pinedale Public Utility District provides wastewater, street lighting, street sweeping, and landscape maintenance. The district services an area of 362 acres in the northern portion of Fresno, serving both an unincorporated County island and portions of the city. The collected wastewater is diverted to the City's collection system for treatment at the RWRF.

Wastewater Collection, Treatment, and Disposal

The City's wastewater collection system was originally developed in 1891 with the installation of a 24-inch outfall sewer that discharged to a 40-acre sewer farm located southwest of town. The amount of land and number of facilities at this location continued to be expanded as Fresno grew over the years. Today, the City's wastewater collection system consists of about 1,630 miles of pipes ranging in size from 4 inches in diameter to 84 inches in diameter. This collection system also utilizes 15 lift stations throughout Fresno, ranging in pumping capacity from 0.25 million gallons per day (mgd) to 2.2 mgd.

Wastewater Treatment and Discharge Within Service Area

The City is served by two wastewater treatment plants, briefly described below.

Fresno-Clovis Regional Wastewater Reclamation Facility. The RWRF has developed from what was once a sewer farm to a state-of-the-art wastewater treatment facility. In 1966, the City of Fresno was appointed the sewering agency for the local metropolitan region and shortly after began long-range planning and construction of new facilities to handle increasing flows and regulatory requirements. The RWRF treats flows from not only Fresno, but also sewered County areas (some County areas remain unsewered), the City of Clovis, Pinedale County Water District, and Pinedale Public Utility District.

Flows received at this facility peaked at 81,100 AF in 2006 and have been steadily decreasing since, with the average influent flow about 63,000 AF over the last 5 years. The

RWRF includes preliminary, primary, secondary, and tertiary treatment units with disinfection. Secondary treatment consists of three treatment trains with an annual average capacity of 87 mgd, consisting of 30 mgd for Train A and 57 mgd for Trains B and C combined. In 2017, a 5 mgd tertiary treatment system—the Tertiary Treatment and Disinfection Facility (TTDF)—was completed. The system can be expanded to 15 mgd and ultimately to 30 mgd.

The City has three primary means of effluent disposal:

1. Undisinfected secondary effluent to on-site and off-site farmland for restricted irrigation
2. Undisinfected secondary effluent to percolation ponds
3. Disinfected tertiary effluent to the recycled water distribution system

The percolated effluent has been deemed equivalent to Title 22 tertiary-treated water by the State Water Resources Control Board (SWRCB) Department of Drinking Water (DDW). The City has been extracting this water for reuse in areas within and surrounding the RWRF, as well as to FID's canals, through an exchange agreement for delivery to FID agricultural customers.

The discharged effluent is within the City boundaries and located just southwest of the metropolitan area. The treated effluent percolation ponds are within the City's SOI and hydrologic sphere that benefit the City's overall regional water budget.

North Fresno Wastewater Reclamation Facility. The NFWRF was constructed as part of a residential, commercial, and golf course master planned development located in the northern portion of Fresno. As a condition of the planned community, the developer was required to construct a wastewater treatment facility that would produce tertiary-level effluent for use within the development to ensure the overall project had a net-zero impact on water resources. This facility is presently rated at 0.71 mgd (average monthly flow) and 1.07 mgd (maximum daily flow). However, the ultraviolet (UV) light disinfection system was only validated for 300 gallons per minute (gpm) (0.43 mgd), which is the current flow limit until the DDW approves a higher flow. This facility is expandable to 1.25 mgd (average monthly flow). The disinfected tertiary effluent from the plant is largely used to irrigate the Copper River Ranch Golf Course. Of the 325 AF of wastewater treated in 2020, 54 AF was used for irrigation of turf. Treated but unused effluent is diverted to the City's collection system to the RWRF.

Recycled Water System Description

The 2014 Metro Plan recommended expanding reuse by: (1) using the NFWRF effluent to irrigate the Copper River Ranch Golf Course; and (2) deriving up to 25,000 AFY of recycled water for landscape irrigation or other non-potable uses from the RWRF or new satellite WRFs. Since then, the City has irrigated the Copper River Ranch Golf Course with recycled

water and has constructed much of the southwest recycled water distribution system. However, the City is currently updating the Metro Plan and reevaluating the target volume of reuse in Fresno beyond the southwest system considering new conditions and regulations, including the potential for potable reuse in the future.

Fresno-Clovis Regional Wastewater Reclamation Facility

As mentioned above, the RWRF produces undisinfected secondary effluent for restricted irrigation to on-site and off-site farmlands and disinfected tertiary-treated effluent for the recycled water distribution system.

The City's RWRF diverts a portion of the undisinfected secondary effluent to irrigate non-food crops grown adjacent to this facility. The practice of using the secondary effluent to irrigate non-food crops has been carried out for decades and is expected to continue for the foreseeable future. The City owns nearly 3,300 acres of land for and around the RWRF, consisting of percolation ponds (1,750 acres) and other land available to farm non-food crops. Table E provides the annual quantities of recycled water applied to these crops for the period from 2015 to 2019.

Table E: Historic Recycled Water Used Within Service Area (AF)

Recycle Water Facility	2015	2015	2017	2018	2019	2020
RWRF, Secondary Effluent (Non-Food Crop Irrigation)	8,688	7,329	4,540	7,031	3,652	3,845
RWRF, Tertiary Effluent	531	485	423	867	912	858
NFWRF	62	110	0	0	19	54
Total	**9,281**	**7,924**	**4,963**	**7,898**	**4,583**	**4,757**

Source: 2020 Urban Water Management Plan, Table 6-5 (City of Fresno 2021).
Note: Reuse at the NFWRF was zero in 2017 and 2018 because the recycled water delivery system was offline for system repairs.
AF = acre-feet
NFWRF = North Fresno Wastewater Reclamation Facility
RWRF = Regional Wastewater Reclamation Facility

Additionally, the RWRF produces Title 22 disinfected tertiary-treated effluent through the TTDF completed in 2017 and through tertiary-equivalent soil aquifer-treated recycled water recovered from the percolated secondary effluent. A series of 15 groundwater wells located

at the RWRF are used to extract previously percolated effluent groundwater from beneath the facility. The extracted groundwater has the potential to be used for higher beneficial use if it can be demonstrated this water has attained a level of treatment satisfactory to meet disinfected tertiary levels. The City embarked on a joint project with the WateReuse Research Foundation to demonstrate to State regulatory agencies the soil aquifer-treated recycled water met Title 22 levels. The culmination of this study is presented in a final report entitled "Demonstration of Filtration and Disinfection Compliance Through Soil-Aquifer Treatment," which was completed in 2013. This study concluded that, based on the documented sampled water quality data, the extracted groundwater met requirements for classification as disinfected tertiary-level recycled water. The SWRCB DDW stated that the percolated effluent water meets the tertiary treatment classification, and the City is making plans for its use as part of its recycled water production and distribution system. The combined rated production yield of the 15 wells, if run year-round, would be approximately 32,000 AFY. The City plans to blend the recycled extraction well water with the disinfected tertiary-level recycled water produced from the 5 mgd TTDF to feed the southwest recycled water distribution system. As new sales grow for the recycled water, additional recycled extraction of well water will be utilized to feed the City's southwest recycled water system.

The tertiary-equivalent soil aquifer-treated recycled water (recovered groundwater) is also used for on-site irrigation and transport to FID canals for delivery to customers during the irrigation season, as facilitated through an exchange agreement with FID.

Since the completion of the 2010 Recycled Water Master Plan (RWMP), the City has constructed most of the southwest recycled water system, shown in Figure 6-9 of the UWMP. The southwest recycled water system consists of a 3.2-million-gallon recycled water reservoir located at the RWRF, a 6,000 gpm (8.64 mgd) recycled water pump station located at the RWRF, a 640 gpm booster pump station (Roeding Park Booster), and 15.7 miles of 10-inch to 54-inch recycled water pipeline. Roughly 7.5 miles of pipeline remain to be constructed. The City also updated the demand and distribution system from the 2010 RWMP with the 2019 Citywide Recycled Water Demand and Southwest Recycled Water System Analysis to identify potential recycled water customers. This recent analysis will be incorporated into the latest Metro Plan update.

North Fresno Water Reclamation Facility

As described earlier, the City has an existing recycled water plant in the northern portion of Fresno that receives and treats sewage from the residential, commercial, and golf course master-planned community. The NFWRF was constructed in 2008 but was not fully operational until 2009 due to the inability to run properly in extremely low-flow conditions. Subsequent modifications at the plant allowed it to run on a regular basis in 2010 and again in 2014 for UV approval. The amount of reuse has varied substantially since 2016 because the delivery system was offline in 2017 and 2018 for treated water basin slope repairs. City

staff indicated that 2016 is representative of operations going forward. The disinfected tertiary effluent is conveyed in a dedicated pipeline to an adjacent golf course for irrigation purposes. The quantities used for irrigation purposes are shown in Table E for the period of 2015–2019.

Potential, Current, and Project Recycled Water Rates

The 2020 actual recycled water use and projected recycled water use in Fresno's service area is included in Table F. Secondary undisinfected reuse is projected to continue to be used to irrigate non-food crops adjacent to the RWRF in the future. The projected secondary undisinfected use going forward is based on the average use from 2015 to 2020. Additionally, the amount of tertiary recycled water from the RWRF is projected to increase to provide 6,210 AF for landscape and agricultural irrigation as the southwest recycled water system is built out. Projected tertiary recycled water from the NFWRF for golf course irrigation is projected to be 110 AF annually through 2045.

The 2015 UWMP anticipated that 21,200 AFY of recycled water would be produced and utilized in 2020. The previous projected increases in recycled water were based on recommendations from the 2010 RWMP, which included projects to increase recycled water use for landscape irrigation, agricultural irrigation, industrial use, and blending with raw surface water for groundwater recharge. Since the 2010 RWMP, the City has focused on constructing the southwest recycled water system to increase landscape and agricultural irrigation in the southwest portion of Fresno. The City is also currently updating the Metro Plan that is evaluating recycled water alternatives in Fresno and is expected to update its RWMP following the Metro Plan update to serve as a new guiding planning document for recycled water use by the City.

Table F: Recycled Water within Service Area

Beneficial Use Type	Potential Beneficial Uses of Recycled Water	Number of Potential Uses of Recycled Water (AF)	General Description of 2020 Uses	Level of Treatment	2020 (AF)	2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)
Agricultural irrigation[1]	Non-food crop irrigation	7,900	Irrigate non-food crops	Secondary, Undisinfected	3,845	7,900	7,900	7,900	7,900	7,900
Landscape irrigation (excludes golf course)	Landscape irrigation	5,800	Landscape irrigation; distributed through the southwest recycled water distribution system	Tertiary	858	5,800	5,800	5,800	5,800	5,800
Agricultural irrigation[1]	Food crop irrigation	410	Irrigate limited food crops; distributed through the southwest recycled water distribution system	Tertiary	-	410	410	410	410	410
Golf course irrigation	Landscape irrigation	110	Copper River Golf Course	Tertiary	54	110	110	110	110	110
-				**Total:**	**4,757**	**14,220**	**14,220**	**14,220**	**14,220**	**14,220**

Source: 2020 Urban Water Management Plan, Table 6-6 (City of Fresno 2021).

Table footnotes continued on next page.

Notes: Name of Supplier Producing (Treating) the Recycled Water: City of Fresno
Name of Supplier Operating the Recycled Water Distribution System: City of Fresno
Supplemental Volume of Water Added in 2020: 0%
Source of 2020 Supplemental Water: N/A

[1] Recycled water for agricultural irrigation does not offset the City's potable water demands, and as such, is excluded from projected recycled water in subsequent tables.

AF = acre-feet

Actions to Encourage and Optimize Future Water Use

The 2010 RWMP identified the need for the City to adopt an ordinance to establish a recycled water policy and criteria for its use within the City's SOI. On July 14, 2014, the Recycled Water Ordinance was adopted by the City Council, laying the foundation for the expanded use of recycled water within Fresno.

The focus of the ordinance includes the following:

- Establish an Administrative Authority.
- Establish approved uses of recycled water.
- Define areas of potential eligibility for recycled water service.
- Specify voluntary uses of recycled water, depending on user classifications.
- Require installation of a transmission and distribution infrastructure.
- Encourage the use of voluntary retrofits for existing users that may not be addressed in the ordinance.
- Require the City of Fresno to prepare Rules and Regulations.
- Provide enforcement and severability clauses.
- Establishing a means for the City to provide recycled water at a negotiated price.

Efforts to further the use of recycled water include the requirement that new developments within planned major recycled water distribution mains must install purple pipe. Then, as the City's capital projects construct a distribution infrastructure, these segments will be in place to facilitate connections to new customers, reduce program costs by avoiding digging up new street improvements, and reduce disruption to vehicular traffic.

Most of the southwest recycled water distribution system from the RWRF completed construction in 2021. The City has identified potential customers to connect to the recycled water system once it is completed to offset potable demand and increase recycled water use in Fresno.

DESALINATED WATER OPPORTUNITIES

Fresno is located in the central San Joaquin Valley; therefore, seawater desalination is not applicable to the City. Additionally, the groundwater that exists within the immediate area of Fresno is not brackish in nature and does not require desalination treatment.

WATER EXCHANGES AND TRANSFERS

Exchanges and Transfer Opportunities

USBRR Supply

The Central Valley Project Improvement Act (CVPIA) of 1992 authorized the transfer of all or a portion of a CVP contractor's water supply to any other California water users or water agencies. The CVPIA allows water transfers as long as they are consistent with federal and State water laws. The primary component of the CVPIA that specifies water transfer provisions for federal water supplies is Section 3405(a), which includes provisions regarding maximum annual water transfer, beneficial use, and approvals.

As part of the City's current Metro Plan update, the City is evaluating potential future water transfers and exchanges of its periodically available USBR water. Currently, the City does not have any plans to transfer its USBR water to other California water users.

FID/RWRF Groundwater Exchange Supply

Since 1974, the City has had an agreement with FID to exchange recycled water for the delivery of surface water east of Fresno (Appendix I of the 2020 UWMP). The agreement between fid and the city for exchange of recycled water allows for water pumped from beneath the RWRF to be conveyed to FID's Dry Creek and Houghton canals for delivery to growers west of Fresno. In exchange for the water delivered to FID by the City, FID agreed to deliver 46% of the total from either its Kings River entitlement or USBR Class II supply to growers or basins in the eastern portion of FID "insofar as is feasible and practical." The water is to be considered additional to the water that would have been delivered to the eastern portion of FID, such that the additional delivered water used by growers is assumed to offset groundwater pumping in the area and, therefore, provide a groundwater basin benefit. This is an indirect benefit to the City.

The agreement includes a minimum of 100,000 AF delivered over a 10-year period and no more than 30,000 AF in any given year. As shown in Figure 6-10 of the 2020 UWMP, the City exceeded the maximum yearly delivery in 2003 and 2004 and has maintained more than 100,000 AF of deliveries over a 10-year period. However, since 2016, the City has reduced RWRF groundwater exchange deliveries. The City is currently discussing an update to the agreement with FID, while the 2020 Metro Plan will identify and recommend other beneficial uses for the City's percolated effluent.

Emergency Interties

In 2007, the cities of Fresno and Clovis executed an agreement for interconnection of their potable water systems to provide service during emergencies and other times of hardship in either community. The agreement covers interconnections, including apportionment of

capital costs, at two locations: Leonard Avenue at the Gould Canal alignment and Behymer Avenue at Willow Avenue.

The agreement provided for temporary deliveries from Clovis to southeast Fresno through the Leonard Avenue connection through 2013. The Leonard Avenue interconnection was constructed and remains in place for emergency uses through manual operation.

The agreement also provided for temporary deliveries from Fresno to northern Clovis through the Behymer Avenue connection through 2015. However, the Behymer Avenue interconnection has yet to be constructed and, if constructed in the future, would serve only for emergency use.

FUTURE WATER PROJECTS

The City is currently updating its Metro Plan, which will recommend programs and projects to improve the City's water supply portfolio and continue providing a safe, reliable, and sustainable water supply. While the outcomes of the Metro Plan update are currently being developed, the City's ongoing and future projects to improve its supply portfolio include:

- Expansion of the recycled water distribution system
- Expansion of the groundwater recharge program
- Expansion of surface water treatment capacity
- Beneficial transfers and exchanges

Expand Recycled Water Distribution System

As described above, the City has made significant improvements to its recycled water system over the last 5 years and is currently expanding its recycled water distribution system. The expanded distribution system allows an additional 5,000 AF of recycled water use in the City to offset potable demands that can be used in all hydrological year types. The expansion is projected to be completed by 2025.

Expand Groundwater Recharge Capacity

With the acknowledgement that the groundwater aquifer is and will remain an integral resource, the City is currently evaluating an expanded recharge program as part of the Metro Plan update. Expanding intentional recharge may include the development of new dedicated intentional recharge facilities and/or joint projects for basins with FMFCD and potentially FID. The target for recharge expansion is to maximize storage within the groundwater basin and optimize use of available surface water supplies in normal years. The stored water will be used more in the single-dry-year and consecutive-dry-years scenarios, when surface water supplies are less available. The timing for groundwater recharge capacity expansion will be examined as part of the Metro Plan update and, for the

UWMP, is assumed to increase to allow for an additional 540 AFY of recharge to occur on average each year.

Expand Surface Water Treatment Capacity

A key component to the success of the City's ability to reverse the long-time overreliance on groundwater is the construction of its surface water treatment facilities. These have allowed the City to optimize the use of available surface water supplies. The City's NESWTF currently has a 30 mgd capacity and the capability to expand up to 60 mgd. The SESWTF is currently permitted to produce up to 54 mgd but, with the subsequent rerating of the media filters, will be capable of operating at a rated capacity of 80 mgd. The timing for the SWTF expansion will be examined as part of the Metro Plan update and determined based on need as the City grows and demands increase.

Beneficial Transfers and Exchanges

The City is evaluating future beneficial transfers and exchanges of the City's USBR water in normal water years when available water supplies exceed demands.

SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER

Summaries of the above-discussed existing and planned sources of water are provided in Table G and Table H below.

Table G: Actual Water Supplies

Water Supply	2020	
	Actual Volume, AFY	Water Quality
Groundwater	55,028	Drinking Water
USBR CVP	37,447	Drinking Water
FID Kings River	71,292	Drinking Water
Recycled Water, RWRF	858	Recycled Water
Recycled Water, NFWRF	54	Recycled Water
Total	**164,679**	

Source: 2020 Urban Water Management Plan, Table 6-7 (City of Fresno 2021).
AFY = acre-feet per year
CVP = Central Valley Project
FID = Fresno Irrigation District
NFWRF = North Fresno Wastewater Reclamation Facility
RWRF = Regional Wastewater Reclamation Facility
USBR = United States Bureau of Reclamation

Table H: Projected Water Supplies

Water Supply	Reasonably Available Volume, AFY				
	2025	2030	2035	2040	2045
Groundwater	138,090	143,630	149,100	154,490	159,820
USBR CVP	60,000	60,000	60,000	60,000	60,000
FID Kings River	125,030	131,600	131,600	131,600	131,600
Recycled Water, RWRF	5,800	5,800	5,800	5,800	5,800
Recycled Water, NFWRF	110	110	110	110	110
Total	**329,030**	**341,140**	**346,610**	**352,000**	**357,330**

Source: 2020 Urban Water Management Plan, Table 6-8 (City of Fresno 2021).
AFY = acre-feet per year
CVP = Central Valley Project
FID = Fresno Irrigation District
NFWRF = North Fresno Wastewater Reclamation Facility
RWRF = Regional Wastewater Reclamation Facility
USBR = United States Bureau of Reclamation

Supply Management

The City currently balances its surface water supplies and groundwater based on minimum production for operation of the SWTFs and minimum groundwater pumping to manage and control contamination plumes and prevent their spread. The minimum operation conditions typically occur in the low-demand winter months, and the City can increase surface water production during peak-demand months when surface water is available. In normal and wet years, the City intends to rely on more surface water supply and recharge raw surface water to replenish the groundwater basin and build storage for dry years. In dry years, when surface water is less available, the City will ramp up well production to meet demands. The City is expected to continue this supply management strategy in the future.

Special Conditions

This section details climate change and future regulatory conditions that impact the City's supply sources.

Climate Change Effects

Climate models disagree on average annual precipitation projections but agree on other hydrologic metrics relevant to water resources management, including:

- Snowpack declines
- Increased fraction of precipitation on extreme rainfall days
- Shorter, sharper rainy season
- Increased evapotranspiration
- Higher frequency of extremely wet and extremely dry years
- Higher incidence of an extreme dry year followed by an extreme wet year or vice versa

Climate change impacts were evaluated in the North Kings GSP using DWR climate change datasets, which were developed for the California Water Commission's Water Storage Investment Program (WSIP). The North Kings GSP analyzed WSIP water supply projections and found climate change will have no significant impact on the FID Kings River diversions. The North Kings GSP estimates the timing of the inflows to water reservoir and surface water supplies is anticipated to shift significantly due to warmer temperatures causing precipitation to arrive as rainfall instead of snowmelt. The warmer temperatures are also predicted to cause the snowmelt to turn to runoff earlier each spring. These climate impacts are estimated in the North Kings GSP to slightly increase inflows to the Kings River (0.6% in 2040 and 0.3% in 2070); however, they are not expected to impact the Kings River diversions significantly, and the timing will have a greater impact on water management, including a possible greater need for additional storage. The North Kings GSP also estimated climate impacts to the San Joaquin River supplies available to the CVP Friant Division Contractors, including the City's USBR Class I supplies, and found the WSIP dataset estimates a slight reduction in future water supplies. The 2020 UWMP considers water supply during an extreme-dry-year or multi-dry-year scenario, which may occur more often due to climate change.

Regulatory Conditions

The City has existing contracts for its surface water supplies that are not facing any reduction due to forthcoming regulation. The City's groundwater supply is from an unadjudicated basin and is also considered reliable. The GSA is currently working toward determining a safe yield for the Kings Subbasin, which is the amount of water than can be pumped from the basin over a long-term period without producing undesirable results. The City is an active member of the GSA, working collaboratively to bring the basin into balance while protecting the City's groundwater supply.

Additionally, forthcoming California regulations for per- and polyfluoroalkyl substances (PFAS) may impact certain wells within Fresno. The City is currently monitoring and treating

some groundwater wells for PFAS. These regulations are not expected to impact the City's ability to use its full groundwater supply.

ENERGY INTENSITY

Pursuant to California Water Code Section 10631.2(a), readily available information regarding energy intensity shall be reported in the 2020 UWMP. For the City, this includes the total energy usage at each production facility, including each well site and the three SWTFs. The electrical usage includes the energy to produce, treat, and pump the water into the distribution system. Because the City's distribution system includes over 200 groundwater wells, Table I presents the total energy usage, water produced, and average energy intensity for all groundwater wells and for each SWTF following the methodology presented in Appendix O of the DWR 2020 UWMP Guidebook. The energy intensity varies significantly among groundwater wells depending on the depth to the groundwater table, if the well includes treatment beyond disinfection, and other local conditions. The total energy intensity for all production and treatment in the City's distribution system in 2020 was 384 kilowatt-hours per AF.

Table I: Water System Energy Intensity in 2020

	Wells	NESWTF	SESWTF	T-3 SWTF	Total
Groundwater	27,667,366	5,845,314	13,416,000	454,470	**47,386,150**
USBR CVP	56,445	20,724	45,367	875	**123,411**
FID Kings River	490	282	296	520	**384**

Source: 2020 Urban Water Management Plan, Table 6-9 (City of Fresno 2021).
CVP = Central Valley Project
FID = Fresno Irrigation District
NESWTF = Northeast Surface Water Treatment Facility
SESWTF = Southeast Surface Water Treatment Facility
T-3 SWTF T-3 = Water Storage and Modular Surface Water Treatment Facility
USBR = United States Bureau of Reclamation

WATER SUPPLY

This section discusses projected supplies and demands for a normal year, single dry year, and 5-year consecutive drought. As shown in Table J, the City is projected to have greater than 100,000 AF of available supply after meeting demands in normal years. As shown in Table K, the City's surface water supplies are reduced in a single dry year, but all potable demands are met and groundwater recharge of raw surface water is reduced. As shown in Table L, the City is projected to meet all demands during a 5-year drought with its existing supplies. Potable demands are unrestricted, and non-potable water used for groundwater recharge is reduced in years 3 and 4 of a 5-year drought.

Table J: Normal Year Supply and Demand Comparison (acre-feet per year)

	2025	2030	2035	2040	2045
Groundwater	138,090	143,630	149,100	154,490	159,820
Surface Water – USBR	60,000	60,000	60,000	60,000	60,000
Surface Water – FID	125,030	131,600	131,600	131,600	131,600
Recycled Water	5,910	5,910	,5910	5,910	5,910
Supply Totals	**329,030**	**341,140**	**346,610**	**352,000**	**357,330**
Potable Demand	136,504	147,356	154,210	161,076	167,947
Non-Potable Demand	62,700	65,400	68,100	70,800	73,500
Demand Totals	**199,204**	**212,756**	**222,310**	**231,876**	**241,447**
Difference	**129,826**	**128,384**	**124,300**	**120,124**	**115,883**

Source: 2020 Urban Water Management Plan, Table 7-1 (City of Fresno 2021).
FID = Fresno Irrigation District
USBR = United States Bureau of Reclamation

Table K: Single Dry Year Supply and Demand Comparison (acre-feet per year)

	2025	2030	2035	2040	2045
Groundwater	138,090	143,630	149,100	154,490	159,820
Surface Water – USBR	0	0	0	0	0
Surface Water – FID	45,852	45,852	45,852	45,852	45,852
Recycled Water	5,910	5,910	5,910	5,910	5,910
Supply Totals	**189,852**	**159,392**	**200,862**	**206,252**	**211,582**
Potable Demand	136,504	147,356	154,210	161,076	167,947
Non-Potable Demand	27,588	28,776	29,964	31,152	32,340
Demand Totals	**164,092**	**176,132**	**184,174**	**192,228**	**200,287**
Difference	**25,760**	**19,260**	**16,668**	**14,024**	**11,295**

Source: 2020 Urban Water Management Plan, Table 7-2 (City of Fresno 2021).
FID = Fresno Irrigation District
USBR = United States Bureau of Reclamation

Table L: Multiple Dry Years Supply and Demand Comparison

	2025	2030	2035	2040	2045
First Year					
Groundwater	138,090	143,630	149,100	154,490	159,820
Surface Water – USBR	30,000	30,000	30,000	30,000	30,000
Surface Water – FID	99,725	99,725	99,725	99,725	99,725
Recycled Water	5,910	5,910	5,910	5,910	5,910
Supply Totals	**273,725**	**279,265**	**284,735**	**290,125**	**295,455**
Potable Demand	136,504	147,356	154,210	161,076	167,947
Non-Potable Demand	62,700	65,400	68,100	70,800	73,500
Demand Totals	**199,204**	**212,756**	**222,310**	**231,876**	**241,447**
Difference	**74,521**	**66,509**	**62,425**	**58,249**	**54,008**
Second Year					
Groundwater	138,090	143,630	149,100	154,490	159,820
Surface Water – USBR	37,200	37,200	37,200	37,200	37,200

Table L: Multiple Dry Years Supply and Demand Comparison

	2025	2030	2035	2040	2045
Surface Water – FID	93,426	93,426	93,426	93,426	93,426
Recycled Water	5,910	5,910	5,910	5,910	5,910
Supply Totals	**274,626**	**280,166**	**285,636**	**291,026**	**296,356**
Potable Demand	136,504	147,356	154,210	161,076	167,947
Non-Potable Demand	62,700	65,400	68,100	70,800	73,500
Demand Totals	**199,204**	**212,756**	**222,310**	**231,876**	**241,447**
Difference	**75,422**	**67,410**	**63,326**	**59,150**	**54,909**
Third Year					
Groundwater	138,090	143,630	149,100	154,490	159,820
Surface Water – USBR	0	0	0	0	0
Surface Water – FID	73,568	73,568	73,568	73,568	73,568
Recycled Water	5,910	5,910	5,910	5,910	5,910
Supply Totals	**217,568**	**223,108**	**228,578**	**233,968**	**239,298**
Potable Demand	136,504	147,356	154,210	161,076	167,947
Non-Potable Demand	53,763	46,281	43,526	40,677	37,761
Demand Totals	**190,267**	**193,637**	**197,736**	**201,753**	**205,708**
Difference	**27,301**	**29,471**	**30,842**	**32,215**	**33,589**
Fourth Year					
Groundwater	138,090	143,630	149,100	154,490	159,820
Surface Water – USBR	0	0	0	0	0
Surface Water – FID	45,852	45,852	45,852	45,852	45,852
Recycled Water	5,910	5,910	5,910	5,910	5,910
Supply Totals	**189,852**	**195,392**	**200,862**	**206,252**	**211,582**
Potable Demand	136,504	147,356	154,210	161,076	167,947
Non-Potable Demand	26,047	18,564	15,810	12,960	10,045
Demand Totals	**162,551**	**165,920**	**170,020**	**174,036**	**177,992**
Difference	**27,301**	**29,471**	**30,842**	**32,215**	**33,589**
Fifth Year					
Groundwater	138,090	143,630	149,100	154,490	159,820

Table L: Multiple Dry Years Supply and Demand Comparison

	2025	2030	2035	2040	2045
Surface Water – USBR	45,000	45,000	45,000	45,000	45,000
Surface Water – FID	125,840	125,840	125,840	125,840	125,840
Recycled Water	5,910	5,910	5,910	5,910	5,910
Supply Totals	**314,840**	**320,380**	**325,580**	**331,240**	**336,570**
Potable Demand	136,504	147,356	154,210	161,076	167,947
Non-Potable Demand	62,700	65,400	68,100	70,800	73,500
Demand Totals	**199,204**	**212,756**	**222,310**	**231,876**	**241,449**
Difference	**115,636**	**107,624**	**103,540**	**99,364**	**95,123**

Source: 2020 Urban Water Management Plan, Table 7-3 (City of Fresno 2021).
FID = Fresno Irrigation District
USBR = United States Bureau of Reclamation

CONTINGENCY ANALYSIS APPLICABLITY

The City's adopted 2020 UWMP contains an overview of the City's Water Shortage Contingency Plan (WSCP). The City's WSCP is used to provide guidance to the City's governing body and staff and the public by identifying response actions to allow for efficient management of any water shortage with predictability and accountability. Preparation provides the tools to maintain reliable supplies and reduce the impacts of supply interruptions due to extended drought and catastrophic supply interruptions. The WSCP, applicable to the entire City of Fresno municipal water service area, is fully applicable to the project and protective of the adequacy of the project's water supply.

As discussed in the 2020 UWMP, the WSCP describes the following:

1. **Water Supply Reliability Analysis:** Summarizes the City's water supply analysis and reliability and identifies any key issues that may trigger a shortage condition

2. **Annual Water Supply and Demand Assessment Procedures:** Describes the key data inputs, evaluation criteria, and methodology for assessing the system's reliability for the coming year and the steps to formally declare any water shortage levels and response actions

3. **Six Standard Shortage Stages:** Establishes water shortage levels to clearly identify and prepare for shortages

4. **Shortage Response Actions:** Describes the response actions that may be implemented or considered for each stage to reduce gaps between supply and demand as well as minimize social and economic impacts to the community

5. **Communication Protocols:** Describes communication protocols under each stage to ensure customers, the public, and government agencies are informed of shortage conditions and requirements

6. **Compliance and Enforcement:** Defines compliance and enforcement actions available to administer demand reductions

7. **Legal Authority:** Lists the legal documents that grant the City the authority to declare a water shortage and implement and enforce response actions

8. **Financial Consequences of WSCP Implementation:** Describes the anticipated financial impact of implementing water shortage stages and identifies mitigation strategies to offset financial burdens

9. **Monitoring and Reporting:** Summarizes the monitoring and reporting techniques to evaluate the effectiveness of shortage response actions and overall WSCP implementation, with results used to determine if additional shortage response actions should be activated or if efforts are successful and response actions should be reduced

10. **WSCP Refinement Procedures:** Describes the factors that may trigger updates to the WSCP and outlines how to complete an update

11. **Special Water Features Distinctions:** Identifies exemptions for ponds, lakes, fountains, pools, and spas, etc.

12. **Plan Adoption, Submittal, and Availability:** Describes the process for the WSCP adoption, submittal, and availability after each revision

As identified in the 2020 UWMP, the 2020 WSCP is included as Appendix J to the 2020 UWMP.

WATER DEMAND

This section discusses the citywide future estimated water use and estimated water demand associated with the proposed project.

CITYWIDE DEMAND FACTORS FOR WATER USE

The City's 2020 UWMP estimated future water demands based on land use demand factors using 2018 metered consumption data. These demand factors were applied to the 2020 land use acreage by category to develop the demand projection beginning in 2020. Demand factors for land uses that grow over time and represent new developments were assigned a lower demand factor than the demand factors for existing development. Additionally, demand factors were assumed to slowly reduce over time due to passive conservation, which includes the replacement of older water fixtures and appliances with more efficient types. Table M shows the projected annual water use by land use type for 2025, 2030, 2035, 2040, and 2045.

Table M: Citywide Demands for Potable and Non-Potable Water (acre-feet per year)

Use Type	2025	2030	2035	2040	2045
Single-Family	76,255	80,429	82,934	85,437	87,936
Multi-Family	19,000	20,654	21,737	22,831	23,935
Commercial[1]	19,052	21,135	22,587	24,041	25,496
Industrial	7,410	9,003	9,922	10,841	11,758
Landscape	4,490	5,035	5,422	5,809	6,196
Groundwater Recharge[2]	62,700	65,400	68,100	70,800	73,500
Other[3]	200	200	200	200	200
Losses	10,097	10,900	11,408	11,917	12,426
Total	**199,204**	**212,756**	**222,310**	**231,876**	**241,447**

Source: 2020 Urban Water Management Plan, Tables 4-6 and 4-7 (City of Fresno 2021).
Notes:
[1] Includes industrial/governmental uses.
[2] Raw water.
[3] Travel meters.

As shown in Table M, overall water demands are projected to increase from 199,204 AFY in 2025 to 241,447 AFY in 2045, an increase of approximately 21 percent. The increase in water use for industrial uses is projected to increase at a faster rate of approximately 59 percent over the same period, from 7,410 AFY in 2025 to 11,758 AFY in 2045. Based on Table 4-3 of the 2020 UWMP, industrial acreage is expected to increase from 4,500 acres in

2020 to 9,300 acres in 2056, an increase of approximately 107 percent. As discussed above, demand factors for land uses that grow over time and represent new developments were assigned a lower demand factor than the demand factors for existing development.

PROPOSED PROJECT WATER DEMAND

Methodology

The potable demand projections in the 2020 UWMP for normal water use utilize land use-based projections. Under this methodology, existing land use and demand was accounted separately from future land use and demand. This allows different demand factors to be applied to current land use areas and future land use areas. Future land use areas represent future customers and developments that are expected to be more water-efficient than existing land uses and buildings due to the California Plumbing Code (CPC) and use of higher-efficiency appliances and landscapes.

The existing and future land use acreage was sourced from the City's Geographic Information System (GIS) database and the City's General Plan. The existing land use shapefile and associated acreage for each land use classification were used to represent 2020 land use data. Areas not served by the City were excluded from the existing land use shapefile. The future land use shapefile corresponds with the planned land use at buildout as described in the City's General Plan representing the year 2056. Although the City does not have any plans to serve areas currently served by others within the City limits, all areas within the City's SOI were assumed to be served by the City by buildout for conservative planning purposes. Table N lists the land use acreage by land use category for the 2020 and buildout 2056 water service areas used in the City's 2020 UWMP.

Table N: Existing and Future Water Service Area Acreage

Land Use Category	2020 Water Service Area [1,3,4]		2056 Water Service Area[2]	
	Acres	Percent	Acres	Percent
Single-Family Residential	27,700	47%	40,000	47%
Multifamily Residential	3,700	6%	3,800	5%
Commercial	4,500	8%	8,600	10%
Public Facility	5,600	9%	7,200	9%
Industrial	4,500	8%	9,300	11%
Open Space/Landscape Irrigation	13,100	22%	11,000	13%
Mixed Use[3]	0	0%	3,900	5%
Downtown[3]	0	0%	600	1%
Total	**59,100**	**100%**	**84,300**	**100%**

Source: 2020 Urban Water Management Plan, Table 4-3 (City of Fresno 2021).
Notes:

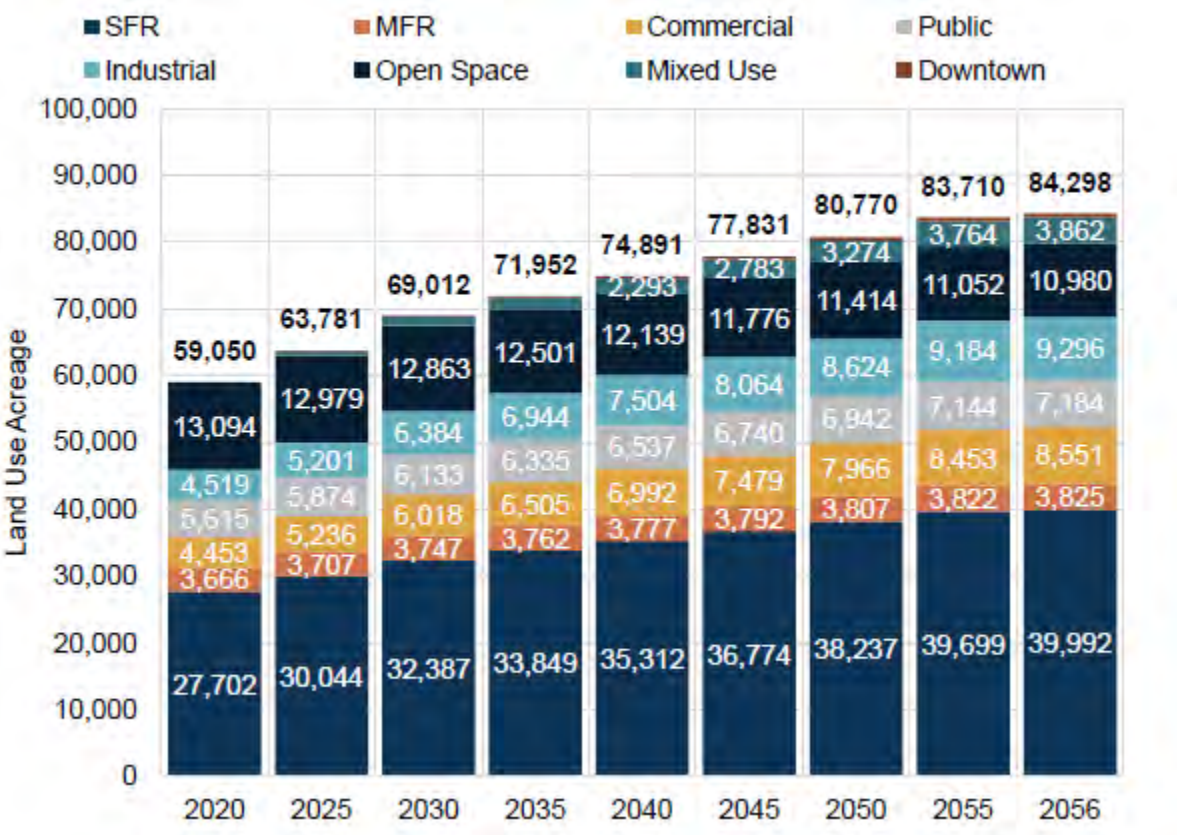
1 Acreage from City of Fresno GIS Shapefile of Land Uses provided 8/12/20 and reduced to the City's water service area (excludes Pinedale, Bakman, and California State University, Fresno, as well as unserved areas outside the City limits and SOI).

2 Future land use shapefile provided by the City on 8/12/20 and aligns with the General Plan for buildout in year 2056. The buildout service area acreage listed excludes the Fresno-Clovis Regional Wastewater Reclamation Facility; land used for road, highways, and railroads; and the north area outside of the SOI.

3 Mixed use and downtown land use categories are not in the existing land use shapefile. They are described in the General Plan as new designations for redevelopment of existing areas that contain a mix of land uses.

4 Approximately 11,300 acres of non-water-demanding vacant/partially vacant land is excluded from the 2020 water service area acreage.

The land use acreage between 2020 and 2056 was estimated in 5-year increments based on areas planned to be developed by 2030 from the City's Planning Department, and by linearly interpolating the remainder of the change in acreage for each land use category between 2030 and 2056. Figure 7 shows the existing and projected land use by customer class used to develop the projections.



Source: 2020 Urban Water Management Plan, Figure 4-3 (City of Fresno 2021).

Figure 7: Existing and Projected Land Use

Assumptions

Project-specific water demand was calculated using the methodology from the 2020 UWMP, as described above, based on the following assumptions:

- Figure 7 above (Figure 4-3 of the 2020 UWMP) indicates there will be 5,201 acres of industrial uses in Fresno in 2025.
- Table M above (Table 4-6 of the 2020 UWMP) indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.

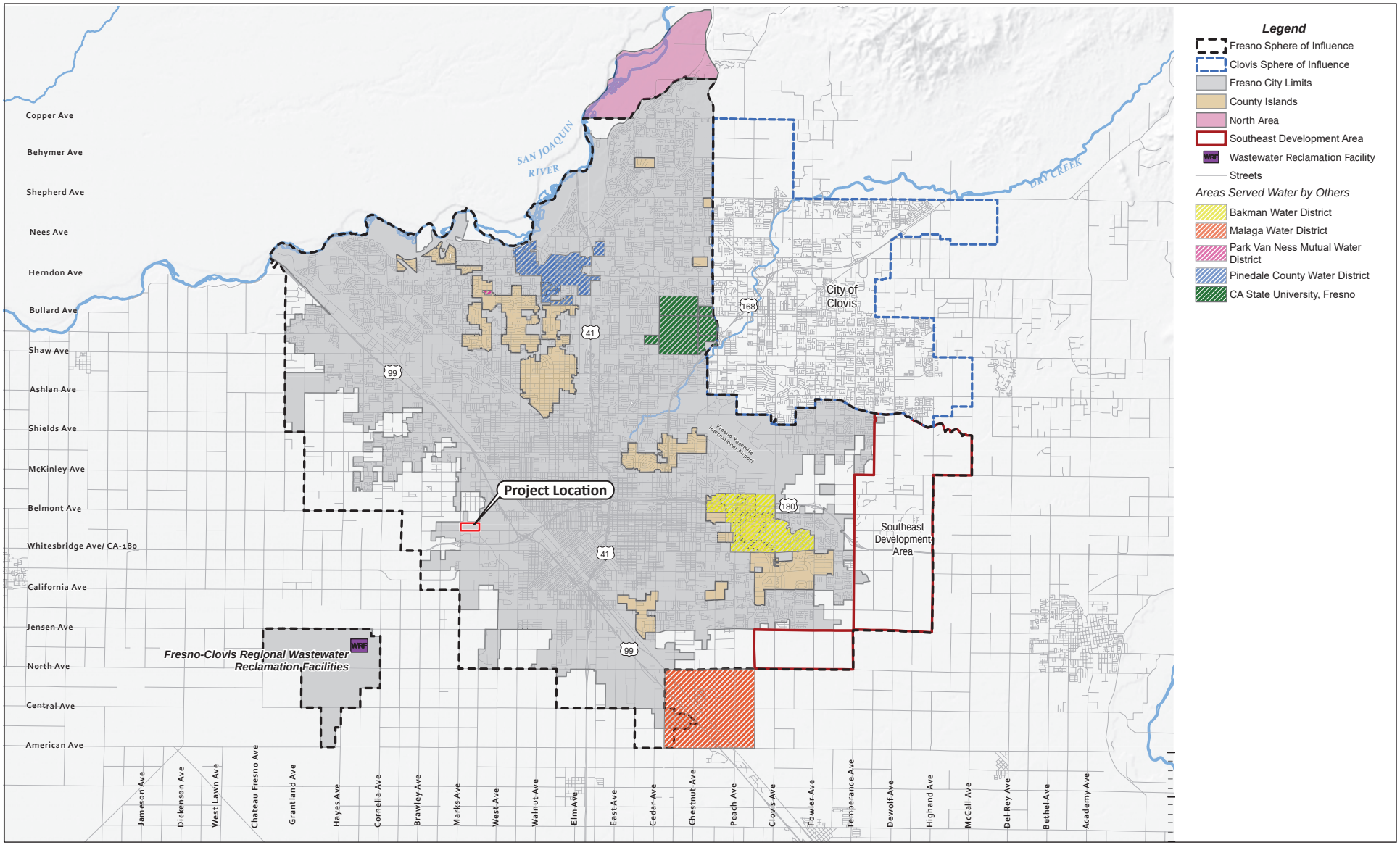
Therefore, it is assumed that industrial land uses, such as the proposed project, will demand approximately 1.42 AFY per acre in 2025.

Proposed Project Water Demand

The total project site is 48.03 acres. Therefore, based on the assumptions identified above, the proposed project is estimated to demand approximately 68.2 AFY.

APPLICABILITY OF THE URBAN WATER MANAGEMENT PLAN

The proposed project site is included in the land use area covered by the City's 2020 UWMP. Figure 8 shows the location of the project site in relation to the water service area boundaries covered by the 2020 UWMP. In addition, Figure 9 shows the proposed project's designation of Heavy Industrial. As shown in Table 4-3 of the 2020 UWMP, land use acreages and water demand in the 2020 UWMP were based on the City's General Plan land use designations for 2020 and buildout in 2056. As such, as shown in Figure 9, the acreage associated with the proposed project was assumed Industrial in the 2020 UWMP; therefore, it is assumed that demand for water was accounted for in the 2020 UWMP. There is no evidence, in consideration of the calculated project water demand, that such demand exceeds that estimated in the 2020 UWMP. The adequacy of the water supply for the project is thus consistent with the basis of the analysis of the City's water supply in the adopted 2020 UWMP.



LSA

Project Site Boundary

FIGURE 8

N

0 1.5 3

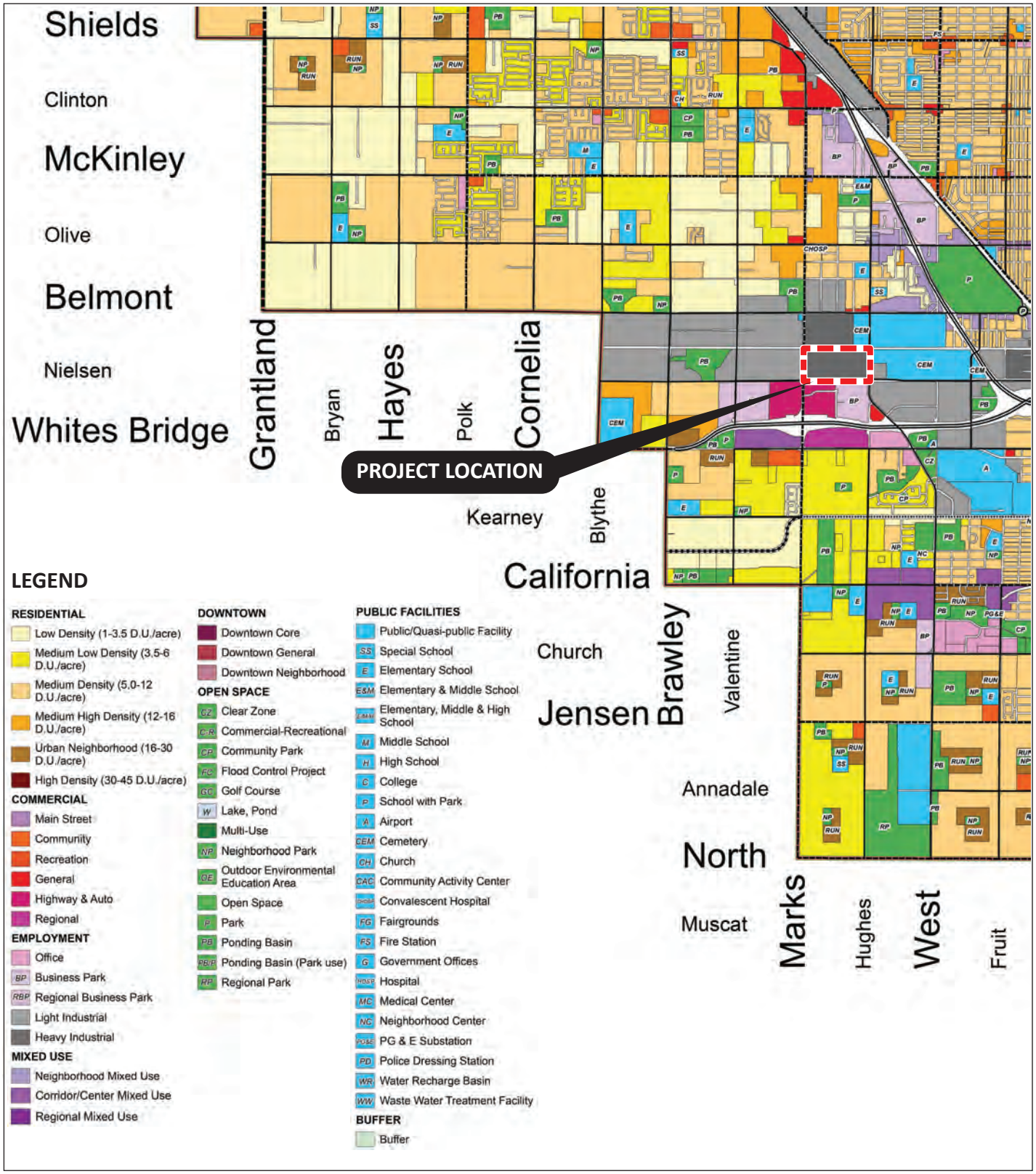
MILES

SOURCE: Source: 2020 Urban Water Management Plan, Figure 3-1 (City of Fresno 2021).

I:\SNN2102\G\Fig 8_Proj Site Relation to UWMP Boundaries.ai (7/20/2022)

2740 West Nielsen Office/Warehouse Project

Project Site in Relation to the 2020 UWMP Water Service Area Boundaries



LSA

FIGURE 9

N

NOT TO SCALE

SOURCE: City of Fresno, 2022

2740 West Nielsen Office/Warehouse Project
Project Site General Plan Land Use Designation

I:\SNN2102\G\Figure 9_Project Site General Plan Land Use Designation.ai (7/20/2022)

ASSESSMENT FINDINGS

It is concluded that the City of Fresno's water system has sufficient capacity to supply the proposed 2740 West Nielsen Avenue Office/Warehouse Project and other projected demands within the City's service area through the year 2045. Therefore, it is recommended that the City of Fresno Water Division approve this assessment and forward the report to the City of Fresno Planning Department for inclusion in the CEQA documentation for the proposed project.

APPENDIX L

NOISE IMPACT ANALYSIS MEMORANDUM

This page intentionally left blank

CARLSBAD
CLOVIS
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

MEMORANDUM

DATE: February 3, 2023

TO: Jake Kurth, Scannell Properties

FROM: JT Stephens, Principal

SUBJECT: Noise Impact Analysis Memorandum for the 2740 West Nielsen Avenue Office/Warehouse Project

LSA has prepared a technical noise impact analysis memorandum for the proposed 2740 West Nielsen Avenue Office/Warehouse Project (project) in Fresno, Fresno County, California. This technical noise impact analysis memorandum evaluates the potential noise and vibration impacts and noise reduction measures associated with the project. This analysis includes a description of existing regulatory framework and an assessment of project-related construction and operational noise and vibration emissions. Measures to reduce or eliminate significant impacts are discussed.

PROJECT DESCRIPTION

The currently vacant 48.03-acre project site is at 2740 West Nielsen (Assessor's Parcel Numbers 458-020-71 and 458-020-72) in the Fresno, in Fresno County, California. The project site is bounded to the north by vacant, undeveloped land, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the east by North Marks Avenue. The project location map is shown as Figure 1 (all figures are provided in Attachment A).

The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of 907,780 square feet. The buildings' exteriors would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 193 loading dock doors on the north and south sides of the buildings. Building 1 would be 468,760 square feet and would provide 122 loading dock doors, Building 2 would be 248,820 square feet and would provide 45 loading dock doors, Building 3 would be 96,250 square feet and would provide 14 loading dock doors, and Building 4 would be 93,850 square feet and would provide 11 loading dock doors. The project site plan is shown in Figure 2.

As identified above, future tenants have not been identified. Therefore, this analysis assumes that the proposed project would be operational 24 hours per day, 7 days per week; however, it is possible that future tenants may operate fewer hours than covered in this analysis.

Construction of the proposed project is anticipated in two phases taking place over a total 24-month period starting in the third quarter of 2023 and ending in 2025. The first phase would include the construction of Buildings 2, 3, and 4 and would last 12 months. The second phase would include the construction of Building 1 and would last for 12 months. The proposed project would comply with City

standards, including the City's current building code, landscape standards, and lighting standards. In addition, the proposed project would be graded similar to other developments throughout Fresno.

Sensitive Receptors and Land Uses in the Project Vicinity

Sensitive receptors include residences, schools, hospitals, and similar uses that are sensitive to noise and vibration. Adjacent parcels consist mostly of residential, light and heavy industrial, cemetery, and vacant, undeveloped uses. The closest sensitive receptors to the proposed project include the single-family residences approximately 110 feet south of the project site across West Nielsen Avenue.

BACKGROUND

Characteristics of Sound

Noise is usually defined as unwanted sound and consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep. To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally related to annoyance, while loudness can affect our ability to hear through hearing damage. Pitch is the number of complete vibrations, or cycles per second, of a wave, resulting in the tone's range from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment and is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves, combined with the reception characteristics of the human ear. Sound pressure refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be measured precisely with instruments. The project analysis defines the noise environment of the planning area in terms of sound pressure levels and the project's effect on sensitive land uses.

Measurement of Sound

Sound intensity is measured with the A-weighted decibel scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound, similar to the human ear's de-emphasis of these frequencies. Decibels, unlike linear units (e.g., inches or pounds), are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 decibels (dB) is 10 times more intense than 1 dB, 20 dB is 100 times more intense than 1 dB, and 30 dB is 1,000 times more intense than 1 dB. Thirty decibels (30 dB) represents 1,000 times as much acoustic energy as 1 dB. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the sound's loudness. Ambient sounds generally range from 30 dB (very quiet) to 100 dB (very loud).

Sound levels generate from a source, and their decibel level decreases as the distance from that source increases. Sound levels dissipate exponentially with distance from their noise sources. For a single point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source (e.g., highway traffic or railroad operations) the sound decreases 3 dB for each doubling of distance

in a hard site environment. Line source sound levels decrease 4.5 dB for each doubling of distance in a relatively flat environment with absorptive vegetation.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. The equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and Community Noise Equivalent Level (CNEL) or the day-night average noise level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noise occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the relaxation and sleeping hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangeable. The City uses the CNEL noise scale for long-term noise impact assessment.

Other noise rating scales of importance when assessing the annoyance factor include the maximum instantaneous noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max}, which reflects peak operating conditions and addresses the annoying aspects of intermittent noise. It is often used together with another noise scale, or noise standards in terms of percentile noise levels, in noise ordinances for enforcement purposes. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half the time the noise level exceeds this level, and half the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first category includes audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 dB or greater because this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1 dB and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category includes changes in noise levels of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Table A lists definitions of acoustical terms, and Table B shows common sound levels and their sources.

Table A: Definitions of Acoustical Terms

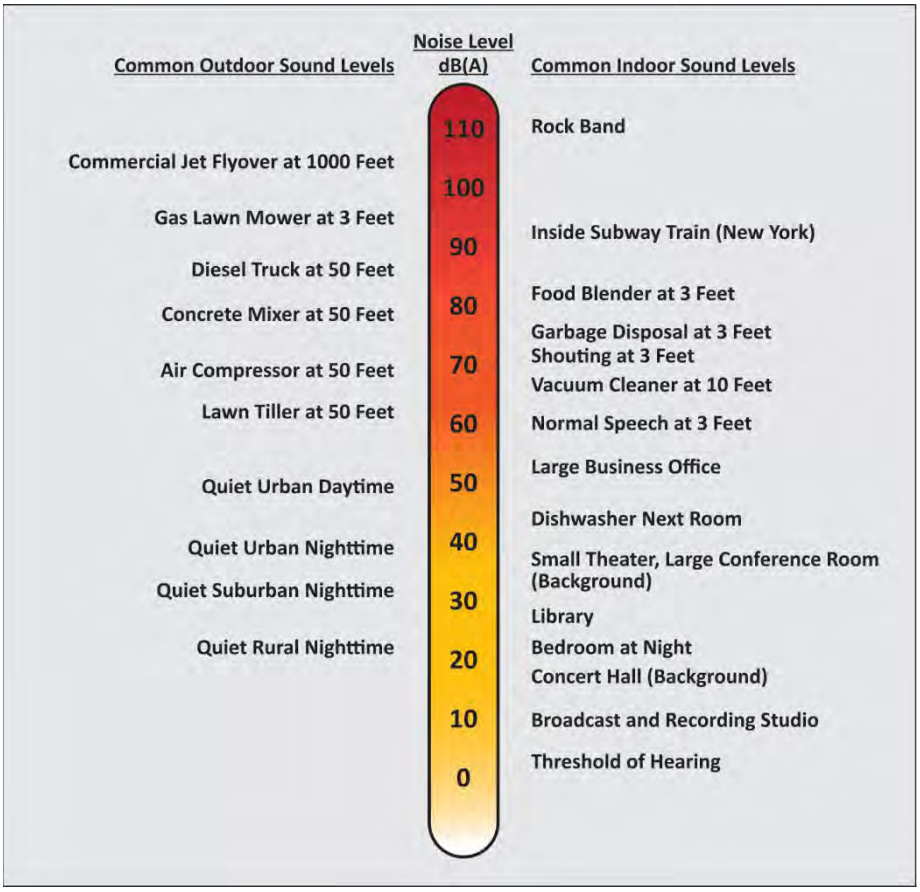
Term	Definitions
Decibel, dB	A unit of sound level that denotes the ratio between two quantities that are proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in 1 second (i.e., the number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. (All sound levels in this report are A-weighted unless reported otherwise.)
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 1%, 10%, 50%, and 90% of a stated time period, respectively.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dBA to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time. It is usually a composite of sound from many sources from many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

Source: *Handbook of Acoustical Measurements and Noise Control* (Harris 1991).

Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to sound levels higher than 85 dBA. Exposure to high sound levels affects the entire system, with prolonged sound exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of sound exposure above 90 dBA would result in permanent cell damage. When the sound level reaches 120 dBA, a tickling sensation occurs in the human ear, even with short-term exposure. This level of sound is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by a feeling of pain in the ear (i.e., the threshold of pain). A sound level of 160–165 dBA will result in dizziness or a loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less-developed areas.

Table B: Typical A-Weighted Sound Levels



Source: Compiled by LSA (2016).

Fundamentals of Vibration

Vibration refers to ground-borne noise and perceptible motion. Ground-borne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernible, but without the effects associated with the shaking of a building there is less adverse reaction. Vibration energy propagates from a source through intervening soil and rock layers to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by occupants as the motion of building surfaces, the rattling of items sitting on shelves or hanging on walls, or a low-frequency rumbling noise. The rumbling noise is caused by the vibration of walls, floors, and ceilings that radiate sound waves. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 10 dB or less. This is an order of magnitude below the damage threshold for normal buildings.

Typical sources of ground-borne vibration are construction activities (e.g., blasting, pile-driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Problems with both ground-borne vibration and noise from these sources are usually localized to

areas within approximately 100 feet (ft) from the vibration source, although there are examples of ground-borne vibration causing interference out to distances greater than 200 ft. When roadways are smooth, vibration from traffic, even heavy trucks, is rarely perceptible. It is assumed for most projects that the roadway surface will be smooth enough that ground-borne vibration from street traffic will not exceed the impact criteria; however, both construction of the project and the freight train operations could result in ground-borne vibration that may be perceptible and annoying.

Ground-borne noise is not likely to be a problem because noise arriving via the normal airborne path will usually be greater than ground-borne noise.

Ground-borne vibration has the potential to disturb people and damage buildings. Although it is very rare for train-induced ground-borne vibration to cause even cosmetic building damage, it is not uncommon for construction processes such as blasting and pile-driving to cause vibration of sufficient amplitudes to damage nearby buildings. Ground-borne vibration is usually measured in terms of vibration velocity, either the root-mean-square (RMS) velocity or peak particle velocity (PPV). The RMS is best for characterizing human response to building vibration, and PPV is used to characterize potential for damage. Decibel notation acts to compress the range of numbers required to describe vibration. Vibration velocity level in decibels is defined as:

$$L_v = 20 \log_{10} [V/V_{ref}]$$

where "L_v" is the vibration velocity in decibels (VdB), "V" is the RMS velocity amplitude, and "V_{ref}" is the reference velocity amplitude, or 1 x 10^{-6} inches/second (in/sec) used in the United States. Table C illustrates human response to various vibration levels, as described in the *Federal Transit Administration (FTA) Noise and Vibration Impact Assessment Manual* (FTA Manual) (2018).

Factors that influence ground-borne vibration and noise include:

- **Vibration Source:** Vehicle suspension, wheel types and condition, railroad track/roadway surface, railroad track support system, speed, transit structure, and depth of vibration source.

- **Vibration Path:** Soil type, rock layers, soil layering, depth to water table, and frost depth.

- **Vibration Receiver:** Foundation type, building construction, and acoustical absorption.

Among the factors listed above, there are significant differences in the vibration characteristics when the source is underground compared to at the ground surface. In addition, soil conditions are known to have a strong influence on the levels of ground-borne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock.

Table C: Human Response to Different Levels of Ground-Borne Noise and Vibration

Vibration Velocity Level	Noise Level		Human Response
	Low Frequency[1]	Mid Frequency[2]	
65 VdB	25 dBA	40 dBA	Approximate threshold of perception for many humans. Low-frequency sound is usually inaudible; mid-frequency sound is excessive for quiet sleeping areas.
75 VdB	35 dBA	50 dBA	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level unacceptable. Low-frequency noise is acceptable for sleeping areas; mid-frequency noise is annoying in most quiet occupied areas.
85 VdB	45 dBA	60 dBA	Vibration is acceptable only if there are an infrequent number of events per day. Low-frequency noise is unacceptable for sleeping areas; mid-frequency noise is unacceptable even for infrequent events with institutional land uses, such as schools and churches.

Source: *Transit Noise and Vibration Impact Assessment* (FTA 2018).
[1] Approximate noise level when vibration spectrum peak is near 30 Hz.
[2] Approximate noise level when vibration spectrum peak is near 60 Hz.
dBA = A-weighted decibels
FTA = Federal Transit Administration
Hz = Hertz
VdB = vibration velocity decibels

Experience with ground-borne vibration indicates (1) vibration propagation is more efficient in stiff, clay soils than in loose, sandy soils; and (2) shallow rock seems to concentrate the vibration energy close to the surface and can result in ground-borne vibration problems at large distances from a railroad track. Factors such as layering of the soil and the depth to the water table can have significant effects on the propagation of ground-borne vibration. Soft, loose, sandy soils tend to attenuate more vibration energy than hard, rocky materials. Vibration propagation through groundwater is more efficient than through sandy soils.

REGULATORY SETTING

Noise and vibration regulations are addressed through the efforts of various federal, State, and local government agencies. The agencies responsible for regulating noise are discussed below.

Federal Regulations

United States Environmental Protection Agency

In 1972, Congress enacted the United States Noise Control Act. This act authorized the United States Environmental Protection Agency (USEPA) to publish descriptive data on the effects of noise and establish levels of sound "requisite to protect the public welfare with an adequate margin of safety." These levels are separated into health (hearing loss levels) and welfare (annoyance levels). For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to 70 dBA during a 24-hour period of time. At 55 dBA L_{dn}, 95 percent sentence clarity (intelligibility) may be expected at 11 ft, with no community reaction. However, 1 percent of the population may complain about noise at this level and 17 percent may indicate annoyance. The USEPA cautions that these identified levels are guidelines, not standards (USEPA 1974).

Federal Transit Administration

Vibration standards included in the FTA Manual are used in this analysis for ground-borne vibration impacts on human annoyance, as shown in Table C. The criteria presented in Table D account for the variations in project types, which differ widely among projects.

Table D: Interpretation of Vibration Criteria for Detailed Analysis

Land Use	Max L_v (VdB)[1]	Description of Use
Workshop	90	Vibration that is distinctly felt. Appropriate for workshops and similar areas not as sensitive to vibration.
Office	84	Vibration that can be felt. Appropriate for offices and similar areas not as sensitive to vibration.
Residential Day	78	Vibration that is barely felt. Adequate for computer equipment and low-power optical microscopes (up to 20×).
Residential Night and Operating Rooms	72	Vibration is not felt, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power microscopes (100×) and other equipment of low sensitivity.

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] As measured in 1/3-Octave bands of frequency over the frequency range 8 to 80 Hertz.
FTA = Federal Transit Administration
VdB = vibration velocity decibels
L_V = velocity in decibels
Max = maximum

The criteria for environmental impact from ground-borne vibration and noise are based on the maximum levels for a single event. Table E lists the potential vibration building damage criteria associated with construction activities, as suggested in the FTA Manual.

Table E: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)	Approximate L_V (VdB)[1]
Reinforced concrete, steel, or timber (no plaster)	0.50	102
Engineered concrete and masonry (no plaster)	0.30	98
Non-engineered timber and masonry buildings	0.20	94
Buildings extremely susceptible to vibration damage	0.12	90

Source: *Transit Noise and Vibration Impact Assessment* (FTA 2018).
[1] RMS vibration velocity in decibels (VdB) re 1 µin/sec.
µin/sec = microinches per second
FTA = Federal Transit Administration
in/sec = inch/inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

FTA Manual guidelines show that for potential annoyance thresholds, a level of up to 78 VdB is acceptable during the daytime hours at residential uses while a level of 87 VdB is appropriate for office uses, and a level of 90 VdB is appropriate for workshop uses. To assess damage potential, a vibration level of up to 102 VdB (equivalent to 0.5 in/sec in PPV) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster) and would not result in any construction vibration damage. For a non-

engineered timber and masonry building, the construction building vibration damage criterion is 94 VdB (0.2 in/sec in PPV).

State Regulations

The State of California has established regulations that help prevent adverse impacts to occupants of buildings near noise sources. Referred to as the *State Noise Insulation Standard*, it requires buildings to meet performance standards through design and/or building materials that would offset any noise source in the vicinity of the receptor. State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are found in California Code of Regulations, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code), Appendix Chapters 12 and 12A.

The State has also established land use compatibility guidelines for determining acceptable noise levels for specified land uses.

Local Regulations

The following is a summary of the applicable policies included in the City's General Plan and Municipal Code that are related to noise and applicable to the proposed project.

City of Fresno General Plan

The City's General Plan (2014) includes a set of policies (detailed below) and programs that form a blueprint for the physical development of the city. The following policies related to noise and applicable to the proposed project are presented in the Noise Element of the General Plan. In addition, the Noise Element sets noise standards for transportation and stationary noise sources as shown in Table F and Table G, below.

Table F: Transportation (Non-Aircraft) Noise Sources

Noise-Sensitive Land Use[1]	Outdoor Activity Areas[2]	Interior Spaces	
	L_{dn}/CNEL, dB	L_{dn}/CNEL, dB	L_{eq} dB[2]
Residential	65	45	-
Transient Lodging	65	45	-
Hospitals, Nursing Homes	65	45	-
Theaters, Auditoriums, Music Halls	-	-	35
Churches, Meeting Halls	65	-	45
Office Buildings	-	-	45
Schools, Libraries, Museums	-	-	45

Source: General Plan (City of Fresno, 2014).

[1] Where the location of outdoor activity areas is unknown or is not applicable, the exterior noise level standard shall be applied to the property line of the receiving land use.

[2] As determined for a typical worst-case hour during periods of use.

CNEL = Community Noise Equivalent Level

dB = decibels

L_{dn} = day-night average noise level

Table G: Stationary Noise Sources

	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly Equivalent Sound Level (L_{eq}), dBA	50	45
Maximum Sound Level (L_{max}), dBA	70	60

Source: General Plan (City of Fresno, 2014).

[1] The Planning and Development Director, on a case-by-case basis, may designate land uses other than those shown in this table to be noise-sensitive, and may require appropriate noise mitigation measures.

[2] As determined at outdoor activity areas. Where the location of outdoor activity areas is unknown or not applicable, the noise exposure standard shall be applied at the property line of the receiving land use. When ambient noise levels exceed or equal the levels in this table, mitigation shall only be required to limit noise to the ambient plus five dB.

dB = decibels

dBA = A-weighted decibels

- **Policy NS-1-b: Conditionally Acceptable Exterior Noise Exposure Range.** Establish the conditionally acceptable noise exposure level range for residential and other noise sensitive uses to be 65 dB L_{dn} or require appropriate noise reducing mitigation measures as determined by a site-specific acoustical analysis to comply with the desirable and conditionally acceptable exterior noise level and the required interior noise level standards set in Table F.

- **Policy NS-1-c: Generally Unacceptable Exterior Noise Exposure Range.** Establish the exterior noise exposure of greater than 65 dB L_{dn} or CNEL to be generally unacceptable for residential and other noise sensitive uses for noise generated by sources in Policy NS-1-a, and study alternative less noise-sensitive uses for these areas if otherwise appropriate. Require appropriate noise reducing mitigation measures as determined by a site-specific acoustical analysis to comply with the generally desirable or generally acceptable exterior noise level and the required 45 dB interior noise level standards set in Table F as conditions of permit approval.

- **Policy NS-1-g:** Noise mitigation measures which help achieve the noise level targets of this plan include, but are not limited to, the following:

    - Façades with substantial weight and insulation;
    - Installation of sound-rated windows for primary sleeping and activity areas;
    - Installation of sound-rated doors for all exterior entries at primary sleeping and activity areas;
    - Greater building setbacks and exterior barriers;
    - Acoustic baffling of vents for chimneys, attic and gable ends;
    - Installation of mechanical ventilation systems that provide fresh air under closed window conditions.

    The aforementioned measures are not exhaustive and alternative designs may be approved by the City, provided that a qualified Acoustical Consultant submits information demonstrating that the alternative design(s) will achieve and maintain the specific targets for outdoor activity areas and interior spaces.

- **Policy NS-1-i: Mitigation by New Development.** Require an acoustical analysis where new development of industrial, commercial, or other noise generating land uses (including transportation facilities such as roadways, railroads, and airports) may result in noise levels that exceed the noise level exposure criteria established by Tables F and G to determine impacts and require developers to mitigate these impacts in conformance with Tables F and G as a condition of permit approval through appropriate means. Noise mitigation measures may include:

    - The screening of noise sources such as parking and loading facilities, outdoor activities, and mechanical equipment;
    - Providing increased setbacks for noise sources from adjacent dwellings;
    - Installation of walls and landscaping that serve as noise buffers;
    - Installation of soundproofing materials and double-glazed windows; and
    - Regulating operations, such as hours of operation, including deliveries and trash pickup.

    Alternative acoustical designs that achieve the prescribed noise level reduction may be approved by the City, provided a qualified Acoustical Consultant submits information demonstrating that the alternative designs will achieve and maintain the specific targets for outdoor activity areas and interior spaces. As a last resort, developers may propose to construct noise walls along roadways when compatible with aesthetic concerns and neighborhood character. This would be a developer responsibility, with no City funding.

- **Policy NS-1-j: Significance Threshold.** Establish, as a threshold of significance for the City's environmental review process, that a significant increase in ambient noise levels is assumed if the project would increase noise levels in the immediate vicinity by 3 dB L_{dn} or CNEL or more above the ambient noise limits established in this General Plan Update.

- **Policy NS-1-m: Transportation Related Noise Impacts.** For projects subject to City approval, require that the project sponsor mitigate noise created by new transportation and transportation-related stationary noise sources, including roadway improvement projects, so that resulting noise levels do not exceed the City's adopted standards for noise-sensitive land uses.

- **Policy NS-1-o: Sound Wall Guidelines.** Acoustical studies and noise mitigation measures for projects shall specify the heights, materials, and design for sound walls and other noise barriers. Aesthetic considerations shall also be addressed in these studies and mitigation measures such as variable noise barrier heights, a combination of a landscaped berm with wall, and reduced barrier height in combination with increased distance or elevation differences between noise source and noise receptor, with a maximum allowable height of 15 feet. The City will develop guidelines for aesthetic design measures of sound walls, and may commission area wide noise mitigation studies that can serve as templates for acoustical treatment that can be applied to similar situations in the urban area.

City of Fresno Municipal Code

Chapter 10, Article 1 (Noise Regulations), of the Fresno Municipal Code (2022) establishes excessive noise guidelines and exemptions. The following portions of the Municipal Code are applicable to the proposed project.

SEC. 10-102. Definitions. (b) Ambient Noise. "Ambient noise" is the all-encompassing noise associated with a given environment, being usually a composite of sounds from many sources near and far. For the purpose of this ordinance, ambient noise level is the level obtained when the noise level is averaged over a period of 15 minutes, without inclusion of the offending noise, at the location and time of day at which a comparison with the offending noise is to be made. Where the ambient noise level is less than that designated in this section, the noise level specified in Table H shall be deemed to be the ambient noise level for that location.

Table H: Ambient Noise Levels

District	Time	Sound Level Decibels
Residential	10:00 p.m. to 7:00 a.m.	50
Residential	7:00 p.m. to 10:00 p.m.	55
Residential	7:00 a.m. to 7:00 p.m.	60
Commercial	10:00 p.m. to 7:00 a.m.	60
Commercial	7:00 a.m. to 10:00 p.m.	65
Industrial	anytime	70

Source: Chapter 10, Article 1 (Noise Regulations) (City of Fresno, 2022).

SEC. 10-105. Excessive Noise Prohibited. No person shall make, cause, or suffer or permit to be made or caused upon any premises or upon any public street, alley, or place within the city, any sound or noise

which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing or working in the area, unless such noise or sound is specifically authorized by or in accordance with this article. The provisions of this section shall apply to, but shall be limited to, the control, use, and operation of the following noise sources:

(a) Radios, musical instruments, phonographs, television sets, or other machines or devices used for the amplification, production, or reproduction of sound or the human voice.

(b) Animals or fowl creating, generating, or emitting any cry or behavioral sound.

(c) Machinery or equipment, such as fans, pumps, air conditioning units, engines, turbines, compressors, generators, motors or similar devices, equipment, or apparatus.

(d) Construction equipment or work, including the operation, use or employment of pile drivers, hammers, saws, drills, derricks, hoists, or similar construction equipment or tools.

SEC. 10-109. Exceptions. The provisions of this article shall not apply to:

(a) Construction, repair or remodeling work accomplished pursuant to a building, electrical, plumbing, mechanical, or other construction permit issued by the city or other governmental agency, or to site preparation and grading, provided such work takes place between the hours of 7:00 a.m. and 10:00 p.m. on any day except Sunday.

(b) Emergency work.

(c) Any act or acts which are prohibited by any law of the State of California or the United States.

OVERVIEW OF THE EXISTING NOISE ENVIRONMENT

This section describes the existing noise environment in the project site vicinity. Noise monitoring and traffic noise modeling were used to quantify existing and future noise levels at the project site.

In Fresno, vehicle traffic is the primary source of noise. Other significant local noise sources include airport noise, railroad operations, and stationary source noise.

Existing Noise Level Measurements

To assess existing noise levels, LSA conducted two long-term and four short-term noise measurements at the proposed project site. The long-term noise measurements were recorded on September 28, 2022 and on September 29, 2022. The long-term noise measurements captured data to calculate the hourly L_{eq} and CNEL at each location, which incorporate the nighttime hours. Sources that dominate the existing noise environment include traffic on West Nielsen Avenue and Hughes Avenue, as well as railway activities and nearby aircraft operations. Noise measurement data collected during long-term noise monitoring are summarized in Table I and shown in Figure 3. Noise measurement sheets are provided in Attachment B.

Table I: Long-Term Noise Level Measurements

Location	Daytime Hours Noise Levels[1] (dBA L_{eq})	Evening Hours Noise Levels[2] (dBA L_{eq})	Nighttime Hours Noise Levels[3] (dBA L_{eq})	Average Daily Noise Level (dBA CNEL)	Average Noise Level 7 a.m. to 10 p.m. (dBA L_{eq})	Average Noise Level 10 p.m. to 7 a.m. (dBA L_{eq})
LT-1: West of 2625 W Nielsen Avenue. On a tree, approximately 40 feet away from W Neilson centerline	61.0-68.3	56.2-61.4	52.0-66.2	67.6	62.3	59.1
LT-2: North of site, near rail tracks, approximately 30 feet from track closest to site.	46.6-66.6	55.8-65.3	50.2-56.4	62.0	56.7	53.3
ST-1[4]: Between second and third tree north of cemetery entrance. Approximately 35 feet from N Hughes Avenue centerline	58.8-66.1	54.0-59.2	49.8-64.0	65.4	60.1	56.9
ST-2[4]: North of Belmont Avenue. Approximately 40 feet away from centerline. By 2560 Belmont Avenue entrance (AAA Welding).	61.6-68.9	56.8-62.0	52.6-66.8	68.2	62.9	59.7
ST-3[4]: West of N Marks Avenue, south of overpass entrance, by power pole. Approximately 50 feet away from Marks Ave. centerline	62.8-70.1	58.0-63.2	53.8-68.0	69.4	64.1	60.9
ST-4[4]: South of Nielsen Avenue, approximately 40 feet away from centerline. East of 2307 W Nielsen Ave entrance.	61.5-68.8	56.7-61.9	52.5-66.7	68.1	62.8	59.6

Source: Compiled by LSA. (October 2022).

[1] Daytime Noise Levels = noise levels during the hours of 7:00 a.m. to 7:00 p.m.

[2] Evening Noise Levels = noise levels during the hours of 7:00 p.m. to 10:00 p.m.

[3] Nighttime Noise Levels = noise levels during the hours of 10:00 p.m. to 7:00 a.m.

[4] Hourly and daily noise levels at short-term noise monitoring locations were estimated by the noise profile of nearby long-term measurements

dBA = A-weighted decibels

CNEL = Community Noise Equivalent Level

L_{eq} = equivalent continuous sound level

Existing Traffic Noise

The guidelines included in the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) were used to evaluate traffic-related noise conditions along roadway segments in the project vicinity. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the CNEL values.

Traffic volumes were obtained from the *Traffic Impact Analysis* (LSA 2022). A specific breakdown of the vehicle percentages based on type and time of day is provided in Attachment C. Table J provides the existing traffic noise levels in the project vicinity. These traffic noise levels are representative of a worst-case scenario that assumes a flat terrain and no shielding between the traffic and the noise contours.

Table J: Existing Traffic Noise Levels Without Project

Roadway Segment	ADT	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane
Marks Avenue between Belmont Avenue and Nielsen Avenue	10,190	158	486	1,532	72.8
Marks Avenue between Nielsen Avenue and Ray Johnson Drive	11,554	178	551	1,737	73.3
Marks Avenue between Ray Johnson Drive and SR-180 Westbound Ramps	12,019	185	573	1,807	73.5
Belmont Avenue between Marks Avenue and Hughes Avenue	7,240	92	280	881	71.0
Nielsen Avenue between Marks Avenue and Hughes Avenue	1,614	< 50	71	199	64.0
Hughes Avenue between Nielsen Avenue and Belmont Avenue	2,604	< 50	105	318	66.3

Source: Compiled by LSA (October 2022).
Notes: Traffic noise within 50 feet of the roadway centerline should be evaluated with site-specific information.
ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
SR- = State Route

Airport Operations

There are currently three airports within the City of Fresno: Fresno Yosemite International Airport, Fresno-Chandler Executive Airport, and Sierra Sky Park Airport. Commercial jet aircraft operations are limited to Fresno Yosemite International Airport. The Air National Guard is also stationed there and

operates military jets and other aircraft. Private and commercial operations with smaller aircraft use Fresno Chandler Downtown Airport, while only small private aircraft use Sierra Sky Park Airport.

The nearest airports to the project site include Fresno Chandler Executive Airport, located 0.8 mile from the project site, the Sierra Sky Airport, 6.7 miles from the project site, and Fresno International Airport, 7.1 miles from the project site. Each of these airports is included in the Fresno County Airport Land Use Compatibility Plan (ALUCP), which guides approximate compatible land uses. The City of Fresno General Plan, other City land use plans, and all City land use decisions must be compatible with the adopted ALUCP. The ALUCP includes CNEL noise contours based on projected airport and aircraft operations. The project site is not within an ALUCP.

Railroad Operations

The two major rail lines that traverse the city are the Union Pacific Railroad line, which is generally runs along State Route (SR) 99, and the BNSF Railway, which diverges from SR-99 in the southwest and travels through downtown (behind City Hall) to the northwest. The Union Pacific line is generally within a heavy commercial and industrial corridor, although residential uses occur in the vicinity of the line north of Shaw Avenue. The Union Pacific line limits its use to only freight traffic. South of downtown, BNSF Railway is bounded by industrial uses, while north of downtown, the line is generally within a residential area. The BNSF Railway carries both freight and passenger traffic (Amtrak).

The closest rail line to the project site is 315 feet north of the project site.

Stationary Noise Sources

Stationary noise sources can also have an effect on the population, and unlike mobile, transportation-related noise sources, these sources generally have a more permanent and consistent impact on people. These stationary noise sources involve a wide spectrum of uses and activities, including various industrial uses, commercial operations, agricultural production, school playgrounds, high school football games, on-site heating, ventilation, and air conditioning (HVAC) units, generators, lawn maintenance equipment, and swimming pool pumps.

Even with incorporation of the best available noise control technology, noise emanating from industrial uses can be substantial and exceed local noise standards. These noise sources can be continuous and may contain tonal components that may be annoying to nearby receptors. Although industrial uses in Fresno are typically in industrial districts near freeways and commercial uses and away from residences and other sensitive noise receptors, noise sources associated with commercial uses such as automotive repair facilities, recycling centers, and loading docks may occur in the vicinity of residential uses.

IMPACT ANALYSIS

Short-Term Construction Noise Impacts

Project construction would result in short-term noise impacts on the nearby sensitive receptors. Maximum construction noise would be short-term, generally intermittent depending on the construction phase, and variable depending on receiver distance from the active construction zone. The duration of noise impacts generally would be from 1 day to several days, depending on the phase

of construction. The level and types of noise impacts that would occur during construction are described below.

Construction is completed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table K lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 ft between the equipment and a noise receptor, taken from the Federal Highway Administration (FHWA) *Roadway Construction Noise Model User's Guide* (FHWA 2006).

Table K: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%)	Maximum Noise Level (L_{max}) at 50 Feet[1]
Backhoes	40	80
Compactor (ground)	20	80
Compressor	40	80
Cranes	16	85
Dozers	40	85
Dump Trucks	40	84
Excavators	40	85
Flat Bed Trucks	40	84
Forklift	20	85
Front-end Loaders	40	80
Graders	40	85
Impact Pile Drivers	20	95
Jackhammers	20	85
Pick-up Truck	40	55
Pneumatic Tools	50	85
Pumps	50	77
Rock Drills	20	85
Rollers	20	85
Scrapers	40	85
Tractors	40	84
Welder	40	73

Source: Roadway Construction Noise Model (Federal Highway Administration 2006).
Note: Noise levels reported in this table are rounded to the nearest whole number.
[1] Maximum noise levels were developed based on Spec 721.560 from the Central Artery/Tunnel (CA/T) program to be consistent with the City of Boston's Noise Code for the "Big Dig" project.
L_{max} = maximum instantaneous sound level

Two types of short-term noise impacts could occur during construction of the proposed project. The first type involves construction crew commutes and the transport of construction equipment and materials to the site, which would incrementally increase noise levels on roads leading to the site. As shown in Table K, there would be a relatively high single-event noise exposure potential at a maximum level of 84 dBA L_{max} with trucks passing at 50 feet.

In addition to the reference maximum noise level, the usage factor provided in Table K is used to calculate the hourly noise level impact for each piece of equipment based on the following equation:

$$L_{eq}(equip) = E.L. + 10\log(U.F.) - 20\log\left(\frac{D}{50}\right)$$

where: $L_{eq}(equip)$ = L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period

E.L. = noise emission level of the particular piece of equipment at a reference distance of 50 ft

U.F. = usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time

D = distance from the receiver to the piece of equipment

Each piece of construction equipment operates as an individual point source. Using the following equation, a composite noise level can be calculated when multiple sources of noise operate simultaneously:

$$Leq\ (composite) = 10 * \log_{10}\left(\sum_{1}^{n} 10^{\frac{Ln}{10}}\right)$$

Using the equations from the methodology above, the reference information in Table K, and the construction equipment list provided, the composite noise level of the two loudest pieces of equipment for each construction phase was calculated. The project construction composite noise levels at a distance of 50 ft for would range from 74 dBA L_{eq} to 84 dBA L_{eq}, with the highest noise levels occurring during the grading phase.

Once composite noise levels are calculated, reference noise levels can then be adjusted for distance using the following equation:

$$Leq\ (at\ distance\ X) = Leq\ (at\ 50\ feet) - 20 * \log_{10}\left(\frac{X}{50}\right)$$

In general, this equation shows that doubling the distance would decrease noise levels by 6 dBA, while halving the distance would increase noise levels by 6 dBA.

To determine the applicable distance, the acoustical average distance is utilized. The acoustical average distance is used to represent noise sources that are mobile or distributed over an area. The average acoustical distance is calculated by multiplying the shortest distance between the receiver and the noise source area by the farthest distance, and then taking the square root of the product.

While construction noise will vary, it is expected that composite noise levels during construction at the nearest off-site sensitive residential use to the south would reach an average noise level of 64 dBA L_{eq} during daytime hours. While construction-related, short-term noise levels have the potential to be higher than quieter daytime ambient noise levels in the project area under existing conditions, the construction noise impacts would be approximately 1.7 dBA greater than the existing average daytime noise level of 64.7 dBA L_{eq} during the allowable hour of construction. When logarithmically combined with the existing average ambient noise level, the total noise level would be 66.2 dBA L_{eq} resulting in an increase of 3.9 dBA L_{eq}. Because the increase would be less than 5 dBA, construction noise would be considered less than significant.

Consistent with the applicable noise provisions of the Fresno Municipal Code, construction work would only take place between the hours of 7:00 a.m. and 10:00 p.m. Monday through Saturday. No construction work would take place on Sundays.

Although the project's potential construction-related noise level increase would be less than 5 dBA, project construction noise would result in a potentially significant impact at the nearest off-site sensitive residential use. As such, Mitigation Measure NOI-1 would be required to ensure that all construction equipment, fixed or mobile, is equipped with properly operating and maintained mufflers consistent with manufacturers' standards, which would reduce the potential impacts associated with construction equipment. Additionally, Mitigation Measure NOI-1 requires the project to designate a "disturbance coordinator" at the City who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem.

Mitigation Measure NOI-1 The project contractor shall implement the following measures during construction of the project:

- Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.
- Designate a "disturbance coordinator" at the City who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem.

With implementation of Mitigation Measure NOI-1, the proposed project would result in a less than significant impact associated with the generation of a substantial temporary increase in ambient noise levels in the vicinity during construction.

Short-Term Construction Vibration Impacts

This construction vibration impact analysis assesses the potential for building damages using vibration levels in PPV (in/sec). This is because vibration levels calculated in RMS are best for characterizing human response to building vibration, while vibration level in PPV is best for characterizing potential for damage.

Table L shows the PPV and VdB values at 25 ft from the construction vibration source. As shown in Table L, bulldozers and other heavy-tracked construction equipment (expected to be used for this project) generate 0.089 PPV in/sec or 87 VdB of ground-borne vibration when measured at 25 ft, based on the FTA Manual. The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project construction boundary (assuming the construction equipment would be used at or near the project setback line).

The formulae for vibration transmission are provided below, and Table M, provides a summary of off-site construction vibration levels.

$$L_v dB\ (D) = L_v dB\ (25\ ft) - 30\ Log\ (D/25)$$

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

Table L: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 ft	
	PPV (in/sec)	L_V (VdB)[1]
Pile Driver (Impact), Typical	0.644	104
Pile Driver (Sonic), Typical	0.170	93
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer[2]	**0.089**	**87**
Caisson Drilling	0.089	87
Loaded Trucks[2]	**0.076**	**86**
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: Transit Noise and Vibration Impact Assessment Manual (FTA 2018).

[1] RMS vibration velocity in decibels (VdB) is 1 µin/sec.

[2] Equipment shown in **bold** is expected to be used on site.

µin/sec = microinches per second
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inch/inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

Table M: Potential Construction Vibration Damage Impacts at Nearest Receptor

Receptor (Location)	Reference Vibration Level (PPV) at 25 feet[1]	Distance (feet)[2]	Vibration Level (PPV)
Residential Uses (South)	0.089	110	0.010
Industrial Uses (North)		30	0.068
Industrial Uses / Cemetery (East)		120	0.009
Industrial Uses (West)		300	0.002

Source: Compiled by LSA (2022).

[1] The reference vibration level is associated with a large bulldozer, which is expected to be representative of the heavy equipment used during construction.

[2] The reference distance is associated with the peak condition, identified by the distance from the perimeter of construction activities to surrounding structures

ft = foot/feet

in/sec = inch/inches per second

PPV = peak particle velocity

Based on the information provided in Table M, vibration levels are expected to approach 0.068 PPV in/sec at the surrounding structures and would be below the 0.2 PPV in/sec damage threshold.

Based on the information provided in Table N, vibration levels are expected to approach 85 VdB at the closest industrial uses north of the project site and 68 VdB at the closest residential use to the south, which are below the 90 VdB and 78 VdB annoyance threshold for workshop or industrial types uses and for daytime residential uses, respectively.

Table N: Potential Construction Vibration Annoyance Impacts at Nearest Receptor

Receptor (Location)	Reference Vibration Level (VdB) at 25 feet[1]	Distance (feet)[2]	Vibration Level (VdB)
Residential Uses (South)	87	110	68
Industrial Uses (North)		30	85
Industrial Uses / Cemetery (East)		120	67
Industrial Uses (West)		300	55

Source: Compiled by LSA (2022).

[1] The reference vibration level is associated with a large bulldozer, which is expected to be representative of the heavy equipment used during construction.

[2] The reference distance is associated with the average condition, identified by the distance from the center of construction activities to surrounding uses

ft = foot/feet

VdB = vibration velocity decibels

Because construction activities are regulated by the City's Code of Ordinance that states temporary construction, maintenance, or demolition activities are not allowed between the 7:00 p.m. on one day and 7:00 a.m. of the following day, vibration impacts would not occur during the more sensitive nighttime hours.

Other building structures surrounding the project site are farther away and would experience further reduced vibration. Therefore, no construction vibration impacts would occur.

Long Term Noise Impacts

Traffic Noise Impacts to Off-Site Receivers

The guidelines included in the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) were used to evaluate highway traffic-related noise conditions along roadway segments in the project vicinity. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the CNEL values. Table O provides the traffic noise levels for the existing with and without project, and opening year with and without project scenarios. These noise levels represent the worst-case scenario, which assumes no shielding is provided between the traffic and the location where the noise contours are drawn.

The without and with project scenario traffic volumes were obtained from the *Traffic Impact Analysis* (LSA 2021).

Table O shows that the increase in project-related traffic noise would be no greater than 2.1 dBA. Noise level increases less than 3.0 dBA are not considered perceptible to most people in an outdoor environment. Because this is also consistent with General Plan Policy NS-1-j: Significance Threshold which states that an increase of 3 dBA CNEL or more is considered significant, traffic noise impacts from project-related traffic on off-site sensitive receptors would be less than significant.

Table O: Traffic Noise Levels Without and With Proposed Project

Roadway Segment	Existing		Existing With Project			Opening Year		Opening Year with Project			Year 2035		Year 2035 With Project		
	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	Increase from Existing Conditions	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	Increase from Near-Term Conditions	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	Increase from Year 2035 Conditions
Marks Avenue between Belmont Avenue and Nielsen Avenue	10,190	72.8	11,228	73.9	1.1	10,938	73.1	11,976	74.1	1.0	11,651	73.4	12,689	74.4	1.0
Marks Avenue between Nielsen Avenue and Ray Johnson Drive	11,554	73.3	12,146	74.2	0.9	12,408	73.6	13,000	74.5	0.9	13,244	73.9	13,836	74.8	0.9
Marks Avenue between Ray Johnson Drive and SR-180 Westbound Ramps	12,019	73.5	12,611	74.4	0.9	12,933	73.8	13,525	74.7	0.9	13,706	74.1	14,298	74.9	0.8
Belmont Avenue between Marks Avenue and Hughes Avenue	7,240	71.0	7,550	71.8	0.8	7,905	71.3	8,215	72.1	0.8	8,846	71.8	9,156	72.6	0.8
Nielsen Avenue between Marks Avenue and Hughes Avenue	1,614	64.0	2,230	66.1	2.1	1,767	64.4	2,383	66.4	2.0	1,772	64.4	2,388	66.4	2.0
Hughes Avenue between Nielsen Avenue and Belmont Avenue	2,604	66.3	3,060	67.6	1.3	2,796	66.6	3,252	67.9	1.3	3,531	67.6	3,987	68.8	1.2

Source: Compiled by LSA (October 2022).
Note: Traffic noise within 50 feet of the roadway centerline should be evaluated with site-specific information.
Shaded cells indicate roadway segments adjacent to the project site.
ADT = average daily traffic
CNEL= Community Noise Equivalent Level
dBA = A-weighted decibels
SR = State Route

Stationary Operational Noise Impacts to Off-Site Receivers

Noise impacts associated with the long-term operation of the project must comply with the noise standards specified in the City's General Plan and the Municipal Code, as described above. Adjacent off-site land uses would be potentially exposed to stationary-source noise impacts from the proposed HVAC equipment, truck deliveries, and loading and unloading activities. The potential noise impacts to off-site sensitive land uses from the proposed operations are discussed below. To provide a conservative analysis, it is assumed that operations would occur equally during all hours of the day and that half the 192 loading docks would be active at all times. Additionally, the analysis assumed that within any given hour, 48 heavy trucks would maneuver to park near or back into one of the proposed trailer parking stalls. HVAC equipment is expected to run continuously for the duration of a 24-hour period. To determine the future noise impacts from project operations to the noise sensitive uses, the 3-D noise model, SoundPLAN, was used for the evaluation. The model incorporates the site topography as well as the shielding from the proposed building on-site. The model output, which includes a graphic representation of the operational noise impacts is presented in Attachment D. Results from the model analysis for each of the anticipated stationary sources are summarized below.

Heating, Ventilation, and Air Conditioning Equipment. it is estimated that the project would have four rooftop HVAC units on each of the proposed buildings to provide ventilation to the proposed office and warehouse spaces. The analysis assumes that the HVAC equipment would operate 24 hours per day and would generate sound power levels (SPL) of up to 87 dBA SPL or 72 dBA L_{eq} at 5 feet, based on manufacturer data (Trane).

Truck Deliveries and Truck Loading and Unloading Activities. Noise levels generated by delivery trucks would be similar to noise readings from truck loading and unloading activities, which generate a noise level of 75 dBA L_{eq} at 20 ft based on measurements taken by LSA (*Operational Noise Impact Analysis for Richmond Wholesale Meat Distribution Center* [LSA 2016]). Delivery trucks would arrive on site and maneuver their trailers so that trailers would be parked within the loading docks. During this process, noise would be associated with the truck engine, air brakes, and back-up alarms while the truck is backing into the dock. These noise sources would occur for a short period of time (less than 5 minutes). After a truck enters the loading dock, the doors would be closed, and the remainder of the truck loading activities would be enclosed and therefore much less perceptible. To present a conservative assessment, the model analysis assumes that unloading activities would occur at half of the 192 docks simultaneously for a period of more than 30 minutes in a given hour. Maximum noise levels that occur during the docking process were measured to be 86 dBA L_{max} at a distance of 20 feet.

Tables P shows the combined hourly noise levels generated by the proposed project at the closest off-site land uses. The project-related hourly noise level impacts would be 58.2 dBA L_{eq} at the outdoor activity area of the residence south of Building 1. When propagated to the outdoor activity area of the residential property south of Building 1, the average daytime noise level is 56.8 dBA L_{eq} and the average nighttime noise level is 53.6 dBA L_{eq}. As specified in the City's Noise Element, if existing ambient noise level exceed the City's noise standards, a project impact would occur when project related noise levels cause a 5 dBA or more increase. When compared to existing noise levels, project operations would not create an impact during daytime hours, but would generate an increase of greater than 5 dBA during nighttime hours, resulting in a potentially significant impact.

Table P: Hourly Exterior Noise Level Impacts

Receptor	Direction	Existing Daytime Noise Level (dBA L_{eq})	Existing Nighttime Noise Level (dBA L_{eq})	Project Noise Level (dBA L_{eq})	Daytime Noise Level Increase (dBA L_{eq})	Nighttime Noise Level Increase (dBA L_{eq})	Potential Operational Noise Impact? (Daytime / Nighttime)[1]
Residential	South	56.8	53.6	58.2	3.8	5.9	No / Yes

Source: Compiled by LSA (2022).

[1] Because ambient noise levels exceed the City of Fresno's stationary noise criteria, a potential operational noise impact would occur if operational noise would increase ambient noise by 5 dBA or more.

dBA = A-weighted decibels

L_{eq} = equivalent noise level

Table Q shows the modeled maximum exterior noise levels. The maximum noise levels generated would approach 66.5 dBA L_{max} at the surrounding sensitive receptors. This noise level would be below the City's exterior maximum daytime noise standard of 70 dBA L_{max} but would exceed the 60 dBA L_{max} for nighttime hours. Similar to the hourly noise impacts, project operations would not generate a significant impact related to maximum noise levels during daytime hours but would generate a significant impact during nighttime hours.

Table Q: Maximum Exterior Noise Level Impacts

Receptor	Direction	Project Maximum Noise Level (dBA L_{max})	Daytime Maximum Noise Level Standard (dBA L_{max})	Nighttime Maximum Noise Level Standard (dBA L_{max})	Potential Operational Noise Impact? (Daytime / Nighttime)[1]
Residential	South	66.5	70	60	No / Yes

Source: Compiled by LSA (2022).

dBA = A-weighted decibels

L_{max} = maximum noise level

Implementation of Mitigation Measure NOI-2 would reduce potential impacts related to loading dock and delivery noise by prohibiting loading dock activities at the loading dock doors and trailer parking activities south of Building 1 during nighttime hours. Loading dock and parking activities at all other locations would be shielded by the proposed buildings and would not exceed the City's nighttime noise standards.

Mitigation Measure NOI-2 All loading dock activities shall be prohibited at the loading dock doors on the south end of Building 1 during the nighttime hours (10:00 p.m. to 7:00 a.m.) or once operational, the project proponent shall provide documentation to the City of Fresno Planning and Development Department that demonstrates that nighttime loading dock activities would comply with the noise level specifications of the City's Municipal Code.

With implementation of Mitigation Measure NOI-2, the proposed project would result in a less than significant impact associated with the generation of a substantial permanent increase in ambient stationary source noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, State, or federal standards.

Long-Term Vibration Impacts

Once operational, the proposed project would not generate vibration levels related to on-site operations. In addition, vibration levels generated from project-related traffic on the adjacent roadways are unusual for on-road vehicles because the rubber tires and suspension systems of on-road vehicles provide vibration isolation. Vibration levels generated from project-related traffic on the adjacent roadways would be less than significant.

CONCLUSION

Project-related impacts associated with short-term construction vibration, long-term off-site traffic increases, and long-term vibration impacts would be less than significant. The following presents a summary of the potentially significant impacts and associated mitigation measures for short-term construction and long-term operational noise impacts.

Short-term Construction Noise Impacts

As stated above, the closest off-site sensitive receptors may be subject to short-term construction noise reaching 81 dBA L_{max} during construction. However, construction equipment would operate at various locations within the 48.03-acre project site and would only generate maximum noise levels when operations take place closest to the receptor. Nevertheless, to ensure that the project's potential construction-related noise impacts are less than significant, Mitigation Measure NOI-1 requires the project to equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards, which would reduce the potential impacts associated with construction equipment. Additionally, Mitigation Measure NOI-1 requires the project to designate a "disturbance coordinator" at the City who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem. These measures would ensure that the project's potential construction-related noise impacts are mitigated to less-than-significant levels.

Mitigation Measure NOI-1 The project contractor shall implement the following measures during construction of the project:

- Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.
- Designate a "disturbance coordinator" at the City who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine

the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem.

With implementation of Mitigation Measure NOI-1, the proposed project would result in a less-than-significant impact associated with the generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, State, or federal standards.

Long-term Operational Noise Impacts

Noise impacts associated with the long-term operation of the project must comply with the noise standards specified in the City's General Plan and Municipal Code, as described above.

As specified in the City's Noise Element, if existing ambient noise level exceed the City's noise standards, a project impact would occur when project-related noise levels cause a 5 dBA or more increase. When compared to existing hourly noise levels, project operations would not create an impact during daytime hours, but would generate an increase of greater than 5 dBA during nighttime hours, resulting in a significant impact. Similar to the hourly noise impacts, project operations would not generate a significant maximum noise level impact during daytime hours but would generate a significant impact during nighttime hours.

Implementation of Mitigation Measure NOI-2 would reduce potential impacts related to loading dock and delivery noise by prohibiting loading dock activities at the loading dock doors and trailer parking activities south of Building 1 during the nighttime hours. Loading dock and parking activities at all other locations would be shielded by the proposed buildings and would not exceed the City's nighttime noise standards.

Mitigation Measure NOI-2 All loading dock activities shall be prohibited at the loading dock doors on the south end of Building 1 during the nighttime hours (10:00 p.m. to 7:00 a.m.) or once operational, the project proponent would provide documentation to the City of Fresno Planning and Development Department that demonstrates that nighttime loading dock activities would comply with the noise level specifications of the City's Municipal Code.

With implementation of Mitigation Measure NOI-2, the proposed project would result in a less-than-significant impact associated with the generation of a substantial permanent increase in ambient stationary source noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, State, or federal standards.

REFERENCES

City of Fresno. 2014. General Plan Noise Element. December.

_____. 2022. Municipal Code. Section 10-101.

Harris, Cyril M., ed. 1991. Handbook of Acoustical Measurements and Noise Control. Third Edition.

Federal Highway Administration (FHWA). 2006. Roadway Construction Noise Model User's Guide. January. Washington, D.C.

Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual*. Office of Planning and Environment. Report No. 0123. September.

LSA Associates, Inc. (LSA). 2016. *Operational Noise Impact Analysis for Richmond Wholesale Meat Distribution Center*.

_____. 2021. *2740 West Nielsen Avenue Warehouse Project Traffic Impact Study*. December.

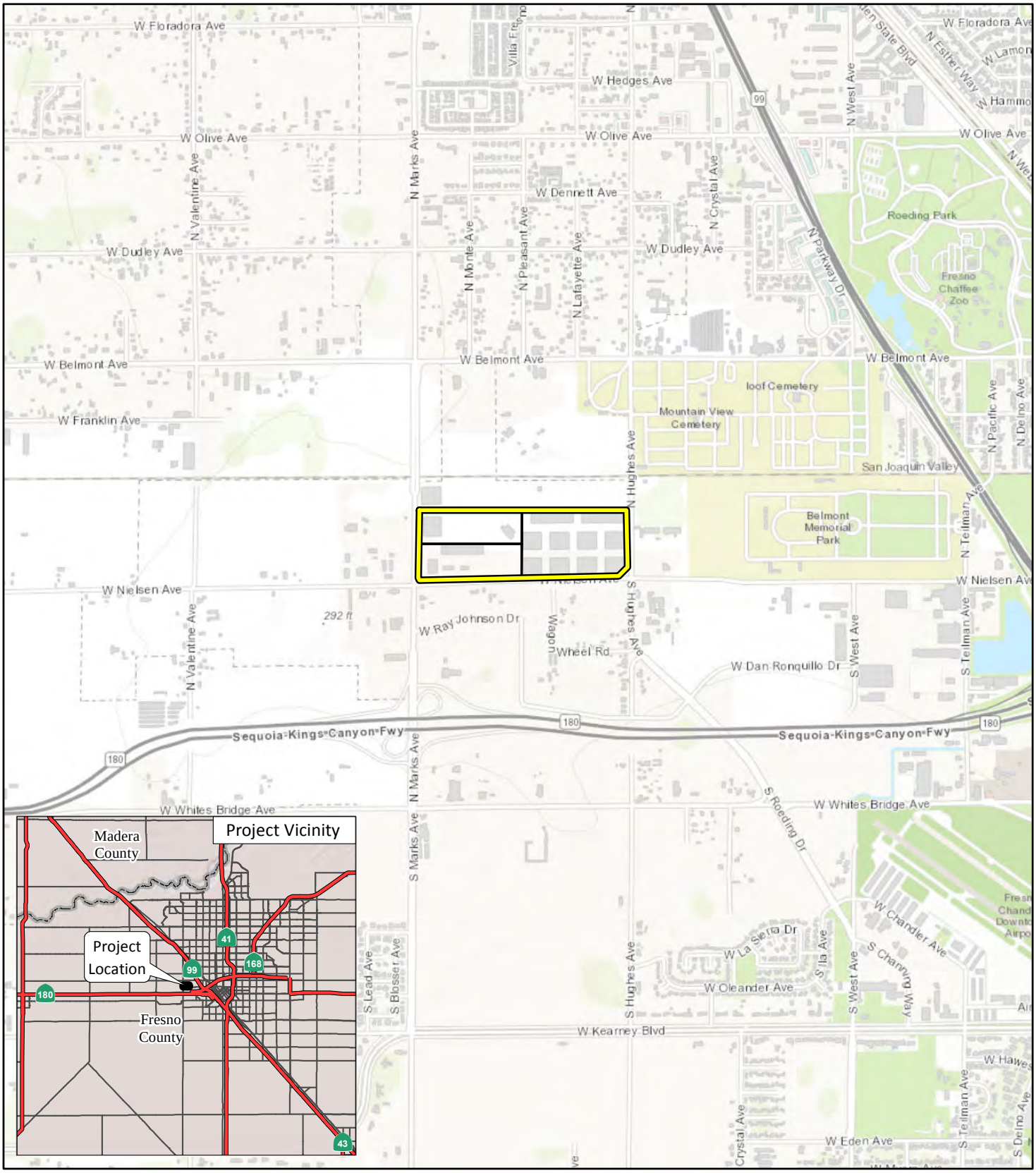
Trane. *Fan Performance - Product Specifications RT-PRC023AU-EN.*

United States Environmental Protection Agency (USEPA). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*.

Attachments: A: Figures 1-3
B: Noise Measurement Sheets
C: FHWA Traffic Noise Model Printouts
D: Soundplan Noise Model Printouts

ATTACHMENT A

FIGURES 1–3



LSA

LEGEND

Project Location

Proposed Parcels

FIGURE 1

N

0 1000 2000

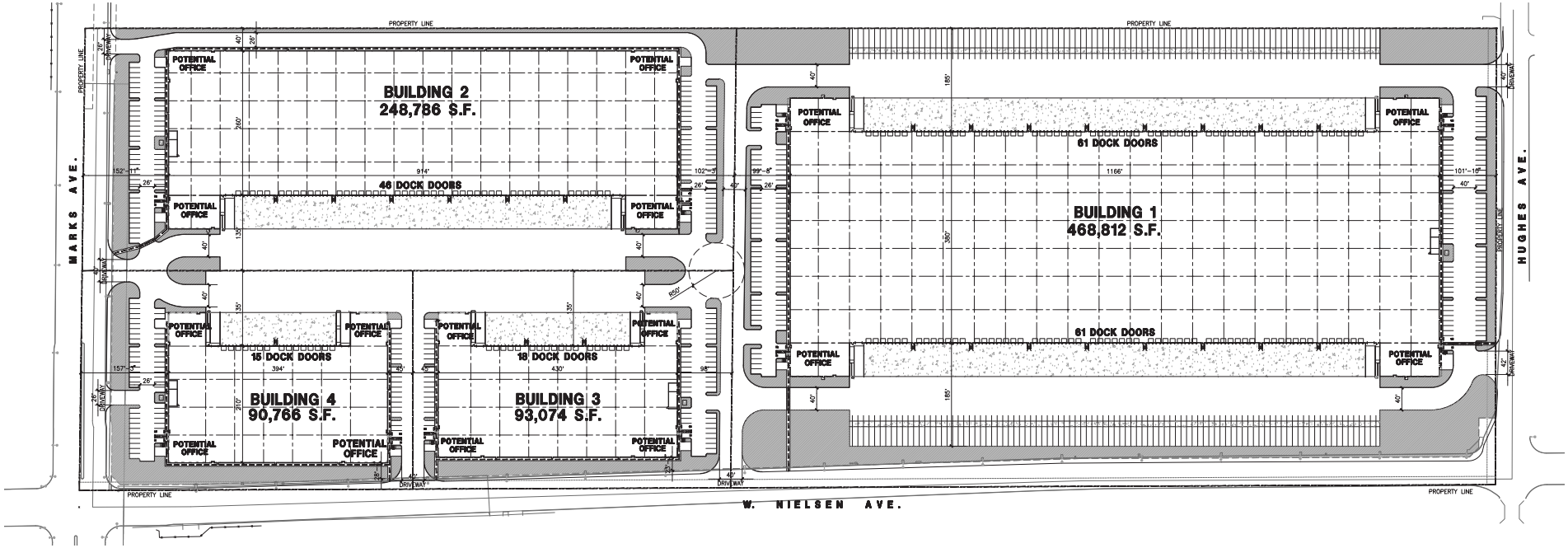
FEET

2740 West Nielsen Avenue Office/Warehouse Project

Regional Project Location

SOURCE: Esri Topographic Map (2021)

I:\SNN2102\GIS\MXD\Project_Location.mxd (6/7/2021)



LSA

FIGURE 2

N

0 150 300

FEET

SOURCE: HPA Architecture, Inc., 2021

I:\SNN2102\G\Site_Plan.ai (10/6/2022)

2740 West Nielsen Avenue Warehouse

Site Plan

LSA

LEGEND

- Project Site Boundary
- ST-1 - Short-term Noise Monitoring Location
- LT-1 - Long-term Noise Monitoring Location

FIGURE 3

0 500 1000

FEET

SOURCES: Google Earth, 2019

2740 West Nielsen Avenue Warehouse

Noise Monitoring Locations

I:\SNN2102\G\Noise_Monitor_Locs.ai (10/6/2022)

ATTACHMENT B

NOISE MEASUREMENT SHEETS

Noise Measurement Survey – 24 HR

Project Number: SNN2101
Project Name: 2740 West Nielson

Test Personnel: Moe Abushanab
Equipment: Spark 706RC (SN:903)

Site Number: LT-1 Date: 9/28/2022

Time: From 1:00 p.m. To 1:00 p.m.

Site Location: West of 2625 W Nielson Avenue. On a tree, approximately 40 ft away from W Neilson centerline

Primary Noise Sources: Regular traffic noise on W Nielson Ave.
Occasional aircraft noise
Occasional dog barking

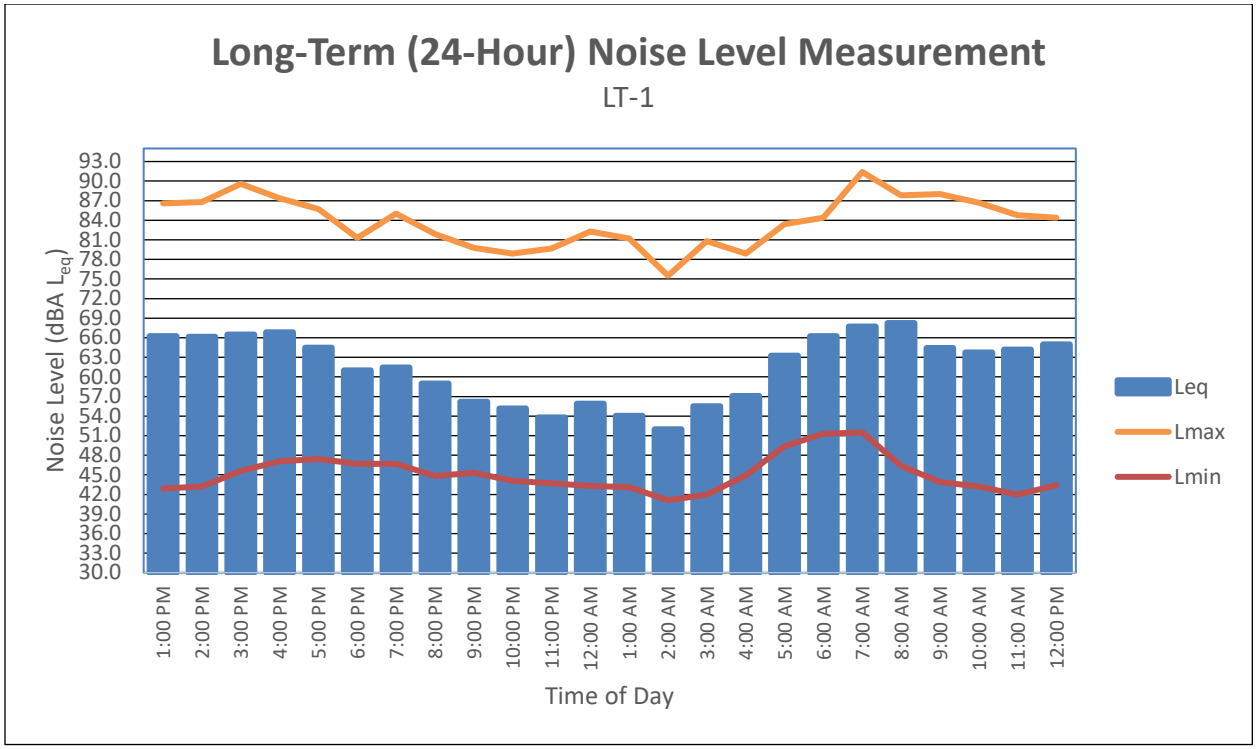
Comments:

Photo:

Long-Term (24-Hour) Noise Level Measurement Results at LT-1

Start Time	Date	Noise Level (dBA)		
		L_{eq}	L_{max}	L_{min}
1:00 PM	9/28/22	66.3	86.6	42.9
2:00 PM	9/28/22	66.2	86.8	43.2
3:00 PM	9/28/22	66.5	89.6	45.6
4:00 PM	9/28/22	66.8	87.4	47.1
5:00 PM	9/28/22	64.5	85.7	47.4
6:00 PM	9/28/22	61.0	81.3	46.7
7:00 PM	9/28/22	61.4	85.0	46.7
8:00 PM	9/28/22	59.0	81.9	44.8
9:00 PM	9/28/22	56.2	79.8	45.3
10:00 PM	9/28/22	55.2	78.9	44.1
11:00 PM	9/28/22	53.8	79.7	43.7
12:00 AM	9/29/22	55.9	82.3	43.3
1:00 AM	9/29/22	54.0	81.2	43.1
2:00 AM	9/29/22	52.0	75.5	41.1
3:00 AM	9/29/22	55.5	80.8	42.0
4:00 AM	9/29/22	57.1	78.9	44.9
5:00 AM	9/29/22	63.2	83.4	49.4
6:00 AM	9/29/22	66.2	84.4	51.3
7:00 AM	9/29/22	67.7	91.4	51.5
8:00 AM	9/29/22	68.3	87.8	46.4
9:00 AM	9/29/22	64.4	88.0	43.9
10:00 AM	9/29/22	63.7	86.7	43.2
11:00 AM	9/29/22	64.2	84.8	42.0
12:00 PM	9/29/22	65.0	84.4	43.4

Source: Compiled by LSA Associates, Inc. (2022).
dBA = A-weighted decibel
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level
L_{min} = minimum measured sound level


Long-Term (24-Hour) Noise Level Measurement
LT-1
Noise Level (dBA Leq)
93.0
90.0
87.0
84.0
81.0
78.0
75.0
72.0
69.0
66.0
63.0
60.0
57.0
54.0
51.0
48.0
45.0
42.0
39.0
36.0
33.0
30.0
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
Time of Day
Leq
Lmax
Lmin

Noise Measurement Survey – 24 HR

Project Number: SNN2101
Project Name: 2740 West Nielson

Test Personnel: Moe Abushanab
Equipment: Spark 706RC (SN:904)

Site Number: LT-2 Date: 9/28/2022

Time: From 2:00 p.m. To 2:00 p.m.

Site Location: North of site, near rail tracks, approximately 30 feet from track closest to site . On a blue painted pole

Primary Noise Sources: Rail activity (idling, moving into adjacent site)
Occasional aircraft
Faint road traffic

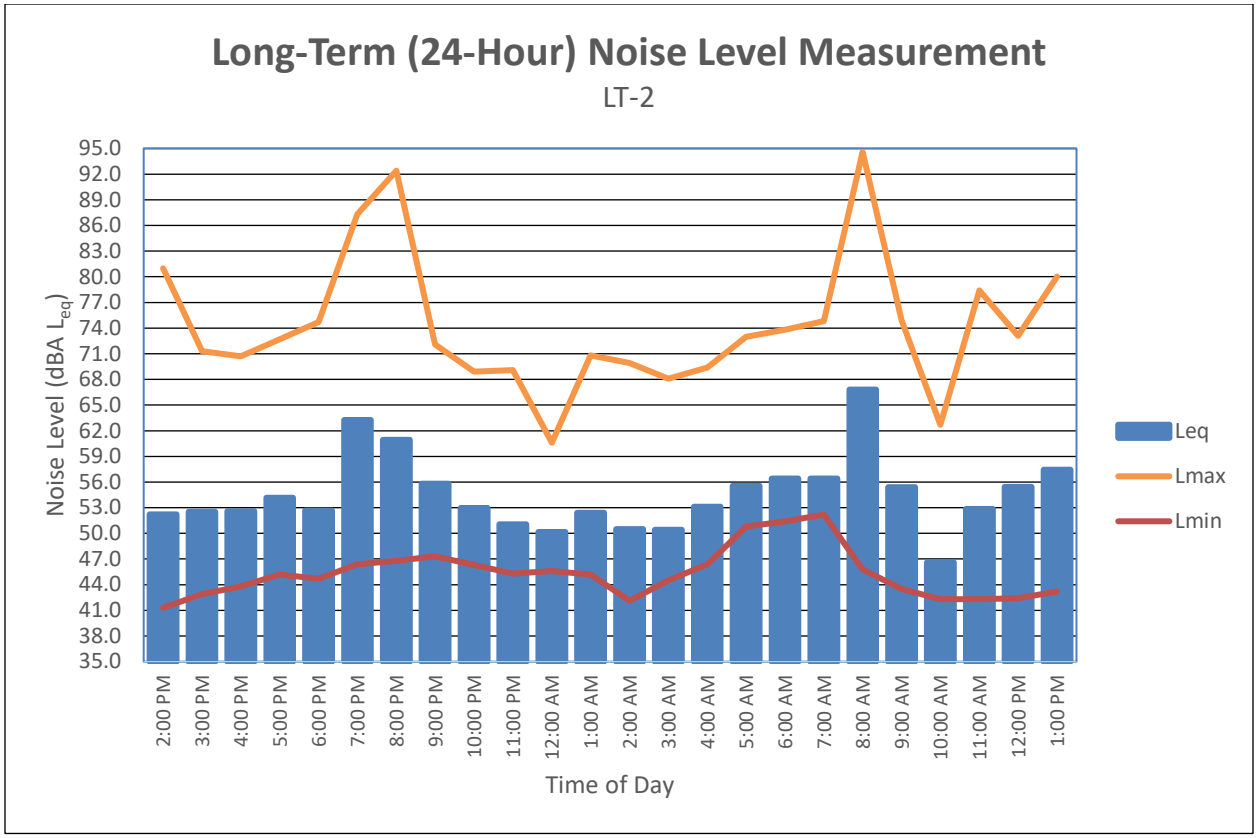
Comments:

Photo:

Long-Term (24-Hour) Noise Level Measurement Results at LT-2

Start Time	Date	Noise Level (dBA)		
		L_{eq}	L_{max}	L_{min}
2:00 PM	9/28/22	52.2	81.0	41.3
3:00 PM	9/28/22	52.5	71.3	42.9
4:00 PM	9/28/22	52.6	70.7	43.8
5:00 PM	9/28/22	54.2	72.7	45.2
6:00 PM	9/28/22	52.7	74.7	44.7
7:00 PM	9/28/22	63.3	87.3	46.4
8:00 PM	9/28/22	60.9	92.4	46.8
9:00 PM	9/28/22	55.8	72.1	47.3
10:00 PM	9/28/22	53.0	68.9	46.3
11:00 PM	9/28/22	51.1	69.1	45.3
12:00 AM	9/29/22	50.2	60.6	45.6
1:00 AM	9/29/22	52.4	70.8	45.2
2:00 AM	9/29/22	50.5	69.9	42.1
3:00 AM	9/29/22	50.4	68.1	44.5
4:00 AM	9/29/22	53.1	69.4	46.4
5:00 AM	9/29/22	55.5	73.0	50.8
6:00 AM	9/29/22	56.4	73.8	51.4
7:00 AM	9/29/22	56.4	74.8	52.2
8:00 AM	9/29/22	66.8	94.6	45.8
9:00 AM	9/29/22	55.4	74.9	43.5
10:00 AM	9/29/22	46.6	62.7	42.3
11:00 AM	9/29/22	52.8	78.4	42.3
12:00 PM	9/29/22	55.4	73.1	42.4
1:00 PM	9/29/22	57.4	80.0	43.2

Source: Compiled by LSA Associates, Inc. (2022).
dBA = A-weighted decibel
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level
L_{min} = minimum measured sound level


Long-Term (24-Hour) Noise Level Measurement
LT-2
Noise Level (dBA Leq)
95.0
92.0
89.0
86.0
83.0
80.0
77.0
74.0
71.0
68.0
65.0
62.0
59.0
56.0
53.0
50.0
47.0
44.0
41.0
38.0
35.0
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
Time of Day
Leq
Lmax
Lmin

Noise Measurement Survey

Project Number: SNN2101
Project Name: 2740 West Nielson

Test Personnel: Moe Abushanab
Equipment: Larson Davis LxT

Site Number: ST-1 Date: 9/28/2022

Time: From 1:30 p.m. To 1:50 p.m.

Site Location: Between 2nd and 3rd tree north of cemetery entrance. Approximately 35 feet away from N Hughes centerline

Primary Noise Sources: traffic noise on N Hughes Ave
Rail crossing gate at 1:35 pm w/ train passby
Faint operations noise from adjacent site (forklift)

Measurement Results

	dBA
L_{eq}	63.5
L_{max}	77.6
L_{min}	43.1
L_{peak}	95.4
L_2	72.0
L_8	69.0
L_{25}	63.6
L_{50}	57.4
SEL	

Atmospheric Conditions:

Maximum Wind Velocity (mph)	3.6
Average Wind Velocity (mph)	2.3
Temperature (F)	92
Relative Humidity (%)	30
Comments:	

Comments: File # 1

Location Photo:

Noise Measurement Survey

Project Number: SNN2101
Project Name: 2740 West Nielson

Test Personnel: Moe Abushanab
Equipment: Larson Davis LxT

Site Number: ST-2 Date: 9/28/2022

Time: From 1:56 p.m. To 2:16 p.m.

Site Location: North of Belmont Avenue. Approximately 40 feet away from centerline. By 2560 Belmont avenue entrance (AAA Welding)

Primary Noise Sources: traffic noise on Belmont Avenue
Occasional aircraft

Measurement Results

	dBA
L_{eq}	66.7
L_{max}	80.2
L_{min}	45.6
L_{peak}	98.0
L_2	75.3
L_8	71.9
L_{25}	67.1
L_{50}	60.7
SEL	

Atmospheric Conditions:

Maximum Wind Velocity (mph)	3.6
Average Wind Velocity (mph)	2.3
Temperature (F)	92
Relative Humidity (%)	30
Comments:	

Comments: File # 2

Location Photo:

Noise Measurement Survey

Project Number: SNN2101
Project Name: 2740 West Nielson

Test Personnel: Moe Abushanab
Equipment: Larson Davis LxT

Site Number: ST-3 Date: 9/28/2022

Time: From 2:25 p.m. To 2:45 p.m.

Site Location: West of N Marks Avenue, south of overpass entrance, by powerline pole. Approximately 50 feet away from Marks Ave. centerline

Primary Noise Sources: traffic noise on Marks
Faint operational noise from adjacent site, trucks leaving/entering site.

Measurement Results

	dBA
L_{eq}	68.9
L_{max}	83.9
L_{min}	43.3
L_{peak}	98.6
L_2	77.2
L_8	73.9
L_{25}	69.0
L_{50}	63.8
SEL	

Atmospheric Conditions:

Maximum Wind Velocity (mph)	3.6
Average Wind Velocity (mph)	2.3
Temperature (F)	92
Relative Humidity (%)	30
Comments:	

Comments: File # 3

Location Photo:

Noise Measurement Survey

Project Number: SNN2101
Project Name: 2740 West Nielson

Test Personnel: Moe Abushanab
Equipment: Larson Davis LxT

Site Number: ST-4 Date: 9/28/2022

Time: From 2:50 p.m. To 3:10 p.m.

Site Location: South of Nielson Avenue, approximately 40 feet away from centerline. East of 2307 W Nielson Ave entrance.

Primary Noise Sources: traffic noise on Nielson
Occasional aircraft

Measurement Results

	dBA
L_{eq}	66.7
L_{max}	80.2
L_{min}	45.6
L_{peak}	98.0
L_2	75.3
L_8	71.9
L_{25}	67.1
L_{50}	60.7
SEL	

Atmospheric Conditions:

Maximum Wind Velocity (mph)	3.6
Average Wind Velocity (mph)	2.3
Temperature (F)	92
Relative Humidity (%)	30
Comments:	

Comments: File # 4
Generally quiet without traffic

Location Photo:

ATTACHMENT C

FHWA TRAFFIC NOISE MODEL PRINTOUTS

TABLE Existing -01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Belmont Avenue and Nielson Avenue
NOTES: 2740 West Nielson Warehouse Project - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 10190 SPEED (MPH): 45 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 72.79

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
158.3	486.1	1532.3	4843.5

TABLE Existing -02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Nielsen Avenue and Ray Johnson Drive
NOTES: 2740 West Nielson Warehouse Project - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 11554 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.33

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
178.3	550.7	1737.2	5491.8

TABLE Existing -03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Ray Johnson Drive and SR-180 Westbound Ramps
NOTES: 2740 West Nielson Warehouse Project - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12019 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.51

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
185.1	572.8	1807.1	5712.8

TABLE Existing -04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Belmont Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7240 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 25 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.96

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
91.6	279.7	881.2	2785.5

TABLE Existing -05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Nielson Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1614 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 35 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.04

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	71.2	199.2	621.2

TABLE Existing -06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Hughes Avenue between Nielson Avenue and Belmont Avenue
NOTES: 2740 West Nielson Warehouse Project - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2604 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.31

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	104.5	318.1	1001.7

TABLE Existing - With Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Belmont Avenue and Nielson Avenue
NOTES: 2740 West Nielson Warehouse Project - Existing - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 11228 SPEED (MPH): 45 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.85

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
199.7	619.9	1956.4	6184.9

TABLE Existing - With Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Nielsen Avenue and Ray Johnson Drive
NOTES: 2740 West Nielson Warehouse Project - Existing - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12146 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 74.19

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
215.4	670.3	2116.2	6690.5

TABLE Existing - With Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Ray Johnson Drive and SR-180 Westbound Ramps
NOTES: 2740 West Nielson Warehouse Project - Existing - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12611 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 74.36

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
223.3	695.9	2197.2	6946.6

TABLE Existing - With Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Belmont Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Existing - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7550 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 25 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 71.77

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL 70 CNEL	65 CNEL	60 CNEL	55 CNEL
109.2	337.2	1063.6	3362.3

TABLE Existing - With Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Nielson Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Existing - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2230 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 35 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.08

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	105.2	315.6	992.5

TABLE Existing - With Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Hughes Avenue between Nielson Avenue and Belmont Avenue
NOTES: 2740 West Nielson Warehouse Project - Existing - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3060 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.64

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	139.5	431.8	1362.3

TABLE Opening Year - No Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Belmont Avenue and Nielson Avenue
NOTES: 2740 West Nielson Warehouse Project - Opening Year - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 10938 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.10

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
169.2	521.5	1644.7	5199.1

TABLE Opening Year - No Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Nielsen Avenue and Ray Johnson Drive
NOTES: 2740 West Nielson Warehouse Project - Opening Year - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12408 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.64

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
190.8	591.2	1865.6	5897.7

TABLE Opening Year - No Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Ray Johnson Drive and SR-180 Westbound Ramps
NOTES: 2740 West Nielson Warehouse Project - Opening Year - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12933 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.82

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
198.5	616.1	1944.5	6147.2

TABLE Opening Year - No Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Belmont Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Opening Year - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7905 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 25 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 71.34

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
99.4	305.2	962.1	3041.3

TABLE Opening Year - No Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Nielson Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Opening Year - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1767 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 35 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.43

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	76.4	217.6	679.9

TABLE Opening Year - No Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Hughes Avenue between Nielson Avenue and Belmont Avenue
NOTES: 2740 West Nielson Warehouse Project - Opening Year - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2796 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.61

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL 70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	111.6	341.3	1075.5

TABLE Opening Year - With Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Belmont Avenue and Nielson Avenue
NOTES: 2740 West Nielson Warehouse Project - Opening Year - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 11976 SPEED (MPH): 45 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 74.13

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
212.5	661.0	2086.6	6596.8

TABLE Opening Year - With Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Nielsen Avenue and Ray Johnson Drive
NOTES: 2740 West Nielson Warehouse Project - Opening Year - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13000 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 74.49

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
230.0	717.3	2265.0	7160.9

TABLE Opening Year - With Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Ray Johnson Drive and SR-180 Westbound Ramps
NOTES: 2740 West Nielson Warehouse Project - Opening Year - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13525 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 74.66

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
239.0	746.2	2356.4	7450.0

TABLE Opening Year - With Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Belmont Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Opening Year - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8215 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 25 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 72.14

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
118.4	366.7	1157.2	3658.4

TABLE Opening Year - With Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Nielson Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Opening Year - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2383 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 35 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.36

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	111.6	337.0	1060.5

TABLE Opening Year - With Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Hughes Avenue between Nielson Avenue and Belmont Avenue
NOTES: 2740 West Nielson Warehouse Project - Opening Year - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3252 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.91

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL 70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	147.8	458.7	1447.7

TABLE Year 2035 - No Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Belmont Avenue and Nielson Avenue
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 11651 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.37

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
179.7	555.3	1751.8	5537.9

TABLE Year 2035 - No Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Nielsen Avenue and Ray Johnson Drive
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13244 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.93

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
203.1	630.9	1991.2	6295.0

TABLE Year 2035 - No Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Ray Johnson Drive and SR-180 Westbound Ramps
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13706 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 74.08

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
209.9	652.8	2060.6	6514.6

TABLE Year 2035 - No Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Belmont Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8846 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 25 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 71.83

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
110.5	341.3	1076.6	3403.3

TABLE Year 2035 - No Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Nielson Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1772 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 35 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.44

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	76.6	218.2	681.8

TABLE Year 2035 - No Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Hughes Avenue between Nielson Avenue and Belmont Avenue
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3531 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	58.45	7.80	11.70
M-TRUCKS	8.24	1.11	1.67
H-TRUCKS	8.25	1.11	1.67

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.63

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	139.1	430.4	1358.0

TABLE Year 2035 - With Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Belmont Avenue and Nielson Avenue
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12689 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 74.38

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
224.7	700.2	2210.8	6989.6

TABLE Year 2035 - With Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Nielsen Avenue and Ray Johnson Drive
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13836 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 74.76

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
244.4	763.3	2410.6	7621.3

TABLE Year 2035 - With Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Marks Avenue between Ray Johnson Drive and SR-180 Westbound Ramps
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 14298 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 40 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 74.90

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
252.3	788.7	2491.1	7875.8

TABLE Year 2035 - With Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Belmont Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 9156 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 25 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 72.61

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
131.4	408.6	1289.7	4077.4

TABLE Year 2035 - With Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Nielson Avenue between Marks Avenue and Hughes Avenue
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2388 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 35 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.37

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	111.8	337.7	1062.7

TABLE Year 2035 - With Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 10/07/2022
ROADWAY SEGMENT: Hughes Avenue between Nielson Avenue and Belmont Avenue
NOTES: 2740 West Nielson Warehouse Project - Year 2035 - With Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3987 SPEED (MPH): 40 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	49.84	13.18	16.00
M-TRUCKS	6.77	1.61	2.06
H-TRUCKS	6.82	1.66	2.06

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: HARD

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.79

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
63.6	180.0	561.9	1774.6

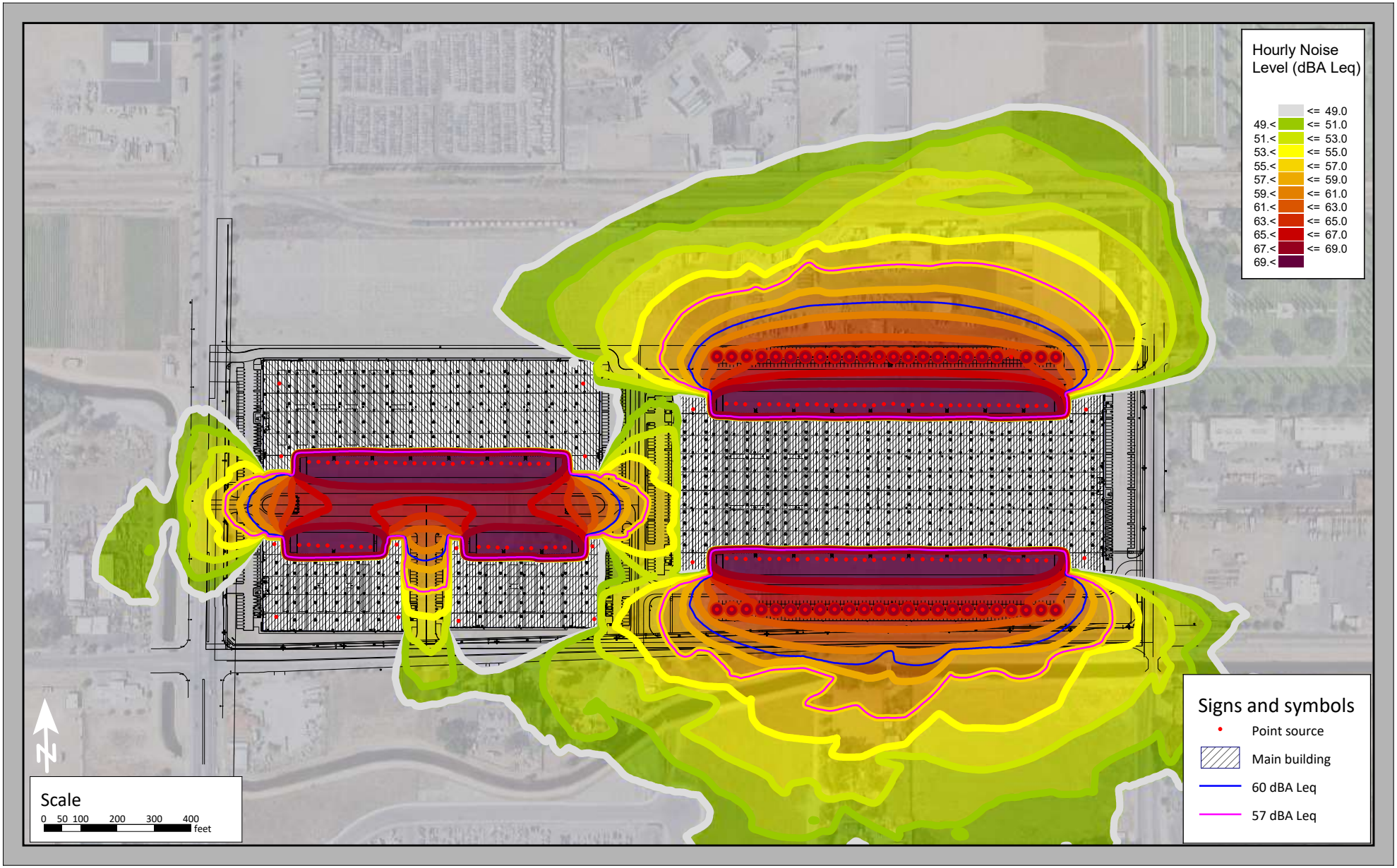
ATTACHMENT D

SOUNDPLAN NOISE MODEL PRINTOUTS

2740 W Nielsen

Project No. SNN2102

Project Operational Noise Levels

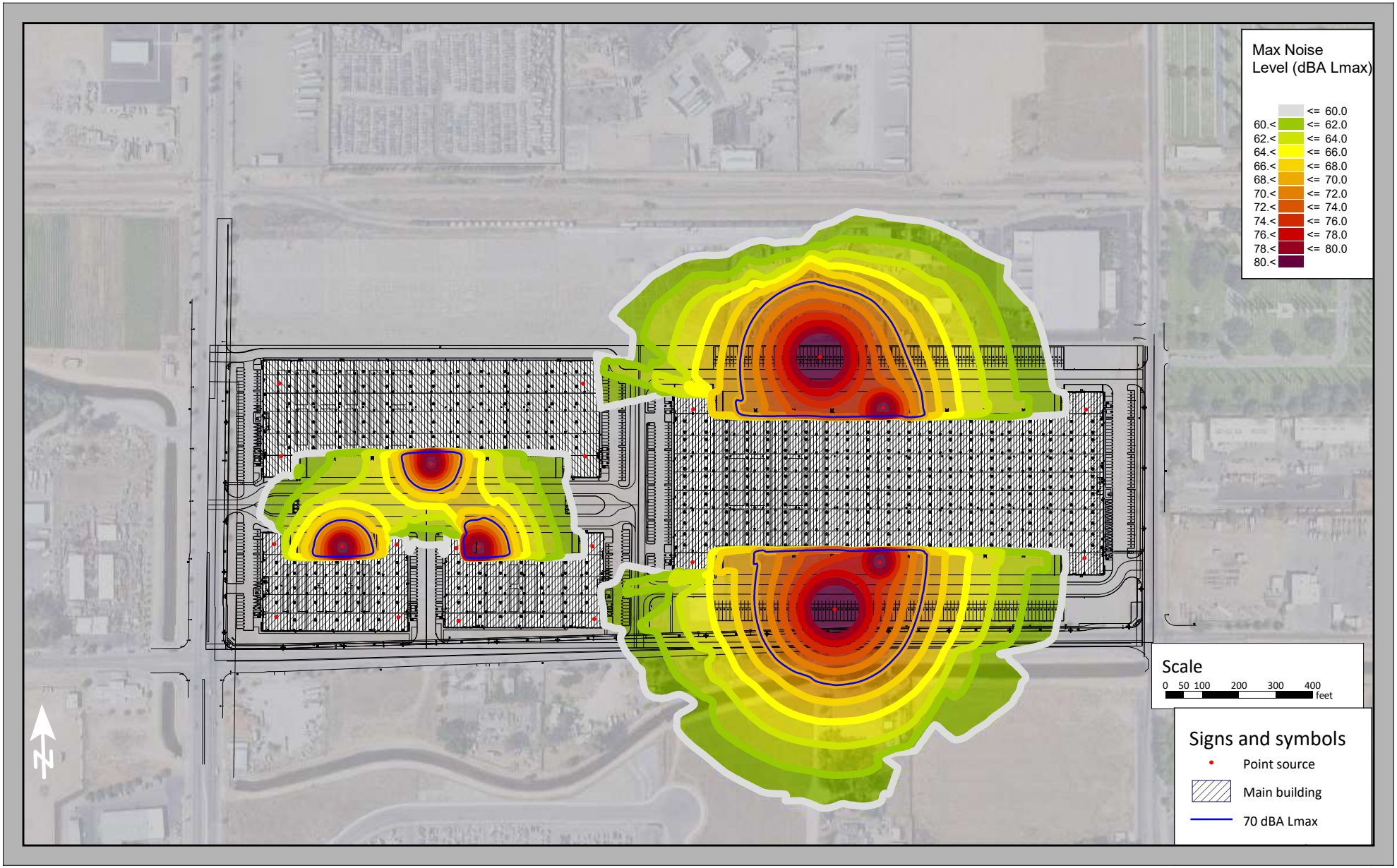


C:\Users\LStephens\OneDrive - LSA Associates\DESKTOP\SOUNDPLAN\SNN2102 - 2740 W Nielsen\Ops.sgs - last edit 10/12/2022

2740 W Nielsen

Project No. SNN2102

Project Operational Noise Levels - Max



APPENDIX M

TRAFFIC IMPACT STUDY

This page intentionally left blank

TRAFFIC IMPACT STUDY

2740 WEST NIELSEN AVENUE WAREHOUSE PROJECT

CITY OF FRESNO

FRESNO COUNTY, CALIFORNIA

This Traffic Impact Study has been prepared under the supervision of
Ambarish Mukherjee, P.E.

LSA

December 2021

TRAFFIC IMPACT STUDY

2740 WEST NIELSEN AVENUE WAREHOUSE PROJECT

CITY OF FRESNO

FRESNO COUNTY, CALIFORNIA

Prepared for:

Jill Gormley, City Traffic Engineer
City of Fresno
Room 4016
Fresno, California 93721

Prepared by:

LSA Associates, Inc.
1500 Iowa Avenue, Suite 200
Riverside, California 92507
(951) 781-9310

Project No. SNN2101

LSA

December 2021

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 PROJECT DESCRIPTION 1
1.2 STUDY AREA 2
1.2.1 Study Intersections 2
1.2.2 Roadway Segments 3
1.2.3 Worst Case Scenario Study Area 3
1.3 LIST OF CHAPTER 1.0 FIGURES 4
2.0 ANALYSIS METHODOLOGY AND THRESHOLDS 8
2.1 LEVEL OF SERVICE DEFINITIONS 8
2.2 LEVEL OF SERVICE PROCEDURES AND THRESHOLDS 8
2.3 LIST OF CHAPTER 2.0 TABLES 9
3.0 CIRCULATION NETWORK SETTING 13
3.1 EXISTING ROADWAY NETWORK 13
3.2 EXISTING BICYCLE, PEDESTRIAN, AND TRANSIT FACILITIES 13
3.2.1 Bicycle Facilities 13
3.2.2 Pedestrian Facilities 14
3.2.3 Transit Facilities 14
3.3 LIST OF CHAPTER 3.0 FIGURES 14
4.0 TRAFFIC VOLUMES FOR WITHOUT PROJECT SCENARIOS 19
4.1 EXISTING TRAFFIC VOLUMES 19
4.2 NEAR-TERM APPROVED AND PENDING (2023) WITHOUT PROJECT TRAFFIC VOLUMES 20
4.3 CUMULATIVE YEAR (2035) WITHOUT PROJECT TRAFFIC VOLUMES 20
4.4 LIST OF CHAPTER 4.0 FIGURES AND TABLES 20
5.0 PROJECT TRAFFIC 33
5.1 PROJECT TRIP GENERATION 33
5.2 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT 33
5.3 LIST OF CHAPTER 5.0 FIGURES AND TABLES 33
6.0 TRAFFIC VOLUMES FOR WITH PROJECT SCENARIOS 41
6.1 LIST OF CHAPTER 6.0 FIGURES 41
7.0 INTERSECTION AND ROADWAY SEGMENT LEVELS OF SERVICE 45
7.1 EXISTING LEVELS OF SERVICE 45

7.1.1 Study Intersections 45
7.1.2 Roadway Segments 45
7.2 EXISTING WITH PROJECT LEVELS OF SERVICE 45
7.2.1 Study Intersections 45
7.2.2 Roadway Segments 45
7.3 NEAR-TERM APPROVED AND PENDING (2023) WITH PROJECT LEVELS OF SERVICE 46
7.3.1 Study Intersections 46
7.3.2 Roadway Segments 46
7.4 CUMULATIVE YEAR (2035) WITHOUT PROJECT LEVELS OF SERVICE 46
7.4.1 Study Intersections 46
7.4.2 Roadway Segments 46
7.4 CUMULATIVE YEAR (2035) WITH PROJECT LEVELS OF SERVICE 46
7.4.1 Study Intersections 46
7.4.2 Roadway Segments 47
7.5 LIST OF CHAPTER 7.0 TABLES 47
8.0 QUEUING ANALYSIS 54
8.1 LIST OF CHAPTER 8.0 TABLES 54
9.0 CALTRANS SCENARIO ANALYSIS 56
9.1 STUDY AREA 56
9.1.1 Study Intersections 56
9.1.2 Freeway Basic and Merge/Diverge Study Area 56
9.2 VOLUME DEVELOPMENT AND ANALYSIS METHODOLOGY 57
9.2.1 Intersections 57
9.2.2 Freeway Mainline and Merge/Diverge Segments 57
9.3 NEAR-TERM APPROVED AND PENDING (2023) WITH PROJECT CONDITIONS LOS ANALYSIS 57
9.3.1 Study Intersections 57
9.3.2 Freeway Segments 58
9.4 CUMULATIVE YEAR (2035) WITH PROJECT CONDITIONS LOS ANALYSIS 58
9.4.1 Study Intersections 58
9.4.2 Freeway Segments 58
9.5 LIST OF CHAPTER 9.0 FIGURES AND TABLES 58
10.0 SITE ACCESS ANALYSIS 72
10.1 EVALUATION OF PROJECT DRIVEWAYS 72
11.0 SIGNAL WARRANT ANALYSIS 73
11.1 MARKS AVENUE/BELMONT AVENUE 73

11.2 HUGHES AVENUE/BELMONT AVENUE 73
11.3 HUGHES AVENUE/NIELSEN AVENUE 74
11.5 LIST OF CHAPTER 11.0 FIGURES AND TABLES 74
12.0 CIRCULATION IMPROVEMENTS AND FUNDING SOURCES 93
12.1 RECOMMENDED IMPROVEMENTS 93
12.2 FUNDING SOURCES AND MECHANISMS 93
12.2.1 Citywide Traffic Signal Mitigation Impact (TSMI) Program 93
12.3 LIST OF CHAPTER 12.0 TABLES 93
13.0 VEHICLE MILES TRAVELED ANALYSIS 95
13.1 METHODOLOGY 95
13.1.1 Thresholds of Significance 95
13.1.2 Project Traffic Analysis Zone Update 96
13.1.3 Model Runs and Project VMT Estimation 96
13.2 PROJECT VMT ANALYSIS 96
13.3 LIST OF CHAPTER 13.0 TABLES 96
14.0 COLLISION ANALYSIS 98
14.1 METHODOLOGY 98
14.2 ANALYSIS SUMMARY 98
14.2.1 Intersections 98
14.2.2 Roadway Segment 98
14.2.3 Freeway Segment 99
14.3 CONCLUSION 99
14.4 LIST OF CHAPTER 14.0 TABLES 99
15.0 SUMMARY AND CONCLUSION 102
15.1 EXISTING CONDITIONS SUMMARY 102
15.2 NEAR-TERM APPROVED AND PENDING (2023) CONDITIONS SUMMARY 102
15.3 CUMULATIVE YEAR (2035) CONDITIONS SUMMARY 102
15.4 QUEUING ANALYSIS SUMMARY 102
15.5 WORST CASE SCENARIO ANALYSIS SUMMARY 102
15.6 SITE ACCESS ANALYSIS SUMMARY 102
15.7 SIGNAL WARRANT ANALYSIS SUMMARY 102
15.7 CIRCULATION IMPROVEMENTS SUMMARY 103
15.8 CEQA VMT ANALYSIS SUMMARY 103

15.9 COLLISION ANALYSIS SUMMARY 103

APPENDICES

A: SCOPING AGREEMENT
B: TRAFFIC COUNT SHEETS AND SIGNAL TIMING SHEETS
C: VOLUME DEVELOPMENT WORKSHEETS
D: INTERSECTION LEVEL OF SERVICE WORKSHEETS
E: QUEUING ANALYSIS WORKSHEETS
F: FREEWAY LEVELS OF SERVICE WORKSHEETS
G: VEHICLE MILES TRAVELED ANALYSIS
H: CRASH DATA SUMMARY

FIGURES AND TABLES

FIGURES

Figure 1-1: Regional and Project Location 5
Figure 1-2: Conceptual Site Plan 6
Figure 1-3: Study Area Intersections 7
Figure 3-1: Existing Study Intersection Geometrics and Traffic Control 15
Figure 3-2: City of Fresno Roadway Classification 16
Figure 3-3: City of Fresno Existing and Proposed Bikeway Network 17
Figure 3-4: City of Fresno Existing and Proposed Sidewalks 18
Figure 4-1: Existing Peak Hour Traffic Volumes 22
Figure 4-2: Cumulative Project Locations 23
Figure 4-3: Cumulative Projects Trip Assignment 24
Figure 4-4: Near-term approved and pending (2023) without Project Peak Hour Traffic Volumes 25
Figure 4-5: Cumulative Year (2035) without Project Peak Hour Traffic Volumes 26
Figure 5-1: Project Trip Distribution – Passenger Car 35
Figure 5-2: Project Trip Distribution – Truck 36
Figure 5-3: Project Trip Assignment – Passenger Car 37
Figure 5-4: Project Trip Assignment – Truck 38
Figure 5-5: Total Project PCE Trip Assignment 39
Figure 6-1: Existing with Project Peak Hour Traffic Volumes 42
Figure 6-2: Near-term approved and pending (2023) with Project Peak Hour Traffic Volumes 43
Figure 6-3: Cumulative Year (2035) with Project Peak Hour Traffic Volumes 44
Figure 9-1: Project Trip Distribution – Passenger Car 59
Figure 9-2: Project Trip Distribution – Truck 60
Figure9-3: Project Trip Assignment – Passenger Car 61
Figure 9-4: Project Trip Assignment – Truck 62
Figure 9-5: Total Project PCE Trip Assignment 63
Figure 9-6: Near-term approved and pending (2023) with Project Peak Hour Traffic Volumes 64
Figure 9-7: Cumulative year (2035) with Project Peak Hour Traffic Volumes 65
Figure 11-1: Warrant 2: 4 Hour - Marks Avenue/Belmont Avenue– Existing Conditions 76
Figure 11-2: Warrant 3: Peak Hour - Marks Avenue/Belmont Avenue – Existing Conditions 77
Figure 11-3: Warrant 3: Peak Hour - Marks Avenue/Belmont Avenue - Near-term Approved and pending with project Conditions 78
Figure 11-4: Warrant 3: Peak Hour - Marks Avenue/Belmont Avenue - Cumulative Year (2035) Conditions 79
Figure 11-5: Warrant 2: 4 Hour - Hughes Avenue/Belmont Avenue 80
Figure 11-6: Warrant 3: Peak Hour - Hughes Avenue/Belmont Avenue – Existing Conditions 81
Figure 11-7: Warrant 3: Peak Hour - Hughes Avenue/Belmont Avenue –Near-term Approved and pending with project Conditions 82
Figure 11-8: Warrant 3: Peak Hour - Hughes Avenue/Belmont Avenue Cumulative Year (2035) Conditions 83
Figure 11-9: Warrant 2: 4 Hour - Hughes Avenue/Nielsen Avenue 84

Figure 11-10: Warrant 3: Peak Hour - Hughes Avenue/Nielsen Avenue – Existing Conditions 85
Figure 11-11: Warrant 3: Peak Hour - Hughes Avenue/Nielsen Avenue –Near-term Approved and pending with project Conditions 86
Figure 11-12: Warrant 3: Peak Hour - Hughes Avenue/Nielsen Avenue - Cumulative Year (2035) Conditions 87

TABLES

Table 2-A: Intersection Level of Service Definitions 10
Table 2-B: Roadway Segment Level of Service Definitions 10
Table 2-C: Level of Service Criteria for Unsignalized and Signalized Intersections 11
Table 2-D: Roadway Segment Capacity and Levels of Service 11
Table 2-E: Level of Service Criteria for Freeway Segments 11
Table 2-F: Level Of Service Criteria for Ramps and Ramp Junctions 12
Table 4-A: Existing Roadway Segment Daily Traffic Volumes 27
Table 4-B: Cumulative Projects Trip Generation 28
Table 4-C: Near term approved and pending (2023) Roadway Segment Daily Traffic Volumes 31
Table 4-D: Cumulative Year (2035) Roadway Segment Daily Traffic Volumes 32
Table 5-A: Project Trip Generation 40
Table 7-A: Existing Intersection Levels of Service 48
Table 7-B: Existing Roadway Segment Levels of Service 49
Table 7-C: Near term approved and pending (2023) with project Intersection Levels of Service 50
Table 7-D: Near term approved and pending (2023) with project Roadway Segment Levels of Service 51
Table 7-E: Cumulative Year (2035) Intersection Levels of Service 52
Table 7-F: Cumulative Year (2035) Roadway Segment Levels of Service 53
Table 8-A: Intersection Queuing Analysis 55
Table 9-A: Near-term approved and pending (2023) with Project Freeway Peak Hour Traffic Volumes 66
Table 9-B: Cumulative Year (2035) with Project Freeway Peak Hour Traffic Volumes 67
Table 9-C: Near-term approved and pending (2023) with project Intersection Levels of Service 68
Table 9-D: Near-term approved and pending (2023) with project Freeway Segment Levels of Service 69
Table 9-E: Cumulative Year (2035) Intersection Levels of Service 70
Table 9-F: Cumulative Year (2035) Freeway Levels of Service 71
Table 11-A: Eight-Hour Warrant Analysis - Condition A (70%) - Marks Avenue/Belmont Avenue 88
Table 11-B: Eight-Hour Warrant Analysis - Condition A (80%) - Hughes Avenue/Belmont Avenue 89
Table 11-C: Eight-Hour Warrant Analysis - Condition B (80%) - Hughes Avenue/Belmont Avenue 90
Table 11-D: Eight-Hour Warrant Analysis - Condition A (80%) - Hughes Avenue/Nielsen Avenue 91

Table 11-E: Eight-Hour Warrant Analysis - Condition B (80%) - Hughes Avenue/Nielsen Avenue 92
Table 12-A: Existing with Project with Improvements Intersection Levels of Service 94
Table 12-B: Near Term Approved and Pending with Project with Improvements Intersection Levels of Service 94
Table 12-C: Cumulative Year (2035) with Project with Improvements Intersection Levels of Service 94
Table 13-A: Existing (2019) Regional and Project VMT per Employee 97
Table 14-A: Intersection Accident Rate per RMEV 100
Table 14-B: Roadway Segment Accident Rate per MVM 101

1.0 INTRODUCTION

The Traffic Impact Study (TIS) has been prepared for the proposed 2740 West Nielsen Avenue Warehouse project (project) to be located at the northeast corner of the intersection of Marks Avenue and Nielsen Avenue in the City of Fresno. Figure 1-1 illustrates the regional and project location. (Figures and tables are located at the end of each chapter.)

This report is intended to satisfy the requirements established by the City of Fresno *Traffic Impact Study Report Guidelines* (updated February 2, 2009), the *City of Fresno CEQA Guidelines for Vehicle Miles Traveled Thresholds* (adopted on June 25, 2020), the California Department of Transportation (Caltrans), as well as the requirements for the disclosure of potential impacts and mitigation measures pursuant to the California Environmental Quality Act (CEQA). The scope of work for this TIS, including trip generation, trip distribution, study area, and analysis methodologies, has been approved by City staff via the Scoping Agreement process. A copy of the Scoping Agreement is included in Appendix A.

This study examines traffic operations in the vicinity of the proposed project under the following five scenarios:

- Existing Conditions;
- Existing plus Project Conditions;
- Existing plus Project and Near-term approved and pending projects Conditions;
- Cumulative Year (2035) no Project Conditions; and
- Cumulative Year (2035) plus Project Conditions.

Traffic conditions were examined for the weekday daily, a.m., and p.m. peak hour conditions. The a.m. peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 and 9:00 a.m. The p.m. peak hour is the one hour of highest traffic volumes occurring between 4:00 and 6:00 p.m. Roadway segments were analyzed using daily volume counts and comparisons were made to the daily service volume standards provided in the City's TIS Guidelines.

1.1 PROJECT DESCRIPTION

The proposed project consists of four buildings with a total area of 901,438 sf, all of which will be High Cube Fulfilment Center warehouses. The project site designation in the City of Fresno Official Zoning Map is IH – Heavy Industrial. As such, the proposed project is consistent with the designated zoning. The project is anticipated to be completed by the year 2023. Figure 1-2 illustrates the conceptual site plan for the proposed project.

As illustrated in Figure 1-2, access to the project will be provided via the following seven driveways:

Driveways on Marks Avenue

- Driveway 1: This full access driveway near the northwest corner of the site will be used by passenger vehicles only.
- Driveway 2: This driveway will be used by trucks only. This driveway will allow all movements except for left-turn egress from the project site.
- Driveway 3: This right-in-right-out driveway near the southwest corner of the site will be used by passenger vehicles only.

Driveways on Nielsen Avenue

- Driveway 4: This right-in-right-out driveway will be used by passenger vehicles only.
- Driveway 5: This full access driveway will be used by both passenger vehicles and trucks.

Driveways on Hughes Avenue

- Driveway 6: This full access driveway near the northeast corner of the site will be used by both passenger vehicles and trucks.
- Driveway 7: This full access driveway will be used by both passenger vehicles and trucks.

Additionally, as part of project design feature, the project will also construct sidewalks along the project frontages on Marks Avenue, Nielsen Avenue and Hughes Avenue.

1.2 STUDY AREA

Based on the City's TIS Guidelines, the study intersections for the TIS will be identified on a case-by-case basis for each project. Study intersections and roadway segments considered for the analysis were finalized during the TIS scoping agreement process and based on discussion with City staff.

1.2.1 Study Intersections

Per the Scoping Agreement (Appendix A), intersections analyzed in this study and their jurisdictions are as follows:

1. Marks Avenue/Belmont Avenue (City of Fresno, County of Fresno);
2. Marks Avenue/Nielsen Avenue (City of Fresno);
3. Marks Avenue/Ray Johnson Drive (City of Fresno);
4. Marks Avenue/SR-180 Westbound Ramps (Caltrans);
5. Marks Avenue/SR-180 Eastbound Ramps (Caltrans);
6. Hughes Avenue/Belmont Avenue (City of Fresno, County of Fresno); and
7. Hughes Avenue/Nielsen Avenue (City of Fresno).

It should be noted that based upon recommendation by City staff during the scoping agreement process, a LOS analysis was not required at the project driveway intersections. As such, the project driveway intersections have been included for project trip distribution, and trip assignment purposes only.

Figure 1-3 illustrates the locations of all study intersections.

1.2.2 Roadway Segments

Per the Scoping Agreement (Appendix A), roadway segments analyzed in this study are as follows:

1. Marks Avenue, between Belmont Avenue and Nielsen Avenue;
2. Marks Avenue, between Nielsen Avenue and Ray Johnson Drive;
3. Marks Avenue, between Ray Johnson Drive and SR-180 Westbound Ramps;
4. Marks Avenue, between SR-180 Westbound Ramps and SR-180 Eastbound Ramps;
5. Belmont Avenue, between Marks Avenue and Hughes Avenue;
6. Nielsen Avenue, between Marks Avenue and Hughes Avenue; and
7. Hughes Avenue, between Belmont Avenue and Nielsen Avenue.

For each roadway segment, the highest volume on any part of the segment will be considered as the analysis volume for the entire segment.

1.2.3 Worst Case Scenario Study Area

During the Scoping Agreement process, California Department of Transportation (Caltrans) recommended to evaluate the project under a worst case scenario with 60% of project traffic using Caltrans facilities (ramps and freeway segments). This evaluation included intersections 3, 4, and 5 as listed above, as well as the following freeway basic and merge/diverge areas for the SR-180 and Marks Avenue interchange:

SR-180 Eastbound

1. West of Marks Avenue Off-Ramp (Basic);
2. Marks Avenue Off-Ramp (Diverge);
3. Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp (Basic);
4. Marks Avenue Loop-On Ramp (Merge);
5. Between Marks Avenue Loop-On Ramp and Marks Avenue Slip-On Ramp (Basic);
6. Marks Avenue Slip-On Ramp(Merge); and
7. East of Marks Avenue (Basic).

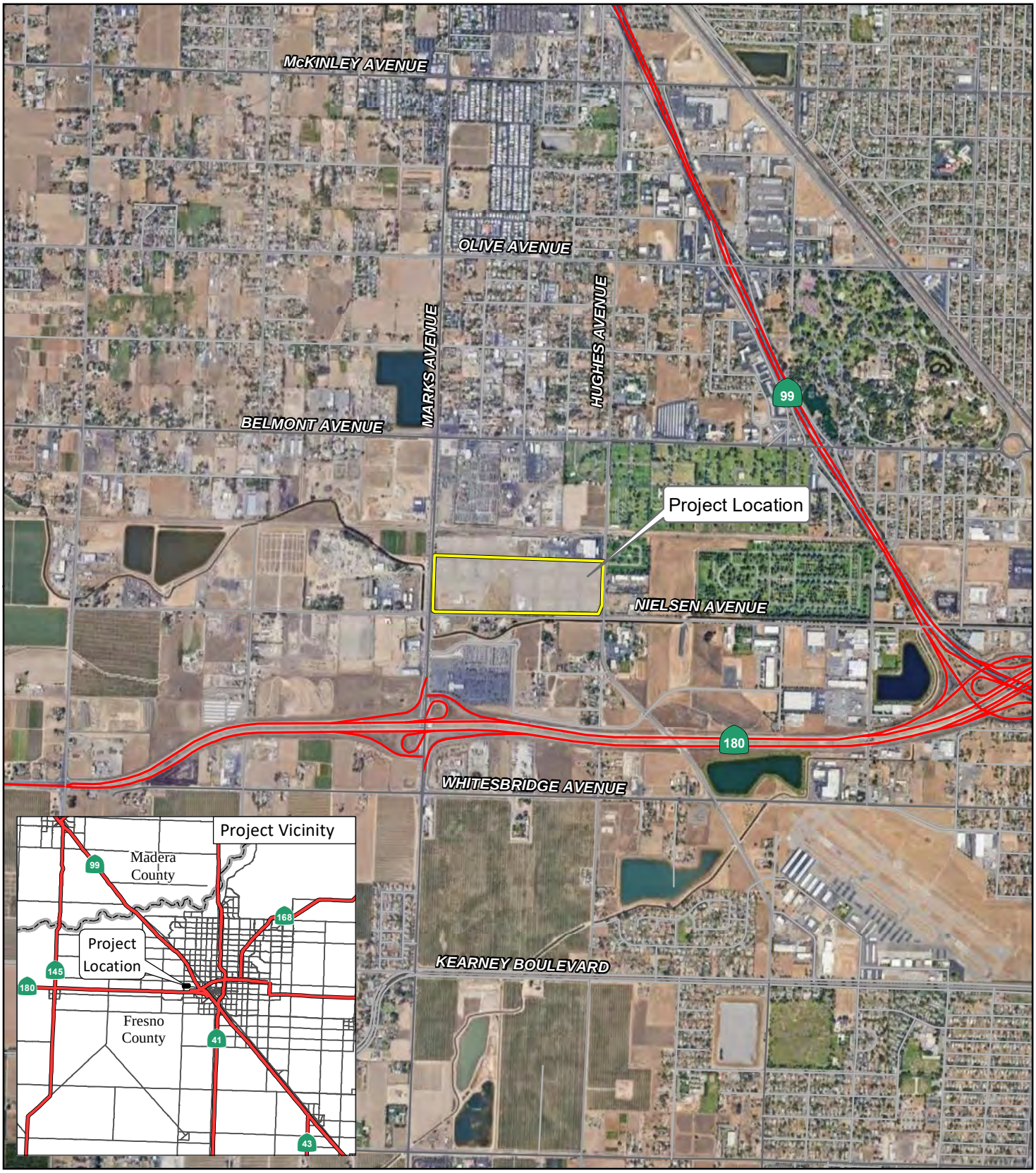
SR-180 Westbound

8. East of Marks Avenue (Basic);
9. Marks Avenue Off-Ramp (Diverge);
10. Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp (Basic);
11. Marks Avenue Loop-On Ramp(Merge);
12. Between Marks Avenue Loop-On Ramp and Marks Avenue Slip-On Ramp (Basic);

13. Marks Avenue Slip-On Ramp(Merge); and
14. West of Marks Avenue (Basic).

1.3 LIST OF CHAPTER 1.0 FIGURES

- Figure 1-1: Regional and Project Location
- Figure 1-2: Conceptual Site Plan
- Figure 1-3: Study Area Intersections



LSA

FIGURE 1-1

N

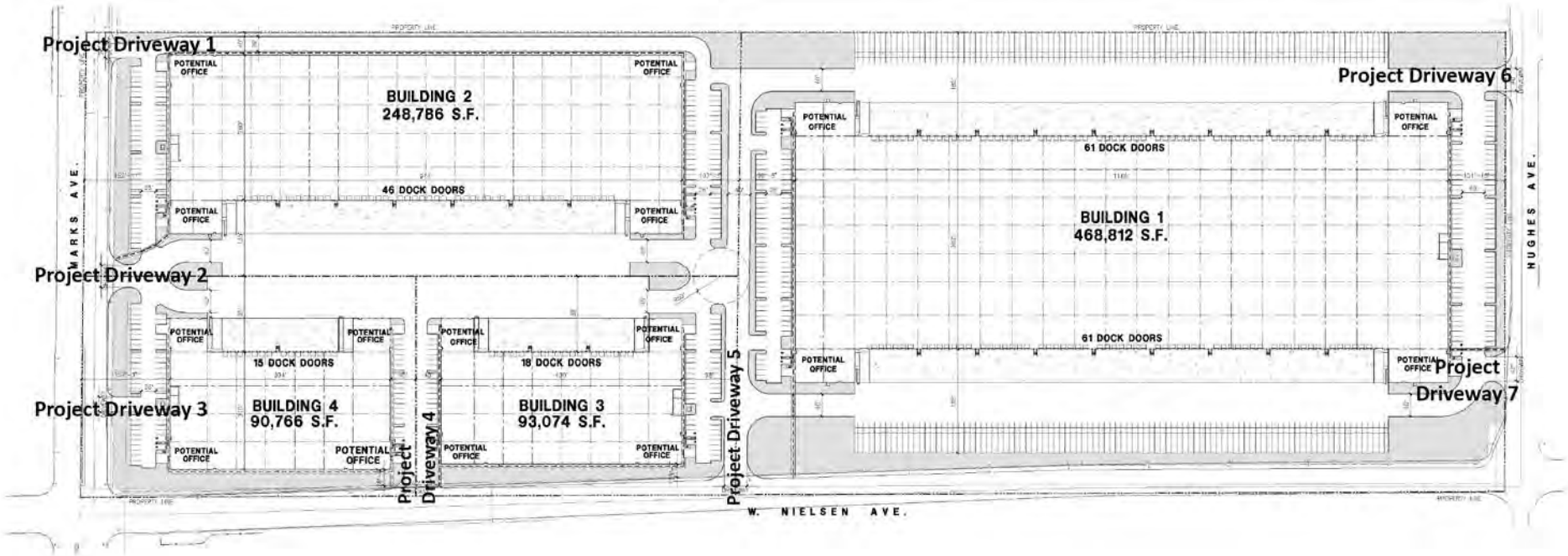
0 1000 2000
FEET

SOURCE: ESRI Streetmap, 2021; Google Earth, 2019.

R:\SNN2101\TIS\GIS\Reports\fig1-1_Reg_ProjLoc.mxd (11/20/2021)

2740 West Nielsen Warehouse Project
Traffic Impact Study

Regional and Project Location



LSA

FIGURE 1-2

N

0 120 240

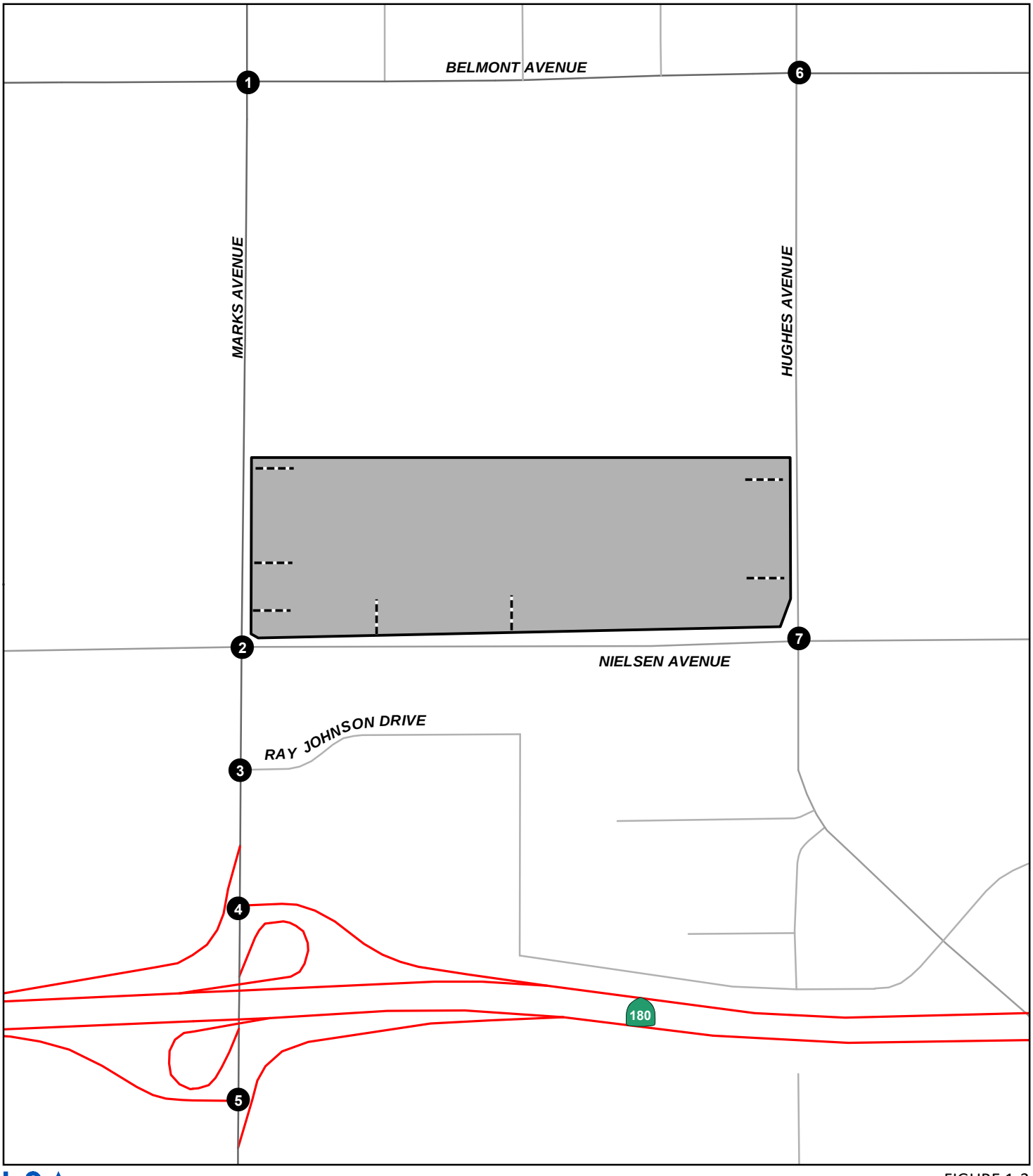
FEET

SOURCE: HPA architecture; April 2021

R:\SNN2101\TIS\GIS\Reports\fig1-2_SitePlan.ai (11/11/2021)

2740 West Nielsen Warehouse Project
Traffic Impact Study

Conceptual Site Plan



LSA

FIGURE 1-3

LEGEND

Project Site

Study Intersection

Project Driveway

N

0 300 600

FEET

2740 West Nielsen Warehouse Project
Traffic Impact Study

Study Area Intersections

SOURCE: County of Fresno Streets Data, 2021.

R:\SNN2101\TIS\GIS\Reports\fig1-3_StudyIntersections.mxd (11/20/2021)

2.0 ANALYSIS METHODOLOGY AND THRESHOLDS

2.1 LEVEL OF SERVICE DEFINITIONS

LOS can be characterized for the whole intersection, each intersection approach, and by each lane group. Control delay alone is used to characterize LOS for the entire intersection. Control delay quantifies the increase in travel time due to the traffic signal control, and is a surrogate measure of driver discomfort and fuel consumption.

A complete description of the meaning of LOS can be found in the Transportation Research Board Special Report 209, *Highway Capacity Manual* (HCM). The HCM establishes LOS A through F for intersections. A description of LOS for signalized and unsignalized intersections is summarized in Table 2-A. A description of LOS for roadway segments is summarized in Table 2-B.

Table 2-C shows the LOS criteria for unsignalized and signalized intersections. The TIS Guidelines recommend using Florida LOS tables to be used for roadway segment analysis. Table 2-D summarizes the LOS criteria used to evaluate roadway segments based on the Florida LOS Tables for urbanized areas, which was adapted from Table 1 of the *2020 Quality/Level of Service Handbook*, dated June 2020. The daily traffic volumes represent the total vehicles (both directions) traveling on a roadway segment within 24 hours.

Basic freeway segments have uniform traffic conditions and roadway characteristics. The measure used to provide an estimate of LOS is density, where density is calculated from the average vehicle flow rate per lane and the average speed. Table 2-E shows the correlation between LOS and flow density. LOS A represents a freeway segment with density less than or equal to 11 passenger cars per mile per lane (pc/mi/ln). LOS F represents a freeway segment with density greater than 45 pc/mi/ln.

Based on the HCM, the LOS for freeway ramps is determined by traffic flow density. Table 2-F shows the correlation between LOS and traffic flow density defined in the HCM. LOS A represents traffic flow density less than or equal to 10 pc/mi/ln. LOS F represents overflow conditions with high density and congestion.

For all study area intersections, the *Highway Capacity Manual 6th Edition* (HCM 6) analysis methodologies were used to determine intersection LOS. Intersection LOS was calculated using the Synchro 10 software, which uses the HCM 6 methodologies. Roadway segment LOS was calculated based on the Florida LOS tables as described above. For basic freeway segments and ramp merge/diverge segments, the Highway Capacity 7 Software (HCS 7) was used. The software calculates LOS using the HCM 6 methodologies.

2.2 LEVEL OF SERVICE PROCEDURES AND THRESHOLDS

Study intersections and roadway segments analyzed in this report are under the jurisdiction of the City of Fresno or on the border of both the City and County of Fresno. However, intersections located at freeway on-ramps and off-ramps are under the jurisdiction of Caltrans. Based on the City of Fresno General Plan Circulation Element, the City uses Traffic Impact Zone (TIZ) boundaries within the City to identify acceptable LOS for each TIZ. The majority of the study area is within TIZ III, or

along the border of TIZ II and TIZ III. TIZ II has a LOS standard of E, while within TIZ III has a LOS standard of D. Therefore, as a conservative estimate, LOS D was considered as the minimum level of service criterion for all intersections. As such, an operational deficiency occurs when the project causes an unsatisfactory condition (deteriorate from LOS A through D to E or F) for intersections or when the project contributes to an existing or forecast deficiency. The project needs to identify improvements to improve the intersection LOS to an acceptable level.

For intersections under the jurisdictions of Caltrans, Caltrans considers an acceptable LOS to be between LOS C and D at all intersections under its jurisdiction (delay of 45 seconds at signalized intersections and delay of 30 seconds at unsignalized intersections).

Caltrans does not have any operational deficiency criteria for study intersections. Therefore, an operational deficiency occurs when the project causes an unsatisfactory condition (deteriorate from LOS A through D to E or F) for intersections or when the project contributes to an existing or forecast deficiency. The project needs to identify improvements to improve the intersection LOS to an acceptable level.

2.3 LIST OF CHAPTER 2.0 TABLES

- Table 2-A: Intersection Level of Service Definitions
- Table 2-B: Roadway Segment Level of Service Definitions
- Table 2-C: Level of Service Criteria for Unsignalized and Signalized Intersections
- Table 2-D: Roadway Segment Capacity and Levels of Service
- Table 2-E: Level of Service Criteria for Freeway Segments
- Table 2-F: Level Of Service Criteria for Ramps and Ramp Junctions

Table 2-A: Intersection Level of Service Definitions

LOS	Description
A	Traffic operations with a control delay of 10 seconds per vehicle or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If LOS A is the result of favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.
B	Traffic operations with control delay between 10 seconds per vehicle and 20 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.
C	Traffic operations with control delay between 20 and 35 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of the insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.
D	Traffic operations with control delay between 35 and 55 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.
E	Traffic operations with control delay between 55 and 80 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.
F	Traffic operations with control delay exceeding 80 seconds per vehicle or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: *Highway Capacity Manual* (6th Edition)

Table 2-B: Roadway Segment Level of Service Definitions

LOS	Description
A	Describes primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control Delay at the boundary intersection is minimal. The travel speed exceeds 80% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.
B	Describes reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted, and control delay at the boundary is not significant. The travel speed is between 67% and 80% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.
C	Describes stable operation. The ability to maneuver and change lanes at mid-segment locations may be more restricted than at LOS B. Longer queues at the boundary intersection may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.
D	Indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the boundary intersections. The travel speed is between 40% and 50% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.
E	Characterized by unstable operation and significant delay. Such operations may be due to some combination of adverse progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30% and 40% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.
F	Characterized by flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is between 30% or less of the base free-flow speed, and the volume-to-capacity ratio is greater than 1.0.

Source: *Highway Capacity Manual* (6th Edition)

Table 2-C: Level of Service Criteria for Unsignalized and Signalized Intersections

Level of Service	Unsignalized Intersection Average Delay per Vehicle (sec.)	Signalized Intersection Average Delay per Vehicle (sec.)
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

Source: *Highway Capacity Manual* (6th Edition)

Table 2-D: Roadway Segment Capacity and Levels of Service

Class I (40 MPH or Higher Posted Speed Limit)					
		Level of Service			
Lanes	Median	B	C	D	E
2	Undivided	*	15,120	15,930	*
4	Divided	*	34,110	35,820	*
6	Divided	*	52,560	53,910	*
8	Divided	*	70,920	72,090	*
Class II (35 MPH or Slower Posted Speed Limit)					
2	Undivided	*	6,570	13,320	14,040
4	Divided	*	13,050	29,160	30,420
6	Divided	*	20,970	45,000	45,810
8	Divided	*	28,800	60,570	61,290

[1] The Florida LOS Tables includes the LOS capacities for State Signalized Arterials, and recommends a 10% adjustment for non-state signalized roadway system. Therefore, the roadway capacities have been calculated using a 10% adjustment to the values provided within the Florida LOS Table for urbanized area for State Signalized arterials.

Source: State of Florida *2020 Quality/level of Service Handbook, June 2020*.

Table 2-E: Level of Service Criteria for Freeway Segments

LOS	Density (v/c)
A	≤ 0.30
B	> 0.30–0.50
C	> 0.50–0.71
D	> 0.71–0.89
E	> 0.89–1.00
F	> 1.00

Table 2-F: Level Of Service Criteria for Ramps and Ramp Junctions

LOS	Density (pc/mi/ln)
A	≤ 10
B	> 10–20
C	> 20–28
D	> 28–35
E	> 35
F	Demand exceeds capacity

3.0 CIRCULATION NETWORK SETTING

3.1 EXISTING ROADWAY NETWORK

This section provides a description of the circulation network within the study area. Within the City of Fresno, all major roadways are classified based on the Major Street Circulation Diagram provided in the Mobility and Transportation Element of the City of Fresno *General Plan*. Following is a brief description of major roadways within the study area:

- **Marks Avenue**: Marks Avenue is designated as an Arterial in the City's General Plan. Within the study area, Marks Avenue is a 4-lane divided roadway. There is no provision for continuous sidewalks within the study area. Class II bike lanes are present on both sides of Marks Avenue within the study area. There is no provision for on-street parking within the study area.
- **Belmont Avenue**: Belmont Avenue is designated as a collector street in the City's General Plan. Between Marks Avenue and Hughes Avenue, Belmont Avenue is a 4-lane undivided roadway. There is no provision for continuous sidewalks within the study area. There are no bike facilities along either direction of this segment. There is no provision for on-street parking within the study area.
- **Nielsen Avenue**: Nielsen Avenue is designated as a collector street in the City's General Plan. Between Marks Avenue and Hughes Avenue, Nielsen Avenue is a 2-lane undivided roadway with a two-way left-turn lane (TWLTL). There is no provision for sidewalks within the study area. Class II bike lanes are present on both sides of Nielsen Avenue within the study area. There is no provision for on-street parking within the study area.
- **Hughes Avenue**: Hughes Avenue is designated as a collector street in the City's General Plan. Between Belmont Avenue and Nielsen Avenue, Hughes Avenue is a 2-lane undivided roadway. There is no provision for continuous sidewalks within the study area. There are no bike facilities along either direction of this segment. There is no provision for on-street parking within the study area.

Figure 3-1 illustrates existing study intersection geometrics and traffic control. Figure 3-2 illustrates the Major Street Circulation Diagram for the City.

3.2 EXISTING BICYCLE, PEDESTRIAN, AND TRANSIT FACILITIES

3.2.1 Bicycle Facilities

The City of Fresno is committed to improving non-motorized travel. Bicycling can be a viable alternative to local work commutes and offers children a healthy way to get to school. To facilitate and encourage bicycle trips among other non-motorized mods of travel, the City has adopted its Active Transportation Plan in 2016 that includes a network of proposed facilities and implementation plan for the future. The *City of Fresno Active Transportation Plan* (adopted December 2016) provides an inventory of all existing bicycle infrastructure improvements to be implemented in the future.

According to the *City of Fresno Active Transportation Plan,* the bikeway network within the City is classified into four categories: Class I – Bike Paths, Class II – Bike Lanes, and Class III – Bike Routes, and Class IV – Separated Bikeways. Class I bikeways provide bicycle travel on a paved right-of-way completely separated from any street or highway. Class II bikeways provide a striped and stenciled lane for one-way travel on a street or highway. Class III bikeways provide for shared use with motor vehicle traffic and are identified only by signing. Class IV bikeways are physically separated bikeway facilities distinct from the sidewalks and designated for exclusive use of the bikers.

Currently, Class II bike lanes exists along Marks Avenue and Nielsen Avenue within the study area. Proposed future Class II bike lanes will be added along the Belmont Avenue and Hughes Avenue within the study area. Figure 3-3 illustrates the existing and proposed bike lanes within the project vicinity.

3.2.2 Pedestrian Facilities

The implementation of enhanced pedestrian linkage with a comprehensive trails system links residential areas, schools, parks, and commercial centers so that residents can travel within the community without driving. Safe and attractive sidewalks and walkways improve the walkability of the City. Sidewalks are generally provided on both sides of the streets throughout the City. Additionally, standard paved trails and non-standard unpaved trails are frequently used by bicyclists and pedestrians in the City. The existence of trails and sidewalks provides accessible facilities, provides safety features, and improves walkability in the City.

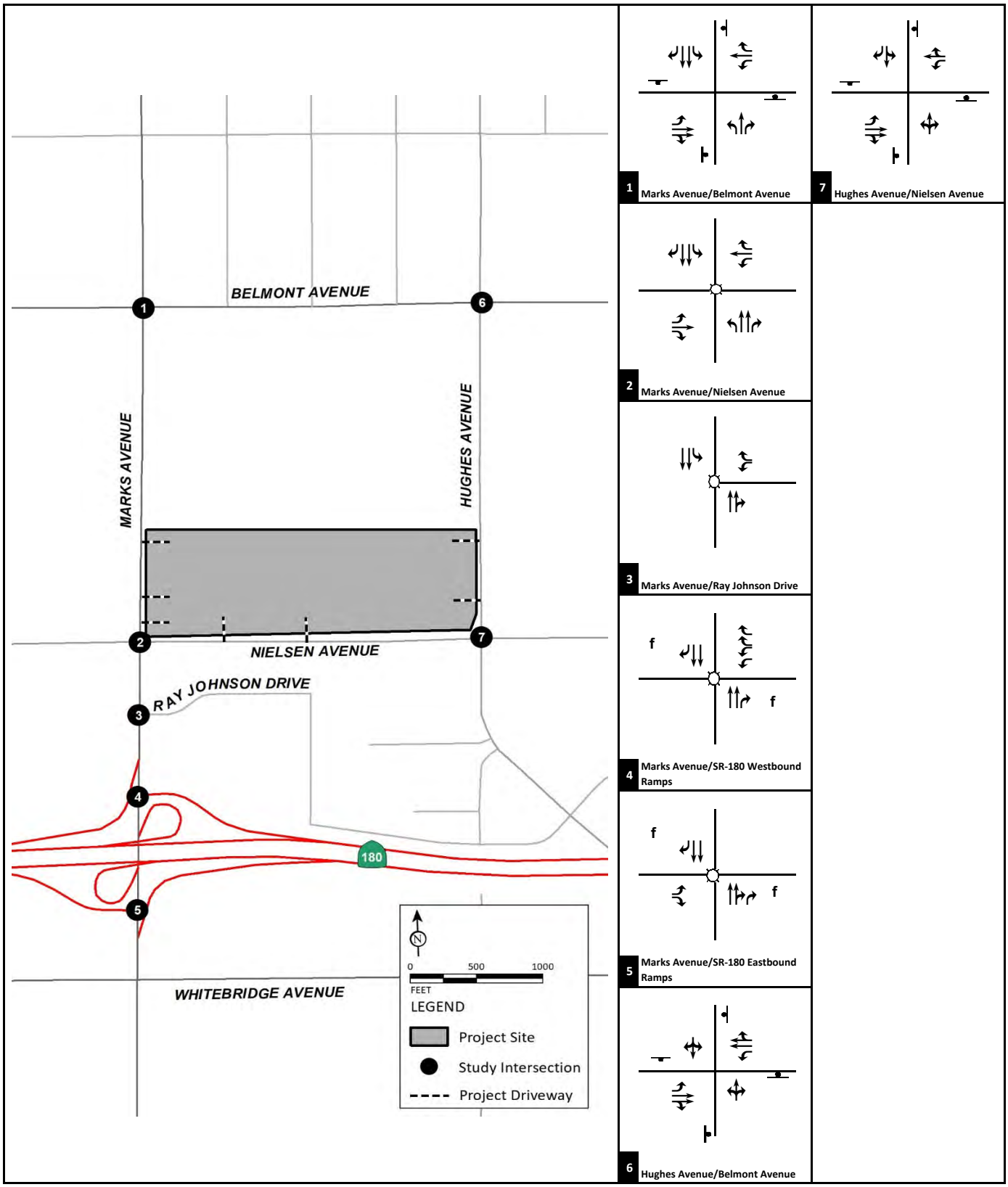
Paved sidewalks are present intermittently on both sides of Belmont Avenue and Marks Avenue. Sidewalks are proposed on Marks Avenue, Nielsen Avenue, Belmont Avenue and Hughes Avenue within the study area. Additionally, as previously mentioned, the project will be constructing sidewalks along the project frontage on Marks Avenue, Nielsen Avenue and Hughes Avenue. Figure 3-4 illustrates the existing and planned sidewalks within the City.

3.2.3 Transit Facilities

Fresno Area Express (FAX) is the Transportation Service Agency within the City and is responsible for coordinating transit services within its service area. FAX provides services via Route 1/Q (Bus Rapid Transit) as well as 17 other routes throughout the City, and four routes for Clovis Transit. There are currently no transit routes present within the study area.

3.3 LIST OF CHAPTER 3.0 FIGURES

- Figure 3-1: Existing Study Intersection Geometrics and Traffic Control
- Figure 3-2: City of Fresno Roadway Classification
- Figure 3-3: City of Fresno Existing and Proposed Bikeway Network
- Figure 3-4: City of Fresno Existing and Proposed Sidewalks



LSA

FIGURE 3-1

Legend

Signal

Stop Sign

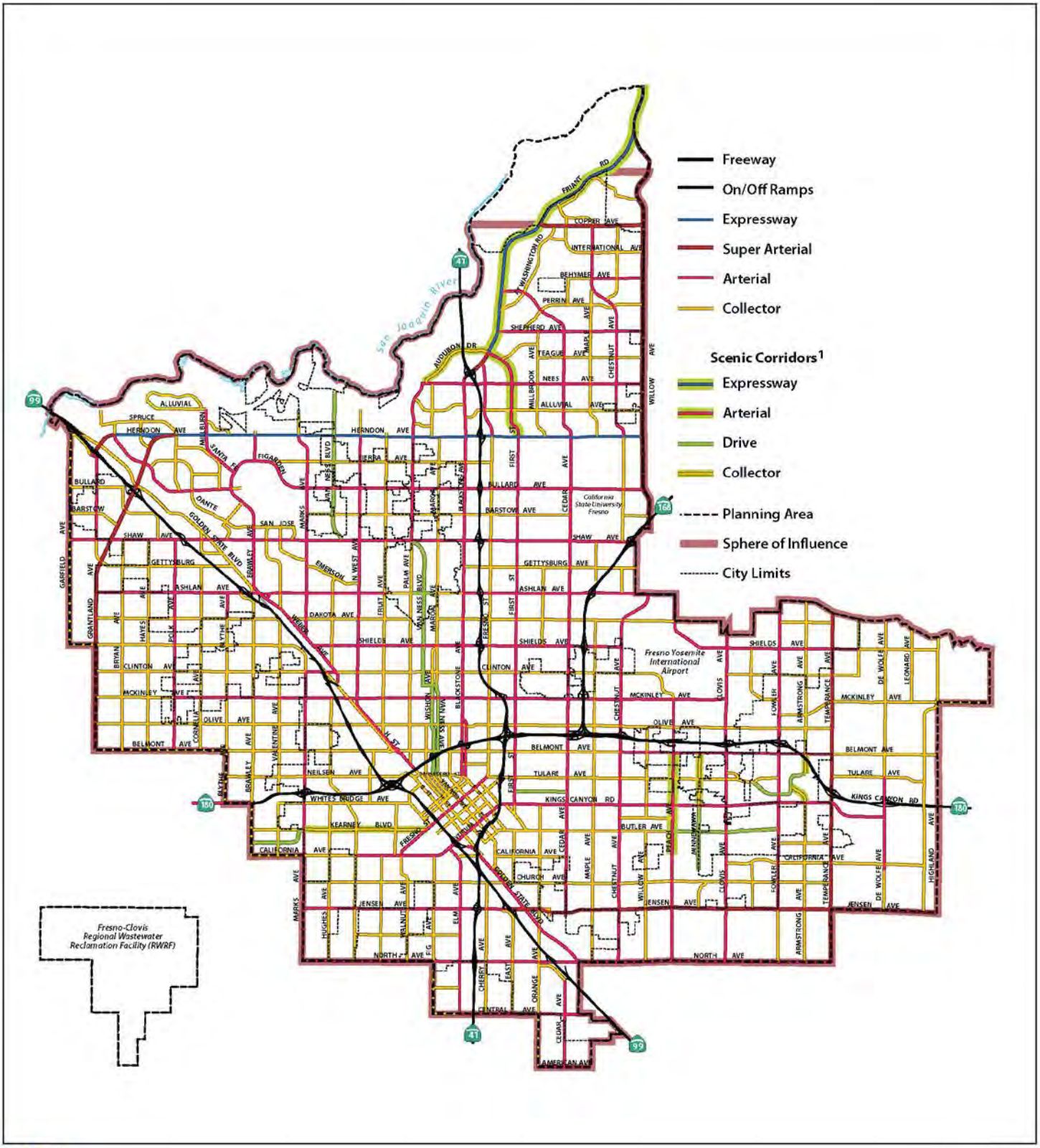
f Free Right Turn

2740 West Nielsen Warehouse Project

Traffic Impact Study

Existing Study Intersection Geometrics and Traffic Control

R:\SNN2101\TIS\g30- Geo_Exist.xlsx\Figure (11/22/2021)



LSA

FIGURE 3-2

N

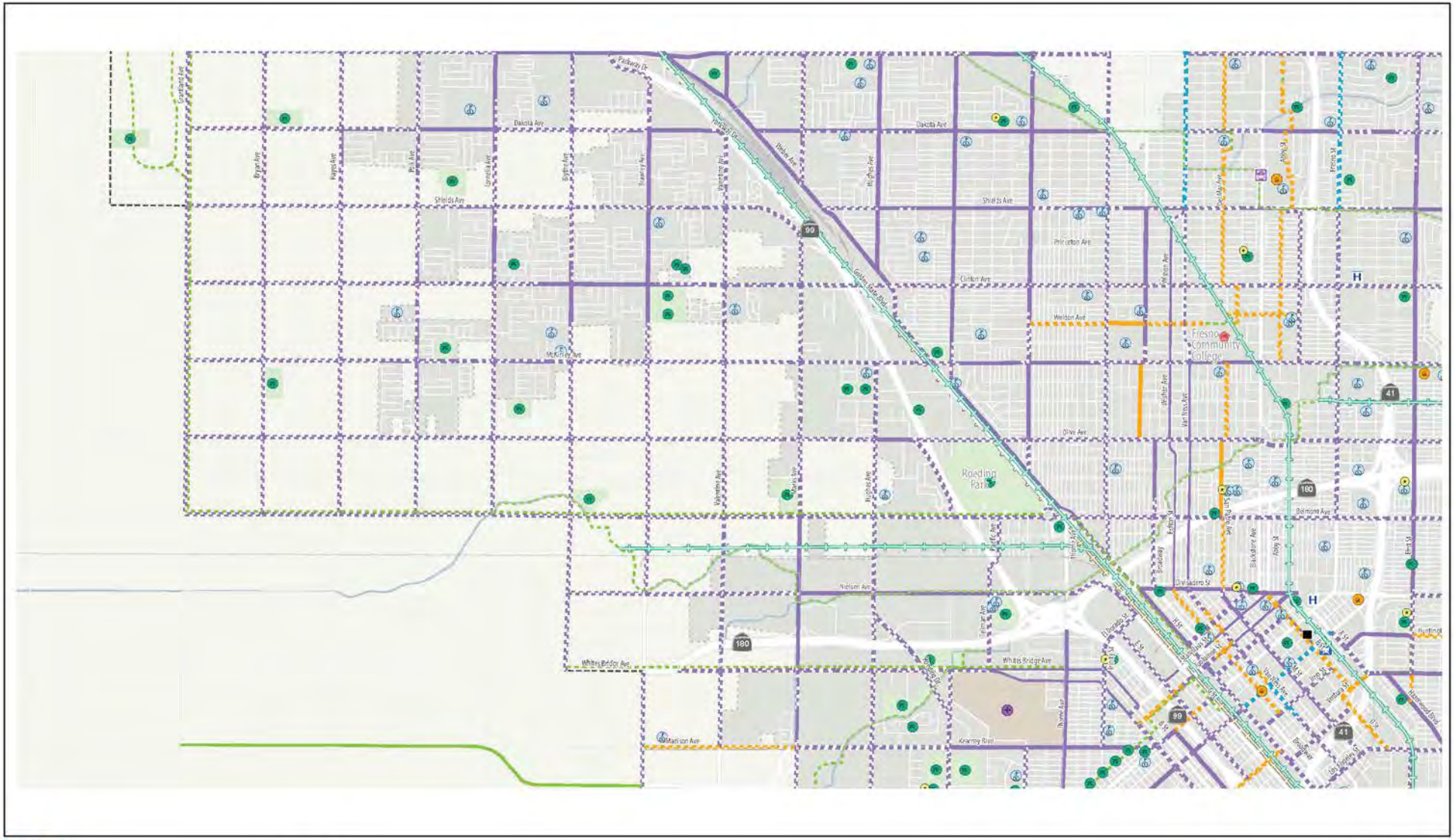
0 1 2
MILE

SOURCE: City of Fresno General Plan, 2014

R:\SNN2101\TIS\GIS\Reports\fig3-2_GP_Rdway.ai (11/11/2021)

2740 West Nielsen Warehouse Project
Traffic Impact Study

City of Fresno Roadway Classification



LSA

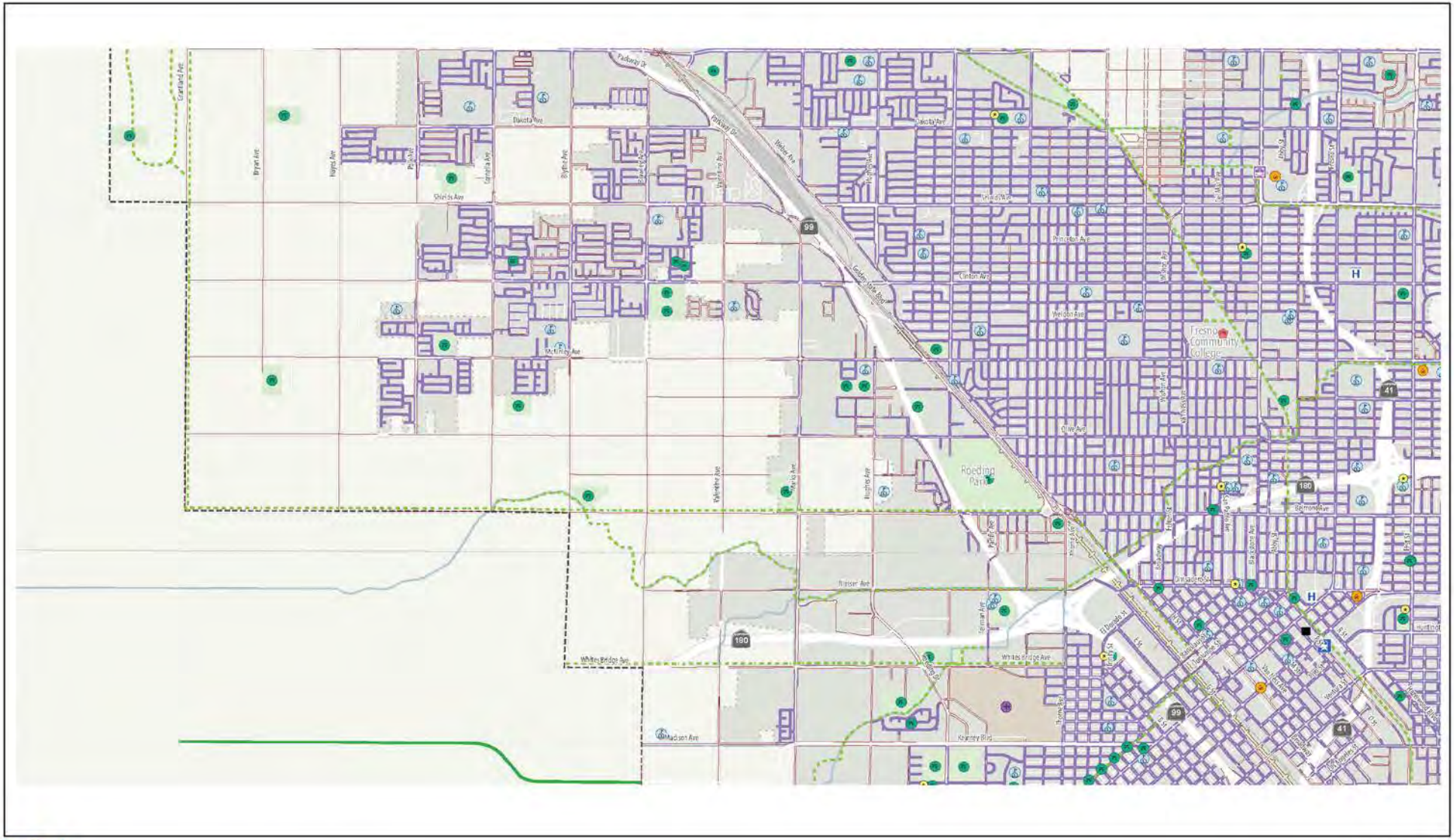
FIGURE 3-3

2740 West Nielsen Warehouse Project
Traffic Impact Study

City of Fresno Existing and Proposed Bikeway Network

SOURCE: Fresno Active Transportation Plan, December 2016

R:\SNN2101\TIS\GIS\Reports\fig3-3_Bike.ai (11/11/2021)



LSA

FIGURE 3-4

2740 West Nielsen Warehouse Project
Traffic Impact Study

City of Fresno Existing and Proposed Sidewalks

SOURCE: Fresno Active Transportation Plan, December 2016
R:\SNN2101\TIS\GIS\Reports\fig3-4-Sidewalks.ai (11/11/2021)

4.0 TRAFFIC VOLUMES FOR WITHOUT PROJECT SCENARIOS

4.1 EXISTING TRAFFIC VOLUMES

Traffic volumes for existing year traffic conditions are typically developed using existing count data collected at study intersections and roadway segments. Due to the current statewide school and office closures/restrictions for the COVID-19 pandemic, new traffic counts will not reflect realistic traffic conditions at the study intersections. Traffic counts were collected in August 2021. However, LSA consulted traffic counters to obtain historic traffic counts at study intersections wherever available to identify the differences between COVID time and historical traffic counts. Existing counts were adjusted accordingly based on the difference between these two counts. Following is a brief description of the development of existing traffic volumes from historic and COVID counts.

Step 1: For the intersection of Marks Avenue/Belmont Avenue, historic counts were available for the year 2016. To develop the existing 2021 traffic counts, a 2 percent per annum growth was applied to these counts and compared to the 2021 counts by turning movements. The higher of the turning movements was taken as the adjusted 2021 volumes.

Step 2: All other study intersections did not have any historic counts available. Therefore, to develop existing traffic volumes at these intersections, a percentage growth adjustment was applied to the counts collected in August 2021 to reflect existing conditions. The percentage difference between the COVID counts and the adjusted existing volumes on all four approaches at the intersection of Marks Avenue/Belmont Avenue was developed for the percentage growth adjustment to be used at the remaining study intersections. It was observed that the north-south direction has a higher traffic volume based on the comparison of the adjusted historical counts to the August 2021 counts, while the east-west direction has a higher traffic volumes for the August 2021 counts. Therefore, the percentage growth adjustment was applied for only the north-south direction/approaches along Marks Avenue.

Step 3: For other intersections along Marks Avenue, August 2021 traffic counts were adjusted based on the growth rate developed in Step 2.

Step 4: Vehicle classification counts were collected at the intersections of Marks Avenue/Belmont Avenue, Marks Avenue/Nielsen Avenue, Marks Avenue/SR-180 Westbound Ramps, and Marks Avenue/SR-180 Eastbound Ramps. At these locations, counts were converted to Passenger Car Equivalent (PCE) volumes. The concept of PCEs accounts for the larger impact of trucks on traffic operations. It does so by assigning each type of truck a PCE factor that represents the number of passenger vehicles that could travel through an intersection in the same time that a particular type of truck could. PCE volumes at study intersections were computed using a factor of 2.0, consistent with the HCM 6 methodologies.

Step 5: The percentage of trucks at the remaining study intersections without classification counts was determined based on truck percentages derived from adjacent intersections with classification counts. At these locations, PCE volumes were computed using a PCE factor of 2.0, consistent with the HCM 6 methodologies.

Figure 4-1 illustrates existing peak hour traffic volumes at study intersections. Table 4-A illustrates existing daily traffic volumes at the study roadway segments. Detailed counts are included in Appendix B. Detailed volume development worksheets are included in Appendix C.

4.2 NEAR-TERM APPROVED AND PENDING (2023) WITHOUT PROJECT TRAFFIC VOLUMES

Traffic volumes for Near-term approved and pending (2023) conditions were developed by applying a growth rate of 2 percent per annum to the existing without project traffic volumes and adding trips from approved and pending cumulative projects in the area.

Information concerning cumulative projects in the vicinity of the proposed project was obtained from both the City of Fresno and County of Fresno. Figure 4-2 illustrates the cumulative project locations. The trip generation for cumulative projects was developed using trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10th Edition), and/or using information from approved traffic studies where available.

Table 4-B lists the approved and pending projects included in this analysis, and shows the cumulative projects are estimated to generate 330 new a.m. peak hour trips, 389 new p.m. peak hour trips, and 4,450 daily trips.

Cumulative project trips were assigned to the roadway network based on their locations in relation to surrounding land uses and regional arterials, and/or using information from approved traffic studies where available. Figure 4-3 illustrates the peak hour cumulative project trip assignment at the study area intersections. Figure 4-4 illustrates the peak hour traffic volumes at study intersections under Near-term approved and pending (2023) without project conditions. Table 4-C shows Near-term approved and pending (2023) daily volumes at the study area roadway segments.

It should be noted that the volume development for this scenario was prepared to develop the volumes for Near-term approved and pending (2023) with project scenario. As such, this scenario was not evaluated for operational performances.

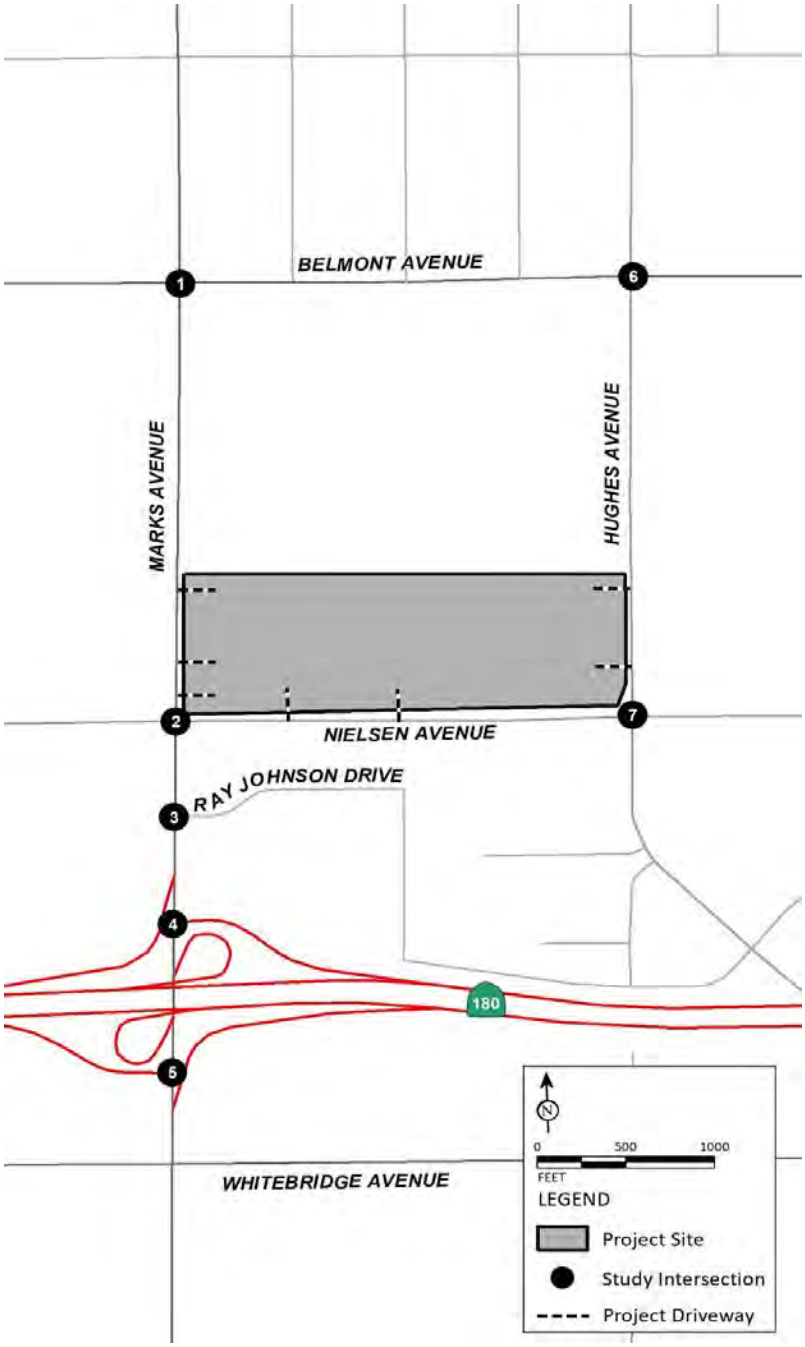
4.3 CUMULATIVE YEAR (2035) WITHOUT PROJECT TRAFFIC VOLUMES

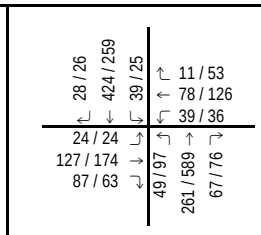
Cumulative Year (2035) no Project volume was developed using forecast volumes obtained from the latest version of the Fresno Council of Governments (Fresno COG) Activity Based Model (ABM) and by applying the Fresno COG recommended post-processing methodologies. Figure 4-5 illustrates the peak hour traffic volumes at study intersections under Cumulative Year (2035) without project conditions. Table 4-D shows Cumulative Year (2035) daily volumes at the study area roadway segments.

4.4 LIST OF CHAPTER 4.0 FIGURES AND TABLES

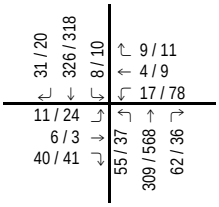
- Figure 4-1: Existing Peak Hour Traffic Volumes
- Figure 4-2: Cumulative Project Locations
- Figure 4-3: Cumulative Projects Trip Assignment

- Figure 4-4: Near-term approved and pending (2023) without Project Peak Hour Traffic Volumes
- Figure 4-5: Cumulative Year (2035) without Project Peak Hour Traffic Volumes
- Table 4-A: Existing Roadway Segment Daily Traffic Volumes
- Table 4-B: Cumulative Projects Trip Generation
- Table 4-C: Near term approved and pending (2023) Roadway Segment Daily Traffic Volumes
- Table 4-D: Cumulative Year (2035) Roadway Segment Daily Traffic Volumes

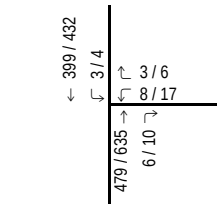




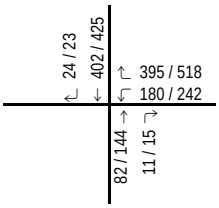
1 Marks Avenue/Belmont Avenue



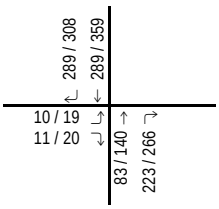
2 Marks Avenue/Nielsen Avenue



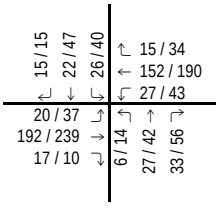
3 Marks Avenue/Ray Johnson Drive



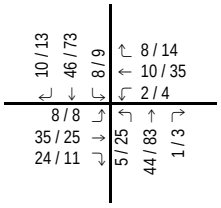
4 Marks Avenue/SR-180 Westbound Ramps



5 Marks Avenue/SR-180 Eastbound Ramps



6 Hughes Avenue/Belmont Avenue



7 Hughes Avenue/Nielsen Avenue

LSA

FIGURE 4-1

XXX / YYY
AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study

Existing Peak Hour Traffic Volumes

R:\SNN2101\TIS\z30_Vol_Exist.xlsx\Figure (11/22/2021)

LSA

LEGEND

Project Location

Cumulative Project Location

FIGURE 4-2

N

0 1250 2500

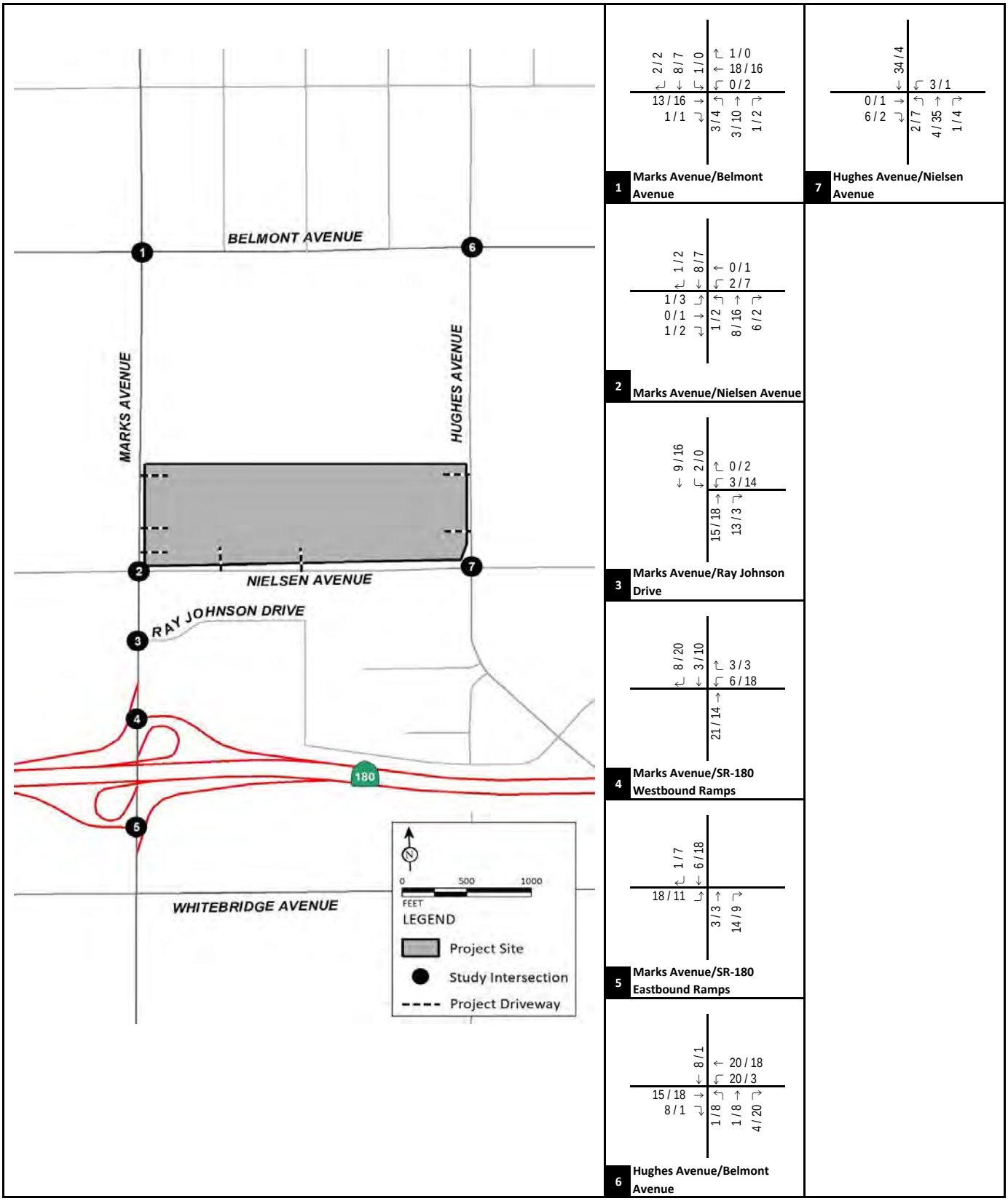
FEET

SOURCE: ESRI Streetmap, 2021; Google Earth, 2019.

R:\SNN2101\TIS\GIS\Reports\fig4-2_Cumulative.mxd (11/22/2021)

2740 West Nielsen Warehouse Project
Traffic Impact Study

Cumulative Project Location



LSA

FIGURE 4-3

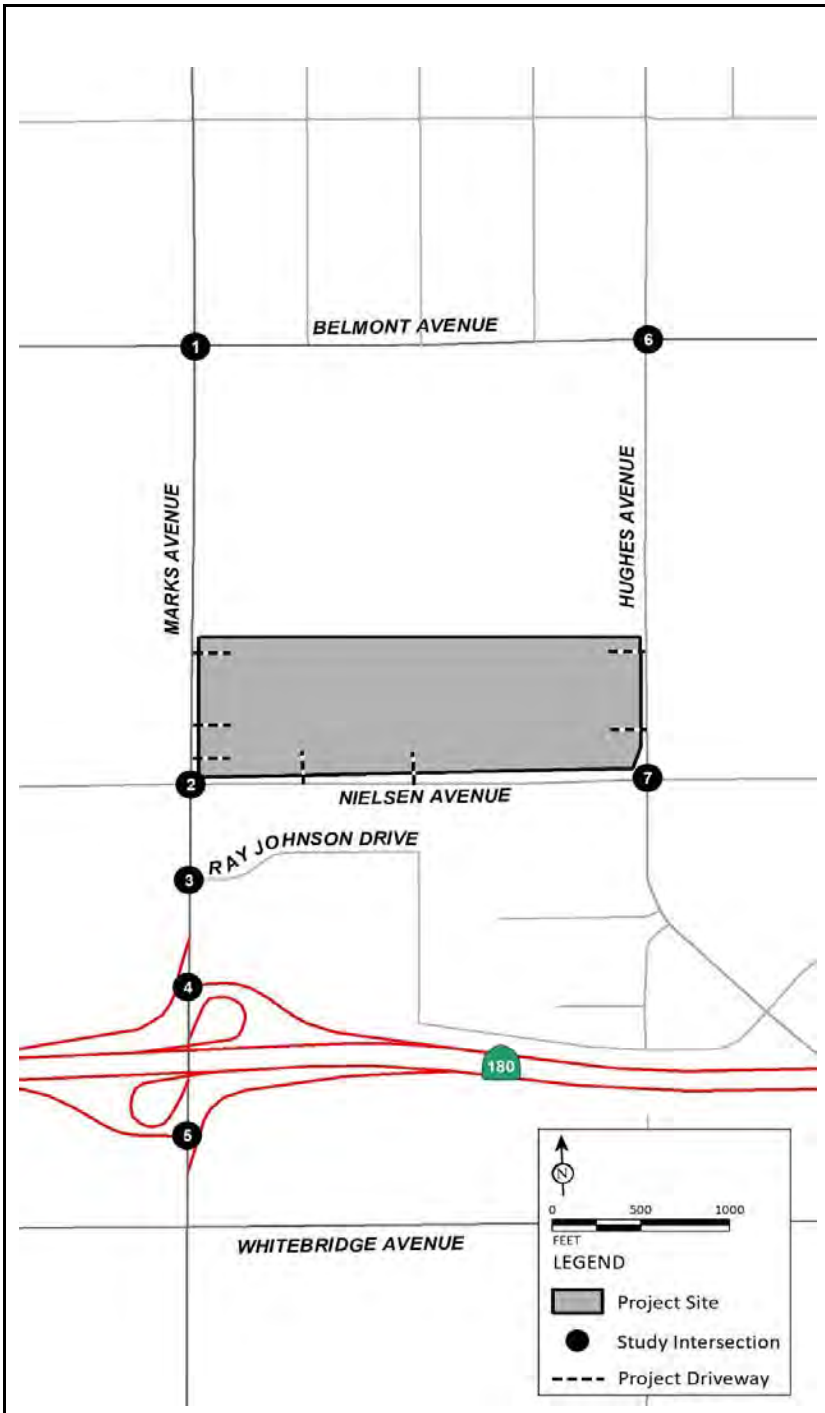
XXX / YYY

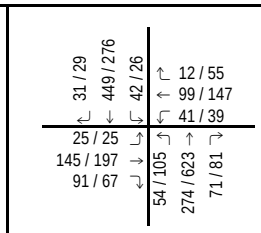
AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study

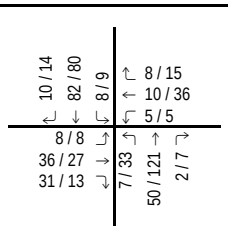
Cumulative Project Trip Assignment

R:\SNN2101\TIS\z30_Vol_Cumul_Proj.xlsx\Figure (11/22/2021)

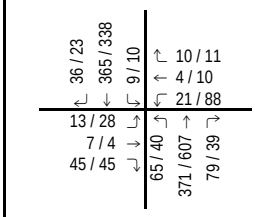




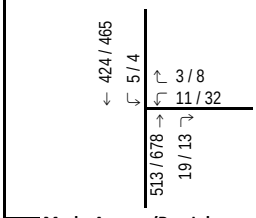
1 Marks Avenue/Belmont Avenue



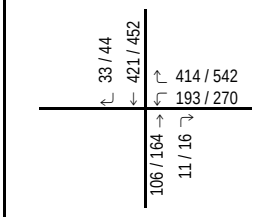
7 Hughes Avenue/Nielsen Avenue



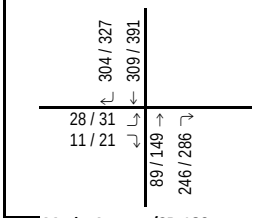
2 Marks Avenue/Nielsen Avenue



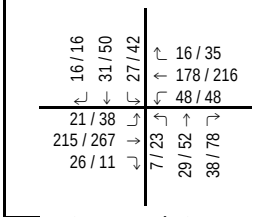
3 Marks Avenue/Ray Johnson Drive



4 Marks Avenue/SR-180 Westbound Ramps



5 Marks Avenue/SR-180 Eastbound Ramps



6 Hughes Avenue/Belmont Avenue

LSA

FIGURE 4-4

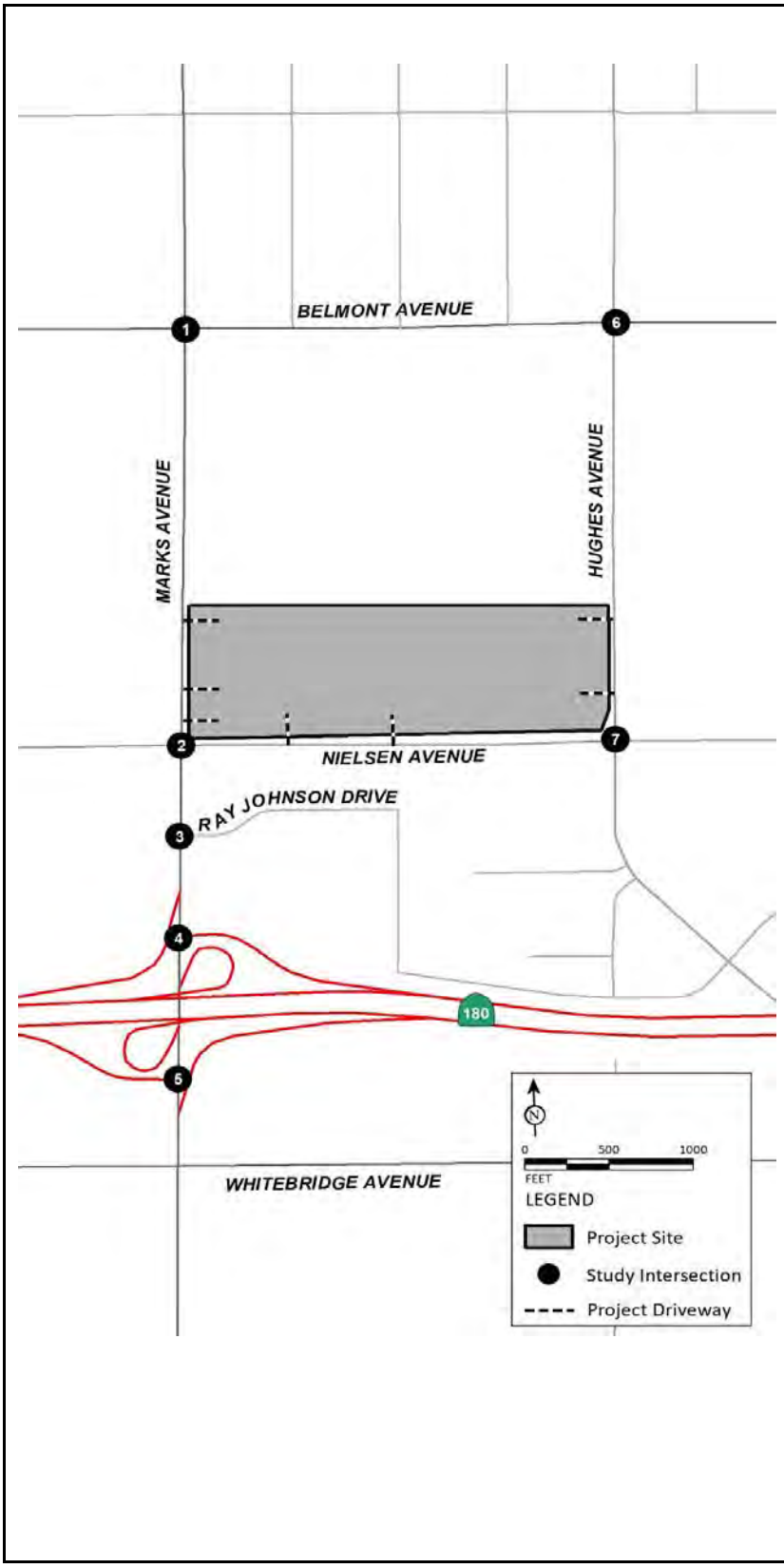
XXX / YYY

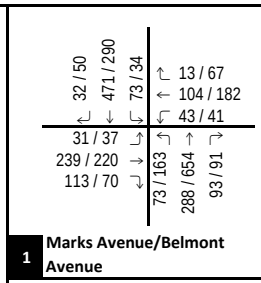
AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study

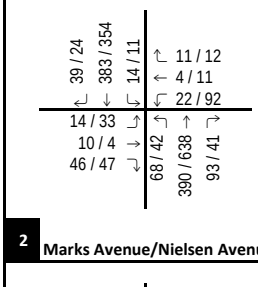
Near-term approved and pending (2023) without Project Peak Hour Traffic Volumes

R:\SNN2101\TIS\z30_Vol_OY.xlsx\Figure (11/22/2021)

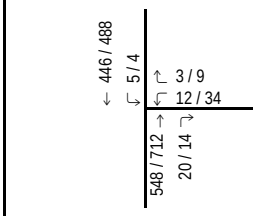




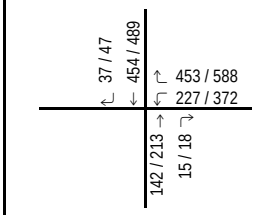
1 Marks Avenue/Belmont Avenue



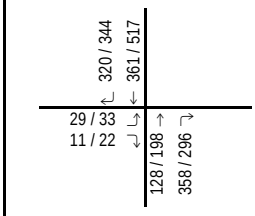
2 Marks Avenue/Nielsen Avenue



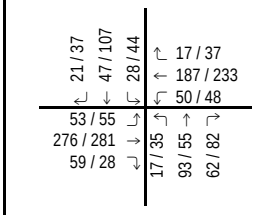
3 Marks Avenue/Ray Johnson Drive



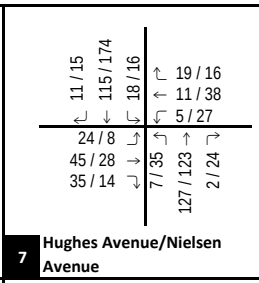
4 Marks Avenue/SR-180 Westbound Ramps



5 Marks Avenue/SR-180 Eastbound Ramps



6 Hughes Avenue/Belmont Avenue



7 Hughes Avenue/Nielsen Avenue

LSA

FIGURE 4-5

XXX / YYY
AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study

Cumulative Year (2035) without Project Peak Hour Traffic Volumes

R:\SNN2101\TIS\z30_Vol_BO.xlsx\Figure (11/22/2021)

LSA

Table 4-A - Existing Daily Traffic Volumes

Roadway	#	Segment	Existing ADT	Project Trips	Existing With Project ADT
Marks Avenue	1	Marks Avenue, between Belmont Avenue and Nielsen Avenue	10,190	1,038	11,228
	2	Marks Avenue, between Nielsen Avenue and Ray Johnson Drive	11,554	592	12,146
	3	Marks Avenue, between Ray Johnson Drive and SR-180 Westbound Ramps	12,019	592	12,611
	4	Marks Avenue, between SR-180 Westbound Ramps and SR-180 Eastbound Ramps	10,651	326	10,977
Belmont Avenue	5	Belmont Avenue, between Marks Avenue and Hughes Avenue	7,240	310	7,550
Nielsen Avenue	6	Nielsen Avenue, between Marks Avenue and Hughes Avenue	1,614	616	2,230
Hughes Avenue	7	Hughes Avenue, between Belmont Avenue and Nielsen Avenue	2,604	456	3,060

LSA

Table 4-B - Cumulative Projects Trip Generation

Project No.	Project Name/Land Use/Builder/Applicant	Units		A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
F-1	**P21-02291/Step Up on 99**									
	1240 N Crystal Avenue									
	Proposed Use - Affordable Housing	98	DU							
	Trips/Unit[1]			0.11	0.35	0.46	0.35	0.21	0.56	7.32
	Trip Generation			11	34	45	34	21	55	717
	Proposed Use - Multifamily Housing	63	DU							
	Trips/Unit[1]			0.11	0.35	0.46	0.35	0.21	0.56	7.32
	Trip Generation			7	22	29	22	13	35	461
	Existing Use - Motel	98	RM							
	Trips/Unit[2]			0.14	0.24	0.38	0.21	0.17	0.38	3.35
	Trip Generation			14	24	38	21	17	38	328
	Total Net Trip Generation (Proposed - Existing)			**4**	**32**	**36**	**35**	**17**	**52**	**850**
F-2	**P19-00662/Derrel's Mini Storage West Belmont Expansion**									
	1800 W Belmont Avenue, 1827 W Dudley Avenue									
	Replacement of existing office/residential building with a new office/caretake	105.525	TSF							
	Trips/Unit[3]			0.06	0.04	0.10	0.08	0.09	0.17	1.51
	Trip Generation			**6**	**4**	**10**	**8**	**9**	**17**	**159**
F-3	**P21-02299/Sun Lodge**									
	1101 N Parkway Drive									
	Proposed Use - Affordable Housing	97	DU							
	Trips/Unit[1]			0.11	0.35	0.46	0.35	0.21	0.56	7.32
	Trip Generation			11	34	45	34	20	54	710
	Proposed Use - Multifamily Housing	63	DU							
	Trips/Unit[1]			0.11	0.35	0.46	0.35	0.21	0.56	7.32
	Trip Generation			7	22	29	22	13	35	461
	Existing Use - Motel	97	RM							
	Trips/Unit[2]			0.14	0.24	0.38	0.21	0.17	0.38	3.35
	Trip Generation			14	23	37	20	16	36	325
	Total Net Trip Generation (Proposed - Existing)			**4**	**33**	**37**	**36**	**17**	**53**	**846**
F-4	**P19-04220, P19-04222/The OASIS Project**									
	Northwest and Northeast corners of intersection of Madison Avenue and Valentina Avenue									
	84 Single-Family Lots	84	SFDU							
	Trips/Unit[4]			0.19	0.55	0.74	0.62	0.37	0.99	9.44
	Trip Generation			**16**	**46**	**62**	**52**	**31**	**83**	**793**
F-5	**P19-06300**									
	3075 W Nielsen Avenue									
	Replacing a 7,000 sf fire damaged metal building with a new 4,920 sf metal bu	4.920	TSF							
	Trips/Unit[5]			0.58	0.36	0.94	1.83	1.98	3.81	37.75
	Trip Generation			3	2	5	9	10	19	186
	Pass-by Trips[6]			0	0	0	(3)	(3)	(6)	(63)
	Net Trip Generation			**3**	**2**	**5**	**6**	**7**	**13**	**123**
F-6	**P21-03628**									
	963 N Marks Avenue									
	Subdivide industrial parcel	148	TSF							
	Trips/Unit[7]									
	Trip Generation			**17**	**3**	**20**	**22**	**4**	**26**	**402**

LSA

Table 4-B - Cumulative Projects Trip Generation

Project No.	Project Name/Land Use/Builder/Applicant	Units		A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
F-7	**P19-02847/Red Onion Drive Thru**									
	555 W Belmont Avenue									
	Proposed Use - Fast-Food Restaurant w/ Drive-Through	3.500	TSF							
	Trips/Unit[8]			20.50	19.69	40.19	16.99	15.68	32.67	470.95
	Trip Generation			72	69	141	59	55	114	1,648
	Pass-by Trips[9]			(35)	(34)	(69)	(30)	(28)	(58)	(816)
	Net Trip Generation			**37**	**35**	**72**	**29**	**27**	**56**	**832**
	Existing Use - Fast-Food Restaurant	3.500	TSF							
	Trips/Unit[10]			15.06	10.04	25.10	14.17	14.17	28.34	346.23
	Trip Generation			53	35	88	50	50	100	1,212
	Pass-by Trips[11]			(26)	(17)	(43)	(25)	(25)	(50)	(600)
	Net Trip Generation			**27**	**18**	**45**	**25**	**25**	**50**	**612**
	Net Gross Trip Generation (Proposed - Existing)			**19**	**34**	**53**	**9**	**5**	**14**	**436**
	Net Pass-By Trips (Proposed - Existing)			**(9)**	**(17)**	**(26)**	**(5)**	**(3)**	**(8)**	**(216)**
	Net Project Trip Generation (Proposed - Existing)			**10**	**17**	**27**	**4**	**2**	**6**	**220**
F-8	**P20-03068/Truck Wash and Lube Building**									
	125 S Pleasant Avenue									
	8,100 sf metal building containing 2 truck wash bays, 1 truck lube bay	3	Bay							
	Trips/Unit[12]			1.92	0.69	2.62	0.69	2.23	2.92	23.08
	Trip Generation			**6**	**2**	**8**	**2**	**7**	**9**	**69**
F-9 .	**P19-04564/McKinley Ave Retail & Residential Complex**									
	2809 W McKinley Avenue									
	Retail Building	5.480	TSF							
	Trips/Unit[5]			0.58	0.36	0.94	1.83	1.98	3.81	37.75
	Trip Generation			3	2	5	10	11	21	207
	Pass-by Trips[6]			0	0	0	(3)	(4)	(7)	(70)
	Net Trip Generation			**3**	**2**	**5**	**7**	**7**	**14**	**137**
	Multifamily Housing	6	DU							
	Trips/Unit[1]			0.11	0.35	0.46	0.35	0.21	0.56	7.32
	Trip Generation			1	2	3	2	1	3	44
	Project Gross Trip Generation			**4**	**4**	**8**	**12**	**12**	**24**	**251**
	Pass-By Trips			**0**	**0**	**0**	**(3)**	**(4)**	**(7)**	**(70)**
	Net Project Trip Generation			**4**	**4**	**8**	**9**	**8**	**17**	**181**
F-10 .	**P19-02113/Royalty Freight Trucking Service**									
	50 S Hughes Avenue									
	The applicant is proposing to develop a new 26,143 sf truck-service facility for	6	Bay							
	Trips/Unit[12]			1.92	0.69	2.62	0.69	2.23	2.92	23.08
	Trip Generation			**12**	**4**	**16**	**4**	**13**	**17**	**138**
FC-1 .	**AA3752**									
	Rezoning of 0.75 acre to commercial/light manufacturing use									
	South of Belmont between North Brawley and North Valentine Avenu	8.17	TSF							
	Trips/Unit[13]			0.48	0.14	0.62	0.21	0.46	0.67	3.93
	Trip Generation			**4**	**1**	**5**	**2**	**4**	**6**	**32**
FC-2 .	**CUP3066**									
	Kochergen Tranefer Facility									
	East of Brawley Avenue and North of Nieslen Avenue	7.00	Ac							
	Trip Generation[14]			**33**	**26**	**53**	**26**	**33**	**53**	**530**
FC-3 .	**CUP3629**									
	2.67 acre waste transfer station									
	310 S. West Avenue	2.67	Ac							
	Trip Generation[15]			**39**	**4**	**43**	**4**	**39**	**43**	**170**

LSA

Table 4-B - Cumulative Projects Trip Generation

Project No.	Project Name/Land Use/Builder/Applicant	Units	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
	Total Gross Trip Generation		167	195	356	218	198	410	4,799
	Total Pass-By Trips		(9)	(17)	(26)	(11)	(10)	(21)	(349)
	Total Net Trip Generation		**158**	**178**	**330**	**207**	**188**	**389**	**4,450**

Notes:

DU = Dwelling Units; VFP = Vehicle Fueling Positions; TSF = Thousand Square Feet.

[1] Rates based on Land Use 220 - "Multifamily Housing (Low-Rise)" from Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 10th Edition. Setting/Location used is General

[2] Rates based on Land Use 320 - "Motel" from Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. Setting/Location used is General Urban/Suburban.

[3] Rates based on Land Use 151 - "Mini-Warehouse" from Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. Setting/Location used is General Urban/Suburban.

[4] Rates based on Land Use 210 - "Single-Family Detached Housing" from Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. Setting/Location used is General Urban/Suburban.

[5] Rates based on Land Use 820 - "Shopping Center" from Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. Setting/Location used is General Urban/Suburban.

[6] Pass-by rates obtained from the ITE Trip Generation Handbook (3rd Edition) for Land Use 820. A.m. and p.m. peak period pass-by rates for this land use in the ITE handbook are 0 percent and 34 percent respectively. No daily pass-by rates are provided. Therefore, the daily pass-by rate was obtained as an average of the a.m. and p.m. peak period pass-by rates.

[7] Rates are based on WRCOG TUMF Warehosue facilities Trip generation rates.

[8] Rates based on Land Use 934 - "Fast-Food Restaurant with Drive-Through Window" from Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. Setting/Location used is General Urban/Suburban.

[9] Pass-by rates obtained from the ITE Trip Generation Handbook (3rd Edition) for Land Use 934. A.m. and p.m. peak period pass-by rates for this land use in the ITE handbook are 49 percent and 50 percent respectively. No daily pass-by rates are provided. Therefore, the daily pass-by rate was obtained as an average of the a.m. and p.m. peak period pass-by rates.

[10] Rates based on Land Use 933 - "Fast-Food Restaurant without Drive-Through Window" from ITE Trip Generation Manual, 10th Edition. Setting/Location used is General Urban/Suburban.

[11] Pass-by rates obtained from the ITE Trip Generation Handbook (3rd Edition) for Land Use 934. A.m. and p.m. peak period pass-by rates for this land use in the ITE handbook are 49 percent and 50 percent respectively. No daily pass-by rates are provided. Therefore, the daily pass-by rate was obtained as an average of the a.m. and p.m. peak period pass-by rates.

[12] Rates are based on Driveway Survey Counts for Truck Maintenance facilities

[13] Rates based on Land Use 150 - "Warehouse" from Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. Setting/Location used is General Urban/Suburban.

[14] Trip generation and distribution obtained from Proposed Kochergen Transfer facility Traffic Impact Study Prepared by Peter's Engineering Group.

[15] Trip generation Obtained from the Operational Statement for County of Fresno Regional Environmental Complience Center.

LSA

Table 4-C - Near-term Approved and Pending (2023) Daily Traffic Volumes

Roadway	#	Segment	Existing (2021) ADT	2021-23 Growth	Cumulative Projects Trips	Near-term (2023) ADT	Project Trips	Near-term (2023) With Project ADT
Marks Avenue	1	Marks Avenue, between Belmont Avenue and Nielsen Avenue	10,190	408	340	10,938	1,038	11,976
	2	Marks Avenue, between Nielsen Avenue and Ray Johnson Drive	11,554	462	392	12,408	592	13,000
	3	Marks Avenue, between Ray Johnson Drive and SR-180 Westbound Ramps	12,019	481	433	12,933	592	13,525
	4	Marks Avenue, between SR-180 Westbound Ramps and SR-180 Eastbound Ramps	10,651	426	386	11,463	326	11,789
Belmont Avenue	5	Belmont Avenue, between Marks Avenue and Hughes Avenue	7,240	290	375	7,905	310	8,215
Nielsen Avenue	6	Nielsen Avenue, between Marks Avenue and Hughes Avenue	1,614	65	88	1,767	616	2,383
Hughes Avenue	7	Hughes Avenue, between Belmont Avenue and Nielsen Avenue	2,604	104	88	2,796	456	3,252

LSA

Table 4-D - Cumulative Year (2035) Daily Traffic Volumes

Roadway	#	Segment	Cumulative Year (2035) ADT	Project Trips	Cumulative Year (2035) With Project ADT
Marks Avenue	1	Marks Avenue, between Belmont Avenue and Nielsen Avenue	11,651	1,038	12,689
	2	Marks Avenue, between Nielsen Avenue and Ray Johnson Drive	13,244	592	13,836
	3	Marks Avenue, between Ray Johnson Drive and SR-180 Westbound Ramps	13,706	592	14,298
	4	Marks Avenue, between SR-180 Westbound Ramps and SR-180 Eastbound Ramps	13,065	326	13,391
Belmont Avenue	5	Belmont Avenue, between Marks Avenue and Hughes Avenue	8,846	310	9,156
Nielsen Avenue	6	Nielsen Avenue, between Marks Avenue and Hughes Avenue	1,772	616	2,388
Hughes Avenue	7	Hughes Avenue, between Belmont Avenue and Nielsen Avenue	3,531	456	3,987

5.0 PROJECT TRAFFIC

5.1 PROJECT TRIP GENERATION

The trip generation rates from Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10th Edition) Land Use 155 – "High-Cube Fulfillment Center Warehouse" has a small sample size. Recently, Western Riverside Council of Governments (WRCOG) facilitated a Trip Generation Study for such facilities. Therefore, the trip generation for the proposed project was developed using rates from the WRCOG *Transportation Uniform Mitigation Fee (TUMF) High-Cube Warehouse Trip Generation Study* (dated January 29, 2019) prepared by WSP. The study is included within Appendix A. The study provides separate trip generation rates for passenger vehicles, 2-4 axle trucks, and 5+ axle trucks. The truck trips were converted to PCE trips using a PCE factor of 2.0 for 2-4 axle trucks, consistent with HCM recommendations. However, as a conservative approach, a PCE factor of 3.0 was used for 5+ axle trucks, consistent with the practices in several regions within the State. Table 5-A illustrates the project trip generation.

As shown in Table 5-A, the project is estimated to generate 2,458 daily PCE trips, with 137 PCE trips occurring during the a.m. peak hour and 176 PCE trips occurring during the p.m. peak hour.

5.2 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

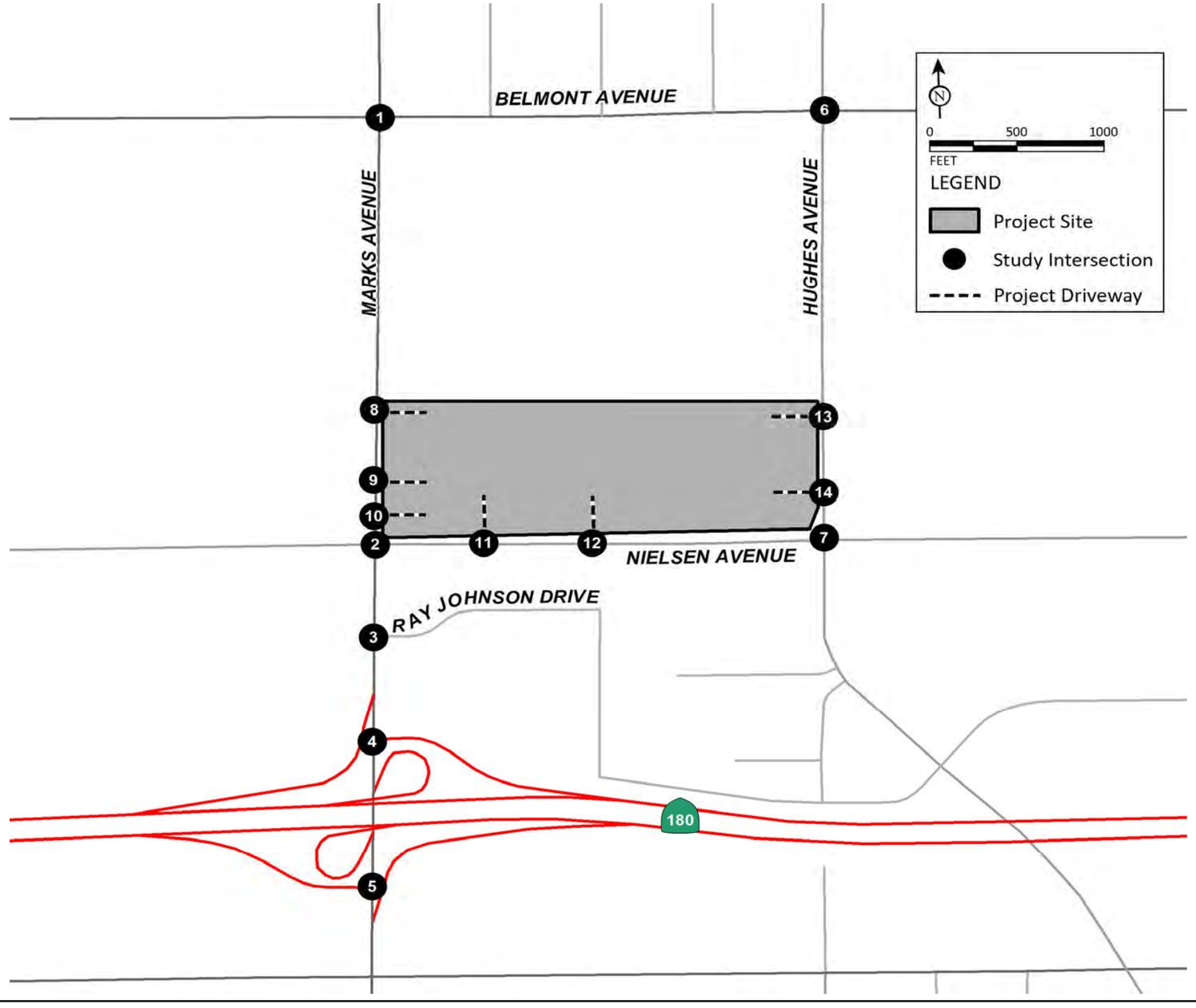
Trip distribution patterns were obtained from select zone model runs of the Fresno COG ABM, which take into account the location of the proposed project in relation to surrounding land uses and the regional roadway network. Separate select zone trip distributions for passenger car and truck trips were obtained from the Fresno COG ABM. The select zone distribution plots are included in Appendix C. However, the model does not account for driveway location, driveway access configuration, or the internal site circulation pattern. Therefore, the distribution was manually adjusted to reflect the project driveway locations and access patterns. Figures 5-1 and 5-2 illustrate the trip distributions at study intersections and project driveways for passenger car and truck trips, respectively.

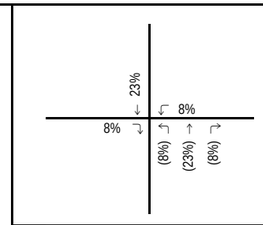
The project trip assignment is the product of the project trip generation and the trip distribution percentages. Figures 5-3 and 5-4 illustrate the trip assignments at study intersections for passenger car and truck PCE trips respectively. Figure 5-5 illustrates the total project PCE trip assignment. It should be noted that these figures also include trip distribution and assignment at all the project driveways. These figures help demonstrate the volume development methodology under plus project conditions with addition of project traffic.

5.3 LIST OF CHAPTER 5.0 FIGURES AND TABLES

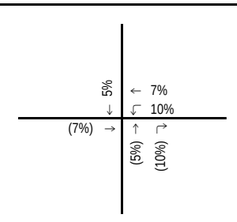
- Figure 5-1: Project Trip Distribution – Passenger Car
- Figure 5-2: Project Trip Distribution – Truck
- Figure 5-3: Project Trip Assignment – Passenger Car
- Figure 5-4: Project Trip Assignment – Truck

- Figure 5-5: Total Project PCE Trip Assignment
- Table 5-A: Project Trip Generation

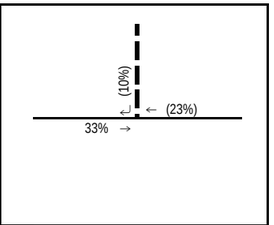




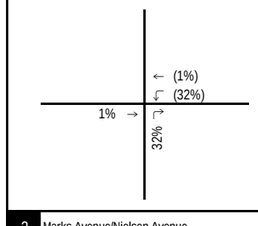
1 Marks Avenue/Belmont Avenue



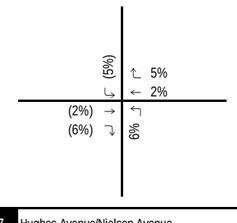
6 Hughes Avenue/Belmont Avenue



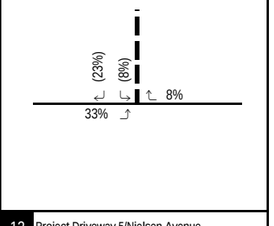
11 Project Driveway 4/Nielsen Avenue



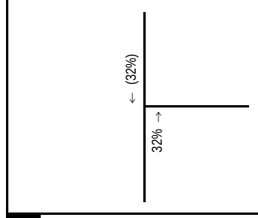
2 Marks Avenue/Nielsen Avenue



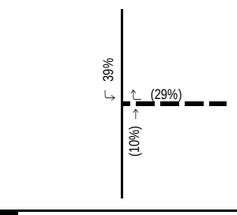
7 Hughes Avenue/Nielsen Avenue



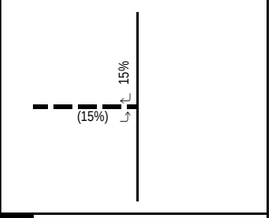
12 Project Driveway 5/Nielsen Avenue



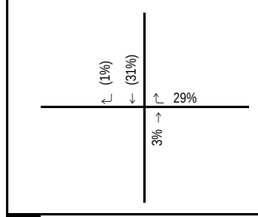
3 Marks Avenue/Ray Johnson Drive



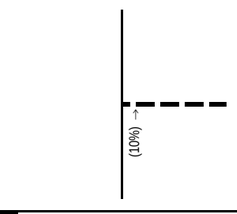
8 Marks Avenue/Project Driveway 1



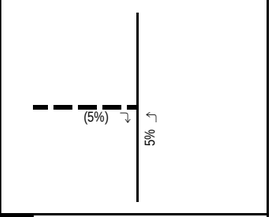
13 Hughes Avenue/Project Driveway 6



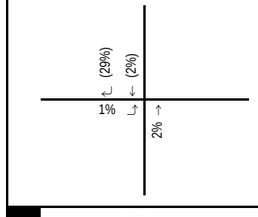
4 Marks Avenue/SR-180 Westbound Ramps



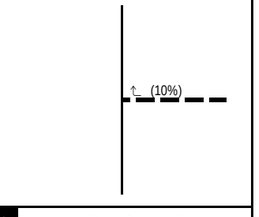
9 Marks Avenue/Project Driveway 2



14 Hughes Avenue/Project Driveway 7



5 Marks Avenue/SR-180 Eastbound Ramps



10 Marks Avenue/Project Driveway 3

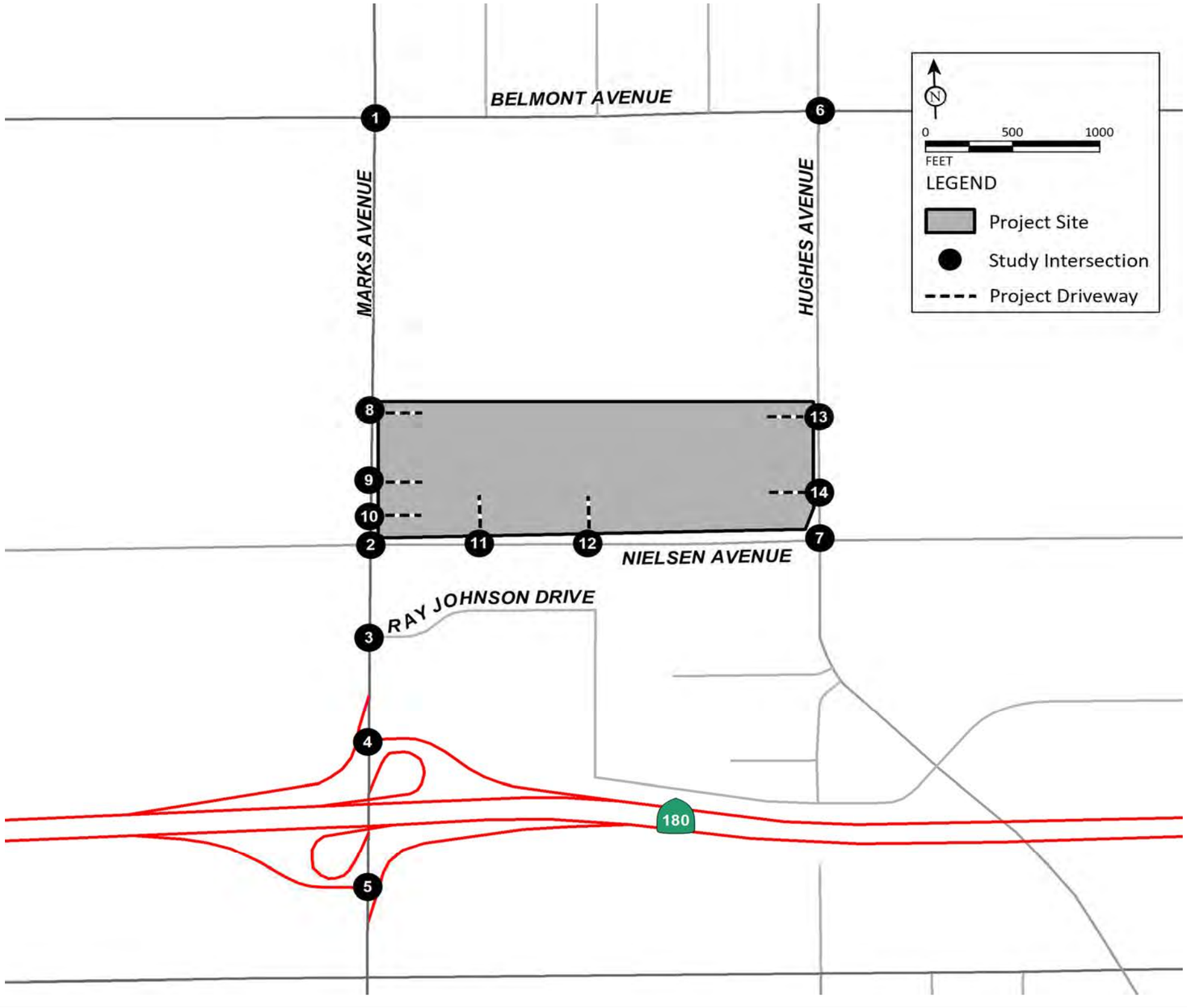
LSA

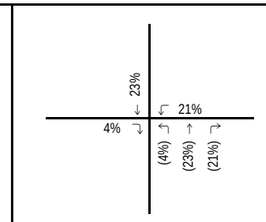
FIGURE 5-1

XX% (YY%)
Inbound (Outbound) Distribution
– – – – Project Driveway

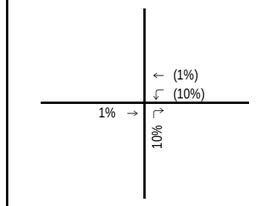
2740 West Nielsen Warehouse Project
Traffic Impact Study
Project Trip Distribution - Passenger Vehicles

R:\SNN2101\TIS\z45_Dist_PV.xlsx (11/22/2021)

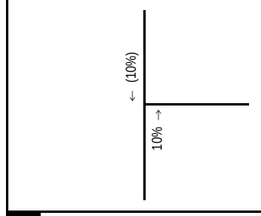




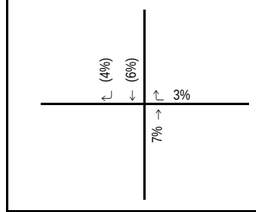
1 Marks Avenue/Belmont Avenue



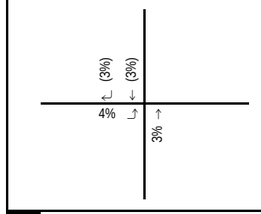
2 Marks Avenue/Nielsen Avenue



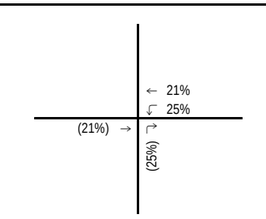
3 Marks Avenue/Ray Johnson Drive



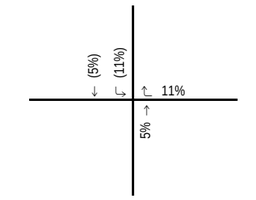
4 Marks Avenue/SR-180 Westbound Ramps



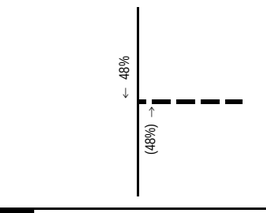
5 Marks Avenue/SR-180 Eastbound Ramps



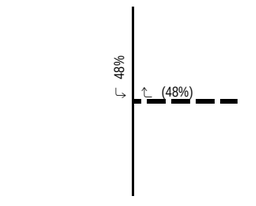
6 Hughes Avenue/Belmont Avenue



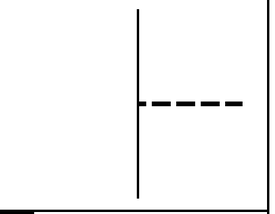
7 Hughes Avenue/Nielsen Avenue



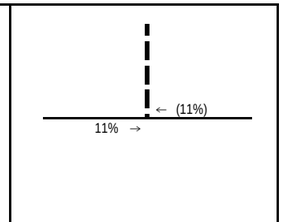
8 Marks Avenue/Project Driveway 1



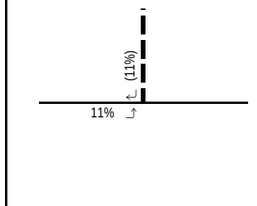
9 Marks Avenue/Project Driveway 2



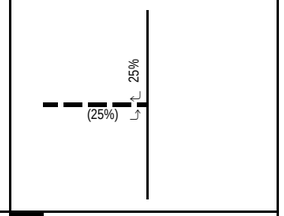
10 Marks Avenue/Project Driveway 3



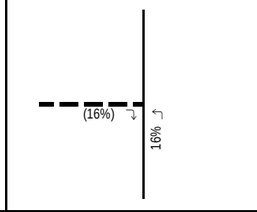
11 Project Driveway 4/Nielsen Avenue



12 Project Driveway 5/Nielsen Avenue



13 Hughes Avenue/Project Driveway 6



14 Hughes Avenue/Project Driveway 7

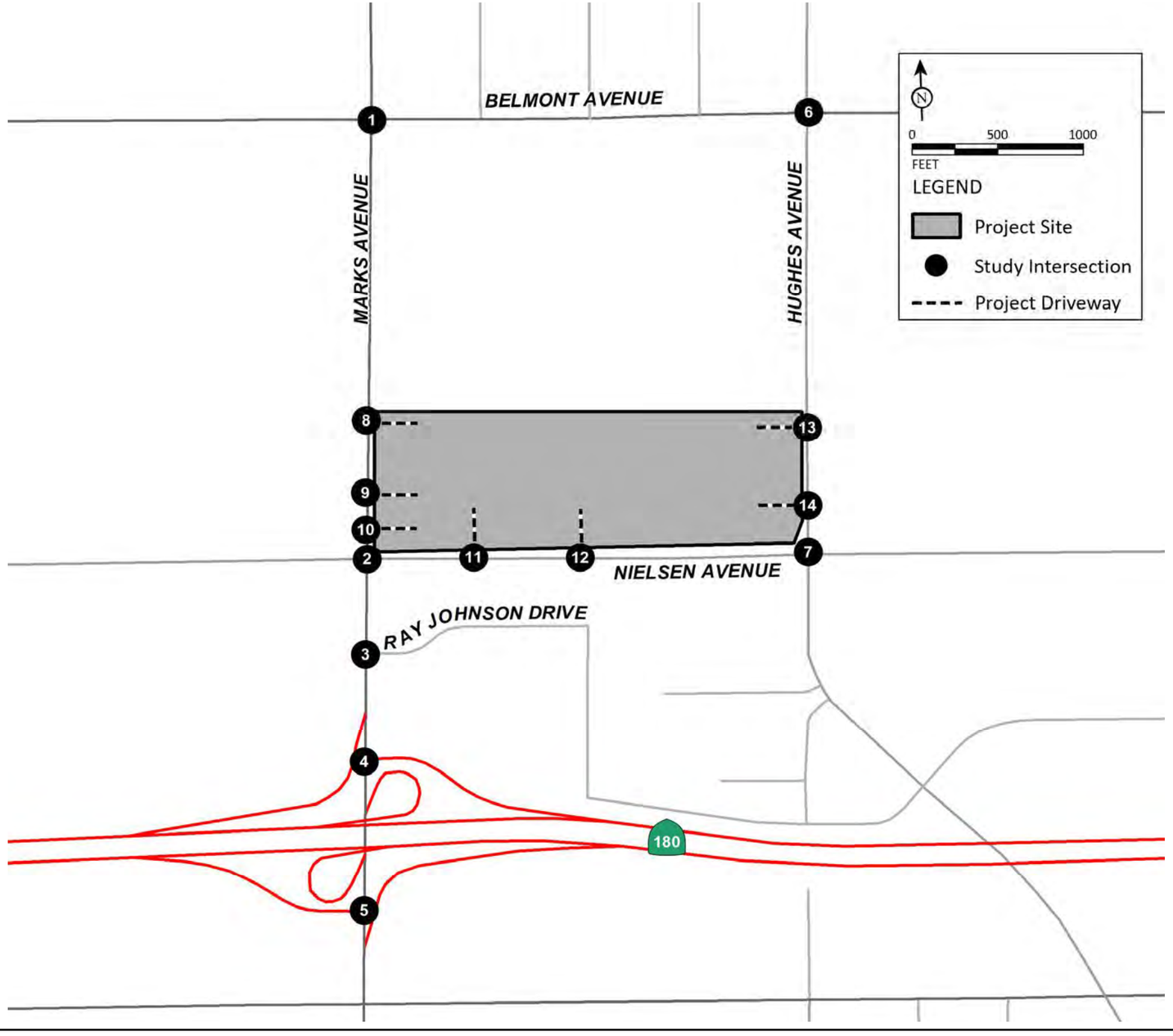
LSA

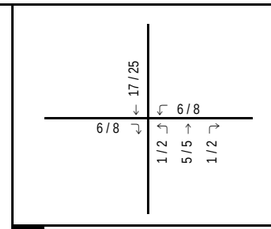
FIGURE 5-2

XX% (YY%)
Inbound (Outbound) Distribution
– – – – Project Driveway

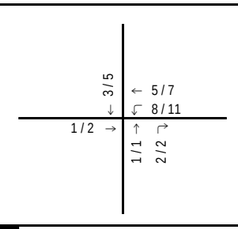
2740 West Nielsen Warehouse Project
Traffic Impact Study
Project Trip Distribution - Trucks

R:\SNN2101\TIS\z45_Dist_TR.xlsx (11/22/2021)

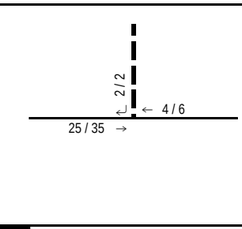




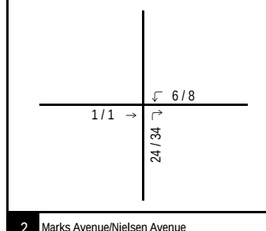
1 Marks Avenue/Belmont Avenue



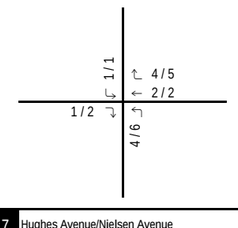
6 Hughes Avenue/Belmont Avenue



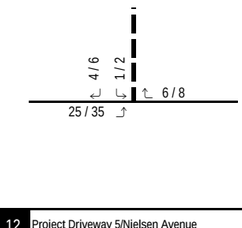
11 Project Driveway 4/Nielsen Avenue



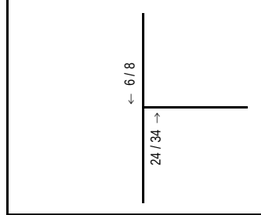
2 Marks Avenue/Nielsen Avenue



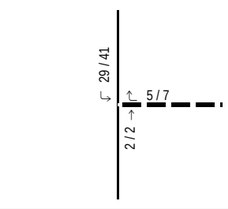
7 Hughes Avenue/Nielsen Avenue



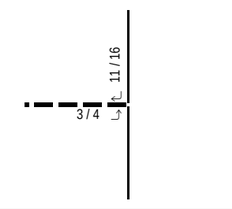
12 Project Driveway 5/Nielsen Avenue



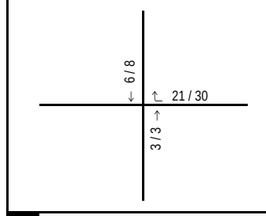
3 Marks Avenue/Ray Johnson Drive



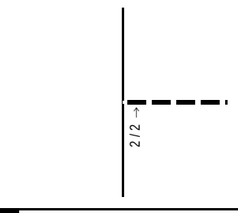
8 Marks Avenue/Project Driveway 1



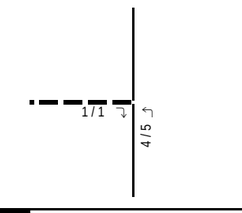
13 Hughes Avenue/Project Driveway 6



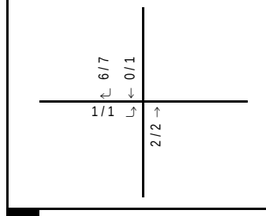
4 Marks Avenue/SR-180 Westbound Ramps



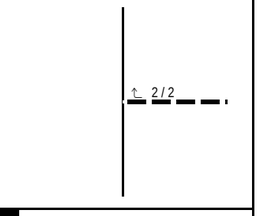
9 Marks Avenue/Project Driveway 2



14 Hughes Avenue/Project Driveway 7



5 Marks Avenue/SR-180 Eastbound Ramps



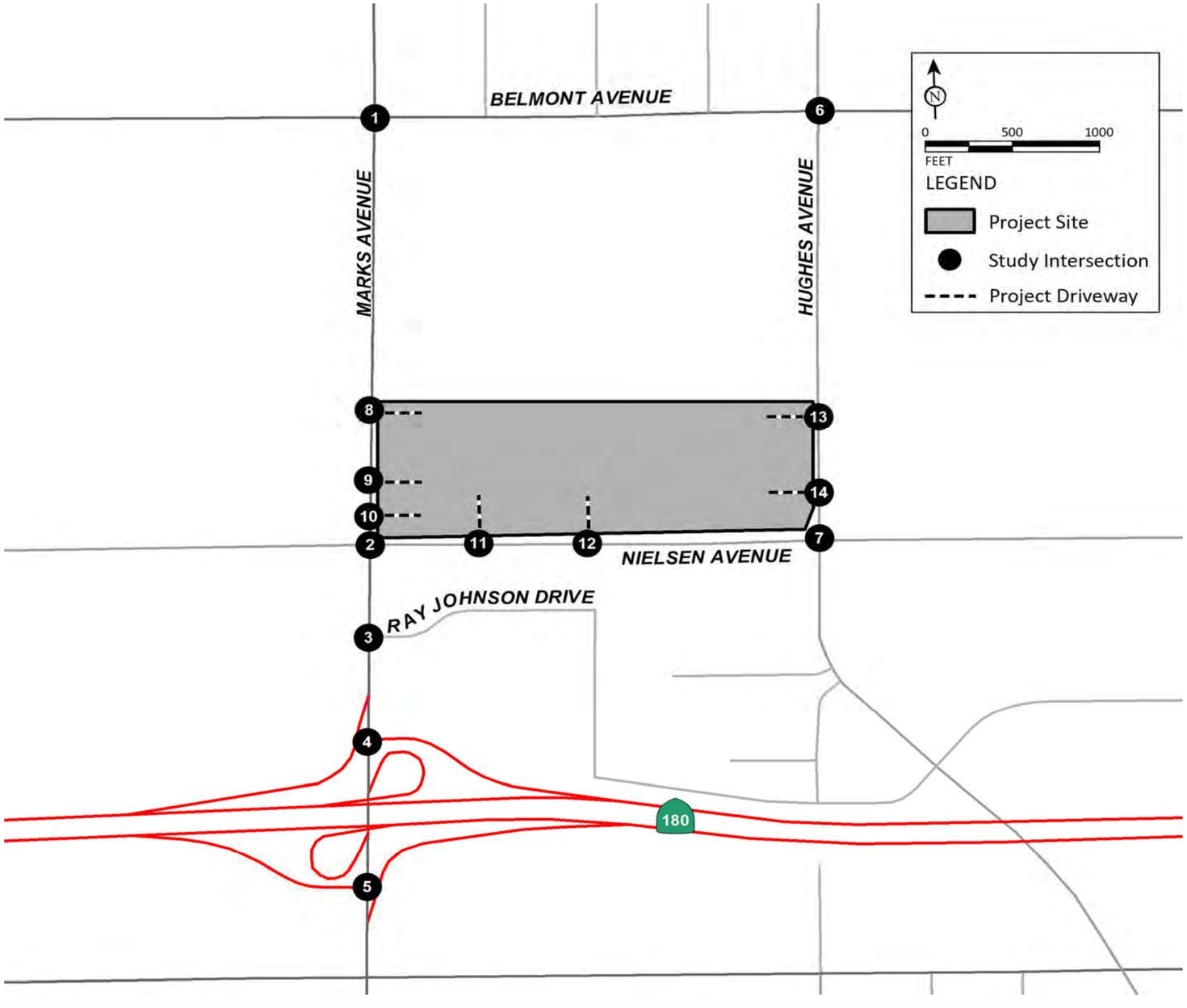
10 Marks Avenue/Project Driveway 3

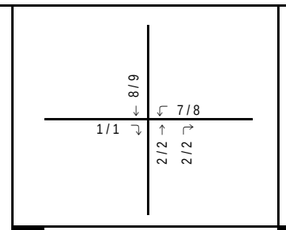
LSA

FIGURE 5-3

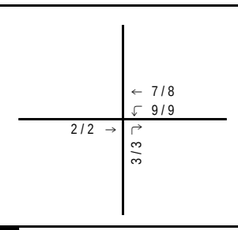
XX / YY
AM / PM Peak Hour Traffic Volumes

2740 West Nielsen Warehouse Project
Traffic Impact Study
Project Trip Assignment - Passenger Vehicles

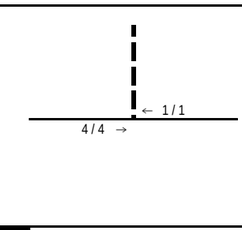




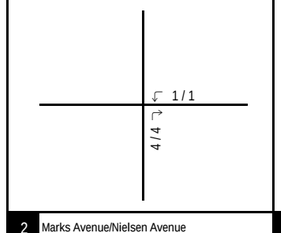
1 Marks Avenue/Belmont Avenue



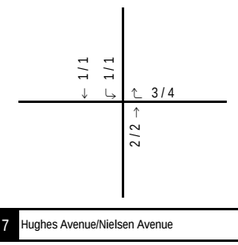
6 Hughes Avenue/Belmont Avenue



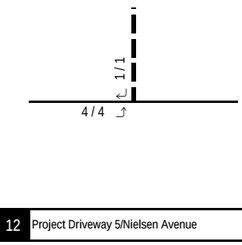
11 Project Driveway 4/Nielsen Avenue



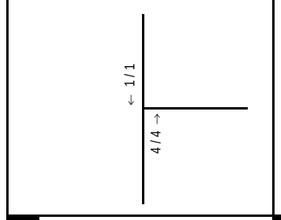
2 Marks Avenue/Nielsen Avenue



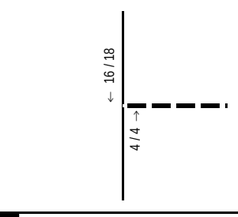
7 Hughes Avenue/Nielsen Avenue



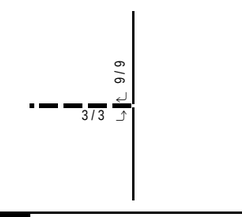
12 Project Driveway 5/Nielsen Avenue



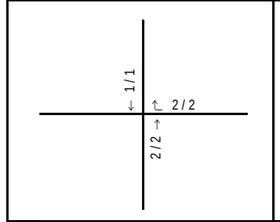
3 Marks Avenue/Ray Johnson Drive



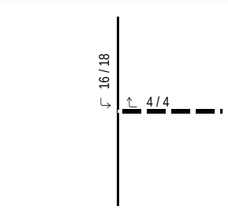
8 Marks Avenue/Project Driveway 1



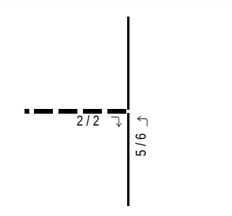
13 Hughes Avenue/Project Driveway 6



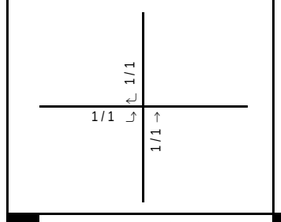
4 Marks Avenue/SR-180 Westbound Ramps



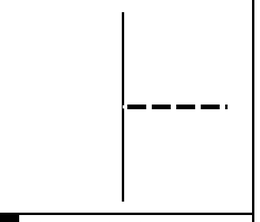
9 Marks Avenue/Project Driveway 2



14 Project Driveway 7/Hughes Avenue



5 Marks Avenue/SR-180 Eastbound Ramps



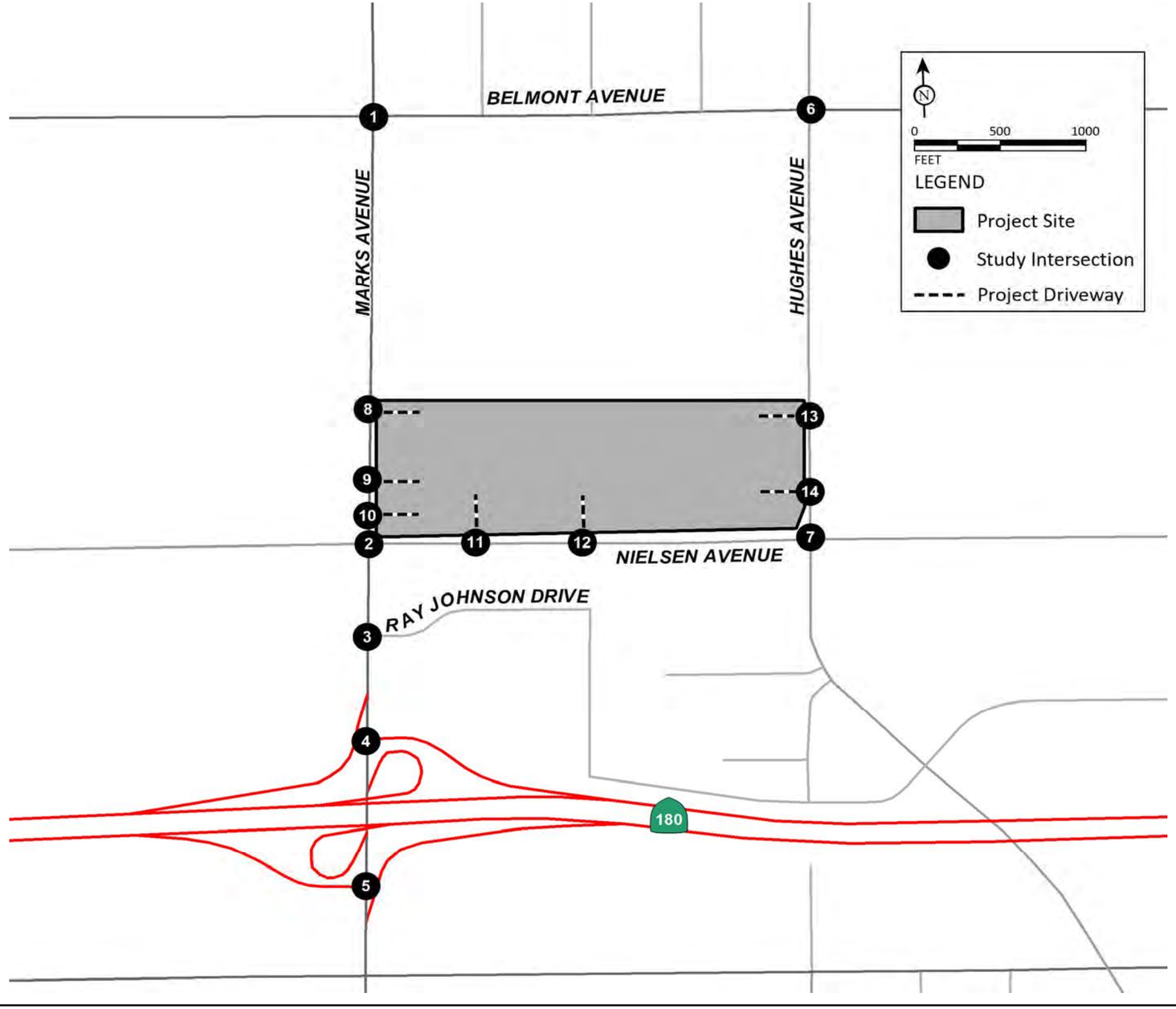
10 Marks Avenue/Project Driveway 3

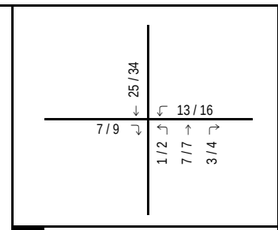
LSA

FIGURE 5-4

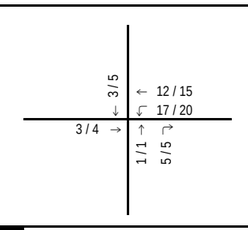
XX / YY
AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study
Project Trip Assignment - Trucks

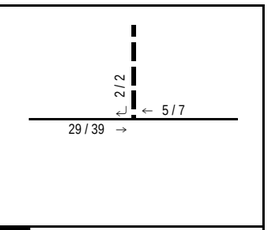




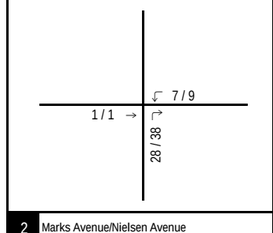
1 Marks Avenue/Belmont Avenue



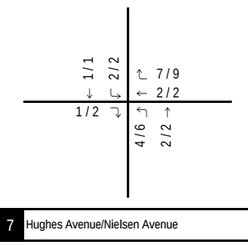
6 Hughes Avenue/Belmont Avenue



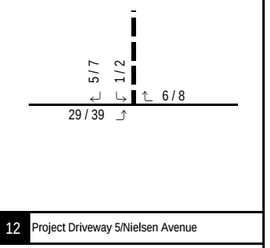
11 Project Driveway 4/Nielsen Avenue



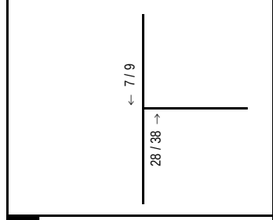
2 Marks Avenue/Nielsen Avenue



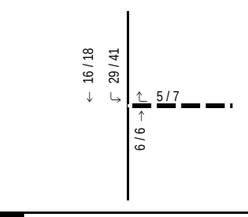
7 Hughes Avenue/Nielsen Avenue



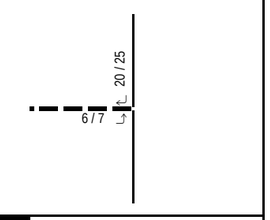
12 Project Driveway 5/Nielsen Avenue



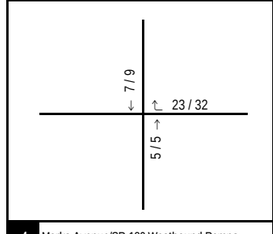
3 Marks Avenue/Ray Johnson Drive



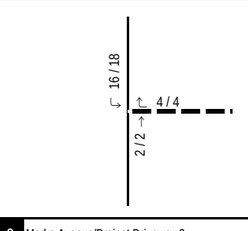
8 Marks Avenue/Project Driveway 1



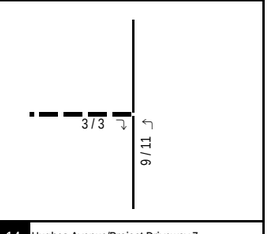
13 Hughes Avenue/Project Driveway 6



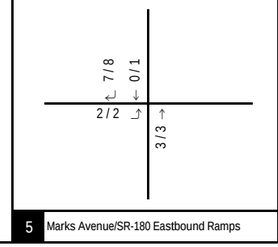
4 Marks Avenue/SR-180 Westbound Ramps



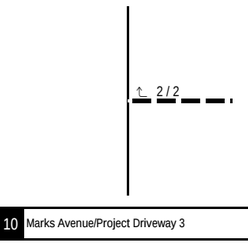
9 Marks Avenue/Project Driveway 2



14 Hughes Avenue/Project Driveway 7



5 Marks Avenue/SR-180 Eastbound Ramps



10 Marks Avenue/Project Driveway 3

LSA

FIGURE 5-5

XX / YY
AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study
Total Project PCE Trip Assignment

LSA

Table 5-A - Project Trip Generation

Land Use		Units	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
High-Cube Fulfillment Center[1,2]	901.438	TSF							
Trips/Unit (Cars)			0.083	0.020	0.103	0.117	0.027	0.144	1.750
Trips/Unit (2-4 Axle Trucks)			0.006	0.002	0.008	0.009	0.002	0.011	0.162
Trips/Unit (5+ Axle Trucks)			0.009	0.002	0.011	0.008	0.002	0.010	0.217
Trips/Unit (Total)			0.098	0.024	0.122	0.134	0.031	0.165	2.129
Trip Generation (Cars)			75	18	93	105	24	129	1,578
Trip Generation (2-4 Axle Trucks)			5	2	7	8	2	10	146
Trip Generation (5+ Axle Trucks)			8	2	10	7	2	9	196
Trip Generation (Total Trucks)			13	4	17	15	4	19	342
Trip Generation (Total)			88	22	110	120	28	148	1,920
Trip Generation (Cars)			75	18	93	105	24	129	1,578
PCE Trip Generation (2-4 Axle Trucks)[3]			10	4	14	16	4	20	292
PCE Trip Generation (5+ Axle Trucks)[3]			24	6	30	21	6	27	588
PCE Trip Generation (Total Trucks)			34	10	44	37	10	47	880
PCE Trip Generation (Total)			109	28	137	142	34	176	2,458

Note:

TSF = Thousand Square Feet

[1] Rates from the Western Riverside Council of Governments (WRCOG) *TUMF High-Cube Warehouse Trip Generation Study*, January 2019, prepared by WSP.

[2] The WRCOG study does not provide in/out splits for the peak hour trip generation. Therefore, in/out splits from Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition) supplement Land Use 155 - "High-Cube Fulfilment Center Warehouse" have been used for obtaining in/out traffic.

[3] A Passenger Car Equivalent (PCE) factor 2.0 has been taken for 2-4 axle trucks based on Highway Capacity Manual (HCM) recommendations. Further, as a conservative approach, a PCE factor of 3.0 is taken, for 5+ axle trucks, consistent with latest practices in numerous California jurisdictions.

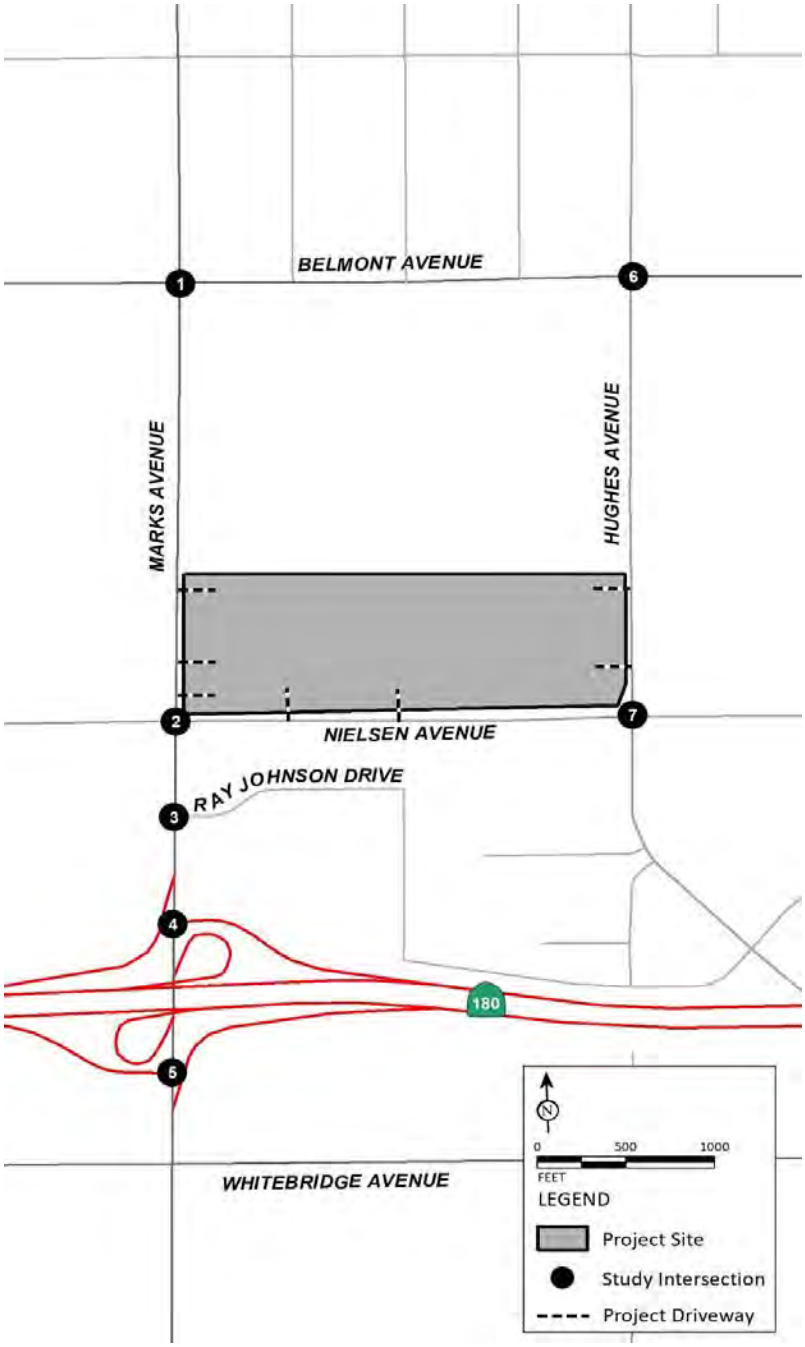
6.0 TRAFFIC VOLUMES FOR WITH PROJECT SCENARIOS

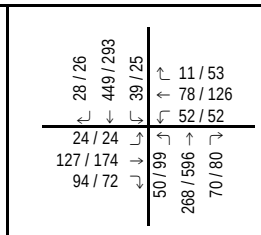
Existing, Near-term approved and pending (2023), and Cumulative year (2035) with project traffic volumes were developed by adding project traffic to the corresponding without project scenarios. Figures 6-1, 6-2, and 6-3 illustrate "with project" peak hour traffic volumes at study intersections under existing, Near-term approved and pending (2023), and Cumulative year (2035) conditions respectively. Previously referenced Tables 4-A, 4-C, and 4-D summarize the "with project" roadway segment daily traffic volumes under existing, Near-term approved and pending (2023), and Cumulative year (2035) conditions.

Detailed volume development worksheets are included in Appendix C.

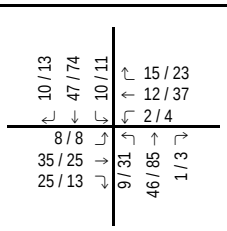
6.1 LIST OF CHAPTER 6.0 FIGURES

- Figure 6-1: Existing with Project Peak Hour Traffic Volumes
- Figure 6-2: Near-term approved and pending (2023) with Project Peak Hour Traffic Volumes
- Figure 6-3: Cumulative Year (2035) with Project Peak Hour Traffic Volumes

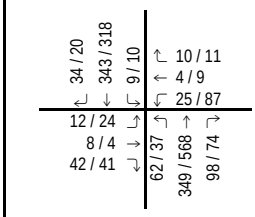




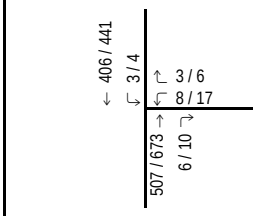
1 Marks Avenue/Belmont Avenue



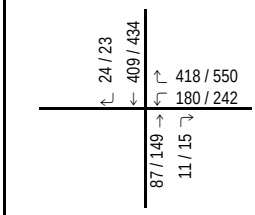
7 Hughes Avenue/Nielsen Avenue



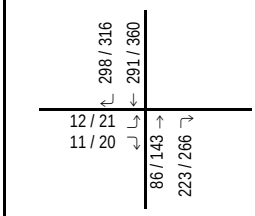
2 Marks Avenue/Nielsen Avenue



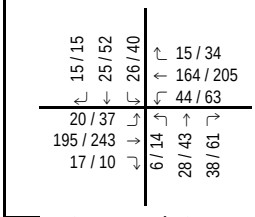
3 Marks Avenue/Ray Johnson Drive



4 Marks Avenue/SR-180 Westbound Ramps



5 Marks Avenue/SR-180 Eastbound Ramps



6 Hughes Avenue/Belmont Avenue

LSA

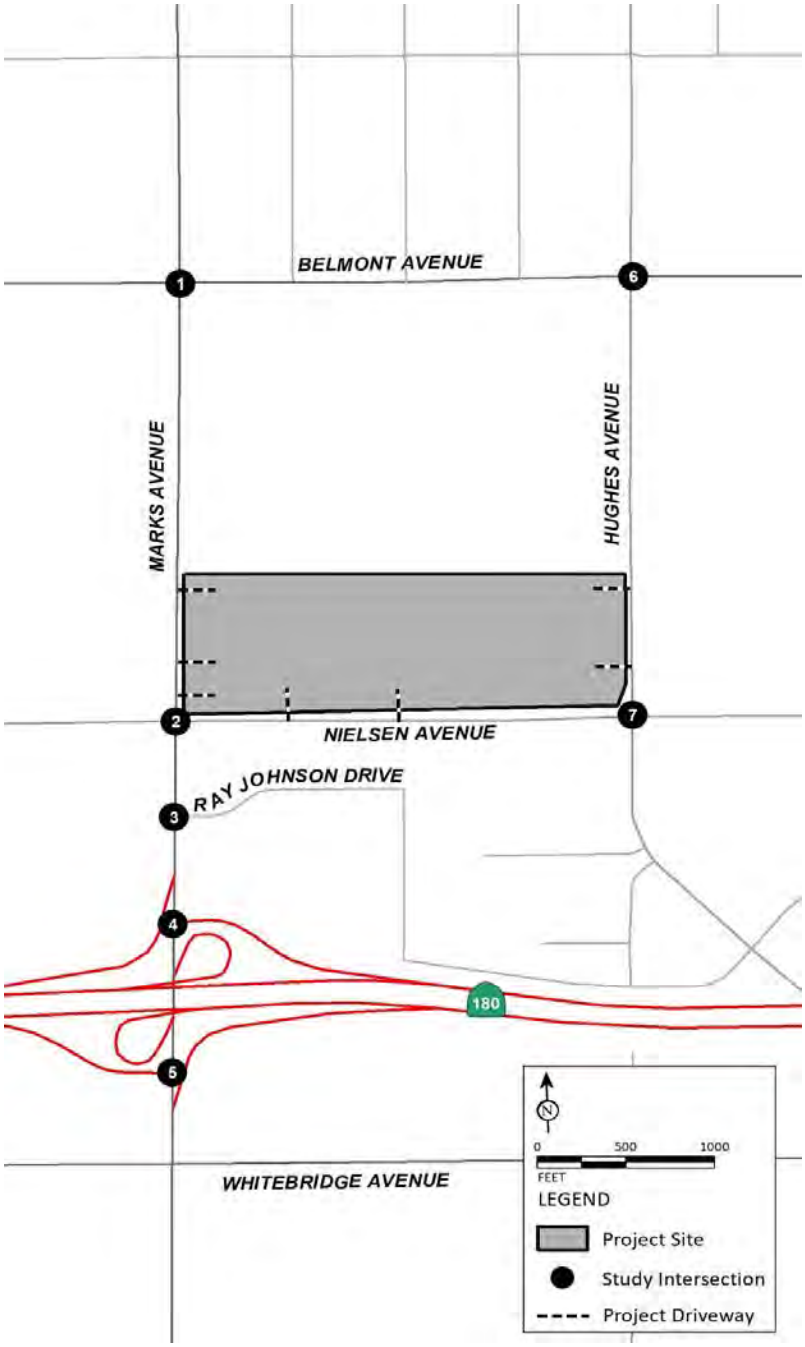
FIGURE 6-1

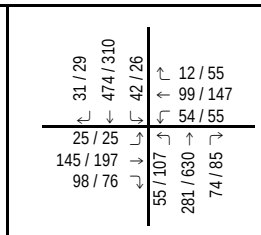
XXX / YYY
AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study

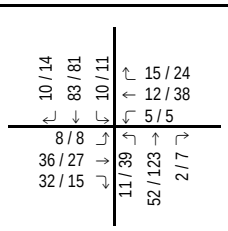
Existing with Project Peak Hour Traffic Volumes

R:\SNN2101\TIS\z30_Vol_Exist_P.xlsx\Figure (11/22/2021)

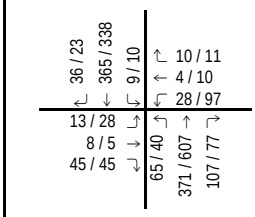




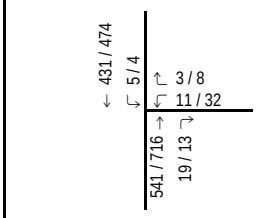
1 Marks Avenue/Belmont Avenue



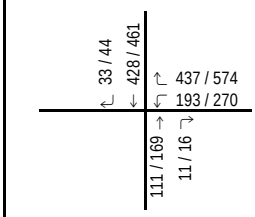
7 Hughes Avenue/Nielsen Avenue



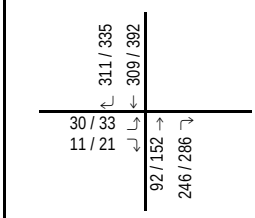
2 Marks Avenue/Nielsen Avenue



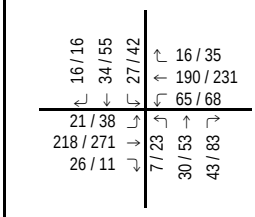
3 Marks Avenue/Ray Johnson Drive



4 Marks Avenue/SR-180 Westbound Ramps



5 Marks Avenue/SR-180 Eastbound Ramps



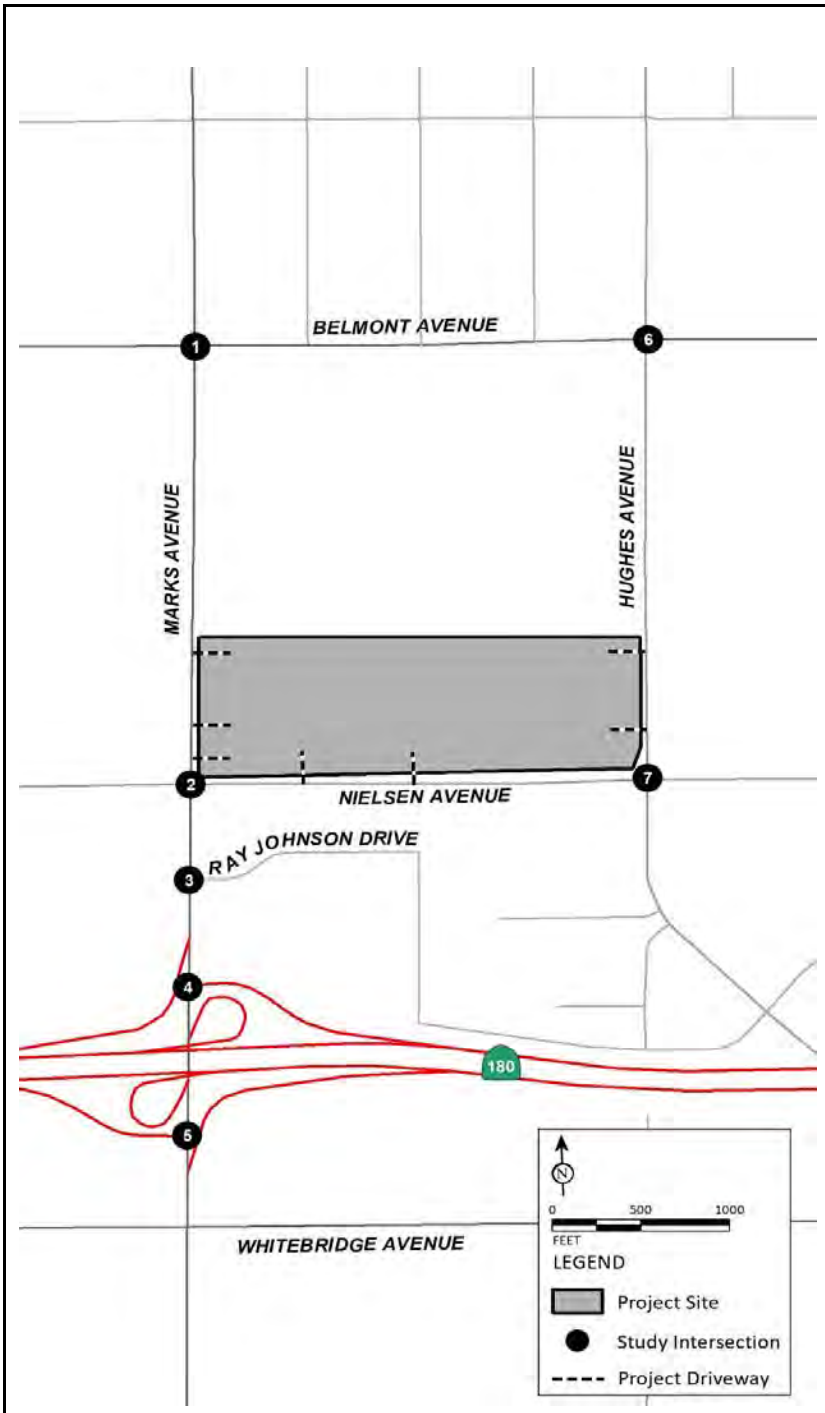
6 Hughes Avenue/Belmont Avenue

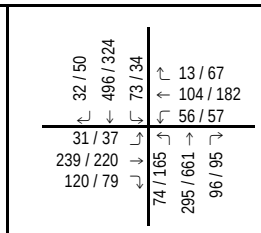
FIGURE 6-2

XXX / YYY
AM / PM Peak Hour Traffic Volumes (In PCE)

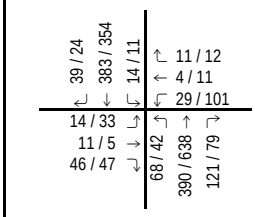
2740 West Nielsen Warehouse Project
Traffic Impact Study

Near-term approved and pending (2023) with Project Peak Hour Traffic Volumes

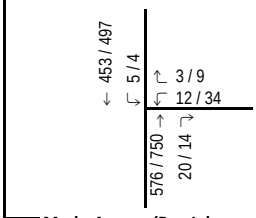




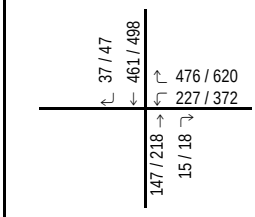
1 Marks Avenue/Belmont Avenue



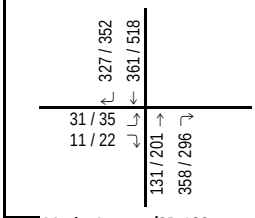
2 Marks Avenue/Nielsen Avenue



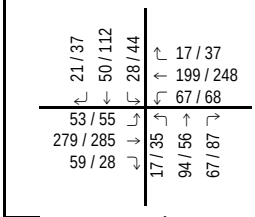
3 Marks Avenue/Ray Johnson Drive



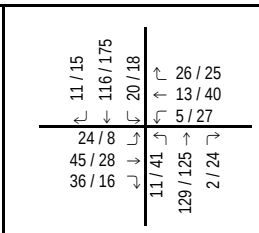
4 Marks Avenue/SR-180 Westbound Ramps



5 Marks Avenue/SR-180 Eastbound Ramps



6 Hughes Avenue/Belmont Avenue



7 Hughes Avenue/Nielsen Avenue

LSA

FIGURE 6-3

XXX / YYY
AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study

Cumulative Year (2035) with Project Peak Hour Traffic Volumes

R:\SNN2101\TIS\z30_Vol_BO_P.xlsx\Figure (11/22/2021)

7.0 INTERSECTION AND ROADWAY SEGMENT LEVELS OF SERVICE

7.1 EXISTING LEVELS OF SERVICE

7.1.1 Study Intersections

Previously referenced Figure 3-1 illustrates existing study intersection geometrics and traffic control. An intersection LOS analysis was conducted for existing conditions using the methodologies previously discussed. Table 7-A summarizes the results of this analysis and shows that all intersections are currently operating at a satisfactory LOS except the following:

- Marks Avenue/Belmont Avenue (p.m. peak hour).

Detailed intersection levels of service worksheets are included in Appendix D.

7.1.2 Roadway Segments

A roadway segment LOS analysis was conducted for existing conditions using the methodologies previously discussed. Table 7-B summarizes the results of this analysis and shows that all roadway segments are currently operating at a satisfactory LOS.

7.2 EXISTING WITH PROJECT LEVELS OF SERVICE

Analysis of the existing with project scenario is provided to identify direct project related operational deficiency if the project were to be built and in operation today. This scenario eliminates the effects of ambient growth and other cumulative projects and deals specifically with operational deficiencies only due to the project traffic.

7.2.1 Study Intersections

An intersection LOS analysis was conducted for existing with project conditions using the methodologies previously discussed. Previously referenced Table 7-A summarizes the results of this analysis and shows that the all intersections are forecast to operate at a satisfactory LOS under existing with project conditions except the following:

- Marks Avenue/Belmont Avenue (p.m. peak hour).

It should be noted that this intersection is already operating at a deficient LOS under existing conditions. As such, the project adds to the existing deficiency.

Detailed intersection levels of service worksheets are included in Appendix D.

7.2.2 Roadway Segments

A roadway segment LOS analysis was conducted for existing with project conditions using the methodologies previously discussed. Previously referenced Table 7-B summarizes the results of this analysis and shows that all roadway segments are forecast to operate at a satisfactory LOS under existing with project conditions.

7.3 NEAR-TERM APPROVED AND PENDING (2023) WITH PROJECT LEVELS OF SERVICE

7.3.1 Study Intersections

An intersection LOS analysis was conducted for Near-term approved and pending (2023) with project conditions using the methodologies previously discussed. Table 7-C summarizes the results of this analysis and shows that all intersections are forecast to operate at a satisfactory LOS under Near-term approved and pending (2023) with project conditions with the exception of the following:

- Marks Avenue/Belmont Avenue (p.m. peak hour).

Detailed intersection levels of service worksheets are included in Appendix D.

7.3.2 Roadway Segments

A roadway segment LOS analysis was conducted for Near-term approved and pending (2023) with project conditions using the methodologies previously discussed. Table 7-D summarizes the results of this analysis and shows that all roadway segments are forecast to operate at a satisfactory LOS.

7.4 CUMULATIVE YEAR (2035) WITHOUT PROJECT LEVELS OF SERVICE

7.4.1 Study Intersections

An intersection LOS analysis was conducted under Cumulative Year (2035) without project conditions using the methodologies previously discussed. Table 7-E summarizes the results of this analysis and shows that all of the study intersections are forecast to operate at a satisfactory LOS under Cumulative Year (2035) without project conditions with the exception of the following:

- Marks Avenue/Belmont Avenue (p.m. peak hour).

Detailed intersection levels of service worksheets are included in Appendix D.

7.4.2 Roadway Segments

A roadway segment LOS analysis was conducted for Cumulative Year (2035) without project conditions using the methodologies previously discussed. Table 7-F summarizes the results of this analysis and shows that all roadway segments are forecast to operate at a satisfactory LOS.

7.4 CUMULATIVE YEAR (2035) WITH PROJECT LEVELS OF SERVICE

7.4.1 Study Intersections

An intersection LOS analysis was conducted under Cumulative Year (2035) with project conditions using the methodologies previously discussed. Table 7-E summarizes the results of this analysis and shows that all of the study intersections are forecast to operate at a satisfactory LOS under Cumulative Year (2035) with project conditions with the exception of the following:

- Marks Avenue/Belmont Avenue (p.m. peak hour).

It should be noted that this intersection is forecast to operate at a deficient LOS under Cumulative Year (2035) without project conditions. As such, the project adds to the forecasted deficiency.

Detailed intersection levels of service worksheets are included in Appendix D.

7.4.2 Roadway Segments

A roadway segment LOS analysis was conducted for Cumulative Year (2035) with project conditions using the methodologies previously discussed. Table 7-F summarizes the results of this analysis and shows that all roadway segments are forecast to operate at a satisfactory LOS.

7.5 LIST OF CHAPTER 7.0 TABLES

- Table 7-A: Existing Intersection Levels of Service
- Table 7-B: Existing Roadway Segment Levels of Service
- Table 7-C: Near term approved and pending (2023) with project Intersection Levels of Service
- Table 7-D: Near term approved and pending (2023) with project Roadway Segment Levels of Service
- Table 7-E: Cumulative Year (2035) Intersection Levels of Service
- Table 7-F: Cumulative Year (2035)Roadway Segment Levels of Service

LSA

Table 7-A - Existing Intersection Levels of Service

Intersection	Jurisdiction	Control	Without Project					With Project				
			AM Peak Hour		PM Peak Hour			AM Peak Hour		PM Peak Hour		
			Delay (sec.)	LOS	Delay (sec.)	LOS		Delay (sec.)	LOS	Delay (sec.)	LOS	
1 . Marks Avenue/Belmont Avenue	City of Fresno	AWSC	18.7	C	95.3	F	*	20.9	C	>100	F	*
2 . Marks Avenue/Nielsen Avenue	City of Fresno	Signal	12.2	B	12.7	B		12.2	B	12.9	B	
3 . Marks Avenue/Ray Johnson Drive	City of Fresno	Signal	2.3	A	3.0	A		2.4	A	3.0	A	
4 . Marks Avenue/SR-180 Westbound Ramps	CALTRANS	Signal	19.1	B	19.2	B		19.1	B	19.3	B	
5 . Marks Avenue/SR-180 Eastbound Ramps	CALTRANS	Signal	4.1	A	5.1	A		4.2	A	5.2	A	
6 . Hughes Avenue/Belmont Avenue	City of Fresno	AWSC	8.8	A	10.4	B		8.9	A	10.8	B	
7 . Hughes Avenue/Nielsen Avenue	City of Fresno	AWSC	7.9	A	8.5	A		7.9	A	8.7	A	

Notes:

AWSC = All-Way Stop Control

Delay = Average control delay in seconds.

LOS = Level of Service

* Exceeds LOS Standard

LSA

Table 7-B - Existing Roadway Segment Levels of Service

Roadway Segment	Functional Classification[1]	Roadway Capacity[2]	Without Project		With Project	
			Daily Volume	LOS	Daily Volume	LOS
Segments on Marks Avenue						
1 . Marks Avenue, between Belmont Avenue and Nielsen Avenue	4 Lane Arterial (Divided)	35,820	10,190	C	11,228	C
2 . Marks Avenue, between Nielsen Avenue and Ray Johnson Drive	4 Lane Arterial (Divided)	35,820	11,554	C	12,146	C
3 . Marks Avenue, between Ray Johnson Drive and SR-180 Westbound Ramps	4 Lane Arterial (Divided)	35,820	12,019	C	12,611	C
4 . Marks Avenue, between SR-180 Westbound Ramps and SR-180 Eastbound Ramps	4 Lane Arterial (Divided)	35,820	10,651	C	10,977	C
Segments on Belmont Avenue						
5 Belmont Avenue, between Marks Avenue and Hughes Avenue	4 Lane Collector (Undivided)	31,860	7,240	C	7,550	C
Segments on Nielsen Avenue						
6 . Nielsen Avenue, between Marks Avenue and Hughes Avenue	2 Lane Collector	15,930	1,614	C	2,230	C
Segments on Hughes Avenue						
7 . Hughes Avenue, between Belmont Avenue and Nielsen Avenue	2 Lane Collector	15,930	2,604	C	3,060	C

Notes:

LOS = Level of Service.

[1] Functional Classification obtained from the Figure MT-1 Major Street Circulayion Diagram, City of Fresno 2014 General Plan.

[2] Roadway Capacity obtained from Table 1, Generalized Annual averge Daily Volues for Florida's Urbanized Areas. Since the facilities ate Non-State, a 10% reduction factor was applied for the roadway capacities.

LSA

Table 7-C - Near-Term approved and pending with Project Intersection Levels of Service

Intersection	Jurisdiction	Control	With Project				
			AM Peak Hour		PM Peak Hour		
			Delay (sec.)	LOS	Delay (sec.)	LOS	
1 . Marks Avenue/Belmont Avenue	City of Fresno	AWSC	26.2	D	>100	F	*
2 . Marks Avenue/Nielsen Avenue	City of Fresno	Signal	12.3	B	13.3	B	
3 . Marks Avenue/Ray Johnson Drive	City of Fresno	Signal	2.7	A	3.9	A	
4 . Marks Avenue/SR-180 Westbound Ramps	CALTRANS	Signal	19.0	B	19.2	B	
5 . Marks Avenue/SR-180 Eastbound Ramps	CALTRANS	Signal	5.7	A	5.8	A	
6 . Hughes Avenue/Belmont Avenue	City of Fresno	AWSC	9.3	A	11.9	B	
7 . Hughes Avenue/Nielsen Avenue	City of Fresno	AWSC	8.3	A	9.2	A	

Notes:

AWSC = All-Way Stop Control

Delay = Average control delay in seconds.

LOS = Level of Service

* Exceeds LOS Standard

No delay was reported for Intersection 9 (Project Truck Driveway 1/24th Street) because there are no conflicting movements.

LSA

Table 7-D - Near-term Approved and Pending (2023) Roadway Segment Levels of Service

Roadway Segment	Functional Classification[1]	Roadway Capacity[2]	With Project	
			Daily Volume	LOS
Segments on Marks Avenue				
1 . Marks Avenue, between Belmont Avenue and Nielsen Avenue	4 Lane Arterial (Divided)	35,820	11,976	C
2 . Marks Avenue, between Nielsen Avenue and Ray Johnson Drive	4 Lane Arterial (Divided)	35,820	13,000	C
3 . Marks Avenue, between Ray Johnson Drive and SR-180 Westbound Ramps	4 Lane Arterial (Divided)	35,820	13,525	C
4 . Marks Avenue, between SR-180 Westbound Ramps and SR-180 Eastbound Ramps	4 Lane Arterial (Divided)	35,820	11,789	C
Segments on Belmont Avenue				
5 Belmont Avenue, between Marks Avenue and Hughes Avenue	4 Lane Collector (Undivided)	31,860	8,215	C
Segments on Nielsen Avenue				
6 . Nielsen Avenue, between Marks Avenue and Hughes Avenue	2 Lane Collector	15,930	2,383	C
Segments on Hughes Avenue				
7 . Hughes Avenue, between Belmont Avenue and Nielsen Avenue	2 Lane Collector	15,930	3,252	C

Notes:

LOS = Level of Service.

[1] Functional Classification obtained from the Figure MT-1 Major Street Circulayion Diagram, City of Fresno 2014 General Plan.

[2] Roadway Capacity obtained from Table 1, Generalized Annual averge Daily Volues for Florida's Urbanized Areas. Since the facilities ate Non-State, a 10% reduction factor was applied for the roadway capacities.

LSA

Table 7-E - Cumulative Year (2035) Intersection Levels of Service

Intersection	Jurisdiction	Control	Without Project					With Project				
			AM Peak Hour		PM Peak Hour			AM Peak Hour		PM Peak Hour		
			Delay (sec.)	LOS	Delay (sec.)	LOS		Delay (sec.)	LOS	Delay (sec.)	LOS	
1 . Marks Avenue/Belmont Avenue	City of Fresno	AWSC	21.1	C	>100	F	*	23.6	C	>100	F	*
2 . Marks Avenue/Nielsen Avenue	City of Fresno	Signal	12.2	B	13.4	B		12.3	B	13.5	B	
3 . Marks Avenue/Ray Johnson Drive	City of Fresno	Signal	2.6	A	4.0	A		2.6	A	4.0	A	
4 . Marks Avenue/SR-180 Westbound Ramps	CALTRANS	Signal	18.9	B	19.0	B		18.9	B	19.0	B	
5 . Marks Avenue/SR-180 Eastbound Ramps	CALTRANS	Signal	5.2	A	5.4	A		5.3	A	5.5	A	
6 . Hughes Avenue/Belmont Avenue	City of Fresno	TWSC	10.6	B	12.0	B		10.8	B	12.3	B	
7 . Hughes Avenue/Nielsen Avenue	City of Fresno	AWSC	8.9	A	9.5	A		9.0	A	9.7	A	

Notes:

AWSC = All-Way Stop Control

Delay = Average control delay in seconds.

LOS = Level of Service

* Exceeds LOS Standard

No delay was reported for Intersection 9 (Project Truck Driveway 1/24th Street) because there are no conflicting movements.

LSA

Table 7-F - Cumulative Year (2035) Segment Levels of Service

Roadway Segment	Functional Classification[1]	Roadway Capacity[2]	Without Project		With Project	
			Daily Volume	LOS	Daily Volume	LOS
Segments on Marks Avenue						
1 . Marks Avenue, between Belmont Avenue and Nielsen Avenue	4 Lane Arterial (Divided)	35,820	11,651	C	12,689	C
2 . Marks Avenue, between Nielsen Avenue and Ray Johnson Drive	4 Lane Arterial (Divided)	35,820	13,244	C	13,836	C
3 . Marks Avenue, between Ray Johnson Drive and SR-180 Westbound Ramps	4 Lane Arterial (Divided)	35,820	13,706	C	14,298	C
4 . Marks Avenue, between SR-180 Westbound Ramps and SR-180 Eastbound Ramps	4 Lane Arterial (Divided)	35,820	13,065	C	13,391	C
Segments on Belmont Avenue						
5 Belmont Avenue, between Marks Avenue and Hughes Avenue	4 Lane Collector (Undivided)	31,860	8,846	C	9,156	C
Segments on Nielsen Avenue						
6 . Nielsen Avenue, between Marks Avenue and Hughes Avenue	2 Lane Collector	15,930	1,772	C	2,388	C
Segments on Hughes Avenue						
7 . Hughes Avenue, between Belmont Avenue and Nielsen Avenue	2 Lane Collector	15,930	3,531	C	3,987	C

Notes:

LOS = Level of Service.

[1] Functional Classification obtained from the Figure MT-1 Major Street Circulayion Diagram, City of Fresno 2014 General Plan.

[2] Roadway Capacity obtained from Table 1, Generalized Annual averge Daily Volues for Florida's Urbanized Areas. Since the facilities ate Non-State, a 10% reduction factor was applied for the roadway capacities.

8.0 QUEUING ANALYSIS

As recommended by the City staff during the scoping agreement process, a queuing analysis was performed at the study intersections for all analysis scenarios.

Table 8-A lists the available turn-pocket storage lengths and summarize the 95th percentile back-of-queue lengths at the study intersections under existing, Near-term approved and pending with project, and Cumulative Year (2035) conditions. The queues for signalized intersections have been reported from Synchro, whereas queues at unsignalized intersections were reported from Simtraffic. As shown in Table 8-A, queues for some of the movements are projected to exceed the existing available turn-pocket storage lengths under existing, Near-term approved and pending with project, and Cumulative Year (2035) for the intersection of Marks Avenue/Belmont Avenue.

Based on the project location, majority of the project traffic will be using the intersections of Marks Avenue/Nielsen Avenue, Hughes Avenue/Belmont Avenue, and Hughes Avenue/Nielsen Avenue. However, as summarized before, the project will not result in creating any inadequacy of turn pocket storage lengths at these intersections.

Detailed queuing analysis worksheets are included in Appendix E.

8.1 LIST OF CHAPTER 8.0 TABLES

- Table 8-A: Intersection Queuing Analysis

LSA

Table 8-A - Intersection Queuing Analysis

Intersection	Movement	Storage Length[1] (ft/ln)	Queue Lengths[2]									
			Existing				Near Term		Cumulative (2035)			
			No Project		With Project		With Project		No Project		With Project	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1. Marks Avenue/Belmont Avenue	**NBL**	230	55	160	50	**335**	60	**470**	65	**480**	65	**475**
	NBR	375	60	90	50	60	50	**450**	60	**590**	55	**1290**
	SBL	135	40	50	40	40	40	40	50	40	55	70
	SBR	50	**55**	**140**	50	**110**	**60**	**75**	**80**	50	**140**	20
	EBL	105	40	45	45	50	40	40	45	35	45	60
	WBL	250	40	80	40	55	55	50	45	60	50	55
	WBR	125	30	45	20	35	30	45	20	50	25	50
2. Marks Avenue/Nielsen Avenue	**NBL**	240	85	60	85	60	90	65	95	65	95	65
	NBR	215	15	5	15	20	15	20	20	5	20	20
	SBL	245	25	10	25	25	25	25	35	25	35	25
	SBR	215	5	0	5	0	5	0	5	0	5	0
	EBL	55	30	40	30	40	30	45	30	50	30	50
	EBR	55	15	15	15	15	20	15	20	20	20	20
	WBL	215	35	95	45	105	50	115	40	110	50	115
	WBR	210	0	0	0	0	0	0	0	0	0	0
3. Marks Avenue/Ray Johnson Drive	**SBL**	110	10	15	10	15	15	15	15	15	15	15
	WBL	75	20	30	20	30	20	45	25	45	25	45
	WBR	75	10	15	10	15	10	15	10	15	10	15
4. Marks Avenue/SR-180 Westbound Ramps	**NBR**	475	0	0	0	0	0	0	0	0	0	0
	WBL	340	85	105	85	105	85	115	105	145	105	145
	WBR	205	10	25	5	25	5	25	40	40	40	40
5. Marks Avenue/SR-180 Eastbound Ramps	**NBR**	270	0	0	0	0	0	0	0	0	0	0
	SBR	460	0	0	0	0	0	0	0	0	0	0
	EBL	520	20	25	20	25	35	35	35	35	35	35
	EBR	520	0	0	0	0	0	0	0	0	0	0
6. Hughes Avenue/Belmont Avenue	**EBL**	145	45	45	40	50	45	50	50	50	50	50
	WBL	165	45	55	50	40	50	60	50	45	50	45
7. Hughes Avenue/Nielsen Avenue	**SBR**	100	30	30	30	40	25	35	40	35	25	35
	EBL	205	30	15	25	20	25	30	45	20	35	15
	WBL	205	0	25	15	15	25	15	20	45	35	45

Notes:

ft/ln = feet per lane

EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound

L = Left; R = Right

Bold = Queue exceeds available storage.

[1] Storage length for all movements obtained from Google Earth measurements.

[2] All queues reported are 95th percentile queues. All queues for signalized intersections have been reported from Synchro. Queues for unsignalized intersections have been reported from Simtraffic.

9.0 CALTRANS SCENARIO ANALYSIS

Based on the comments received from Caltrans during the scoping agreement process, the Marks Avenue/SR-180 interchange using a different project trip distribution compared to what was approved by the City during the scoping agreement process. This revised project trip distribution would result in potentially greater impacts at the interchange and therefore would present a worst case scenario analysis of the interchange. To conduct this analysis, Caltrans staff recommended to distribute 60% of the project traffic through the ramps for this evaluation. Based on Caltrans staff recommendation, this analysis was conducted for the following two scenarios:

- Near-term approved and pending with project Scenario; and
- Cumulative Year (2035) with project Scenario.

9.1 STUDY AREA

9.1.1 Study Intersections

The following intersections were evaluated for both scenarios included above:

3. Marks Avenue/Ray Johnson Drive (City of Fresno);
4. Marks Avenue/SR-180 Westbound Ramps (Caltrans);
5. Marks Avenue/SR-180 Eastbound Ramps (Caltrans);

9.1.2 Freeway Basic and Merge/Diverge Study Area

The following freeway facilities were included for the worst case scenario analysis:

SR-180 Eastbound

1. West of Marks Avenue Off-Ramp (Basic);
2. Marks Avenue Off-Ramp (Diverge);
3. Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp (Basic);
4. Marks Avenue Loop-On Ramp (Merge);
5. Between Marks Avenue Loop-On Ramp and Marks Avenue Slip-On Ramp (Basic);
6. Marks Avenue Slip-On Ramp (Merge); and
7. East of Marks Avenue (Basic).

SR-180 Westbound

8. East of Marks Avenue (Basic);
9. Marks Avenue Off-Ramp(Diverge);
10. Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp (Basic);

11. Marks Avenue Loop-On Ramp (Merge);
12. Between Marks Avenue Loop-On Ramp and Marks Avenue Slip-On Ramp (Basic);
13. Marks Avenue Slip-On Ramp (Merge); and
14. West of Marks Avenue (Basic).

9.2 VOLUME DEVELOPMENT AND ANALYSIS METHODOLOGY

9.2.1 Intersections

Figures 9-1 and Figures 9-2 illustrates the alternate project passenger vehicle and truck trip distribution at the study intersections included in this scenario. Figures 9-3 and 9-4 illustrates the corresponding project trip assignment. Figure 9-5 illustrates the total project trip assignment at the study intersections.

For the study intersections, project trips for this alternative distribution were added to the corresponding no project traffic volumes developed as discussed in Chapter 4 to develop this worst case scenario with project traffic volumes at the study intersections. Figures 9-6 illustrates the traffic volumes for Near-term approved and pending with project conditions. Figure 9-7 illustrates the corresponding traffic volume for Cumulative Year (2035) with project conditions.

9.2.2 Freeway Mainline and Merge/Diverge Segments

For freeway segments, existing freeway segment bidirectional volumes was developed using the Annual Average Daily Traffic (AADT) volume data published by Caltrans in 2019. A 2.6 percent per annum growth rate was applied to the volumes to develop volumes for Near-term approved and pending (2023) conditions. This growth rate was obtained from the Fresno COG ABM. Freeway traffic volumes for Cumulative Year (2035) was developed using forecast volumes obtained from the latest version of the Fresno COG ABM and by applying the Fresno COG recommended post-processing methodologies. For ramp influence areas, vehicles entering and exiting a ramp are based on peak hour turning movement counts developed for the study intersections.

Table 9-A summarizes the freeway traffic volumes for the Near-term approved and pending (2023) with project conditions. Table 9-B summarizes the corresponding volumes for Cumulative Year (2035) with project conditions.

9.3 NEAR-TERM APPROVED AND PENDING (2023) WITH PROJECT CONDITIONS LOS ANALYSIS

9.3.1 Study Intersections

An intersection LOS analysis was conducted for Near-term approved and pending (2023) with project conditions using the methodologies previously discussed. Table 9-C summarizes the results of this analysis and shows that all intersections are forecast to operate at a satisfactory LOS under near term approved and pending (2023) with project conditions.

Detailed intersection levels of service worksheets are included in Appendix D.

9.3.2 Freeway Segments

A freeway segment LOS analysis was conducted for Near-term approved and pending (2023) with project conditions using the methodologies previously discussed. Table 9-D summarizes the results of this analysis and shows that all freeway segments are forecast to operate at a satisfactory LOS.

Detailed freeway levels of service worksheets are included in Appendix F.

9.4 CUMULATIVE YEAR (2035) WITH PROJECT CONDITIONS LOS ANALYSIS

9.4.1 Study Intersections

An intersection LOS analysis was conducted for Cumulative Year (2035) with project conditions using the methodologies previously discussed. Table 9-E summarizes the results of this analysis and shows that all intersections are forecast to operate at a satisfactory LOS under Cumulative Year (2035) with project conditions.

Detailed intersection levels of service worksheets are included in Appendix D.

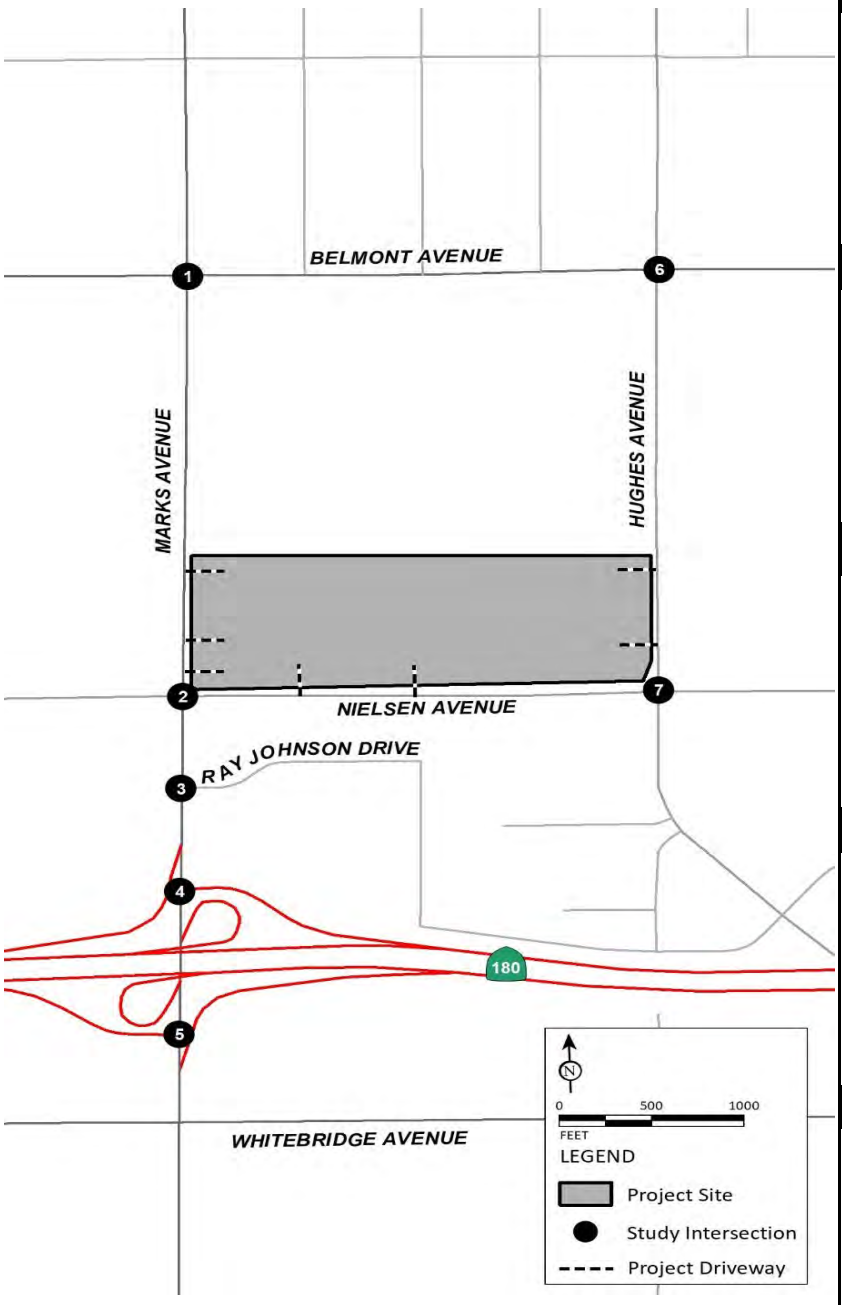
9.4.2 Freeway Segments

A freeway segment LOS analysis was conducted for Cumulative Year (2035) with project conditions using the methodologies previously discussed. Table 9-F summarizes the results of this analysis and shows that all freeway segments are forecast to operate at a satisfactory LOS.

Detailed freeway levels of service worksheets are included in Appendix F.

9.5 LIST OF CHAPTER 9.0 FIGURES AND TABLES

- Figure 9-1: Project Trip Distribution – Passenger Car
- Figure 9-2: Project Trip Distribution – Truck
- Figure 9-3: Project Trip Assignment – Passenger Car
- Figure 9-4: Project Trip Assignment – Truck
- Figure 9-5: Total Project PCE Trip Assignment
- Figure 9-6: Near-term approved and pending (2023) with Project Peak Hour Traffic Volumes
- Figure 9-7: Cumulative year (2035) with Project Peak Hour Traffic Volumes
- Table 9-A: Near-term approved and pending (2023) with Project Freeway Peak Hour Traffic Volumes
- Table 9-B: Cumulative year (2035) with Project Freeway Peak Hour Traffic Volumes
- Table 9-C: Near-term approved and pending (2023) with project Intersection Levels of Service
- Table 9-D: Near-term approved and pending (2023) with project Freeway Segment Levels of Service
- Table 9-E: Cumulative Year (2035) Intersection Levels of Service
- Table 9-F: Cumulative Year (2035) Freeway Segment Levels of Service



Intersection Not Analyzed

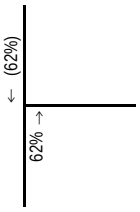
1 Marks Avenue/Belmont Avenue

Intersection Not Analyzed

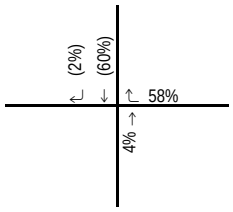
7 Hughes Avenue/Nielsen Avenue

Intersection Not Analyzed

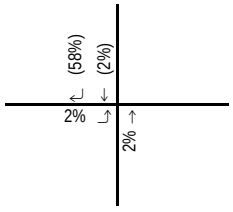
2 Marks Avenue/Nielsen Avenue



3 Marks Avenue/Ray Johnson Drive



4 Marks Avenue/SR-180 Westbound Ramps



5 Marks Avenue/SR-180 Eastbound Ramps

Intersection Not Analyzed

6 Hughes Avenue/Belmont Avenue

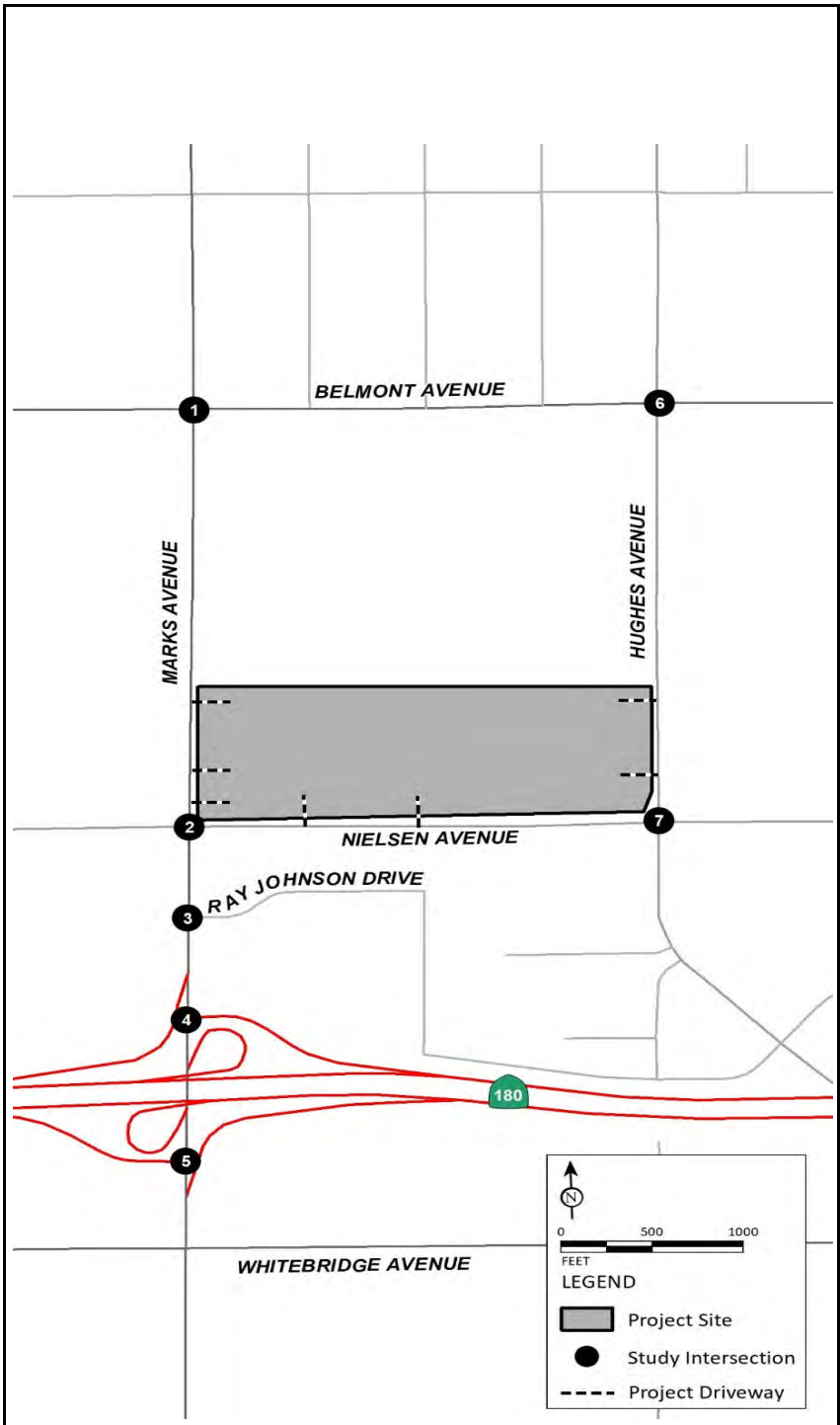
FIGURE 9-1

LSA

XX% (YY%)
Inbound (Outbound) Trip Distribution

2740 West Nielsen Warehouse Project
Traffic Impact Study

Project Trip Distribution – Passenger Car



Intersection Not Analyzed

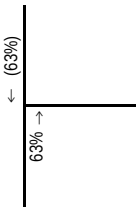
1 Marks Avenue/Belmont Avenue

Intersection Not Analyzed

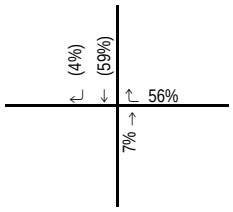
7 Hughes Avenue/Nielsen Avenue

Intersection Not Analyzed

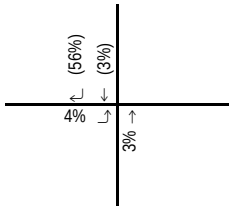
2 Marks Avenue/Nielsen Avenue



3 Marks Avenue/Ray Johnson Drive



4 Marks Avenue/SR-180 Westbound Ramps



5 Marks Avenue/SR-180 Eastbound Ramps

Intersection Not Analyzed

6 Hughes Avenue/Belmont Avenue

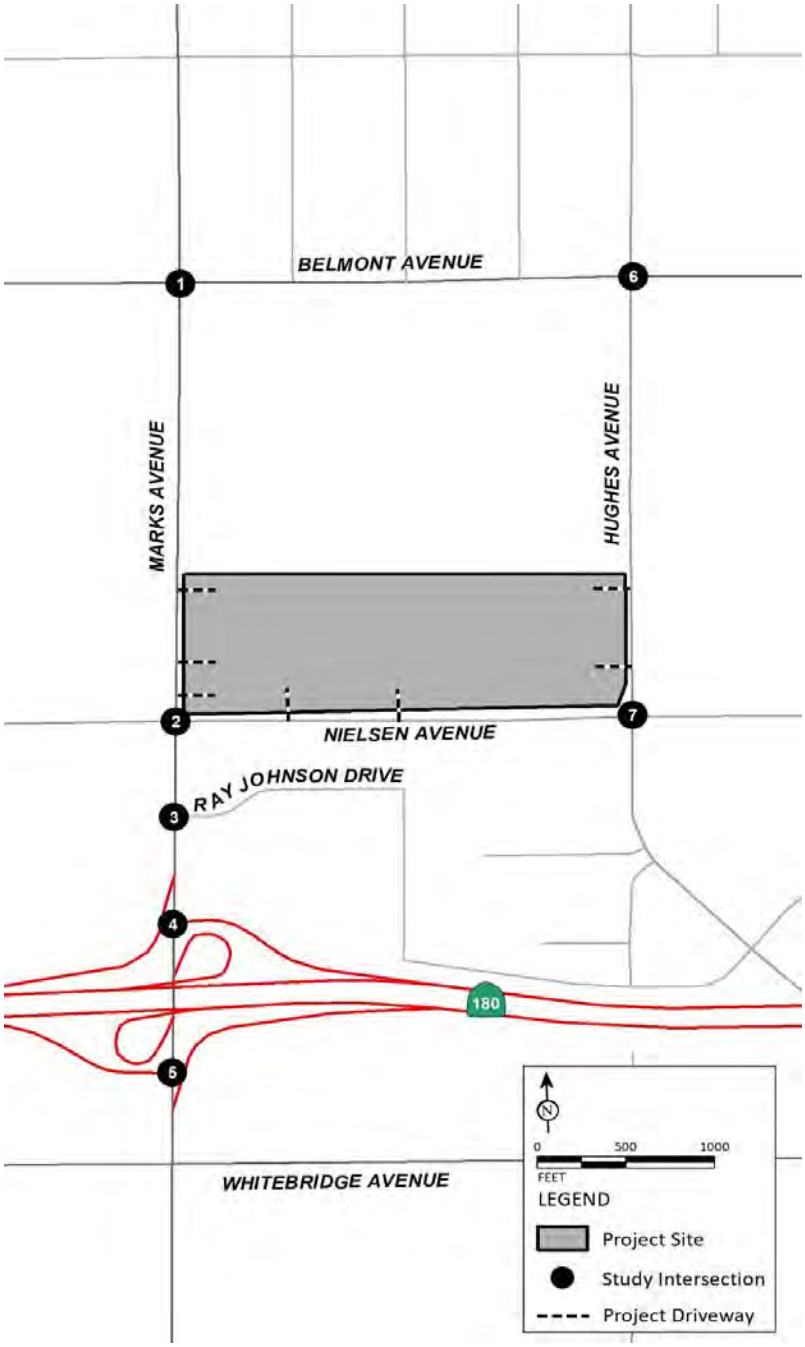
FIGURE 9-2

LSA

XX% (YY%)
Inbound (Outbound) Trip Distribution

2740 West Nielsen Warehouse Project
Traffic Impact Study

Project Trip Distribution – Truck



Intersection Not Analyzed

1 Marks Avenue/Belmont Avenue

Intersection Not Analyzed

7 Hughes Avenue/Nielsen Avenue

Intersection Not Analyzed

2 Marks Avenue/Nielsen Avenue

← 11 / 15

47 / 65 →

3 Marks Avenue/Ray Johnson Drive

← 11 / 14

↱ 44 / 61

3 / 4 →

4 Marks Avenue/SR-180 Westbound Ramps

↳ 10 / 14

2 / 2 ↳

2 / 2 →

5 Marks Avenue/SR-180 Eastbound Ramps

Intersection Not Analyzed

6 Hughes Avenue/Belmont Avenue

LSA

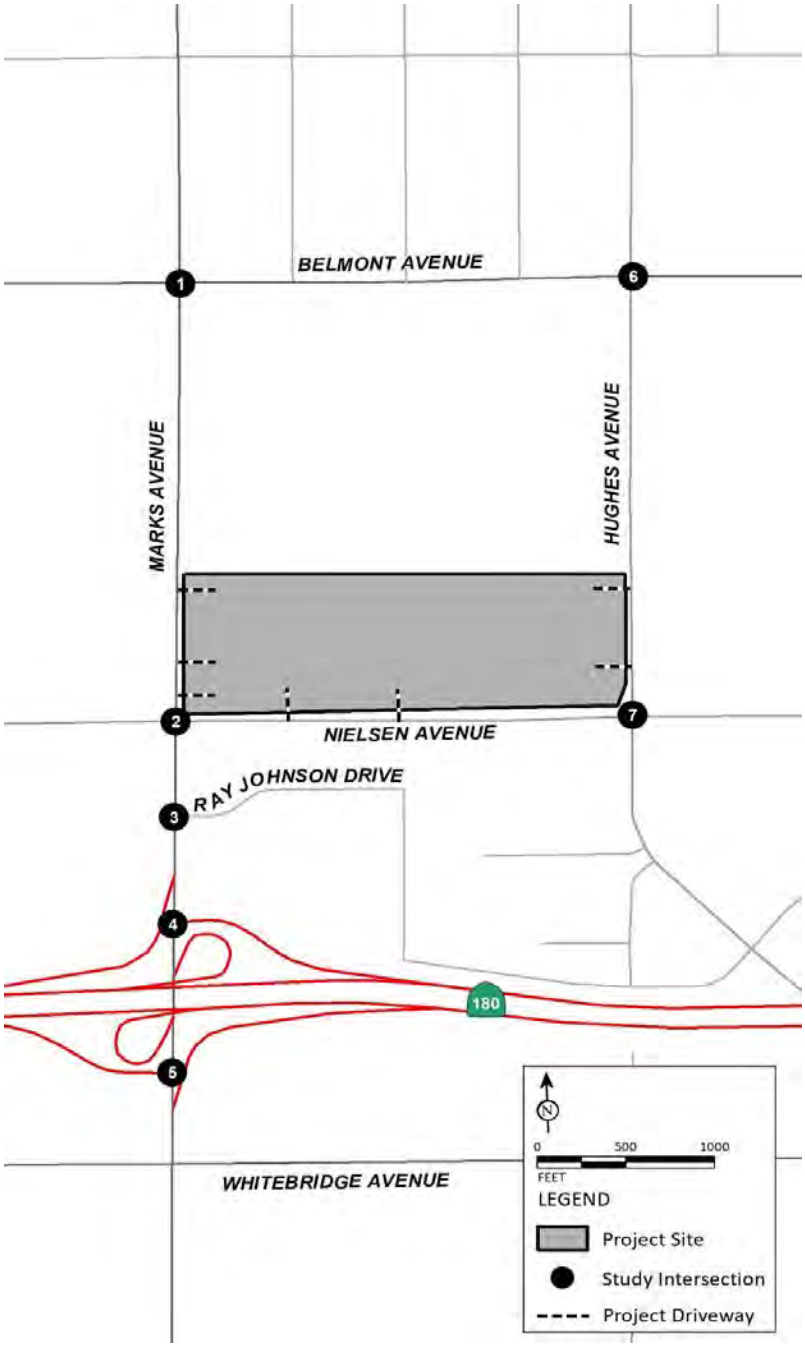
FIGURE 9-3

XX / YY
AM / PM Peak Hour Traffic Volumes

2740 West Nielsen Warehouse Project
Traffic Impact Study

Project Trip Assignment – Passenger Car

R:\SNN2101\TIS\z30_Asgn_Cars_CT.xlsx\Figure (11/22/2021)



Intersection Not Analyzed

1 Marks Avenue/Belmont Avenue

Intersection Not Analyzed

2 Marks Avenue/Nielsen Avenue

← 6 / 6
21 / 23 →

3 Marks Avenue/Ray Johnson Drive

← 6 / 6
↱ 19 / 21
2 / 3 →

4 Marks Avenue/SR-180 Westbound Ramps

↳ 6 / 6
1 / 1 ↳
1 / 1 →

5 Marks Avenue/SR-180 Eastbound Ramps

Intersection Not Analyzed

6 Hughes Avenue/Belmont Avenue

Intersection Not Analyzed

7 Hughes Avenue/Nielsen Avenue

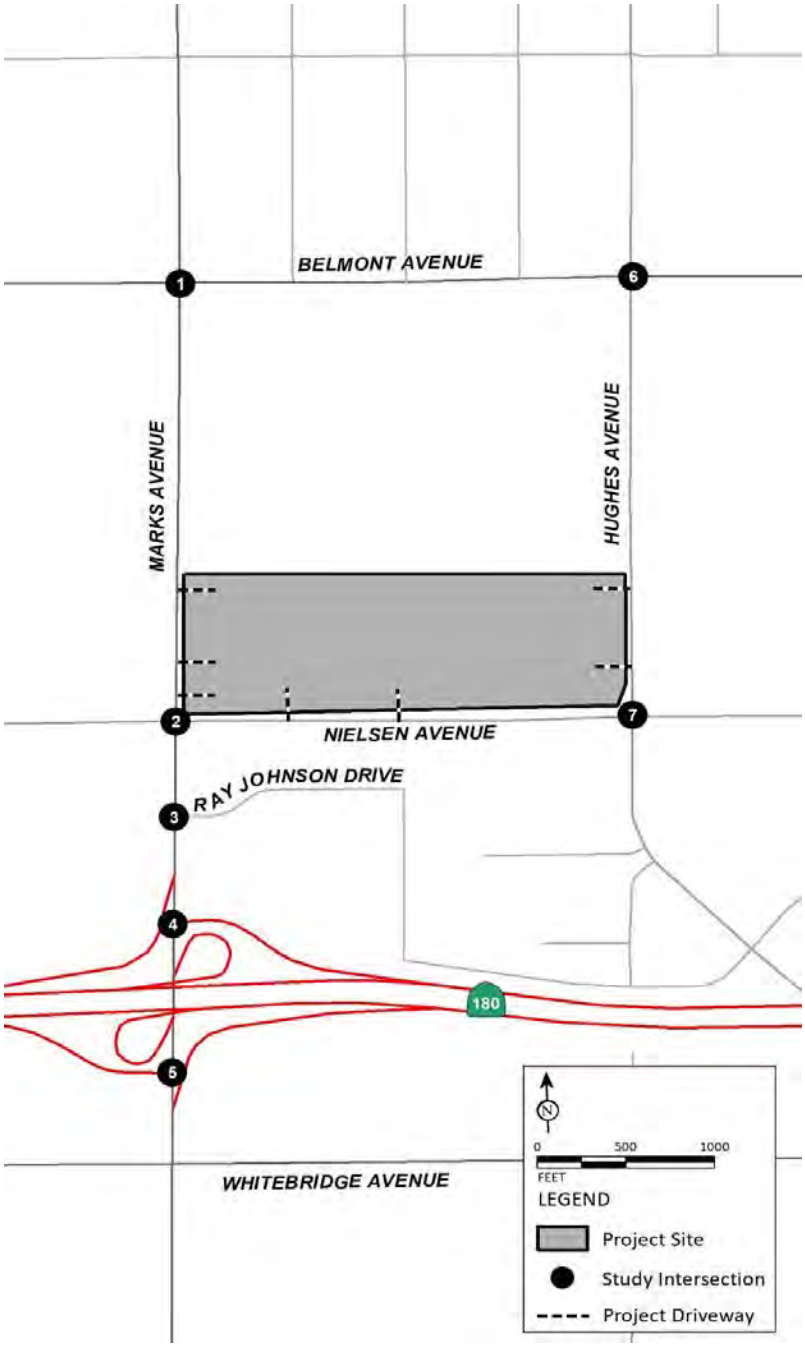
FIGURE 9-4

LSA

XX / YY
AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study

Project Trip Assignment – Truck



Intersection Not Analyzed

1 Marks Avenue/Belmont Avenue

Intersection Not Analyzed

7 Hughes Avenue/Nielsen Avenue

Intersection Not Analyzed

2 Marks Avenue/Nielsen Avenue

← 17 / 21
68 / 88 →

3 Marks Avenue/Ray Johnson Drive

← 17 / 20
↱ 63 / 82
5 / 7 →

4 Marks Avenue/SR-180 Westbound Ramps

↰ 16 / 20
3 / 3 ↳
3 / 3 →

5 Marks Avenue/SR-180 Eastbound Ramps

Intersection Not Analyzed

6 Hughes Avenue/Belmont Avenue

LSA

FIGURE 9-5

XXX / YYY
AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study

Total Project PCE Trip Assignment

R:\SNN2101\TIS\z30_Asgn_Total_CT.xlsx\Figure (11/22/2021)

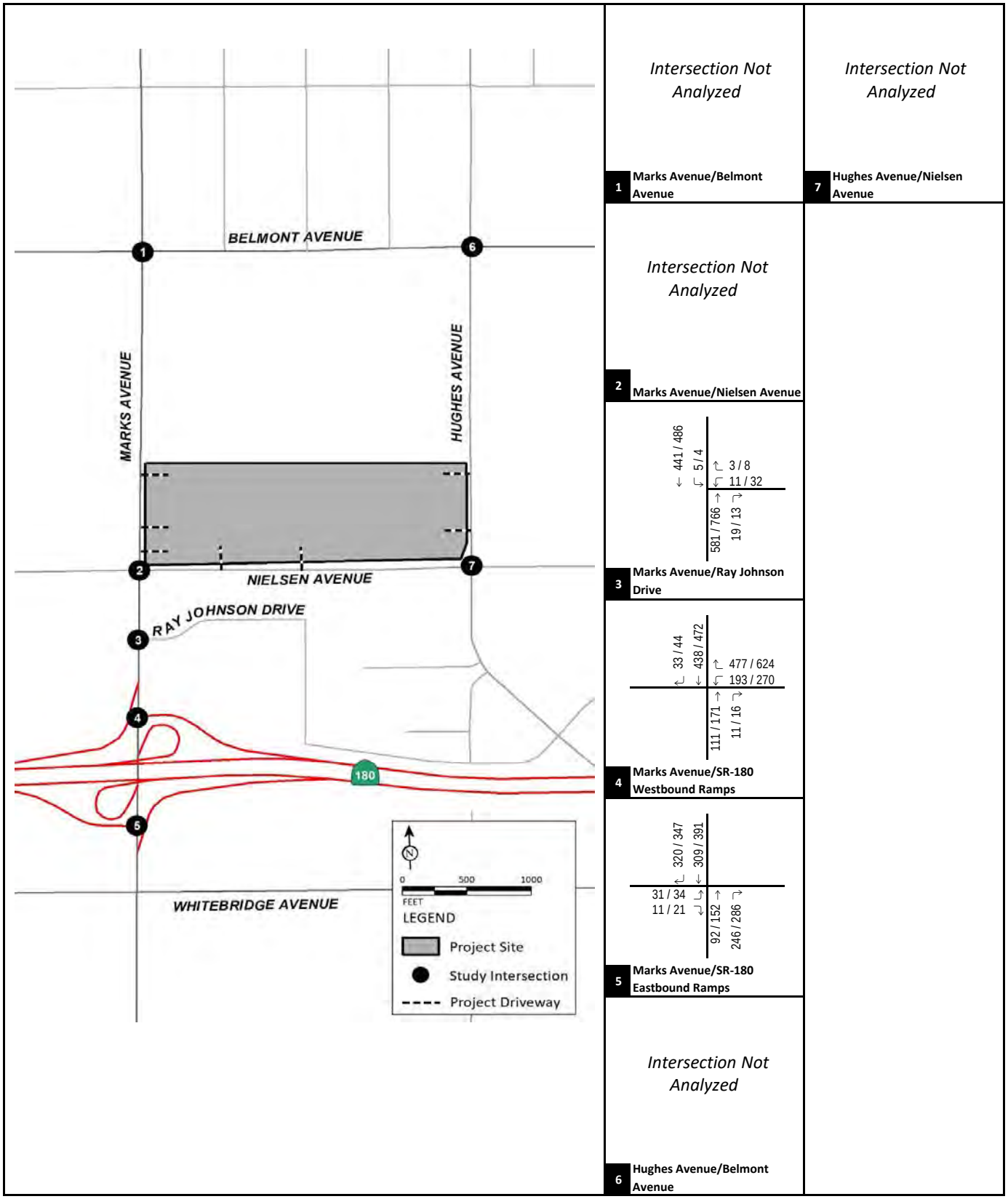


FIGURE 9-6

LSA

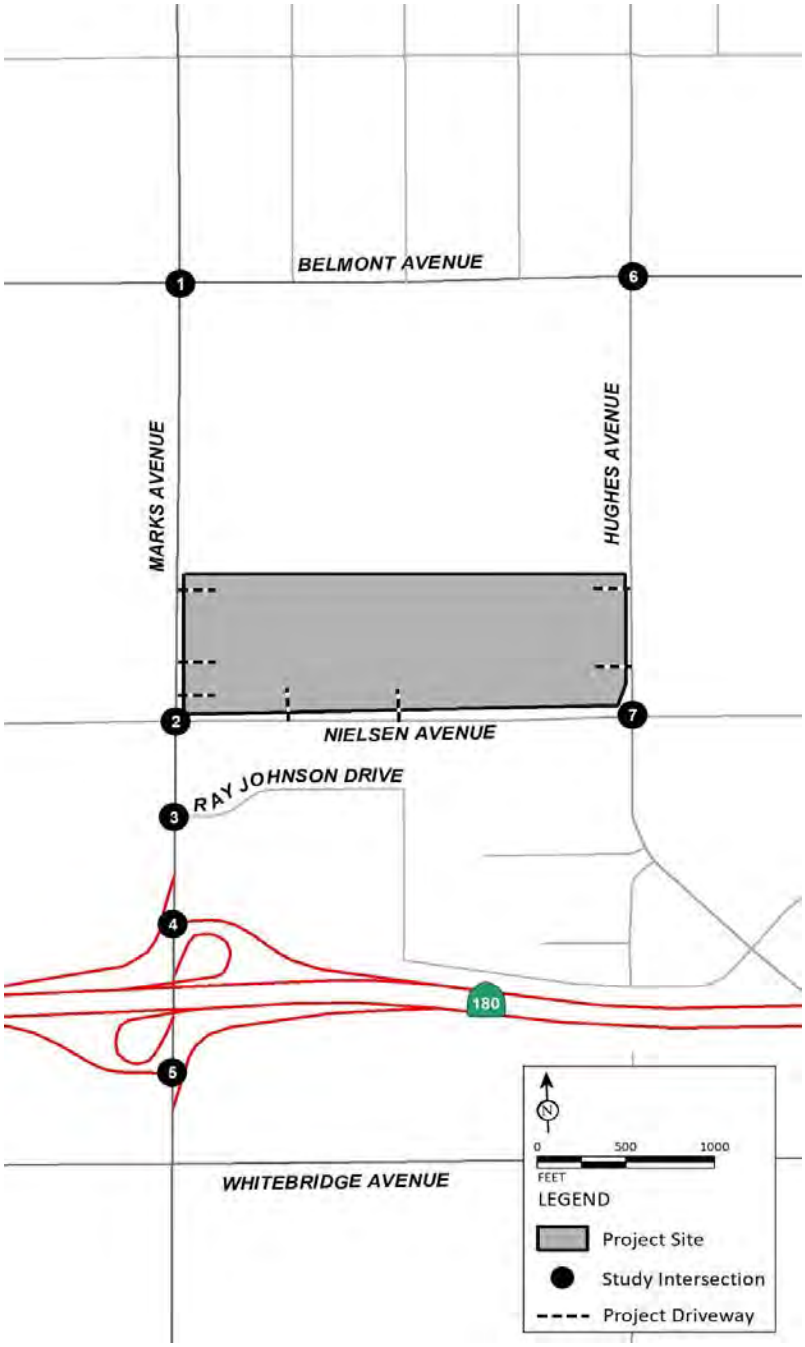
XXX / YYY

AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study

Near-term approved and pending (2023) with Project Peak Hour Traffic Volumes

R:\SNN2101\TIS\z30_Vol_OY_P_CT.xlsx\Figure (11/22/2021)

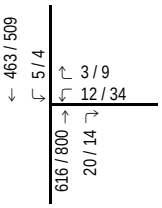


Intersection Not Analyzed

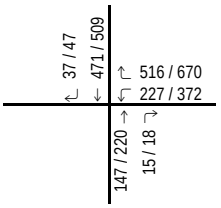
1 Marks Avenue/Belmont Avenue

Intersection Not Analyzed

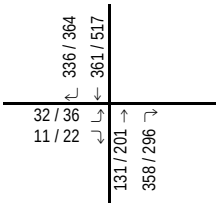
2 Marks Avenue/Nielsen Avenue



3 Marks Avenue/Ray Johnson Drive



4 Marks Avenue/SR-180 Westbound Ramps



5 Marks Avenue/SR-180 Eastbound Ramps

Intersection Not Analyzed

6 Hughes Avenue/Belmont Avenue

Intersection Not Analyzed

7 Hughes Avenue/Nielsen Avenue

FIGURE 9-7

LSA

XXX / YYY
AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse Project
Traffic Impact Study

Cumulative Year (2035) with Project Peak Hour Traffic Volumes

LSA

Table 9-A - Near-Term Approved and Pending (2023) with Projects Conditions Freeway Segment and Ramp Traffic Volumes

Eastbound																	
		AM Peak Hour								PM Peak Hour							
SR-180 Eastbound	Type	Mainline Auto	Mainline Trucks	Mainline Total	Mainline Truck%	Ramp PCE Volumes	Ramp Truck%	Ramp Total Volumes	Ramp Truck Volumes	Mainline Cars	Mainline Trucks	Mainline Total	Mainline Truck%	Ramp PCE Volumes	Ramp Truck%	Ramp Total Volumes	Ramp Truck Volumes
1 . West of Marks Avenue Off-Ramp	Basic	1,830	252	2,082	12.1%					1,314	185	1,499	12.3%				
2 . Marks Avenue Off-Ramp	Ramp (Diverge)					42	0.0%	42	0					55	11.4%	49	6
3 . Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp	Basic	1,788	252	2,040	12.4%					1,271	179	1,450	12.3%				
4 . Marks Avenue Loop-On Ramp	Ramp (Merge)					320	23.0%	260	60					347	5.8%	328	19
5 . Between Marks Avenue Loop-On Ramp and Maks Avenue Slip-On Ramp	Basic	1,988	312	2,300	13.6%					1,580	198	1,778	11.1%				
6 . Marks Avenue Slip-On Ramp	Ramp (Merge)					246	3.7%	237	9					286	0.8%	284	2
7 . East of Marks Avenue	Basic	2,216	321	2,537	12.7%					1,862	200	2,062	9.7%				

Westbound																	
		AM Peak Hour								PM Peak Hour							
SR-180 Westbound	Type	Mainline Cars	Mainline Trucks	Mainline Total	Mainline Truck%	Ramp PCE Volumes	Ramp Truck%	Ramp Total Volumes	Ramp Truck Volumes	Mainline Cars	Mainline Trucks	Mainline Total	Mainline Truck%	Ramp PCE Volumes	Ramp Truck%	Ramp Total Volumes	Ramp Truck Volumes
8 . East of Marks Avenue	Basic	2,001	257	2,258	11.4%					2,416	345	2,761	12.5%				
9 . Marks Avenue Off-Ramp	Ramp (Diverge)					670	8.8%	616	54		0		0	894	12.8%	793	102
10 . Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp	Basic	1,439	203	1,642	12.3%					1,725	243	1,968	12.3%				
11 . Marks Avenue Loop-On Ramp	Ramp (Merge)					11	0.0%	11	0		0		0	16	0.0%	16	0
12 . Between Marks Avenue Loop-On Ramp and Maks Avenue Slip-On Ramp	Basic	1,450	203	1,653	12.3%					1,741	243	1,984	12.2%				
13 . Marks Avenue Slip-On Ramp	Ramp (Merge)					33	26.3%	26	7		0		0	44	15.0%	38	6
14 . West of Marks Avenue	Basic	1,469	210	1,679	12.5%					1,773	249	2,022	12.3%				

LSA

Table 9-B - Cumulative Year (2035) With Project Conditions Freeway Segment and Ramp Traffic Volumes

Eastbound																	
		AM Peak Hour								PM Peak Hour							
SR-180 Eastbound	Type	Mainline Auto	Mainline Trucks	Mainline Total	Mainline Truck%	Ramp PCE Volumes	Ramp Truck%	Ramp Non-PCE Volume	Ramp Truck Volumes	Mainline Auto	Mainline Trucks	Mainline Total	Mainline Truck%	Ramp PCE Volumes	Ramp Truck%	Ramp Non-PCE Volume	Ramp Truck Volumes
1 . West of Marks Avenue Off-Ramp	Basic	2,332	323	2,655	12.2%					1,619	227	1,846	12.3%				
2 . Marks Avenue Off-Ramp	Ramp (Diverge)					43	0.0%	43	0					58	11.4%	52	6
3 . Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp	Basic	2,289	323	2,612	12.4%					1,573	221	1,794	12.3%				
4 . Marks Avenue Loop-On Ramp	Ramp (Merge)					336	23.0%	273	63					364	5.8%	344	20
5 . Between Marks Avenue Loop-On Ramp and Maks Avenue Slip-On Ramp	Basic	2,499	386	2,885	13.4%					1,897	241	2,138	11.3%				
6 . Marks Avenue Slip-On Ramp	Ramp (Merge)					358	3.7%	345	13					296	0.8%	294	2
7 . East of Marks Avenue	Basic	2,831	399	3,230	12.3%					2,189	243	2,432	10.0%				

Westbound																	
		AM Peak Hour								PM Peak Hour							
SR-180 Westbound	Type	Mainline Auto	Mainline Trucks	Mainline Total	Mainline Truck%	Ramp PCE Volumes	Ramp Truck%	Ramp Non-PCE Volume	Ramp Truck Volumes	Mainline Auto	Mainline Trucks	Mainline Total	Mainline Truck%	Ramp PCE Volumes	Ramp Truck%	Ramp Non-PCE Volume	Ramp Truck Volumes
8 . East of Marks Avenue	Basic	2,272	292	2,564	11.4%					3,105	442	3,547	12.5%				
9 . Marks Avenue Off-Ramp	Ramp (Diverge)					743	8.8%	683	60					1,042	12.8%	924	118
10 . Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp	Basic	1,649	232	1,881	12.3%					2,299	324	2,623	12.3%				
11 . Marks Avenue Loop-On Ramp	Ramp (Merge)					15	0.0%	15	0					18	0.0%	18	0
12 . Between Marks Avenue Loop-On Ramp and Maks Avenue Slip-On Ramp	Basic	1,664	232	1,896	12.2%					2,317	324	2,641	12.3%				
13 . Marks Avenue Slip-On Ramp	Ramp (Merge)					37	26.3%	29	8					47	15.0%	41	6
14 . West of Marks Avenue	Basic	1,685	240	1,925	12.5%					2,352	330	2,682	12.3%				

LSA

Table 9-C - Near-Term approved and pending with Project Intersection Levels of Service

Intersection	Jurisdiction	Control	With Project			
			AM Peak Hour		PM Peak Hour	
			Delay (sec.)	LOS	Delay (sec.)	LOS
3 . Marks Avenue/Ray Johnson Drive	City of Fresno	Signal	2.7	A	3.9	A
4 . Marks Avenue/SR-180 Westbound Ramps	CALTRANS	Signal	19.2	B	19.5	B
5 . Marks Avenue/SR-180 Eastbound Ramps	CALTRANS	Signal	5.8	A	5.9	A

Notes:

Delay = Average control delay in seconds.

LOS = Level of Service

* Exceeds LOS Standard

LSA

Table 9-D -Near Term Approved and Pending (2023) With Project Freeway Segment and Ramp Levels of Service

SR-180 Freeway	Type	Mainline Lanes	With Project					
			AM Peak Hour			PM Peak Hour		
			Speed (mi/hr)	Density (pc/mi/ln)	LOS	Speed (mi/hr)	Density (pc/mi/ln)	LOS
Eastbound								
1 . West of Marks Avenue Off-Ramp	Basic	2	73.2	17.0	B	73.6	12.2	B
2 . Marks Avenue Off-Ramp	Ramp (Diverge)	2	65.3	24.1	C	65.3	18.2	B
3 . Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp	Basic	2	72.9	16.6	B	72.9	11.8	B
4 . Marks Avenue Loop-On Ramp	Ramp (Merge)	2	64.1	21.2	C	65.2	15.9	B
6 . Marks Avenue Slip-On Ramp	Ramp (Merge)	3	74.3	13.4	B	74.4	10.6	A
7 . East of Marks Avenue	Basic	3	73.6	13.7	B	73.6	10.9	A
Westbound								
8a . East of Marks Avenue	Basic	3	73.6	12.1	B	73.6	15.0	B
8b . East of Marks Avenue	Basic	4	73.6	9.1	A	73.6	11.2	B
9 . Marks Avenue Off-Ramp	Ramp (Diverge)	4	72.5	9.2	A	71.8	11.5	A
10a . Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp	Basic	3	73.3	8.9	A	73.1	10.7	A
10b . Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp	Basic	2	73.5	13.3	B	73.4	16.0	B
11 . Marks Avenue Loop-On Ramp	Ramp (Merge)	2	65.1	15.2	B	64.6	19.0	B
13 . Marks Avenue Slip-On Ramp	Ramp (Merge)	2	66.4	15.1	B	65.9	18.7	B
14 . East of Marks Avenue	Basic	2	73.2	13.6	B	73.2	16.5	B

Notes:

SR-180 = State Route 180

mi/hr : miles per hour

pc/mi/ln: passanger cars per mile per lane

Bold Indicates deficient LOS

LSA

Table 9-E - Cumulative Year (2035) Intersection Levels of Service

Intersection	Jurisdiction	Control	With Project			
			AM Peak Hour		PM Peak Hour	
			Delay (sec.)	LOS	Delay (sec.)	LOS
3 . Marks Avenue/Ray Johnson Drive	City of Fresno	Signal	2.6	A	4.0	A
4 . Marks Avenue/SR-180 Westbound Ramps	CALTRANS	Signal	19.0	B	19.2	B
5 . Marks Avenue/SR-180 Eastbound Ramps	CALTRANS	Signal	5.4	A	5.5	A

Notes:

Delay = Average control delay in seconds.

LOS = Level of Service

* Exceeds LOS Standard

LSA

Table 9-F -Cumulative Year (2035) With Project Freeway Segment and Ramp Levels of Service

SR-180 Freeway	Type	Mainline Lanes	With Project					
			AM Peak Hour			PM Peak Hour		
			Speed (mi/hr)	Density (pc/mi/ln)	LOS	Speed (mi/hr)	Density (pc/mi/ln)	LOS
Eastbound								
1 . West of Marks Avenue Off-Ramp	Basic	2	73.2	17.0	B	70.5	22.5	C
2 . Marks Avenue Off-Ramp	Ramp (Diverge)	2	65.3	24.1	C	65.3	30.0	D
3 . Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp	Basic	2	72.9	16.6	B	70.7	22.1	C
4 . Marks Avenue Loop-On Ramp	Ramp (Merge)	2	64.1	21.2	C	62.0	26.1	C
6 . Marks Avenue Slip-On Ramp	Ramp (Merge)	3	57.3	35.0	D	74.1	17.3	B
7 . East of Marks Avenue	Basic	3	54.1	37.6	B	73.0	17.6	B
Westbound								
8a . East of Marks Avenue	Basic	3	73.6	13.8	B	72.2	19.6	C
8b . East of Marks Avenue	Basic	4	73.6	10.3	A	73.4	14.4	B
9 . Marks Avenue Off-Ramp	Ramp (Diverge)	4	72.5	10.5	A	71.6	7.3	A
10a . Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp	Basic	3	73.3	10.2	A	73.0	14.2	B
10b . Between Marks Avenue Off-Ramp and Marks Avenue Loop-On Ramp	Basic	2	73.5	15.3	B	70.7	22.2	C
11 . Marks Avenue Loop-On Ramp	Ramp (Merge)	2	64.7	18.2	B	63.0	25.1	C
13 . Marks Avenue Slip-On Ramp	Ramp (Merge)	2	66.1	17.8	B	64.2	24.9	C
14 . West of Marks Avenue	Basic	2	73.2	15.7	B	70.2	22.8	C

Notes:

SR-180 = State Route 180

mi/hr : miles per hour

pc/mi/ln: passanger cars per mile per lane

Bold Indicates deficient LOS

10.0 SITE ACCESS ANALYSIS

10.1 EVALUATION OF PROJECT DRIVEWAYS

Previously referenced Figure 1-2 illustrates the project site plan. As shown in Figure 1-2, and as described in Chapter 1, access to the project site will be provided via seven driveways located on Marks Avenue, Nielsen Avenue, and Hughes Avenue.

All project driveways will be stop controlled at the driveway approach. Therefore, vehicles exiting the project site from project driveways must stop before they continue to merge on the neighboring circulation network.

The majority of the observed traffic flow within the study area utilize Marks Avenue. Out of the three driveways on Marks Avenue, two of them are right-in-right-out only. For the other driveway, left-turn egress movement will be restricted. Additionally, a two-way left turn lane (TWLTL) is present at this location on Marks Avenue. Therefore, project trips using a left-turn ingress movement can also wait in the TWLTL for the clearance of northbound traffic on Marks Avenue. Since there is a traffic signal at the intersection of Marks Avenue/Nielsen Avenue, these project trips will have the opportunity to utilize gaps in northbound traffic created by the signal to complete the turn into the project driveway. Additionally, there are no major obstructions to vision present along Marks Avenue. Therefore, sight distance will not be an issue for these driveways.

For project driveways located along Nielsen Avenue and Hughes Avenue, there needs to be adequate corner sight distance for vehicles to make an egress movement. There is no provision for on-street parking along the project frontage on Nielsen Avenue or Hughes Avenue. Additionally, there are no trees or large stationary objects that might obstruct the sight triangle for drivers. As such, there should be adequate sight distance at the project driveways along Nielsen Avenue or Hughes Avenue. Therefore, it can be concluded that a clear sight triangle will be available for drivers exiting the driveway to safely make turns onto Nielsen Avenue or Hughes Avenue.

11.0 SIGNAL WARRANT ANALYSIS

As recommended during the scoping agreement process, signal warrant analysis was conducted at all unsignalized study intersections. Intersection approach volumes for the study intersections was examined to determine whether signalization is warranted per the criteria defined in the California supplement of the *Manual on Uniform Traffic Control Devices* (CA-MUTCD). As recommended by City staff, three separate signal warrant analysis was conducted for the unsignalized study intersections as follows:

1. Warrant 1: 8 hour Vehicular Volume
2. Warrant 2: 4 hour Vehicular Volume
3. Warrant 3: Peak Hour

Specifically, warrant 1 and 2 was conducted for all the unsignalized intersections under existing scenario, and an analysis with signal warrant 3 was conducted for the unsignalized intersections under all scenarios. Following is a brief summary of signal warrant analysis for each intersection:

11.1 MARKS AVENUE/BELMONT AVENUE

Table 11-A shows the Warrant 1 – Eight Hour Vehicular Volume Condition A for the intersection under existing scenario. Additionally, since the posted speed limit on Marks Avenue (Major Street) is 45 mph, the 70% traffic volume condition was used for this analysis. As shown in Table 11-A, the intersection meets the signal warrant. Since Condition A is already met, Condition B was not analyzed for this intersection.

Figure 11-1 illustrates the Warrant 2- 4 hour for the study intersection under existing scenario. As shown in Figure 11-1, the intersection meets the signal warrant.

Figures 11-2, 11-3, and 11-4 illustrate the Warrant 3 (peak hour signal warrant) for this intersection under existing, Near-term approved and pending with project and Cumulative Year (2035) scenario. As shown in these figures, the intersection meets the signal warrant under all scenarios.

11.2 HUGHES AVENUE/BELMONT AVENUE

Based on the traffic volumes for this intersection, a combination of Condition A and Condition B was evaluated for this intersection. Tables 11-B and 11-C shows the Warrant 1 – Eight Hour Vehicular Volume Condition A, and Condition B, respectively for the intersection under existing scenario. As shown in these tables, the intersection does not meet the signal warrant. As such, this intersection does not meet either Condition A or Condition B.

Figure 11-5 illustrates the Warrant 2- 4 hour for the study intersection. As shown in Figure 11-5, the intersection does not meet the signal warrant.

Figures 11-6, 11-7, and 11-8 illustrates the Warrant 3- peak hour signal warrant for this intersection under existing, Near term Approved and pending with project and Cumulative Year (2035) scenario. As shown in these figures, the intersection does not meet the signal warrant under any scenarios.

11.3 HUGHES AVENUE/NIELSEN AVENUE

Based on the traffic volumes for this intersection, a combination of Condition A and Condition B was evaluated for this intersection. Tables 11-D and 11-E shows the Warrant 1 – Eight Hour Vehicular Volume Condition A, and Condition B, respectively for the intersection under existing scenario. As shown in these tables, the intersection does not meet the signal warrant. As such, this intersection does not meet either Condition A or Condition B.

Figure 11-9 illustrates the Warrant 2- 4 hour for the study intersection. As shown in Figure 11-9, the intersection does not meet the signal warrant.

Figures 11-10, 11-11, and 11-12 illustrates the Warrant 3- peak hour signal warrant for this intersection under existing, Near-term Approved and pending with project and Cumulative Year (2035) scenario. As shown in these figures, the intersection does not meet the signal warrant under any scenarios.

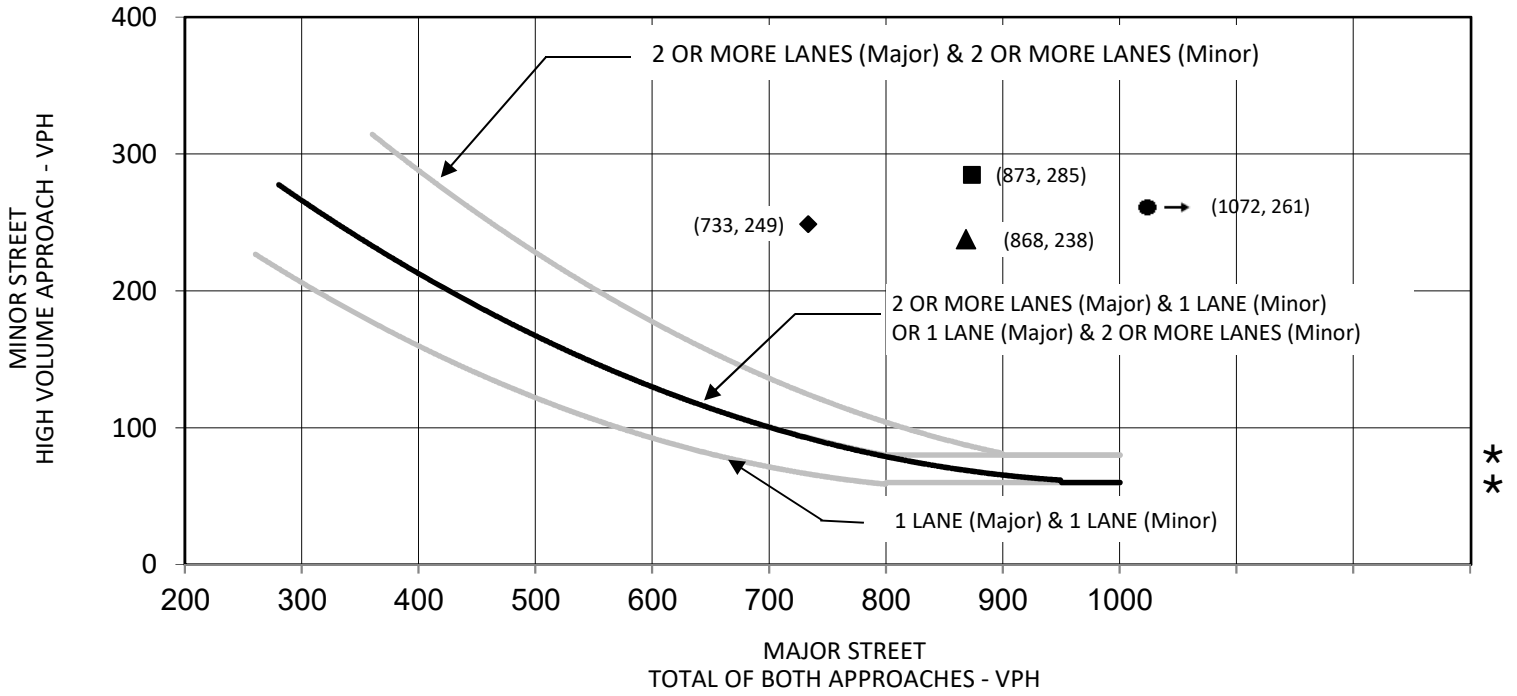
11.5 LIST OF CHAPTER 11.0 FIGURES AND TABLES

- Figure 11-1: Warrant 2: 4 Hour - Marks Avenue/Belmont Avenue– Existing Conditions
- Figure 11-2: Warrant 3: Peak Hour - Marks Avenue/Belmont Avenue – Existing Conditions
- Figure 11-3: Warrant 3: Peak Hour - Marks Avenue/Belmont Avenue - Near-term Approved and pending with project Conditions
- Figure 11-4: Warrant 3: Peak Hour - Marks Avenue/Belmont Avenue - Cumulative Year (2035) Conditions
- Figure 11-5: Warrant 2: 4 Hour - Hughes Avenue/Belmont Avenue
- Figure 11-6: Warrant 3: Peak Hour - Hughes Avenue/Belmont Avenue – Existing Conditions
- Figure 11-7: Warrant 3: Peak Hour - Hughes Avenue/Belmont Avenue –Near-term Approved and pending with project Conditions
- Figure 11-8: Warrant 3: Peak Hour - Hughes Avenue/Belmont Avenue Cumulative Year (2035) Conditions
- Figure 11-9: Warrant 2: 4 Hour - Hughes Avenue/Nielsen Avenue
- Figure 11-10: Warrant 3: Peak Hour - Hughes Avenue/Nielsen Avenue – Existing Conditions
- Figure 11-11: Warrant 3: Peak Hour - Hughes Avenue/Nielsen Avenue –Near-term Approved and pending with project Conditions
- Figure 11-12: Warrant 3: Peak Hour - Hughes Avenue/Nielsen Avenue - Cumulative Year (2035) Conditions
- Table 11-A : Eight-Hour Warrant Analysis - Condition A (70%)- Marks Avenue/Belmont Avenue
- Table 11-B : Eight-Hour Warrant Analysis - Condition A (80%)- Hughes Avenue/Belmont Avenue
- Table 11-C : Eight-Hour Warrant Analysis - Condition B (80%)- Hughes Avenue/Belmont Avenue
- Table 11-D : Eight-Hour Warrant Analysis - Condition A(80%)- Hughes Avenue/Nielsen Avenue

- Table 11-E : Eight-Hour Warrant Analysis - Condition B (80%) - Hughes Avenue/Nielsen Avenue

WARRANT 2, FOUR-HOUR VEHICULAR VOLUME (70% fACTOR)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 mph ON MAJOR STREET)



* 80 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 60 VPH applies as the lower threshold volume for a minor street approaching with one lane.

FIGURE 11-1

LSA

● Highest Hour Volumes (P.M. Peak Hour)

■ Second Highest Hourly Volumes (15:00-16:00)

▲ Third Highest Hourly Volumes (A.M. Peak Hour)

◆ Fourth Highest Hourly Volumes (14:00-15:00)

2740 West Nielsen Warehouse Project

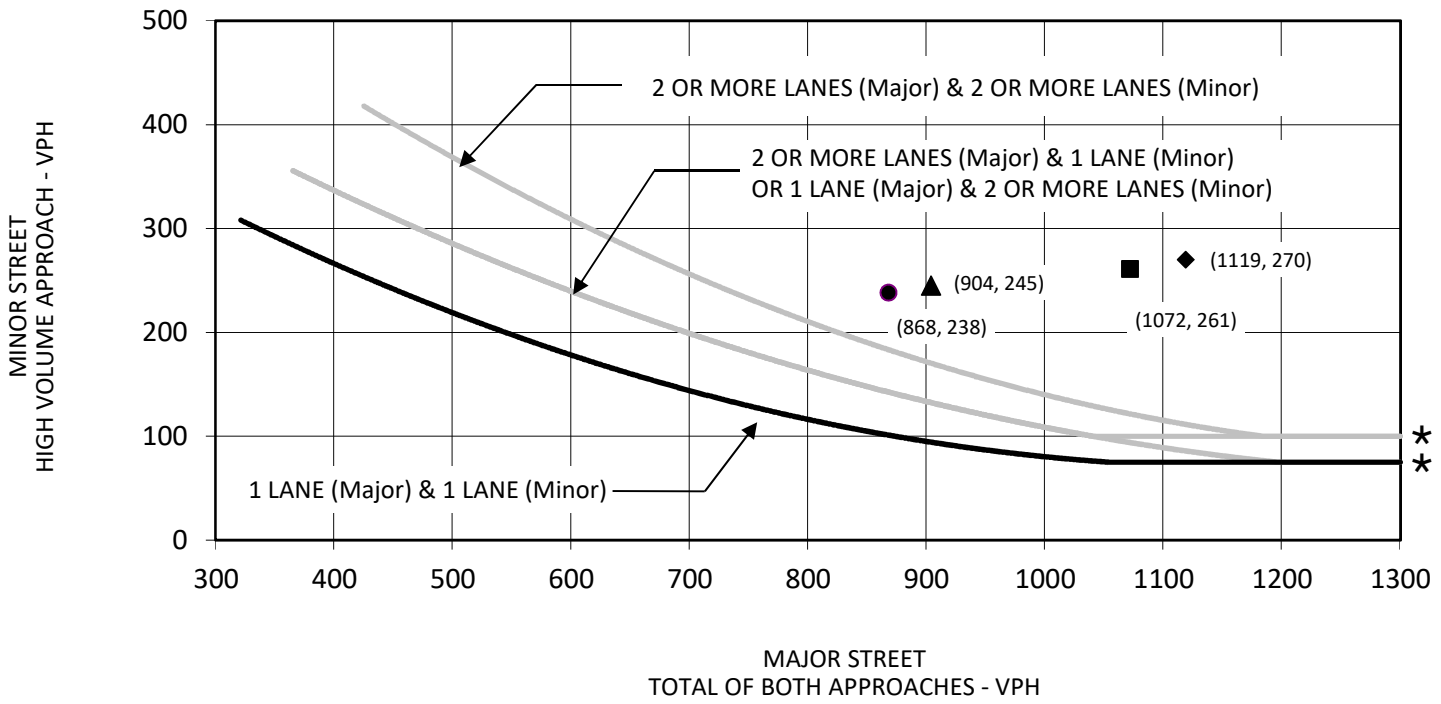
Traffic Impact Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-2

Warrant 2: 4 Hour - Marks Avenue/Belmont Avenue– Existing Conditions

WARRANT 3, PEAK HOUR (70% FACTOR)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 mph ON MAJOR STREET)



* 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.

LSA

FIGURE 11-2

● No Project AM Peak Hour
▲ With Project AM Peak Hour
■ No Project PM Peak Hour
◆ With Project PM Peak Hour

2740 West Nielsen Warehouse Project

Warrant 3: Peak Hour - Marks Avenue/Belmont Avenue – Existing Conditions

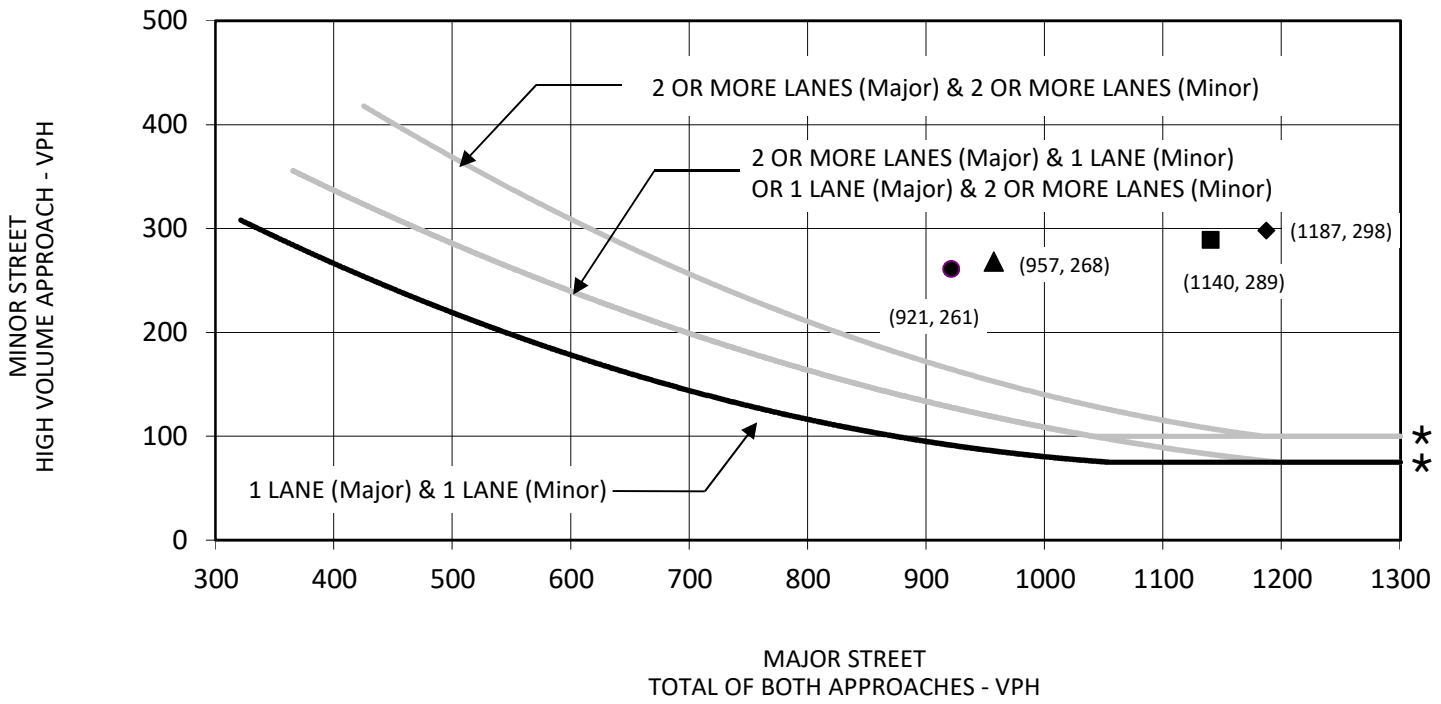
SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-4

Traffic Impact Study

R:\SNN2101\TIS\Warrants\SW_2021 Exist_Int 1.xlsx (11/22/2021)

WARRANT 3, PEAK HOUR (70% FACTOR)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 mph ON MAJOR STREET)



* 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.

LSA

FIGURE 11-3

● No Project AM Peak Hour
▲ With Project AM Peak Hour
■ No Project PM Peak Hour
◆ With Project PM Peak Hour

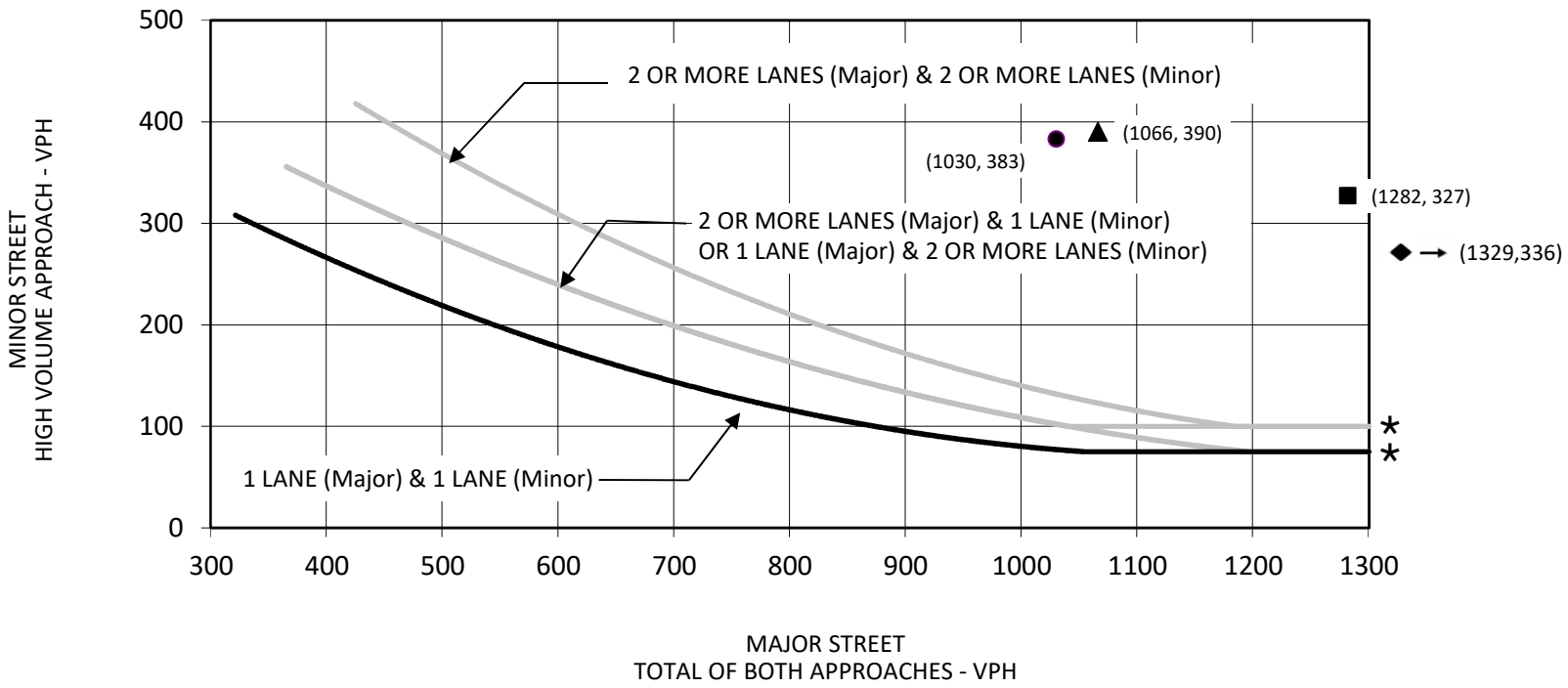
2740 West Nielsen Warehouse Project
Traffic Impact Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-4 Warrant 3: Peak Hour - Marks Avenue/Belmont Avenue - Near-term Approved and pending with project Conditions

R:\SNN2101\TIS\Warrants\SW_OY_Int 1.xlsx (11/22/2021)

WARRANT 3, PEAK HOUR (70% FACTOR)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 mph ON MAJOR STREET)



* 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.

LSA

FIGURE 11-4

● No Project AM Peak Hour
▲ With Project AM Peak Hour
■ No Project PM Peak Hour
◆ With Project PM Peak Hour

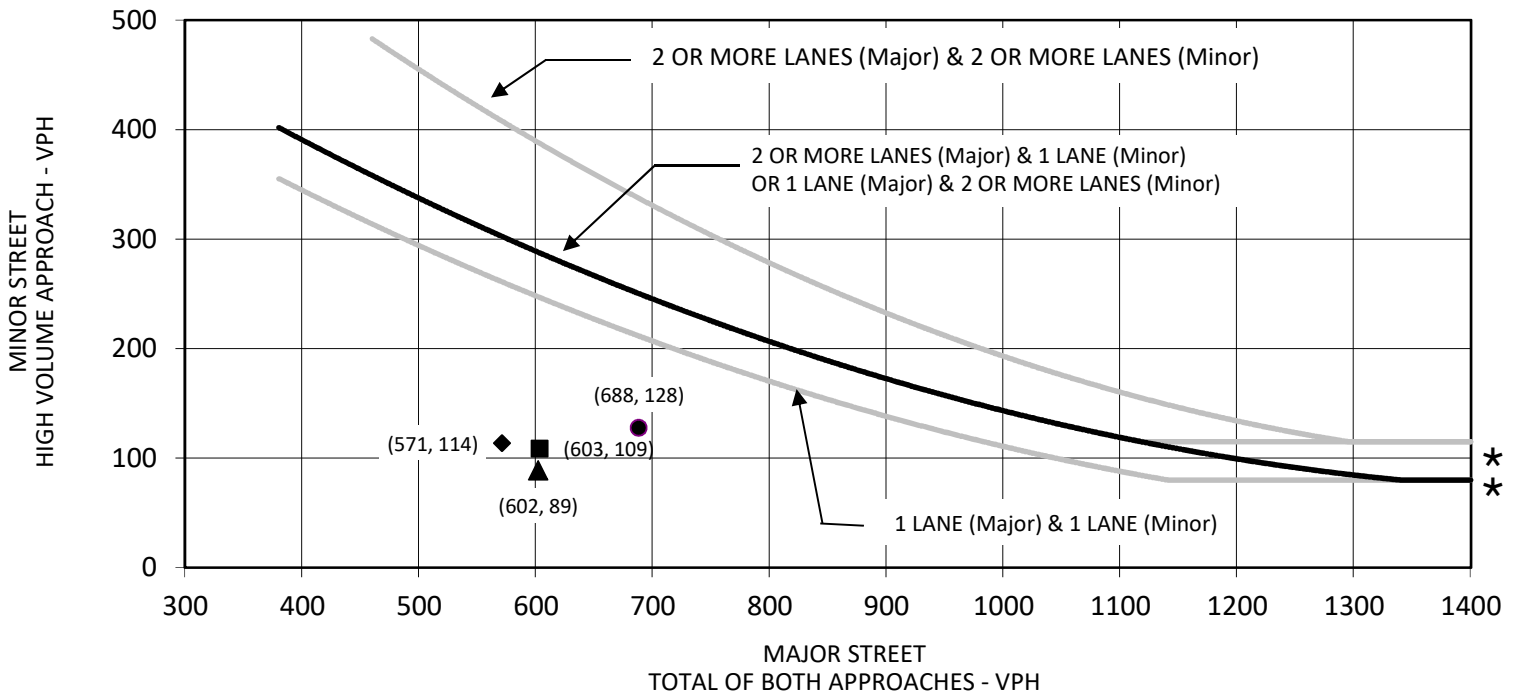
2740 West Nielsen Warehouse Project
Traffic Impact Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-4

Warrant 3: Peak Hour - Marks Avenue/Belmont Avenue Cumulative Year (2035) Conditions

R:\SNN2101\TIS\Warrants\SW_BO_Int 1.xlsx (11/22/2021)

WARRANT 2, FOUR-HOUR VEHICULAR VOLUME



* 115 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 80 VPH applies as the lower threshold volume for a minor street approaching with one lane.

FIGURE 11-5

LSA

● Highest Hour Volumes (15:00-16:00)

■ Second Highest Hourly Volumes (14:00-15:00)

▲ Third Highest Hourly Volumes (13:00-14:00)

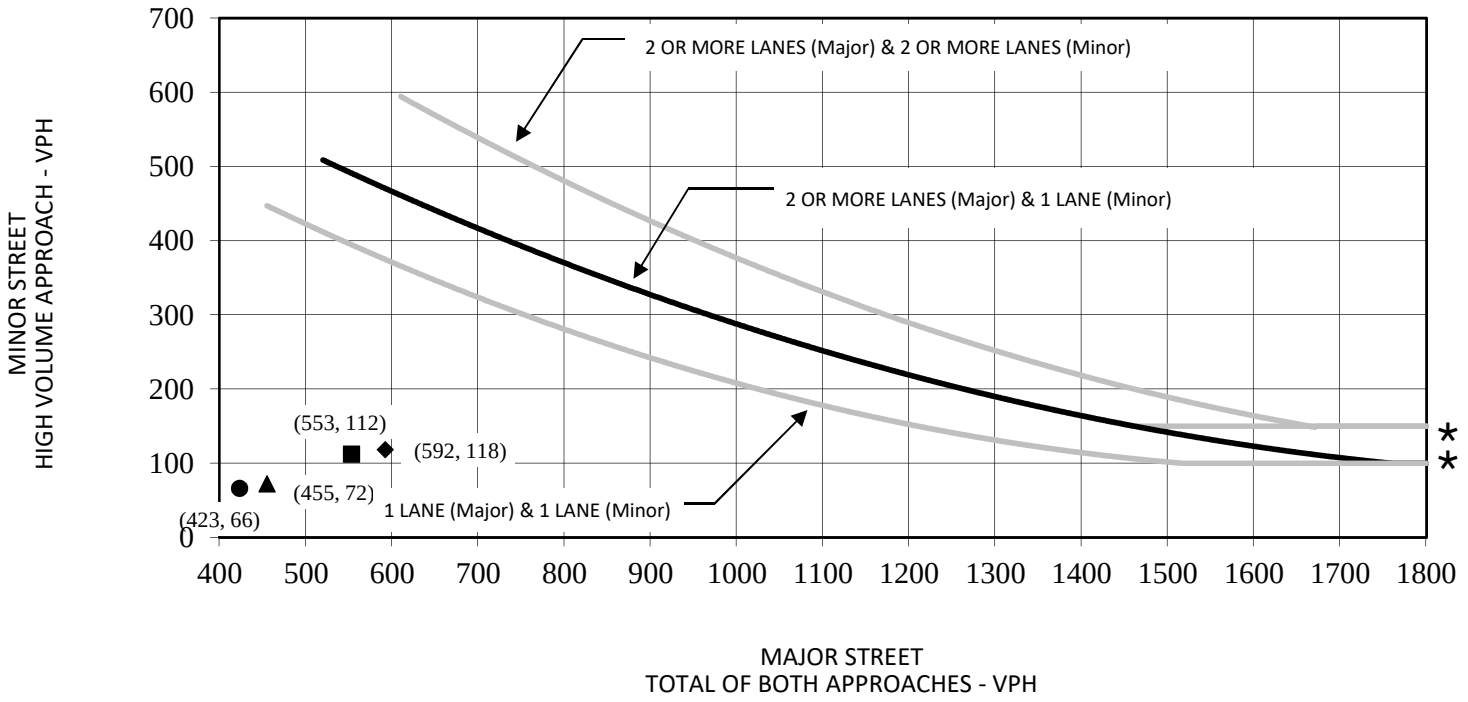
◆ Fourth Highest Hourly Volumes (12:00-13:00)

2740 West Nielsen Warehouse Project
Traffic Impact Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-1

Warrant 2: 4 Hour - Hughes Avenue/Belmont Avenue-Existing Conditions

WARRANT 3, PEAK HOUR



* 150 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 100 VPH applies as the lower threshold volume for a minor street approaching with one lane.

LSA

FIGURE 11-6

● No Project AM Peak Hour
▲ With Project AM Peak Hour
■ No Project PM Peak Hour
◆ With Project PM Peak Hour

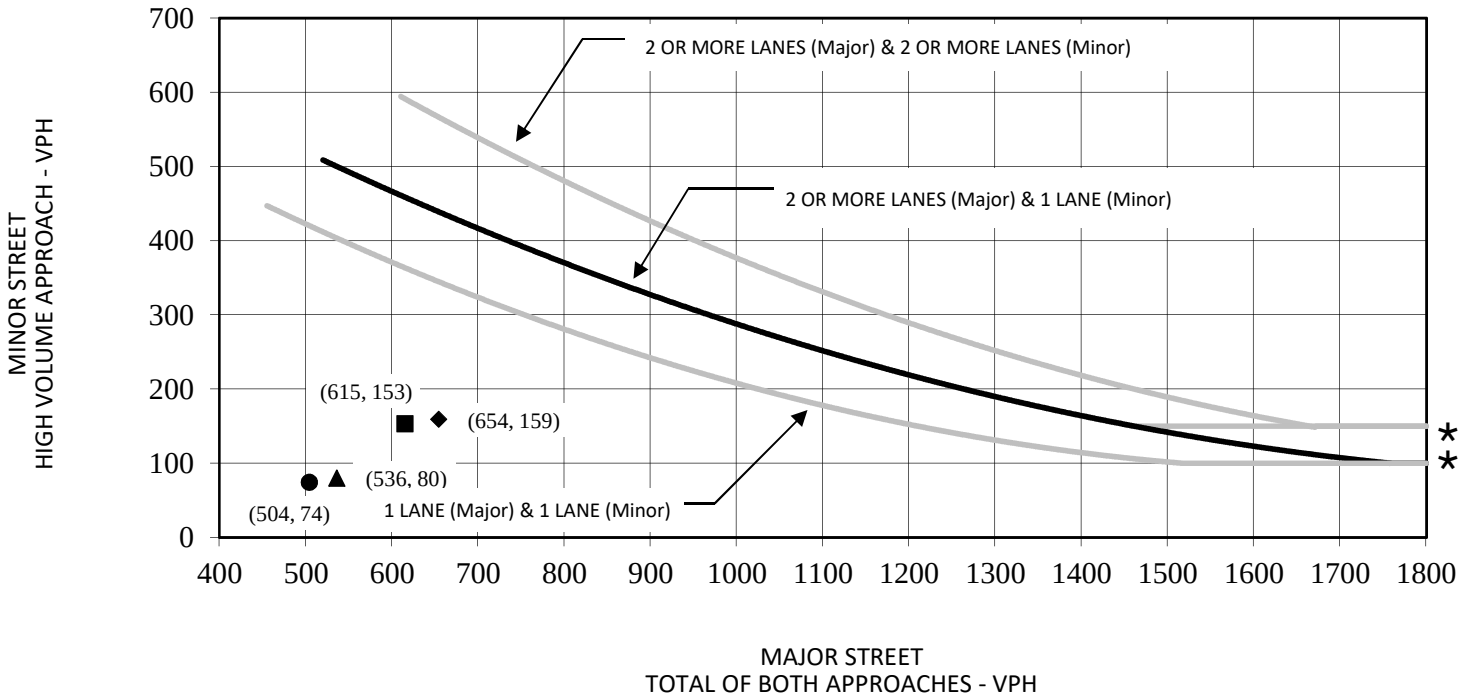
2740 West Nielsen Warehouse Project
Traffic Impact Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-3

Warrant 3: Peak Hour - Hughes Avenue/Belmont Avenue – Existing Conditions

R:\SNN2101\TIS\Warrants\SW_2021 Exist_Int 6.xlsx (11/22/2021)

WARRANT 3, PEAK HOUR



* 150 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 100 VPH applies as the lower threshold volume for a minor street approaching with one lane.

LSA

FIGURE 11-7

● No Project AM Peak Hour
▲ With Project AM Peak Hour
■ No Project PM Peak Hour
◆ With Project PM Peak Hour

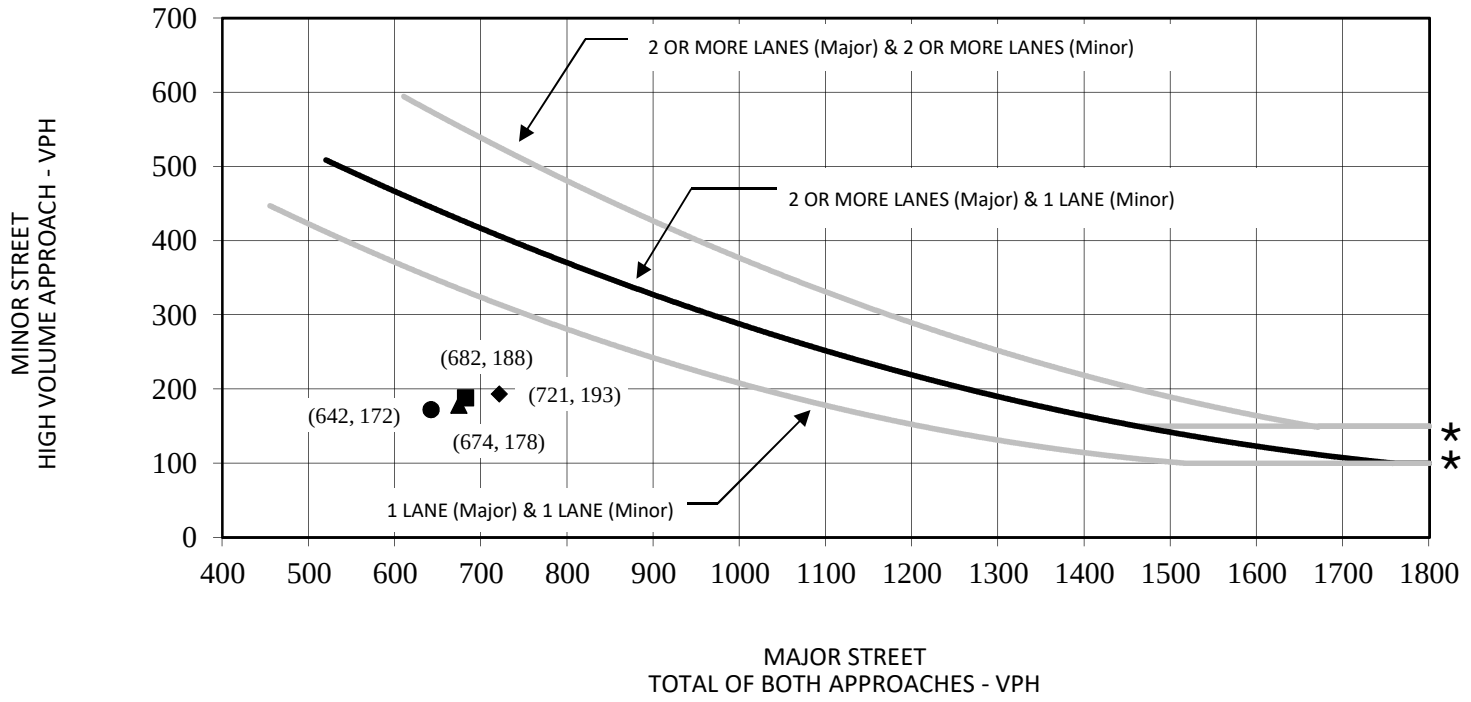
2740 West Nielsen Warehouse Project
Traffic Impact Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-3

Warrant 3, Peak Hour - Hughes Avenue/Belmont Avenue –Near-term approved and pending with project Conditions

R:\SNN2101\TIS\Warrants\SW_OY_Int 6.xlsx (11/22/2021)

WARRANT 3, PEAK HOUR



* 150 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 100 VPH applies as the lower threshold volume for a minor street approaching with one lane.

LSA

FIGURE 11-8

● No Project AM Peak Hour
▲ With Project AM Peak Hour
■ No Project PM Peak Hour
◆ With Project PM Peak Hour

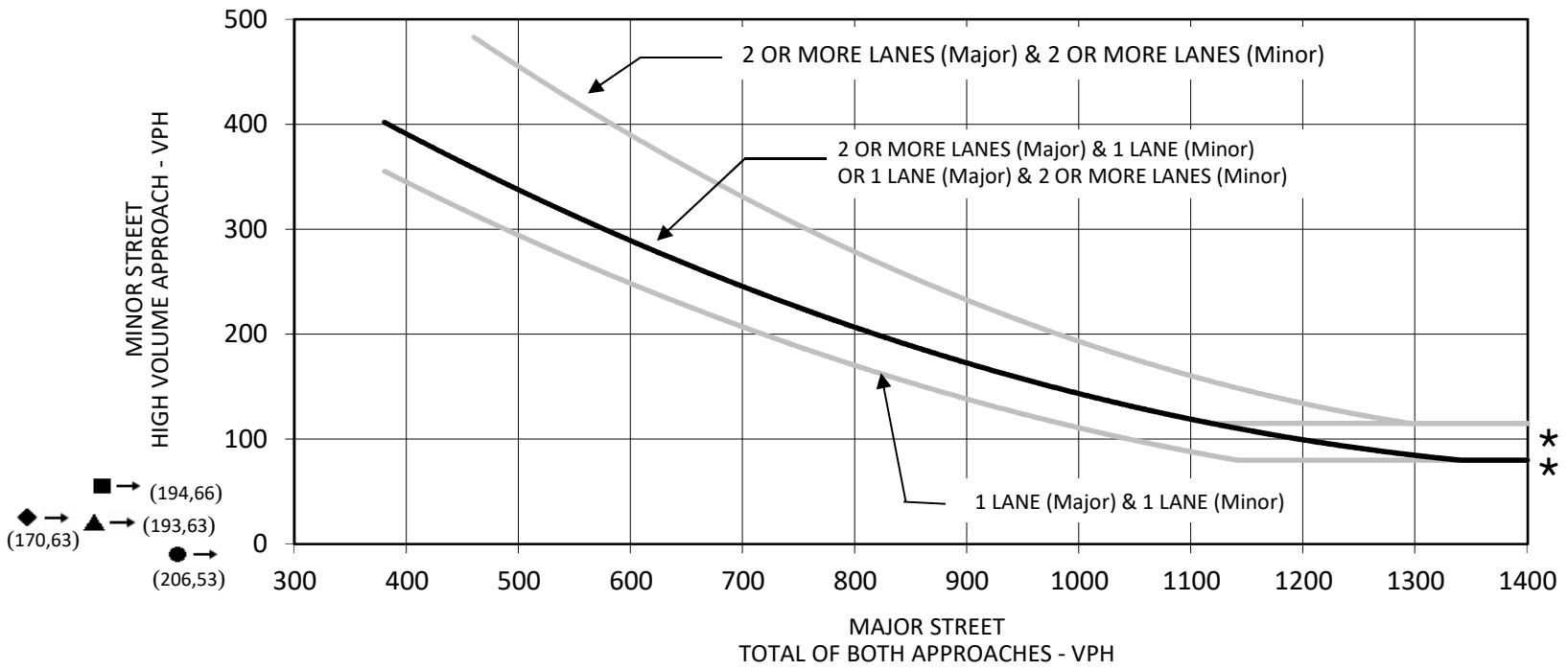
2740 West Nielsen Warehouse Project
Traffic Impact Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-3

Warrant 3: Peak Hour - Hughes Avenue/Belmont Avenue Cumulative Year (2035) Conditions

R:\SNN2101\TIS\Warrants\SW_BO_Int 6.xlsx (11/22/2021)

WARRANT 2, FOUR-HOUR VEHICULAR VOLUME



* 115 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 80 VPH applies as the lower threshold volume for a minor street approaching with one lane.

FIGURE 11-9

LSA

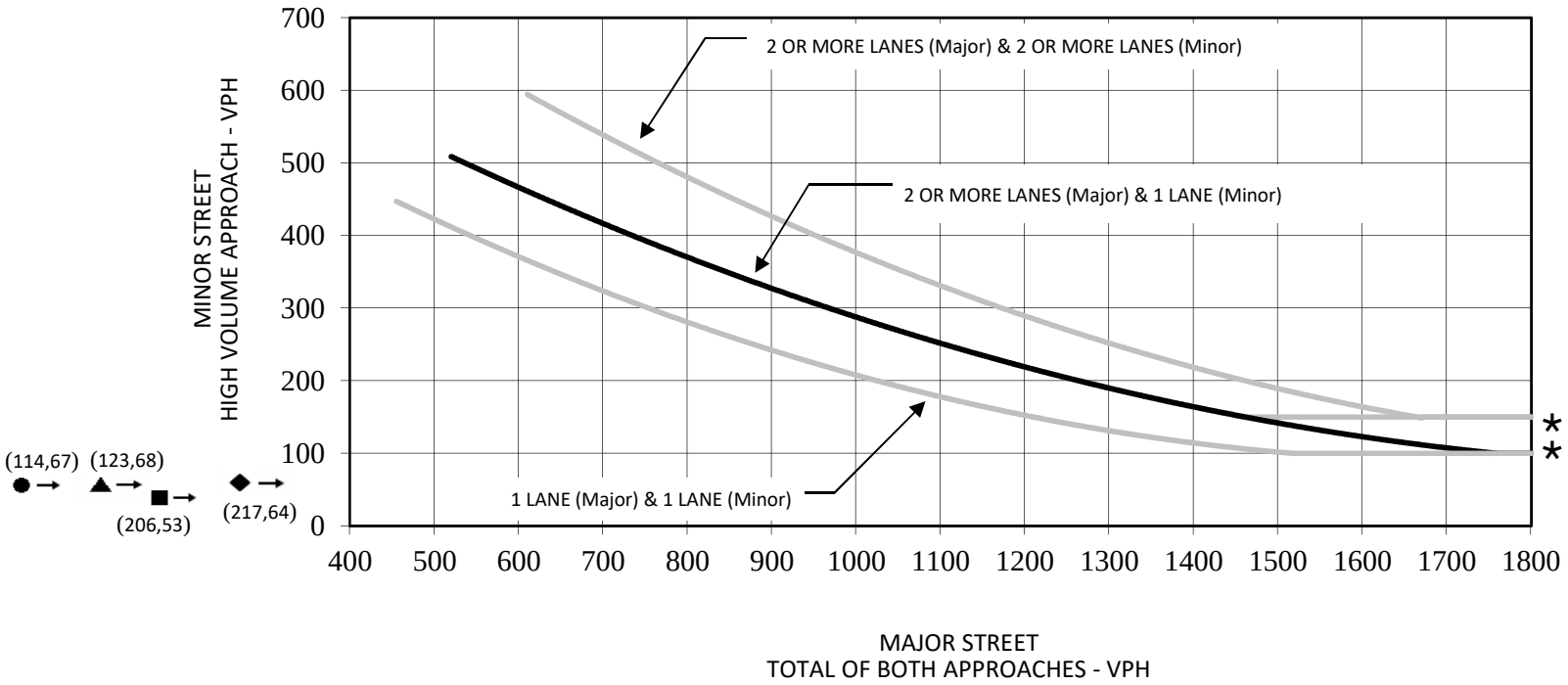
- ● Highest Hour Volumes (P.M. Peak Hour)
- ■ Second Highest Hourly Volumes (14:00-15:00)
- ▲ Third Highest Hourly Volumes (12:00-13:00)
- ◆ Fourth Highest Hourly Volumes (15:00-16:00)

2740 West Nielsen Warehouse Project
Traffic Impact Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-1

Warrant 2: 4 Hour - Hughes Avenue/Nielsen Avenue-Existing Conditions

WARRANT 3, PEAK HOUR



* 150 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 100 VPH applies as the lower threshold volume for a minor street approaching with one lane.

LSA

FIGURE 11-10

● No Project AM Peak Hour
▲ With Project AM Peak Hour
■ No Project PM Peak Hour
◆ With Project PM Peak Hour

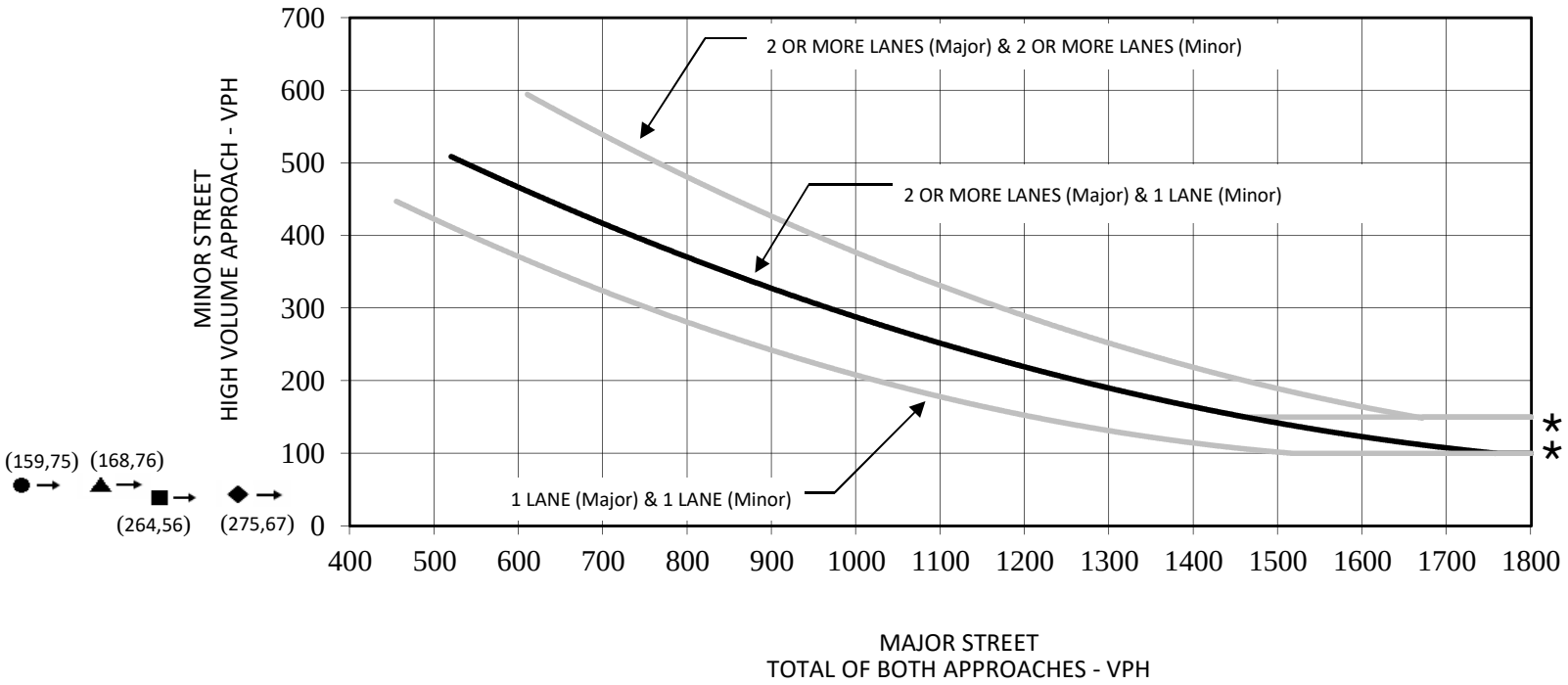
2740 West Nielsen Warehouse Project
Traffic Impact Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-3

Warrant 3: Peak Hour - Hughes Avenue/Nielsen Avenue – Existing Conditions

R:\SNN2101\TIS\Warrants\SW_2021 Exist_Int 7.xlsx (11/22/2021)

WARRANT 3, PEAK HOUR



* 150 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 100 VPH applies as the lower threshold volume for a minor street approaching with one lane.

LSA

FIGURE 11-11

● No Project AM Peak Hour
▲ With Project AM Peak Hour
■ No Project PM Peak Hour
◆ With Project PM Peak Hour

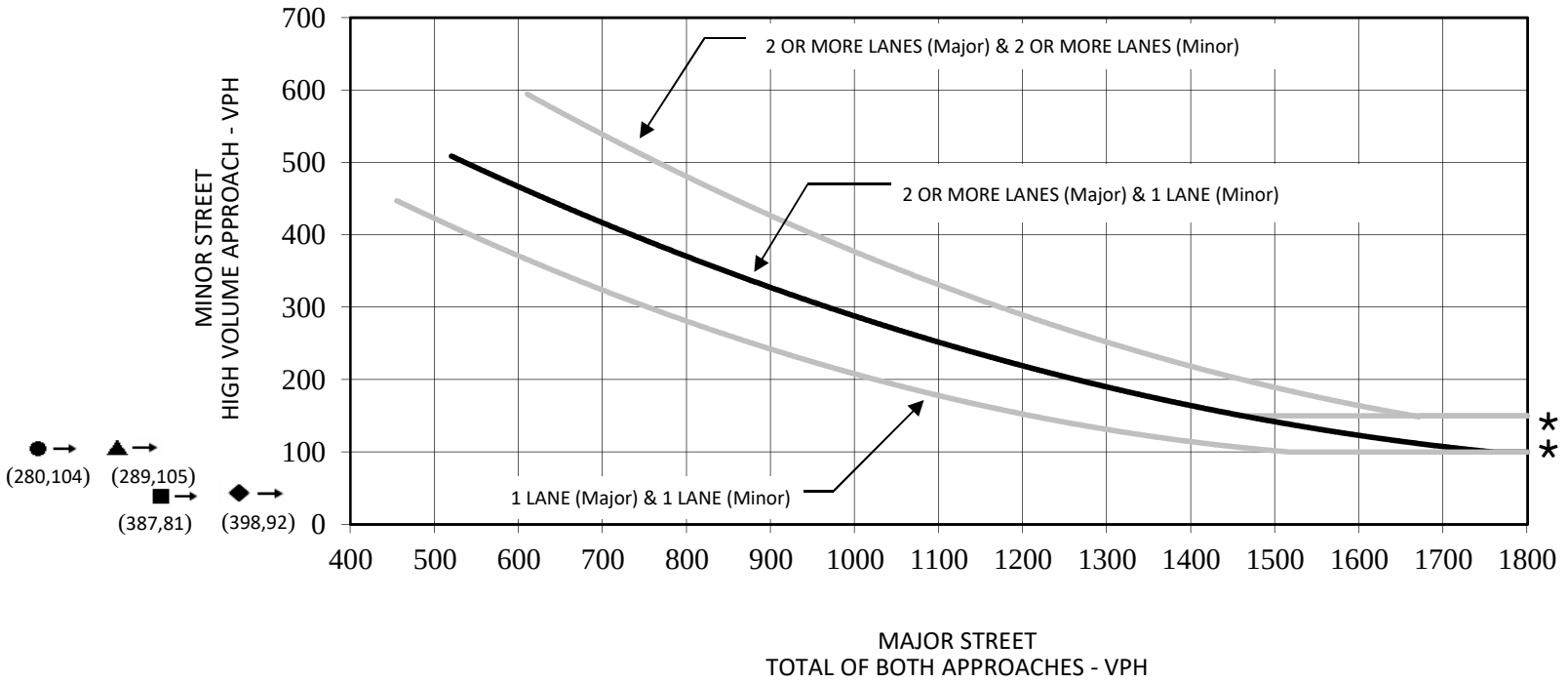
2740 West Nielsen Warehouse Project
Traffic Impact Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, Figure 4C-3

Warrant 3: Peak Hour - Hughes Avenue/Nielsen Avenue –Near-term approved and pending with project Conditions

R:\SNN2101\TIS\Warrants\SW_OY_Int 7.xlsx (11/22/2021)

WARRANT 3, PEAK HOUR



* 150 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 100 VPH applies as the lower threshold volume for a minor street approaching with one lane.

LSA

FIGURE 11-12

● No Project AM Peak Hour
▲ With Project AM Peak Hour
■ No Project PM Peak Hour
◆ With Project PM Peak Hour

2740 West Nielsen Warehouse Project
Traffic Impact Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-3

Warrant 3: Peak Hour - Hughes Avenue/Nielsen Avenue - Cumulative Year (2035) Conditions

R:\SNN2101\TIS\Warrants\SW_BO_Int 7.xlsx (11/22/2021)

LSA

Table 11-A - Eight-Hour Warrant Analysis - Condition A (70%)

Marks Avenue/Belmont Avenue

Time	24-Hour Counts (Veh/hr) EB	WB	NB	SB	Total Major Approaches (≥ 420 Veh/hr)	Higher Minor Approaches (≥ 140 Veh/hr)	Warrant Met
1 Marks Avenue/Belmont Avenue	**Minor Approach**		**Major Approach**				
0:00 - 1:00	15	39	26	27	53	39	No
1:00 - 2:00	10	0	19	12	31	10	No
2:00 - 3:00	13	6	22	18	40	13	No
3:00 - 4:00	14	18	22	18	40	18	No
4:00 - 5:00	42	62	52	60	112	62	No
5:00 - 6:00	106	85	115	141	256	106	No
6:00 - 7:00	131	105	164	193	357	131	No
7:00 - 8:00	248	130	230	357	587	248	Yes
8:00 - 9:00	182	162	259	289	548	182	Yes
9:00 - 10:00	145	173	240	196	436	173	Yes
10:00 - 11:00	142	221	262	178	440	221	Yes
11:00 - 12:00	173	239	281	206	487	239	Yes
12:00 - 13:00	168	234	383	196	578	234	Yes
13:00 - 14:00	166	242	400	211	612	242	Yes
14:00 - 15:00	192	249	522	211	733	249	Yes
15:00 - 16:00	241	285	662	211	873	285	Yes
16:00 - 17:00	264	236	530	201	732	264	Yes
17:00 - 18:00	171	191	449	206	655	191	Yes
18:00 - 19:00	122	136	296	134	429	136	No
19:00 - 20:00	96	146	121	104	225	146	No
20:00 - 21:00	53	91	183	94	277	91	No
21:00 - 22:00	33	86	99	53	152	86	No
22:00 -23:00	24	67	55	29	84	67	No
23:00 - 24:00	22	46	39	26	65	46	No
Total	2,773	3,249	5,430	3,371			

Notes:

Meets Approach Volume Criteria

LSA

Table 11-B - Eight-Hour Warrant Analysis - Condition A (80%)

Hughes Avenue/Belmont Avenue

Time	24-Hour Counts (Veh/hr) EB	WB	NB	SB	Total Major Approaches (≥ 480 Veh/hr)	Higher Minor Approaches (≥ 120 Veh/hr)	Warrant Met
6 Hughes Avenue/Belmont Avenue	**Major Approach**		**Minor Approach**				
0:00 - 1:00	27	27	17	15	54	17	No
1:00 - 2:00	1	4	17	6	5	17	No
2:00 - 3:00	13	30	7	4	43	7	No
3:00 - 4:00	32	25	8	11	57	11	No
4:00 - 5:00	55	83	13	15	138	15	No
5:00 - 6:00	155	128	52	49	283	52	No
6:00 - 7:00	165	138	43	47	303	47	No
7:00 - 8:00	200	163	66	57	363	66	No
8:00 - 9:00	214	185	77	74	399	77	No
9:00 - 10:00	213	215	73	107	428	107	No
10:00 - 11:00	257	257	104	89	514	104	No
11:00 - 12:00	266	291	94	87	557	94	No
12:00 - 13:00	296	275	114	81	571	114	No
13:00 - 14:00	291	311	80	89	602	89	No
14:00 - 15:00	293	310	109	96	603	109	No
15:00 - 16:00	353	335	128	97	688	128	Yes
16:00 - 17:00	299	269	109	102	568	109	No
17:00 - 18:00	216	239	113	77	455	113	No
18:00 - 19:00	181	170	40	62	351	62	No
19:00 - 20:00	157	173	18	52	330	52	No
20:00 - 21:00	110	129	49	49	239	49	No
21:00 - 22:00	79	125	46	40	204	46	No
22:00 -23:00	63	90	30	26	153	30	No
23:00 - 24:00	55	69	14	15	124	15	No
Total	3,991	4,041	1,421	1,347			

Notes:

Meets Approach Volume Criteria

LSA

Table 11- C - Eight-Hour Warrant Analysis - Condition B (80%)

Hughes Avenue/Belmont Avenue

Time	24-Hour Counts (Veh/hr) EB	WB	NB	SB	Total Major Approaches (≥ 720 Veh/hr)	Higher Minor Approaches (≥ 60 Veh/hr)	Warrant Met
6 Hughes Avenue/Belmont Avenue	**Major Approach**		**Minor Approach**				
0:00 - 1:00	27	27	17	15	54	17	No
1:00 - 2:00	1	4	17	6	5	17	No
2:00 - 3:00	13	30	7	4	43	7	No
3:00 - 4:00	32	25	8	11	57	11	No
4:00 - 5:00	55	83	13	15	138	15	No
5:00 - 6:00	155	128	52	49	283	52	No
6:00 - 7:00	165	138	43	47	303	47	No
7:00 - 8:00	200	163	66	57	363	66	No
8:00 - 9:00	214	185	77	74	399	77	No
9:00 - 10:00	213	215	73	107	428	107	No
10:00 - 11:00	257	257	104	89	514	104	No
11:00 - 12:00	266	291	94	87	557	94	No
12:00 - 13:00	296	275	114	81	571	114	No
13:00 - 14:00	291	311	80	89	602	89	No
14:00 - 15:00	293	310	109	96	603	109	No
15:00 - 16:00	353	335	128	97	688	128	No
16:00 - 17:00	299	269	109	102	568	109	No
17:00 - 18:00	216	239	113	77	455	113	No
18:00 - 19:00	181	170	40	62	351	62	No
19:00 - 20:00	157	173	18	52	330	52	No
20:00 - 21:00	110	129	49	49	239	49	No
21:00 - 22:00	79	125	46	40	204	46	No
22:00 -23:00	63	90	30	26	153	30	No
23:00 - 24:00	55	69	14	15	124	15	No
Total	3,991	4,041	1,421	1,347			

Notes:

Meets Approach Volume Criteria

LSA

Table 11-D - Eight-Hour Warrant Analysis - Condition A (80%)

Hughes Avenue/Nielsen Avenue

Time	24-Hour Counts (Veh/hr) EB	WB	NB	SB	Total Major Approaches (≥ 400 Veh/hr)	Higher Minor Approaches (≥ 120 Veh/hr)	Warrant Met
7 Hughes Avenue/Nielsen Avenue	**Minor Approach**		**Major Approach**				
0:00 - 1:00	7	9	21	12	33	9	No
1:00 - 2:00	5	2	18	12	30	5	No
2:00 - 3:00	4	3	6	11	17	4	No
3:00 - 4:00	2	3	6	10	16	3	No
4:00 - 5:00	23	2	11	11	22	23	No
5:00 - 6:00	44	14	19	49	68	44	No
6:00 - 7:00	55	12	30	38	68	55	No
7:00 - 8:00	61	21	38	56	94	61	No
8:00 - 9:00	56	21	61	64	125	56	No
9:00 - 10:00	44	30	52	80	132	44	No
10:00 - 11:00	46	37	67	75	142	46	No
11:00 - 12:00	44	41	73	91	164	44	No
12:00 - 13:00	63	31	105	88	193	63	No
13:00 - 14:00	62	43	66	71	137	62	No
14:00 - 15:00	66	46	96	98	194	66	No
15:00 - 16:00	63	52	92	78	170	63	No
16:00 - 17:00	44	50	102	96	198	50	No
17:00 - 18:00	33	31	77	66	143	33	No
18:00 - 19:00	33	30	56	40	96	33	No
19:00 - 20:00	64	18	51	7	58	64	No
20:00 - 21:00	22	8	48	44	92	22	No
21:00 - 22:00	12	12	38	39	77	12	No
22:00 -23:00	10	5	25	22	47	10	No
23:00 - 24:00	6	5	11	25	36	6	No
Total	869	526	1,169	1,183			

Notes:

Meets Approach Volume Criteria

LSA

Table 11-E - Eight-Hour Warrant Analysis - Condition B (80%)

Hughes Avenue/Nielsen Avenue

Time	24-Hour Counts (Veh/hr) EB	WB	NB	SB	Total Major Approaches (≥ 600 Veh/hr)	Higher Minor Approaches (≥ 60 Veh/hr)	Warrant Met
7 Hughes Avenue/Nielsen Avenue	**Minor Approach**		**Major Approach**				
0:00 - 1:00	7	9	21	12	33	9	No
1:00 - 2:00	5	2	18	12	30	5	No
2:00 - 3:00	4	3	6	11	17	4	No
3:00 - 4:00	2	3	6	10	16	3	No
4:00 - 5:00	23	2	11	11	22	23	No
5:00 - 6:00	44	14	19	49	68	44	No
6:00 - 7:00	55	12	30	38	68	55	No
7:00 - 8:00	61	21	38	56	94	61	No
8:00 - 9:00	56	21	61	64	125	56	No
9:00 - 10:00	44	30	52	80	132	44	No
10:00 - 11:00	46	37	67	75	142	46	No
11:00 - 12:00	44	41	73	91	164	44	No
12:00 - 13:00	63	31	105	88	193	63	No
13:00 - 14:00	62	43	66	71	137	62	No
14:00 - 15:00	66	46	96	98	194	66	No
15:00 - 16:00	63	52	92	78	170	63	No
16:00 - 17:00	44	50	102	96	198	50	No
17:00 - 18:00	33	31	77	66	143	33	No
18:00 - 19:00	33	30	56	40	96	33	No
19:00 - 20:00	64	18	51	7	58	64	No
20:00 - 21:00	22	8	48	44	92	22	No
21:00 - 22:00	12	12	38	39	77	12	No
22:00 -23:00	10	5	25	22	47	10	No
23:00 - 24:00	6	5	11	25	36	6	No
Total	869	526	1,169	1,183			

Notes:

Meets Approach Volume Criteria

12.0 CIRCULATION IMPROVEMENTS AND FUNDING SOURCES

12.1 RECOMMENDED IMPROVEMENTS

Based on the results of the LOS analysis, an operational deficiency currently exists at the intersection of Marks Avenue/Belmont Avenue. As discussed in Chapter 11, this intersection meets several signal warrants under existing, Near-term approved and pending, and Cumulative Year (2035) scenarios. Therefore, the following improvement is being recommended for this intersection:

- Marks Avenue/Belmont Avenue: Install a signal.

Tables 12-A, 12-B, and 12-C illustrate the post-improvement intersection levels of service under existing, Near-term approved and pending conditions, and Cumulative Year (2035) conditions, respectively. As shown in these tables, the intersection is forecast to operate at a satisfactory LOS with the implementation of the proposed improvement.

12.2 FUNDING SOURCES AND MECHANISMS

Where there is a funding mechanism (fee program) for the recommended improvements, payment into the fee program would be considered sufficient project obligation to alleviate project impacts. At study intersections where the project adds to or creates a forecast deficiency and there is no funding mechanism in place, the project is responsible for its fair-share payment toward the implementation of the improvements.

12.2.1 Citywide Traffic Signal Mitigation Impact (TSMI) Program

The City of Fresno traffic Signal Mitigation Impact (TSMI) fees are charged to all new developments throughout the City to mitigate the traffic operational deficiencies through the funding of traffic signal improvements to serve new developments. Based on the City of Fresno *City-Wide Traffic Signal Mitigation Impact Fee nexus Analysis for Proposed Fee Update*, dated September 2016, signalization of intersection of Marks Avenue/Belmont Avenue is included in the Traffic Signal Capital Improvements, where the entire funding is expected to be generated from the TSMI fees. Therefore, since the improvement is covered under the TSMI Fee program, the project will be paying into the fee program for this improvement.

12.3 LIST OF CHAPTER 12.0 TABLES

- Table 12-A: Existing with Project with Improvements Intersection Levels of Service
- Table 12-B: Near-Term Approved and Pending with Project with Improvements Intersection Levels of Service
- Table 12-C: Cumulative (2035) with Project with Improvements Intersection Levels of Service

LSA

Table 12-A - Existing with Project with Recommended Improvements Intersection Levels of Service

Intersection	With Project Without Improvements					With Project With Improvements				
		A.M. Peak Hour		P.M. Peak Hour			A.M. Peak Hour		P.M. Peak Hour	
	Control	Delay (sec.)	LOS	Delay (sec.)	LOS	Control	Delay (sec.)	LOS	Delay (sec.)	LOS
1 . Marks Avenue/Belmont Avenue	AWSC	20.9	C	>100	F *	Signal	20.6	C	22.3	C

Table 12-B - Near-Term approved and pending with Project with Recommended Improvements Intersection Levels of Service

Intersection	With Project Without Improvements					With Project With Improvements				
		A.M. Peak Hour		P.M. Peak Hour			A.M. Peak Hour		P.M. Peak Hour	
	Control	Delay (sec.)	LOS	Delay (sec.)	LOS	Control	Delay (sec.)	LOS	Delay (sec.)	LOS
1 . Marks Avenue/Belmont Avenue	AWSC	26.2	D	>100	F *	Signal	21.3	C	23.3	C

Table 12-C - Cumulative Year (2035) with Project with Recommended Improvements Intersection Levels of Service

Intersection	With Project Without Improvements					With Project With Improvements				
		A.M. Peak Hour		P.M. Peak Hour			A.M. Peak Hour		P.M. Peak Hour	
	Control	Delay (sec.)	LOS	Delay (sec.)	LOS	Control	Delay (sec.)	LOS	Delay (sec.)	LOS
1 . Marks Avenue/Belmont Avenue	AWSC	23.6	C	>100	F *	Signal	23.4	C	24.4	C

Notes:

AWSC = All-Way Stop Control

Delay = Average control delay in seconds (For OWSC intersections, reported delay is for worst-case movement).

LOS = Level of Service

* Exceeds LOS Standard

13.0 VEHICLE MILES TRAVELED ANALYSIS

On December 28, 2018, the California Office of Administrative Law cleared the revised California Environmental Quality Act (CEQA) guidelines for use. Among the changes to the guidelines was removal of vehicle delay and level of service from consideration under CEQA. With the adopted guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled (VMT).

The City adopted the City of Fresno CEQA Guidelines for Vehicle Miles Traveled Thresholds (VMT Guidelines) on June 25, 2020, which includes the screening criteria, VMT analysis methodology, VMT impact thresholds, and VMT mitigation measures. Therefore, the City's VMT Guidelines was used in the evaluation of the project's VMT analysis.

13.1 METHODOLOGY

The VMT Guidelines provides multiple screening criteria for land use projects. The project was compared with the screening criteria established in the "Project Screening" section of the VMT Guidelines to check if the project can be screened out. Following is a brief description about the project in relation with the project screening criteria:

- **Transit Priority Area (TPA) Screening:** The project is not located within a TPA. Therefore, this screening criteria does not apply to the project.
- **Low Trip Generator:** The VMT Guidelines identifies that projects generating less than 500 daily trips could also be screened out. As discussed in the project trip generation section, the project is estimated to generate 2,458 daily trips. Therefore, the project does not satisfy this screening criteria.
- **Other Screening Criteria:** The project is not a residential or office projects, and therefore it could not be screened out using low VMT area maps. Additionally, it is neither an affordable housing project nor it could be classified as retail, institutional/government uses or public service uses. Therefore, these criteria do not apply for the project.

As shown above, the project could not be screened out from detailed VMT analysis. As such, pursuant to the VMT Guidelines, a detailed VMT analysis was conducted to assess the project's VMT impact.

13.1.1 Thresholds of Significance

Though the project is non-residential it could not be classified as a retail or office project. Additionally, the project does not require a General Plan Amendment (GPA). Therefore, pursuant to the VMT Guidelines, the project VMT per employee needs to be compared with the existing VMT per employee for the region. The City's VMT Guidelines establishes a numerical value of 25.6 for the regional VMT per employee.

As recommended in the VMT Guidelines, Fresno COG ABM was used for the project VMT analysis. The model database was updated with the project land uses to calculate project VMT. The project VMT was calculated from Fresno COG ABM model run as described below:

13.1.2 Project Traffic Analysis Zone Update

The first step in preparation of this analysis was to update the traffic analysis zone (TAZ) in the model that include the project area. The project land use was converted to employments. SF to employee conversion factor were estimated from Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. Daily Trip rates per employee were divided by daily trip rates per 1,000 SF to estimate the ratio between land use square footage and number of employees. The socioeconomic data for the project TAZ in the existing year model scenario was updated accordingly.

13.1.3 Model Runs and Project VMT Estimation

Model run was conducted for this updated model upon completion of the socioeconomic data update. The outputs from this updated model run was used to calculate the project VMT per employee.

13.2 PROJECT VMT ANALYSIS

Table 13-A summarizes the regional threshold and project VMT per employee. As shown in Table 13-A, the project VMT per employee is 22.66% lower than the existing regional VMT per employee. Therefore, based on the VMT Guidelines, the project will not have any significant VMT impact.

Detailed VMT calculation for the project is included in Appendix G.

13.3 LIST OF CHAPTER 13.0 TABLES

- Table 13-A: Existing (2019) Regional and Project VMT per Employee

Table 13-A: Existing (2019) Regional and Project VMT per Employee

Regional*	Project	Difference	Percentage Difference	Significant Impact
25.6	19.8	5.8	22.66%	No

* *Obtained from City's VMT Guidelines.*

14.0 COLLISION ANALYSIS

As recommended by the City staff during the scoping agreement process, a collision analysis was performed in the vicinity of the project area. As such, intersections and roadway segments within the study area where accidents occurred in recent times were evaluated to estimate the accident rates at those locations. For the arterial roadway network system in the vicinity of the project, Statewide Integrated Traffic Records System (SWITRS) collision data between January 2018 and December 2020 were obtained from the Transportation Injury Mapping System (TIMS) database. For the freeway facilities in the vicinity of SR-180 Marks Avenue Interchange, Traffic Accident Surveillance and Analysis System (TASAS) crash data summary was obtained from Caltrans for the same time period. The SWIRTS data summary and Caltrans TASAS data summary is included in Appendix H.

Based on the SWIRTS data summary, within the study area during the same time period, one collision occurred at the intersection of Marks Avenue/SR-180 Westbound Ramps and one fatal collision occurred along the roadway segment of Hughes Avenue, between Belmont Avenue and Nielsen Avenue.

14.1 METHODOLOGY

For the intersections analyzed, rates per million entering vehicle (RMEV) was calculated to develop the accident rate at the intersection of Marks Avenue/SR-180 Westbound Ramps. Similarly, for the roadway segment of Hughes Avenue, between Belmont Avenue and Nielsen Avenue, rates per million vehicle miles (MVM) was calculated to determine the accident rate. For the roadway segment, length of the segment was determined from Google Earth aerial imagery. Additionally, since the accidents occurred at one intersection and within one segment only, only those locations were evaluated. These rates were compared against corresponding countywide and statewide rates to identify their performance. The statewide and countywide rates were obtained or derived from the data published in Caltrans *2018 Crash Data on California State Highways (Caltrans Crash Data).*

14.2 ANALYSIS SUMMARY

14.2.1 Intersections

Table 14-A summarizes the accident ratio for the intersection of Marks Avenue/SR-180 Westbound Ramps. As shown in Table 14-A, the accident rate at this intersection is 0.06 per million entering vehicle, which is substantially lower than the statewide average for such intersections. The accident rate for such intersections (signalized T-intersections under suburban setting) is 0.29 as per the Caltrans Crash Data. Relevant pages from the Caltrans Crash Data summary is included in Appendix H. As such, the intersection currently operates within the safety limits and no safety related improvements would be required at this intersection. Since no accidents occurred at the other intersections within recent years, no improvement is necessary for those intersections as well.

14.2.2 Roadway Segment

Table 14-B summarizes the accident rate for the roadway segment of Hughes Avenue, between Belmont Avenue and Nielsen Avenue. As shown in Table 14-B, the accident rate at this roadway segment is 0.71 per million vehicle miles traveled, which is lower than both countywide and

statewide average for non-freeway facilities. The average accident rate for roadway segments (non-freeway facilities) is 0.96 for the County and 1.02 for the state based on the Caltrans Crash Data. Additionally, as per Caltrans Crash Data, the statewide accident rate for two-lane undivided roadways with a speed limit of less than 45 mph and in a suburban setting is 1.6 which is substantially higher than the accident rate at the analyzed segment. Relevant pages from the Caltrans Crash Data summary is included in Appendix H. Therefore, this segment currently operates within acceptable safety limits.

However, currently, this roadway segment does not have any sidewalks to provide safe access to pedestrians. As previously mentioned, the City recommends installing sidewalks along this roadway segment under its Active Transportation Plan. As such, the project would be constructing a sidewalk along this segment along the project frontage, as well as project frontages along Marks Avenue and Nielsen Avenue as a project design feature. The addition of these sidewalks by the project would enhance pedestrian access and address safety concerns.

Since no accidents happened along other roadway segments within the study area, no improvement have been recommended at those segments.

14.2.3 Freeway Segment

Based on the TASAS data for freeway facilities, 36 collisions occurred in the freeway facilities within one mile on either side of the SR-180 and Marks Avenue interchange. None of these collisions resulted in any fatalities. The Caltrans TASAS data summary is included in Appendix H. As included in the summary, the rate of total fatal and injury related collisions along this facility is lower than the corresponding average rate for similar facilities.

14.3 CONCLUSION

Based on the results of this analysis, no improvement is necessary within the study area with the exception of installation of sidewalk along the project frontage on Hughes Avenue. Though the project will be adding new trips within the study area, it is not estimated that the project traffic will be significantly changing the traffic flow pattern within the neighborhood. As such, it is not expected that the project traffic will result in unsafe environment within the study area from traffic safety perspective. As described in the previous chapter, project traffic are estimated to have adequate time for turn movements and corner sight clearance along the project driveway and the intersections. Therefore, both car and truck trips generated by the project could safely maneuver throughout the study area. As such, the project would not potentially increase traffic collision rate within the study area.

14.4 LIST OF CHAPTER 14.0 TABLES

- Table 14-A: Intersection Accident Rate per RMEV
- Table 14-B: Roadway Segment Accident Rate per MVM

LSA

Table 14-A - Intersection Accident Rate per RMEV

	Intersection	# of Crashes C	Existing Daily Approach V	Years of Data N	Accident Ratio R
4 .	Marks Avenue/SR-180 Westbound Ramps	1	16,474	3	0.06

Notes:

RMEV= Rate per Million Entering Vehicle

LSA

Table 14-B - Roadway Segment Accident Rate per MVM

Roadway	#	Segment	# of Crashes C	Existing ADT V	Years of Data N	Length of Segment (ft)[1] L	Accident Ratio R
Hughes Avenue	**7**	Hughes Avenue, between Belmont Avenue and Nielsen Avenue	1	2,604	3	2,587	0.72

Notes:

MVM = Million Vehicle Miles Traveled.

15.0 SUMMARY AND CONCLUSION

The proposed project consists of four buildings with a total area of 901,438 sf, all of which will be High Cube Fulfilment Center warehouses. Access to the project site would be provided via seven driveways located on Marks Avenue, Nielsen Avenue and Hughes Avenue. The project is estimated to generate 2,458 daily PCE trips, with 137 PCE trips occurring during the a.m. peak hour and 176 PCE trips occurring during the p.m. peak hour.

15.1 EXISTING CONDITIONS SUMMARY

All but one study intersections and all roadway segments operate at a satisfactory LOS under existing without and with project conditions.

15.2 NEAR-TERM APPROVED AND PENDING (2023) CONDITIONS SUMMARY

All but one study intersections and all roadway segments are forecast to operate at a satisfactory LOS under Near-term approved and pending (2023) with project conditions.

15.3 CUMULATIVE YEAR (2035) CONDITIONS SUMMARY

All but one study intersections and all roadway segments are forecast to operate at a satisfactory LOS under Cumulative Year (2035) without and with project conditions.

15.4 QUEUING ANALYSIS SUMMARY

Except for some movements for the intersection of Marks Avenue/Belmont Avenue, all other study intersections are forecast to have adequate storage lane lengths to accommodate queues under all scenarios.

15.5 WORST CASE SCENARIO ANALYSIS SUMMARY

All study intersections and freeway segments evaluated under this scenario are forecast to operate at a satisfactory LOS under Near-term approved and pending (2023) with project conditions and Cumulative Year (2035) with project conditions.

15.6 SITE ACCESS ANALYSIS SUMMARY

The project driveways have adequate corner sight distance and will be stop controlled. Based on the locations of the project driveways, the project is not anticipated to create deficiency in the neighborhood traffic flow pattern.

15.7 SIGNAL WARRANT ANALYSIS SUMMARY

The intersection of Marks Avenue/Belmont Avenue meets signal warrant 1 and signal warrant 2 under existing conditions. This intersection also meets peak hour signal warrant for existing and all other analysis scenarios. The intersections of Hughes Avenue/Belmont Avenue and Hughes Avenue/Nielsen Avenue do not meet any signal warrant under any scenario.

15.7 CIRCULATION IMPROVEMENTS SUMMARY

Based on the improvements discussed in Section 12.1 “Recommended Improvements” of this report, the recommended improvements includes installing a signal at the intersection of Marks Avenue/Belmont Avenue. This improvement is included in the City’s TSMI fee program.

15.8 CEQA VMT ANALYSIS SUMMARY

The project could not be screened out and a detailed VMT analysis was performed for the project. Based on the results of this analysis, the project will not have any CEQA VMT impact.

15.9 COLLISION ANALYSIS SUMMARY

Accident ratio within the study area is lower than the corresponding countywide and statewide average and no improvement is necessary to enhance safety within the study area. Within one mile of the SR-180 and Marks Avenue interchange, the accident rates are lower than the average for similar facilities. It is not estimated that the project traffic will significantly change the traffic flow pattern within the study area or increase the current collision frequency.

APPENDIX A:

SCOPING AGREEMENT

CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

July 19, 2021

Ms. Jill Gormley
City Traffic Engineer, City of Fresno
2600 Fresno Street
Room 4016
Fresno, CA 93721

Subject: Scope of Work for the 2740 West Nielsen Warehouse Traffic Impact Study (LSA Project No. SNN2101)

Dear Jill:

LSA will be preparing a traffic impact study (TIS) for the proposed 2740 West Nielsen Warehouse Project (project) to be located at the northeast corner of the intersection of Marks Avenue and Nielsen Avenue in the City of Fresno (City). Figure 1 (all figures and tables attached) illustrates the regional and project location.

The proposed project includes four High Cube Fulfillment Center warehouses totaling an area of 907,780 square feet (sf). Access to the project will be provided via the following seven driveways:

Driveways on Marks Avenue

- Driveway 1: This full access driveway located on Marks Avenue near the Northwest corner of the site will be used by passenger vehicles only.
- Driveway 2: This driveway located on Marks Avenue will be used by trucks only. This driveway will allow all movements except for left-turn egress from the project site.
- Driveway 3: This right-in-right-out driveway located on Marks Avenue near the Southwest corner of the site will be used by passenger vehicles only.

Driveways on Nielsen Avenue

- Driveway 4: This right-in-right-out driveway located on Nielsen Avenue will be used by passenger vehicles only.
- Driveway 5: This full access driveway located on Nielsen Avenue will be used by both passenger vehicles and trucks.

Driveways on Hughes Avenue

- Driveway 6: This full access driveway located on Hughes Avenue near the Northeast corner of the site will be used by both passenger vehicles and trucks.
- Driveway 7: This full access driveway located on Hughes Avenue will be used by both passenger vehicles and trucks.

Figure 2 illustrates the conceptual site plan and the driveway locations.

1500 Iowa Avenue, Suite 200, Riverside, California 92507 951.781.9310 www.lsa.net

The project site designation in the City of Fresno Official Zoning Map is IH – Heavy Industrial. The project is consistent with the designated zoning. LSA anticipates that the following scope of work will be required to prepare the TIS for the proposed project.

SCOPE OF WORK: CEQA TRANSPORTATION ASSESSMENT

Senate Bill 743 (SB 743) required changes be made to California Environmental Quality Act (CEQA) regulations introducing vehicle miles traveled (VMT) as the metric for determining project traffic impacts. Thus, a VMT analysis will be conducted for the project to satisfy the CEQA requirements. The City adopted the *City of Fresno CEQA Guidelines for Vehicle Miles Traveled Thresholds* (VMT Guidelines) on June 25, 2020, which includes the screening criteria, VMT analysis methodology, VMT impact thresholds, and VMT mitigation measures. Based on the screening criteria provided in the VMT Guidelines, it is anticipated that the project will not be screened out from a detailed VMT analysis.

LSA will utilize the Fresno Council of Governments (Fresno COG) Activity Based Model (ABM) for the VMT calculations for the project. Recently LSA has been selected as one of the consultants to run the model in-house for VMT analysis and other purposes. Therefore, LSA will run the model in-house and extract the project VMT for the VMT analysis purposes. The CEQA VMT Assessment will involve the following steps:

Project Traffic Analysis Zone Update

The first step in preparation of this analysis will be to update the traffic analysis zones (TAZs) in the model that include the project area. LSA will convert the project land use into model socioeconomic categories using regional conversion factors. The socioeconomic data for the project TAZ in the existing year model scenario will be updated.

Project VMT Analysis

Upon completion of the socioeconomic data update, LSA will conduct model run for the existing scenario. LSA will utilize the outputs from the model runs to calculate the regional (Entire Fresno County) with project VMT per employee. Further, with project regional VMT per employee will be compared to corresponding no project VMT per employee under existing conditions. As per the City's VMT analysis guidelines, if the with project VMT per employee exceeds the no project VMT per employee, then the project would create a significant VMT impact.

The TIS will include a chapter with the detailed VMT analysis methodology and results, and a discussion on mitigations if a significant VMT impact is found. The VMT methodology and findings will be confirmed with City staff prior to inclusion in the TIS.

Active Transportation and Public Transit Analysis

The TIS will evaluate potential project impacts on public transit, bicycle, and pedestrian facilities in the vicinity of the project. The analysis will determine whether the project conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decreases the performance or safety of such facilities.

SCOPE OF WORK: LEVEL OF SERVICE ANALYSIS

While Levels of Service (LOS) analysis is not a determinant of CEQA impacts, consistency with the City's General Plan goals and policies is still required. The LOS analysis will be prepared to satisfy the requirements established by the City of Fresno *Traffic Impact Study Report Guidelines* (City Guidelines), updated February 2, 2009.

Study Intersections

LSA proposes to include the following intersections in the study:

1. Marks Avenue/Belmont Avenue (City of Fresno, County of Fresno);
2. Marks Avenue/Nielsen Avenue (City of Fresno);
3. Marks Avenue/Ray Johnson Drive (City of Fresno);
4. Marks Avenue/SR-180 Westbound Ramps (Caltrans);
5. Marks Avenue/SR-180 Eastbound Ramps (Caltrans);
6. Hughes Avenue/Belmont Avenue (City of Fresno, County of Fresno); and
7. Hughes Avenue/Nielsen Avenue (City of Fresno).

Figure 3 illustrates the study area intersections.

It should be noted that based upon the recommendation by the City, a detailed LOS analysis will not be conducted at the project driveway intersections. As such, these intersections will be included for project trip distribution, assignment and volume development purposes only. A detailed LOS analysis will only be conducted for the intersections listed above.

Roadway Segments

LSA recommends evaluating the following roadway segments in the study:

1. Marks Avenue, between Belmont Avenue and Nielsen Avenue;
2. Marks Avenue, between Nielsen Avenue and Ray Johnson Drive;
3. Marks Avenue, between Ray Johnson Drive and SR-180 Westbound Ramps;
4. Marks Avenue, between SR-180 Westbound Ramps and SR-180 Eastbound Ramps;
5. Belmont Avenue, between Marks Avenue and Hughes Avenue;
6. Nielsen Avenue, between Marks Avenue and Hughes Avenue; and
7. Hughes Avenue, between Belmont Avenue and Nielsen Avenue.

For each roadway segment, the highest volume on any part of the segment will be considered as the analysis volume for the entire segment.

Analysis Scenarios

The LOS analysis will satisfy the requirements established by the City and Caltrans. The following scenarios will be included in the TIS:

- Existing Conditions;
- Existing plus Project Conditions;
- Existing plus Project and Near-term approved and pending projects Conditions;
- Cumulative Year (2040) no Project Conditions; and
- Cumulative Year (2040) plus Project Conditions.

Trip Generation

The trip generation rates from Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10th Edition) Land Use 155 – "High-Cube Fulfillment Center Warehouse" have a small sample size. Recently, Western Riverside Council of Governments (WRCOG) facilitated a Trip Generation Study for such facilities. Therefore, the trip generation for the proposed project was developed using rates from this WRCOG *TUMF High-Cube Warehouse Trip Generation Study* (dated January 29, 2019) prepared by WSP. The study is included in Appendix A. The study provides separate trip generation rates for passenger vehicles, 2-4 axle trucks and 5+ axle trucks. The truck trips were converted to Passenger Car Equivalent (PCE) trips using a PCE factor of 2.0 for 2-4 axle trucks, consistent with Highway Capacity Manual (HCM) recommendations. However, as a conservative approach, a PCE factor of 3.0 was used for 5+ axle trucks, consistent with the practices in several regions within the State.

Table A summarizes the daily, a.m., and p.m. peak hour project trip generation. As shown in Table A, the project is estimated to generate 2,474 daily PCE trips, with 137 PCE trips occurring during the a.m. peak hour and 178 PCE trips occurring during the p.m. peak hour. Trip distribution patterns were obtained from select zone model runs of the Fresno COG ABM, which take into account the location of the proposed project in relation to surrounding land uses and the regional roadway network. Separate select zone trip distributions for passenger car and truck trips were obtained from the Fresno COG ABM. The select zone distribution plots are included in Appendix B. However, the model does not account for driveway location, driveway access configuration or the internal site circulation pattern. Therefore, the distribution was manually adjusted to reflect the project driveway locations and access patterns. Figures 4-A and 4-B illustrate the trip distributions at study intersections for passenger car and truck trips respectively.

The project trip assignment is the product of the project trip generation and the trip distribution percentages. Figures 5-A and 5-B illustrate the trip assignments at study intersections for passenger car and truck PCE trips respectively. Figure 6 illustrates the total project PCE trip assignment. It should be noted that these figures also include trip distribution and assignment at all the project driveways. These figures help demonstrate the volume development methodology under plus project conditions with addition of project traffic.

Volume Development and Analysis Methodology

Traffic volumes for existing year traffic conditions are usually based on current count data collected at study intersections and roadway segments. However, current traffic counts will not reflect the typical traffic conditions due to the statewide COVID-induced closure. LSA proposes to use historical counts available from counters, and apply a growth rate appropriate for the City to develop Existing year (2021) traffic volumes.

Existing plus project volumes will be developed by adding project traffic to the Existing conditions scenario volumes.

Existing plus project and Near-term approved and pending project conditions traffic volumes will be developed by applying a per annum growth factor to the existing traffic volumes and adding traffic from the project, as well as from the approved and pending development projects in the vicinity of the project. LSA contacted the City's Planning and GIS department and obtained a list of approved and pending development projects in the project vicinity. LSA is in the process of obtaining the list of cumulative projects from the County of Fresno because of the project's adjacency to the unincorporated County limits. Table B summarizes the list of Cumulative projects within the City. As noted in Table B, LSA is requesting the City to provide additional details for projects that have missing information.

Cumulative Year (2040) no Project volumes will be developed using forecast volumes obtained from the latest version of the Fresno COG ABM and by applying the FCOG recommended post-processing methodologies. Additionally, the transportation network to be evaluated in this scenario will include all Capital Improvement Projects (CIPs) already identified in an impact fee program such as the Fresno Major Street Impact (FMSI) program or Traffic Signal Mitigation Impact (TSMI) program.

Cumulative Year (2040) plus Project Conditions will be developed by adding project traffic to the Cumulative Year (2040) scenario volumes.

All study intersections will be analyzed during the a.m. and p.m. peak hours. As per the City Guidelines, the a.m. peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 and 9:00 a.m. while the p.m. peak hour is defined as the one hour of highest traffic volumes occurring between 4:00 and 6:00 p.m. Intersection LOS will be calculated using *Highway Capacity Manual 6* (HCM 6) analysis methodologies by using the Synchro 10 software.

Roadway segments will be analyzed for daily traffic using the Florida Tables as recommended in the City Guidelines.

Queuing Analysis

A queuing analysis will be performed at all the study intersections. Queues for signalized intersections will be reported from Synchro, while queues for unsignalized intersections will be reported from SimTraffic.

Site Access and Circulation

A description of project driveways and illustration on the Site plan will be provided in the TIS. Traffic operations at the project driveways will be analyzed for Levels of service (LOS) and queues as part of the LOS and queuing analysis. The TIS will also include a discussion on the distance of the driveways

from nearby intersections, along with the anticipated queues and Minimum Required Throat Depth (MRTD) at the driveways. An evaluation of sight distance and other potential unsafe traffic conditions shall be included in the TIS as requested by the City Staff.

Analysis of Traffic Operations and Recommended Circulation Improvements

LOS and delay will be analyzed under the Existing plus Project, Near-Term, and Cumulative plus project analysis scenarios to determine operational deficiencies at study intersections and roadway segments. Determination of operational deficiencies will be made based on the City's LOS standards and significance threshold criteria set forth in the City Guidelines and as per consultation with City staff.

Improvements will be recommended at locations operating at an unsatisfactory LOS or where the project causes an operational deficiency. Improvements may include addition of intersection turn lanes, roadway widening, traffic signal installation and modification, local street striping and channelization improvements, and signage. The LOS with improvements will be calculated and summarized along with a comparison of the LOS without improvements.

Signal Warrant Analysis

As per City staff comments, signal warrant analysis would be conducted at unsignalized study intersections. Peak hour approach volumes for the study intersections will be examined to determine whether signalization may be warranted per the criteria defined in the California supplement of the *Manual on Uniform Traffic Control Devices* (CA-MUTCD). Specifically, warrants 1 and 2 will be included for existing unsignalized intersections under the existing scenario. Warrant 3 will be included for unsignalized study intersections under all study scenarios.

Multimodal Analysis

The existing, pedestrian, bicycle, and transit service will be documented and gaps in the existing sidewalk and bicycle network within the study area as well as current access to transit and current transit service will be identified in the analysis. The analysis will identify connectivity from the project site to the existing bicycle, pedestrian network, and distance to current transit stops. Improvements that will increase connectivity to sidewalks, trails, bicycle facilities and transit facilities will be considered in the TIS.

Collision Analysis

An analysis of the collision data based on the California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS) will be included in the TIS.

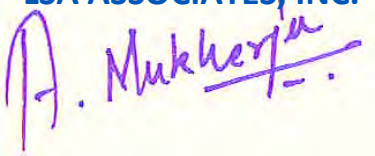
Fair Share

LSA will evaluate whether the improvements identified in the TIS are included in the City's FMSI or the TMSI programs. If it is determined that the improvement is not covered through either of the fee programs, then the project's fair share contribution will be calculated based on the project traffic as a percentage of total growth from existing to cumulative year conditions.

Should you have any questions, please do not hesitate to contact me at (951) 781-9310 or email me at Ambarish.Mukherjee@lsa.net.

Sincerely,

LSA ASSOCIATES, INC.



Ambarish Mukherjee, AICP, PE
Principal

Attachments:

Table A: Project Trip Generation
Table B: Cumulative Projects
Figure 1: Regional and Project Location
Figure 2: Conceptual Site Plan
Figure 3: Study Area Intersections
Figure 4-A: Project Trip Distribution – Passenger Vehicles
Figure 4-B: Project Trip Distribution – Trucks
Figure 5-A: Project Trip Assignment – Passenger Vehicles
Figure 5-B: Project Trip Assignment – Truck PCE
Figure 6: Project Total Trip Assignment
Appendix A: WRCOG TUMF High-Cube Warehouse Trip Generation Study
Appendix B: Fresno COG Travel Model Select Zone Distribution Plots

TABLES

LSA

Table A - Project Trip Generation

Land Use		Units	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
High-Cube Fulfillment Center[1,2]	907.780	TSF							
Trips/Unit (Cars)			0.083	0.020	0.103	0.117	0.027	0.144	1.750
Trips/Unit (2-4 Axle Trucks)			0.006	0.002	0.008	0.009	0.002	0.011	0.162
Trips/Unit (5+ Axle Trucks)			0.009	0.002	0.011	0.008	0.002	0.010	0.217
Trips/Unit (Total)			0.098	0.024	0.122	0.134	0.031	0.165	2.129
Trip Generation (Cars)			75	18	93	106	25	131	1,589
Trip Generation (2-4 Axle Trucks)			5	2	7	8	2	10	147
Trip Generation (5+ Axle Trucks)			8	2	10	7	2	9	197
Trip Generation (Total Trucks)			13	4	17	15	4	19	344
Trip Generation (Total)			88	22	110	121	29	150	1,933
Trip Generation (Cars)			75	18	93	106	25	131	1,589
PCE Trip Generation (2-4 Axle Trucks)[3]			10	4	14	16	4	20	294
PCE Trip Generation (5+ Axle Trucks)[3]			24	6	30	21	6	27	591
PCE Trip Generation (Total Trucks)			34	10	44	37	10	47	885
PCE Trip Generation (Total)			109	28	137	143	35	178	2,474

Note:

TSF = Thousand Square Feet

[1] Rates from the Western Riverside Council of Governments (WRCOG) *TUMF High-Cube Warehouse Trip Generation Study*, January 2019, prepared by WSP.

[2] The WRCOG study does not provide in/out splits for the peak hour trip generation. Therefore, in/out splits from Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition) supplement have been used for obtaining in/out traffic.

[3] A Passenger Car Equivalent (PCE) factor 2.0 has been taken for 2-4 axle trucks based on Highway Capacity Manual (HCM) recommendations. Further, as a conservative approach, a PCE factor of 3.0 is taken, for 5+ axle trucks, consistent with latest practices in numerous California jurisdictions.

LSA

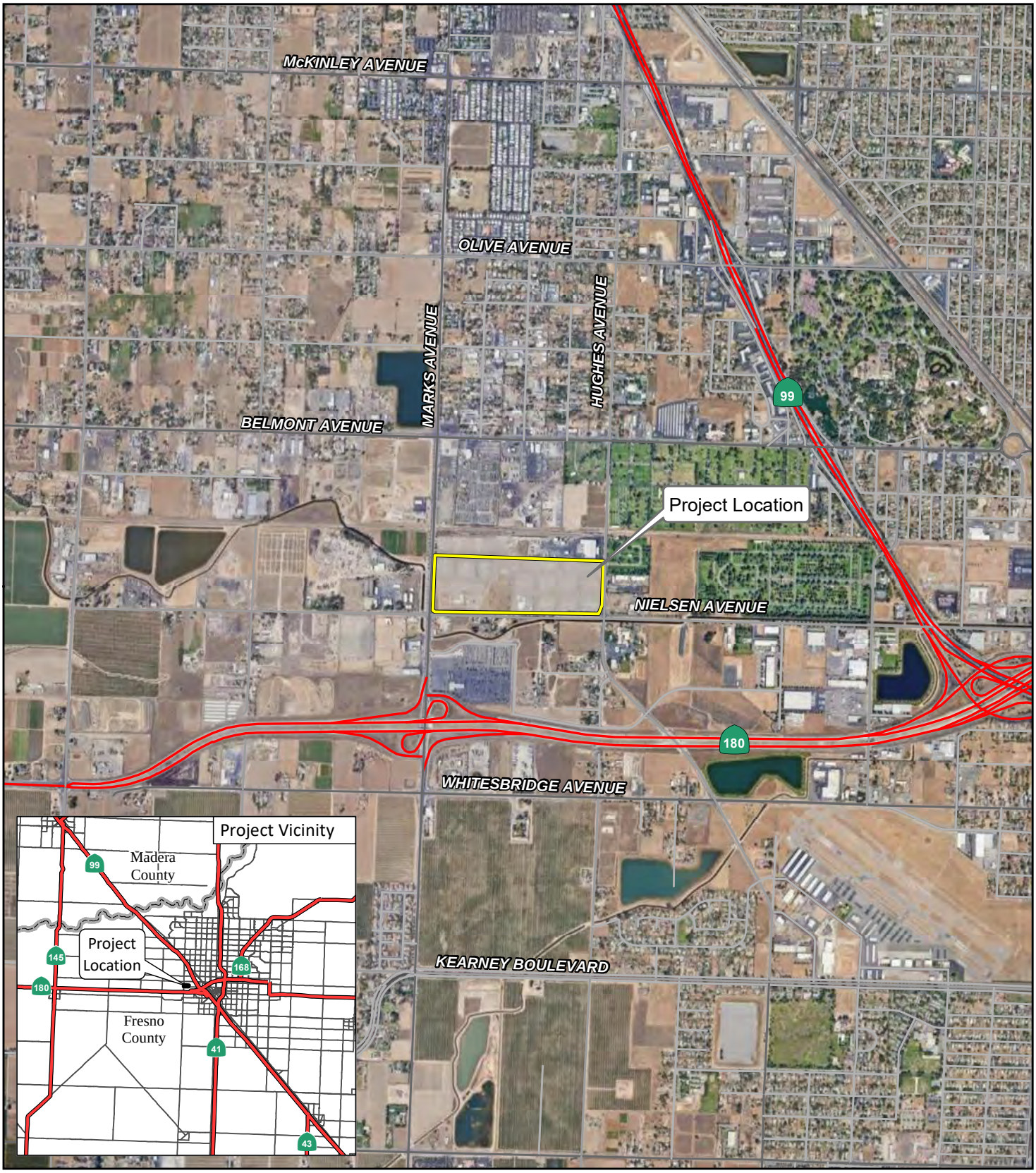
Table B - Cumulative Projects

Project No.	Project Name	Address	Project Description	Required Information
1	Clinton and Marks Commercial Building	3031 W Clinton Avenue, 3015 W Clinton Avenue	8,775 sf restaurant, a 4,669 sf car wash building, a 2,200 sf Starbucks cafe with drive thru	*Please confirm project description.*
2	Derrel's Mini Storage West Belmont Expansion	1800 W Belmont Avenue, 1827 W Dudley Avenue	6.02-acre mini-storage facility	*Please confirm project description.*
3	Soccer, Retail, and Hotel Project	310 S West Street, 1725 W Nielsen Avenue, 1730 W Nielsen Avenue	The applicant proposes to develop these parcels into two indoor soccer fields, seven outdoor soccer fields, a 190 room hotel, restaurants, soccer apparel store, and market with gas station.	*Please confirm project description. Another description for 3100 S West Avenue is to site, build and operate a Permanent Regional Household Hazardous Waste Collection Facility. Another description for 1725 W Nielsen Avenue in the table is that the proposed project pertains to the development of a 16,000 SF industrial shop with office, 7 bays and truck yard with 60 stalls for Dave's Trucking (DISABLED AMERICAN VETERAN ENTERPRISES TRUCKING & SWEEPING, INC.).*
4	Bombay Business Park	145 N Fruit Avenue, 147 N Fruit Avenue, 183 N Fruit Avenue, 227 N Fruit Avenue, 289 N Fruit Avenue, 662 W Nielsen Avenue	The proposed project site is situated in the old industrial area east of State Route 99 and north of State Route 180 West, lying west of and fronting on North Fruit Avenue, south of the Southern Pacific Rail Road tracks and north of the Houghton Canal.	*Please provide number of units for the project (a detailed project description).*
5	ABS Auto Auctions	130 S West Avenue	The applicant is proposing the new use of an auto auction dealership. The proposed use will be through an online bidding system for wholesaling and services made available only to licensed dealers. The site will store between 30 to 60 cars at a time.	*Please provide building square footage.*
6	OASIS Tract 5463	3425 W Whites Bridge Avenue	-	*Please provide detailed project description.*
7	OASIS Tract 5456	3420 W Madison Avenue	-	*Please provide detailed project description.*
8	Tentative Map Tract 6183	3558 W Madison Avenue	The applicant proposes to subdivide the existing property into a 66-lot single-family subdivision.	
9	Tentative Map Tract 6183	3338 W Madison Avenue	The applicant proposes to subdivide the existing property into a 18-lot single-family subdivision.	
10	Truck Wash and Service	294 N Fruit Avenue	-	*Please provide detailed project description.*
11	Replacement of a Commercial Fire Damaged Building	3075 W Nielsen Avenue	Replacing a 7,000 sf fire damaged metal building with a new 4,920 sf metal building.	
12	KFC ASAP REFRESH	1904 W Olive Avenue	-	*Please provide project name and detailed project description.*
13	RNG/CNG Fueling Station	227 N Fruit Avenue, 289 N Fruit Avenue	A Renewable Natural Gas (RNG/CNG) fueling station.	*Please provide detailed project description with number of units.*
14	Fresno Mobile Home Park Expansion	3147 W Olive Avenue	-	*Please provide detailed project description with number of units.*
15	Red Onion Drive Thru	555 W Belmont Avenue	-	*Please provide detailed project description.*
16	Truck Wash and Lube Building	125 S Pleasant Avenue	8,100 sf metal building	*Please provide details about land use.*
17	Mixed-use Project	1824 W Olive Avenue	A 95-space 15 yr truck parking yard, a 5,000 sf convenience store with drive thru restaurant, and 6 multi-purpose dispensers and car wash tunnel.	
18	Renewable Natural Gas (RNG) Fueling Station	2280 W Whites Bridge Avenue	-	*Please provide detailed project description with number of units.*
19	Sandoval Trucking	Please provide exact address.	Proposal to build a new 3,750 sf metal building with 1,000 sf attached roof cover, to be used for truck repair (replace tires, brakes, etc.) and to store tools for trucking company.	*Please provide exact address and confirm project description.*
20	Truck Wash and Repair Facility	-	The proposed development is to construct a 5,000 sf metal building. This metal building will consist of one bay for truck wash and another bay for truck repair, and roughly 60 sf of reception area.	*Please provide exact address.*
21	Commercial Project	2809 W McKinley Avenue	-	*Please provide detailed project description with number of units.*
22	Royalty Freight Trucking Service	50 S Hughes Avenue	The applicant is proposing to develop a new 26,143 sf truck-service facility for truck repair, lube, wash, a tire repair shop with storage for parts, and offices. This project will also include a vestibule and covered patio, oil tank, guard kiosk and loading cross pit.	*Please confirm project description and number of units.*
23	New Metal Office Building	30 E Divisadero Street	3,800 sf general industrial	
24	NKRS Trucking	-	Accela record number P18-01260 pertains to the development permit application for a large diesel truck repair facility that specializes in minor maintenance and repair of large diesel trucks.	*Please provide exact address and detailed project description with number of units.*

Notes:

sf = square feet

FIGURES



LSA

FIGURE 1

N

0 1000 2000

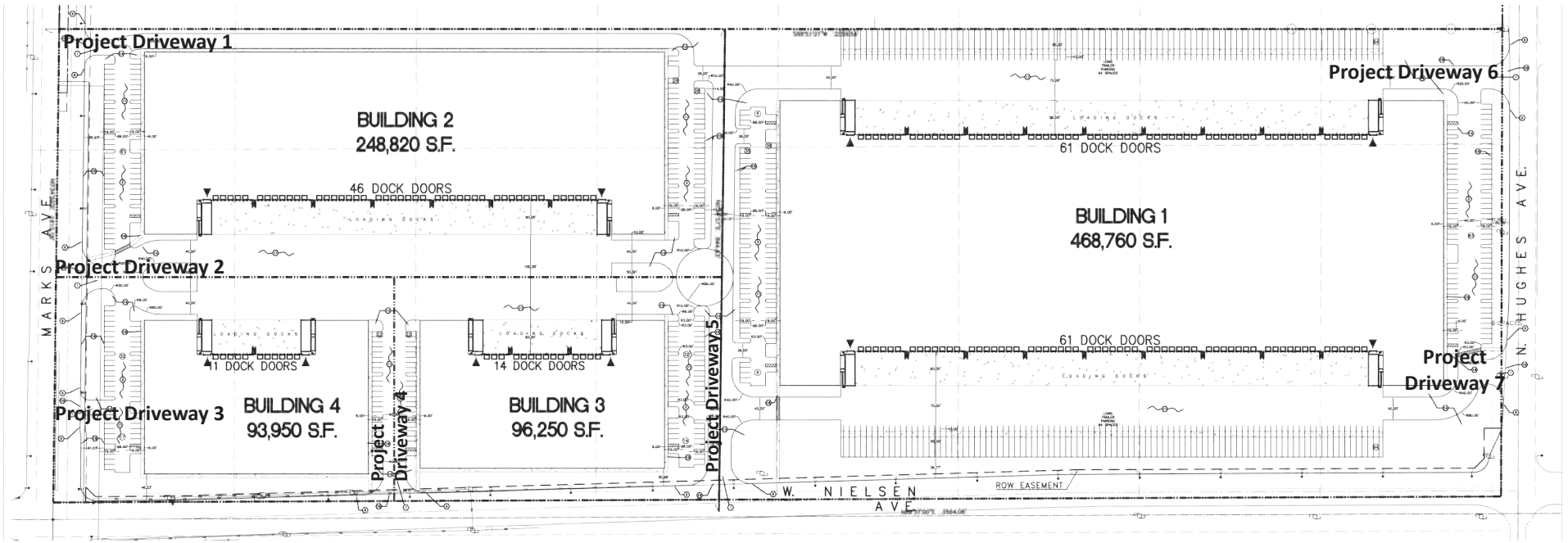
FEET

2740 West Nielsen Warehouse
Traffic Impact Study

Regional and Project Location

SOURCE: ESRI Streetmap, 2021; Google Earth, 2019.

R:\SNN2101\TIS\GIS\Reports\fig1_Reg_ProjLoc.mxd (4/22/2021)



LSA

FIGURE 2

N

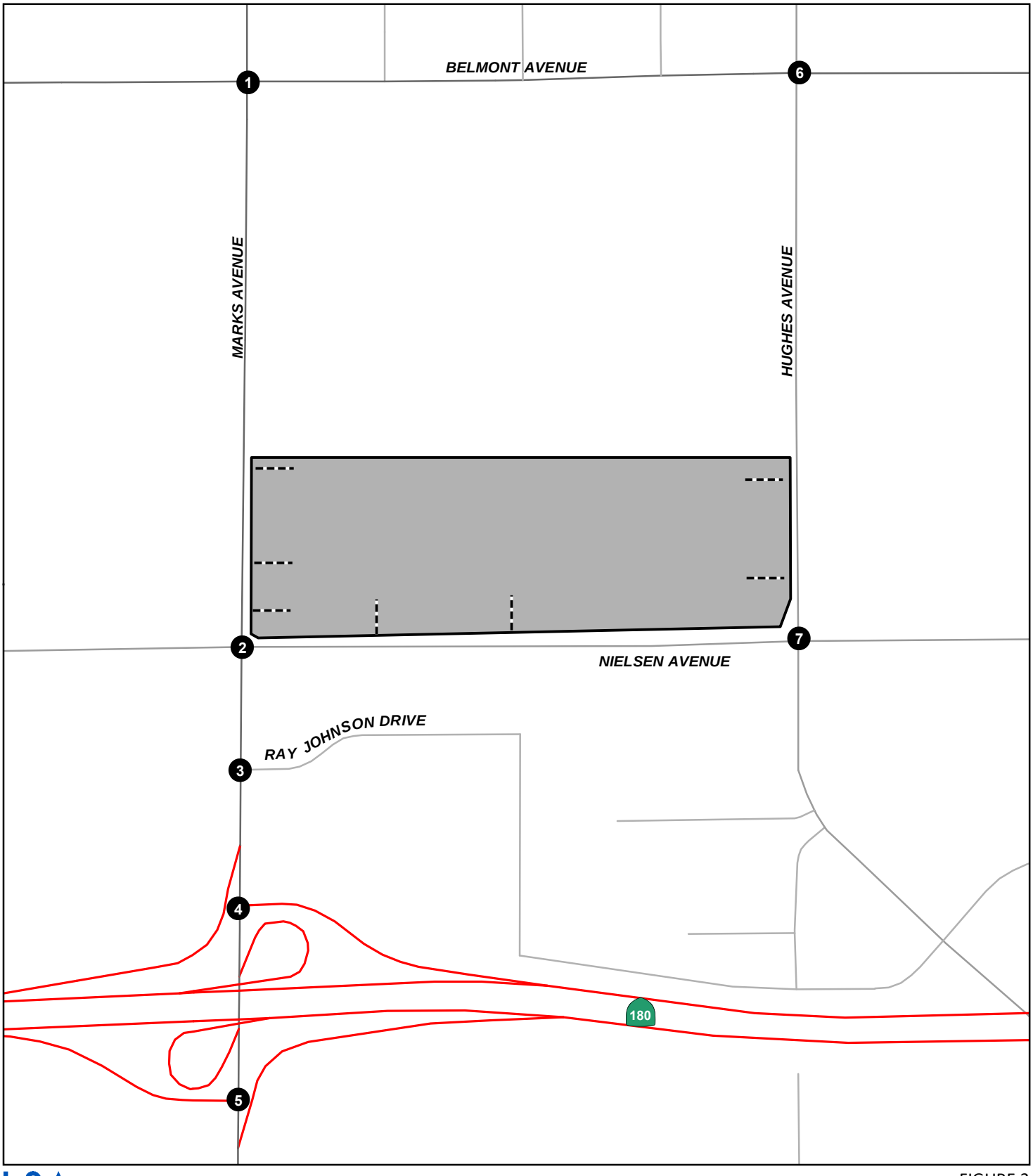
0 120 240
FEET

2740 West Nielsen Warehouse
Traffic Impact Study

Conceptual Site Plan

SOURCE: Lars Anderson and Associates, Inc.; April 2021

R:\SNN2101\TIS\GIS\Reports\fig2_SitePlan.ai (04/29/2021)



LSA

LEGEND

Project Site

Study Intersection

Project Driveway

N

0 300 600

FEET

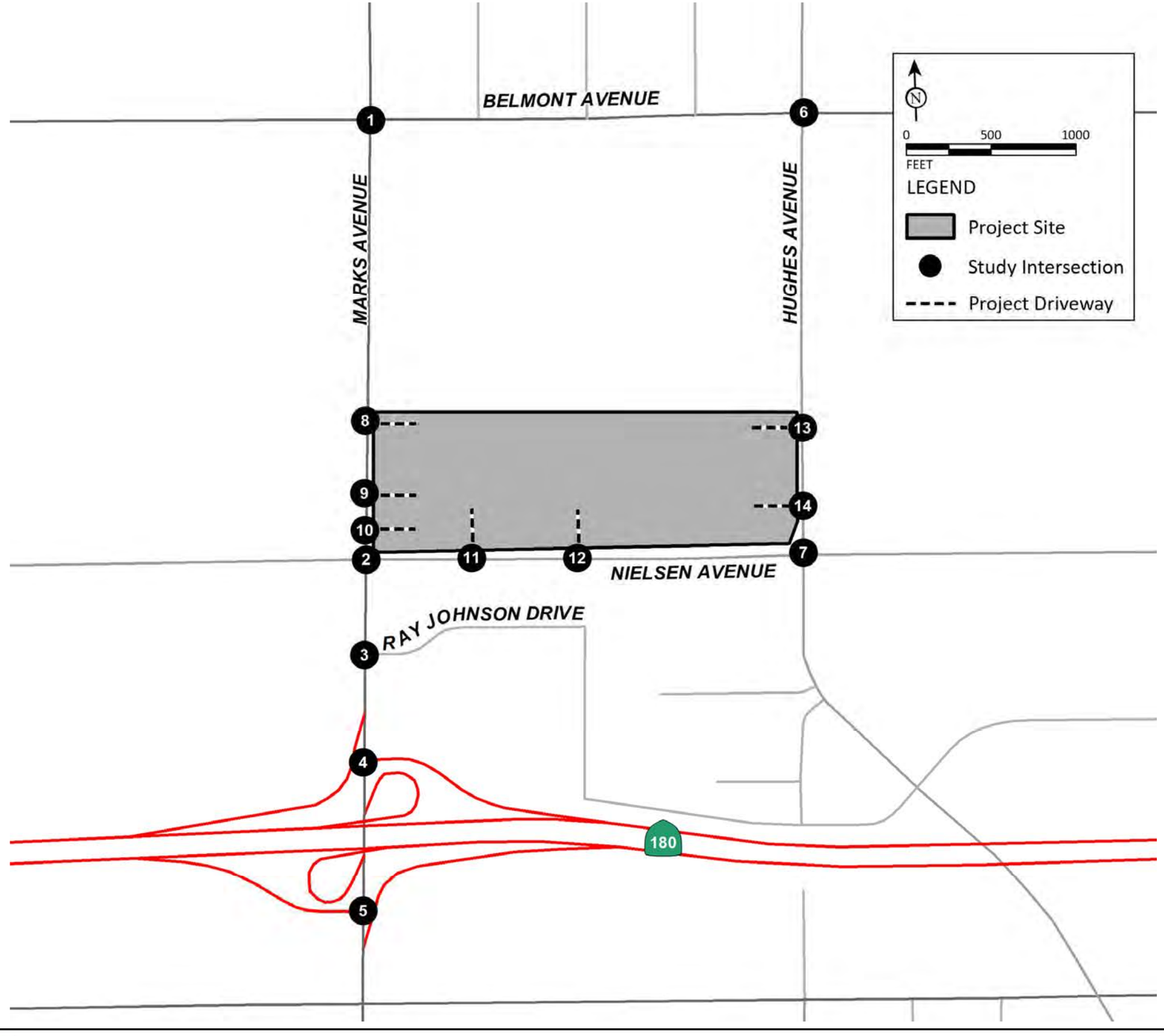
FIGURE 3

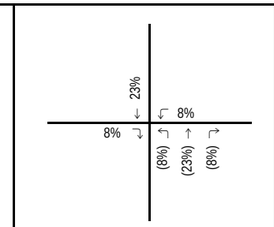
2740 West Nielsen Warehouse
Traffic Impact Study

Study Area Intersections

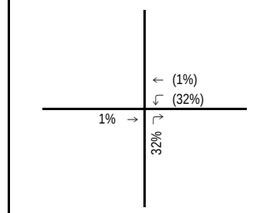
SOURCE: County of Fresno Streets Data, 2021.

R:\SNN2101\TIS\GIS\Reports\fig3_StudyIntersections.mxd (7/19/2021)

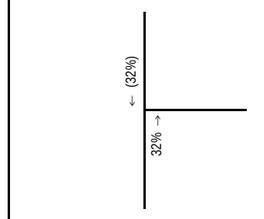




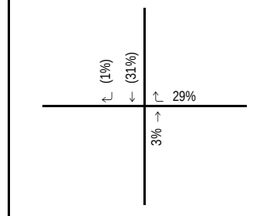
1 Marks Avenue/Belmont Avenue



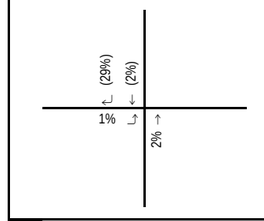
2 Marks Avenue/Nielsen Avenue



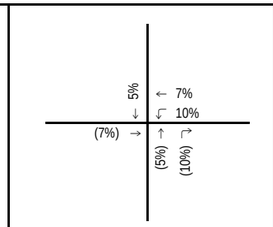
3 Marks Avenue/Ray Johnson Drive



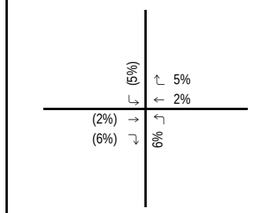
4 Marks Avenue/SR-180 Westbound Ramps



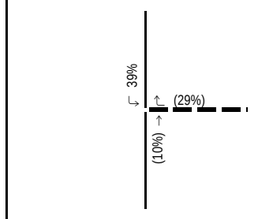
5 Marks Avenue/SR-180 Eastbound Ramps



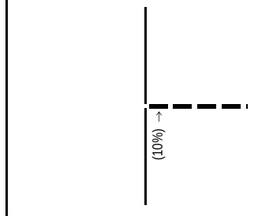
6 Hughes Avenue/Belmont Avenue



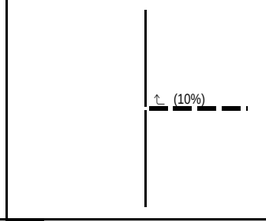
7 Hughes Avenue/Nielsen Avenue



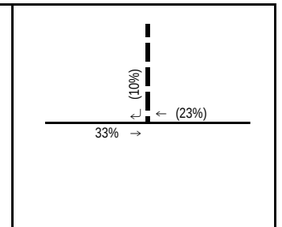
8 Marks Avenue/Project Driveway 1



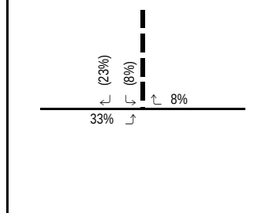
9 Marks Avenue/Project Driveway 2



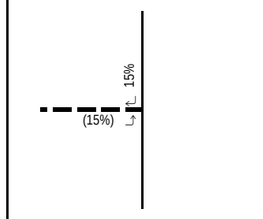
10 Marks Avenue/Project Driveway 3



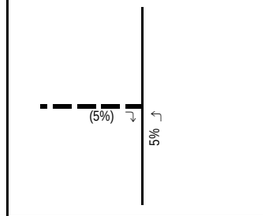
11 Project Driveway 4/Nielsen Avenue



12 Project Driveway 5/Nielsen Avenue



13 Hughes Avenue/Project Driveway 6



14 Hughes Avenue/Project Driveway 7

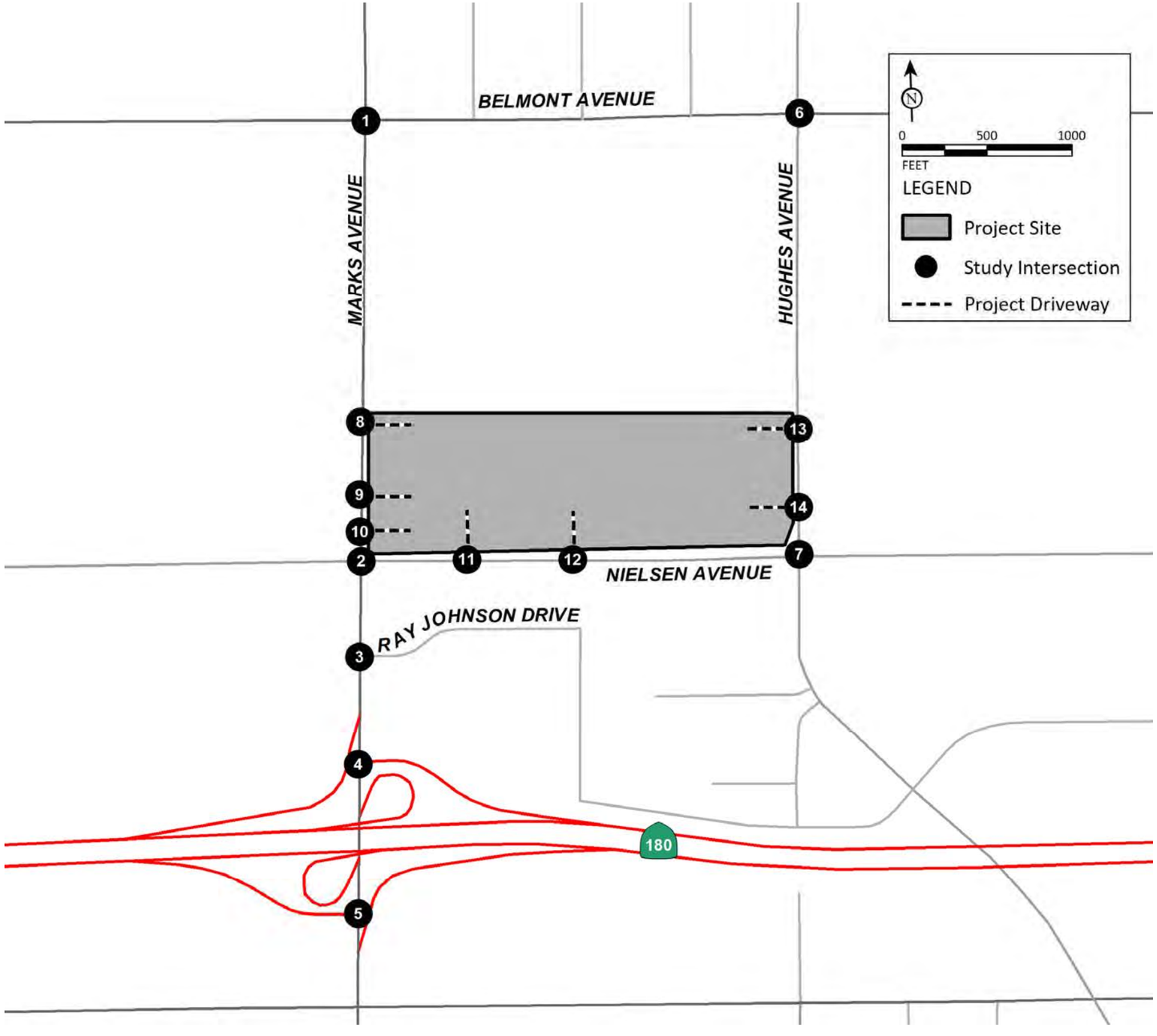
LSA

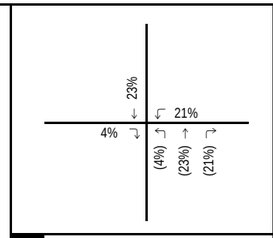
FIGURE 4-A

XX% (YY%)
Inbound (Outbound) Distribution
– – – – Project Driveway

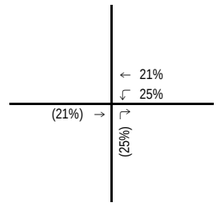
2740 West Nielsen Warehouse
Traffic Impact Study
Project Trip Distribution - Passenger Vehicles

R:\SNN2101\TIS\z45_Dist_PV.xlsx (7/6/2021)

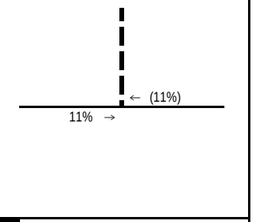




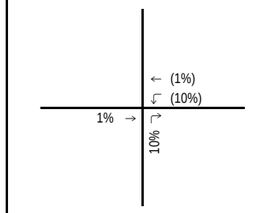
1 Marks Avenue/Belmont Avenue



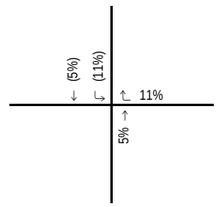
6 Hughes Avenue/Belmont Avenue



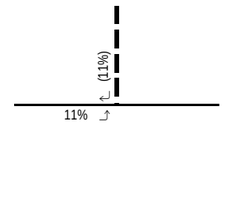
11 Project Driveway 4/Nielsen Avenue



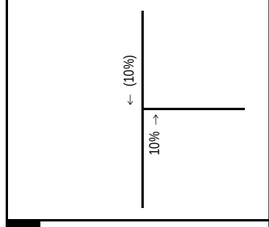
2 Marks Avenue/Nielsen Avenue



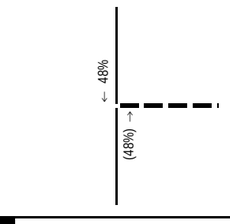
7 Hughes Avenue/Nielsen Avenue



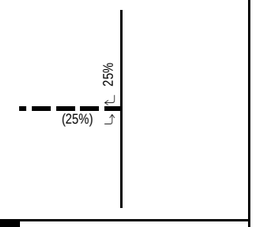
12 Project Driveway 5/Nielsen Avenue



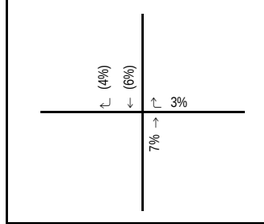
3 Marks Avenue/Ray Johnson Drive



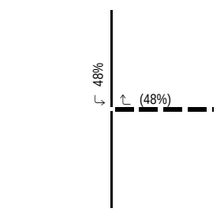
8 Marks Avenue/Project Driveway 1



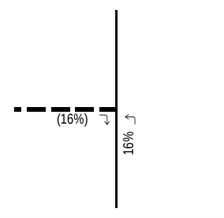
13 Hughes Avenue/Project Driveway 6



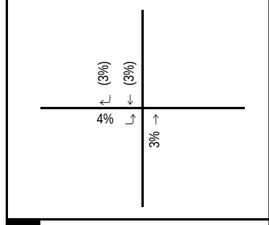
4 Marks Avenue/SR-180 Westbound Ramps



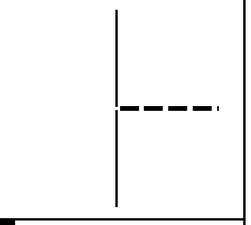
9 Marks Avenue/Project Driveway 2



14 Hughes Avenue/Project Driveway 7



5 Marks Avenue/SR-180 Eastbound Ramps



10 Marks Avenue/Project Driveway 3

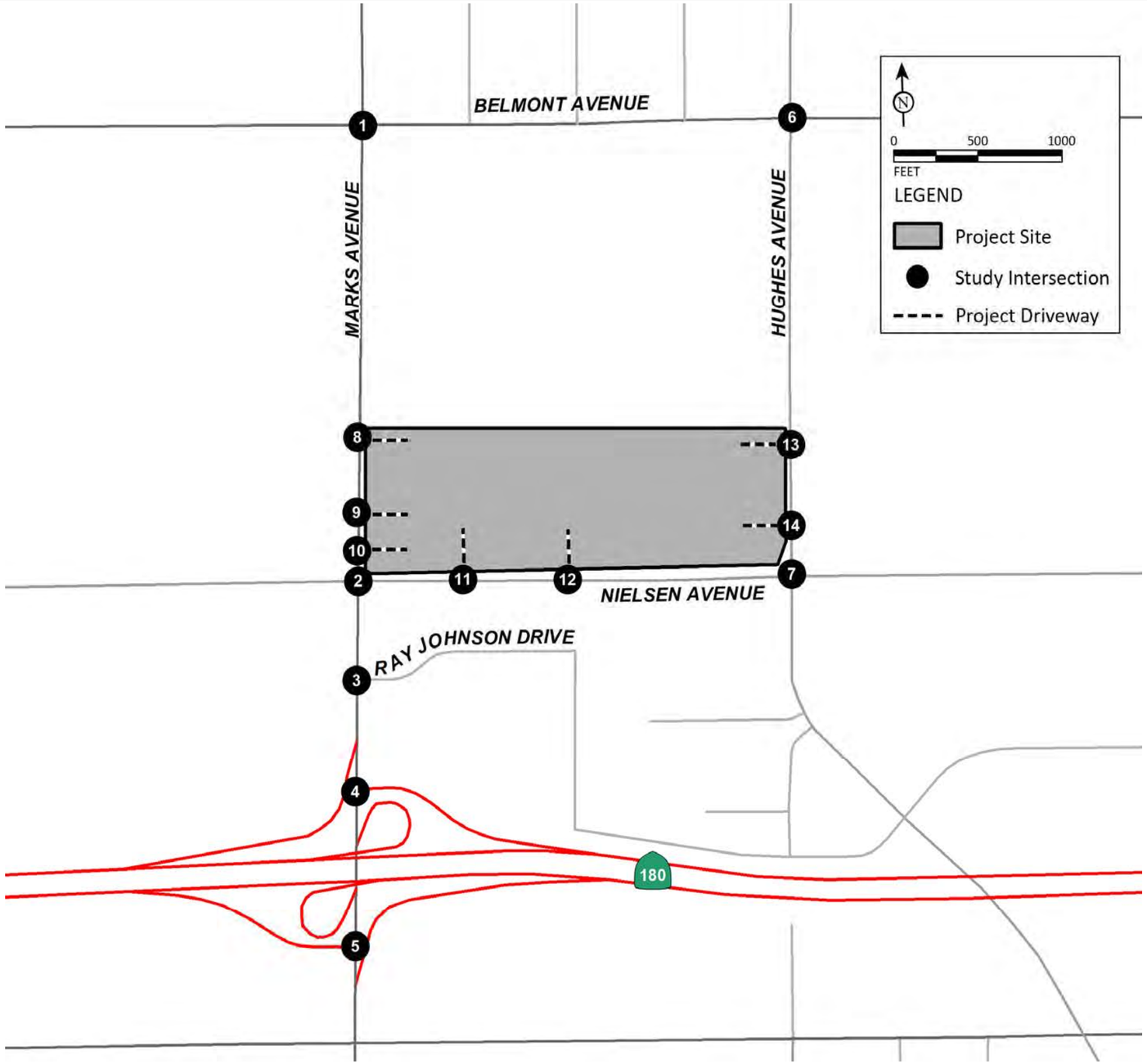
LSA

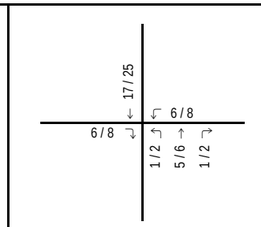
FIGURE 4-B

XX% (YY%)
Inbound (Outbound) Distribution
– – – – Project Driveway

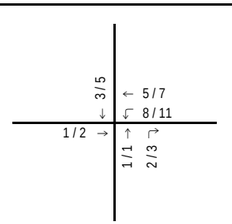
2740 West Nielsen Warehouse
Traffic Impact Study
Project Trip Distribution - Trucks

R:\SNN2101\TIS\z45_Dist_TR.xlsx (7/6/2021)

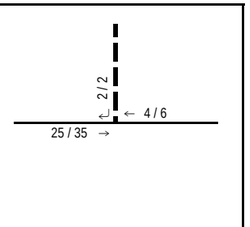




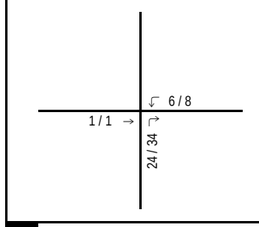
1 Marks Avenue/Belmont Avenue



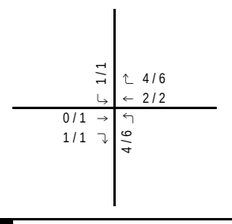
6 Hughes Avenue/Belmont Avenue



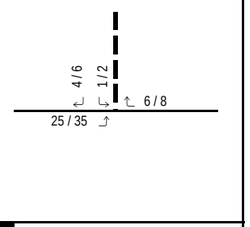
11 Project Driveway 4/Nielsen Avenue



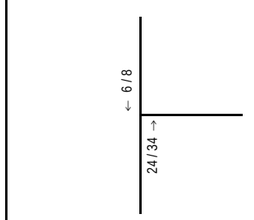
2 Marks Avenue/Nielsen Avenue



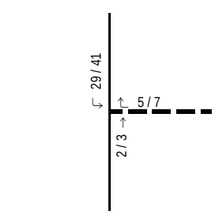
7 Hughes Avenue/Nielsen Avenue



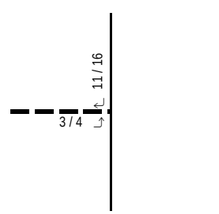
12 Project Driveway 5/Nielsen Avenue



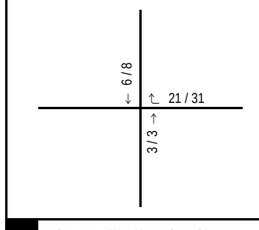
3 Marks Avenue/Ray Johnson Drive



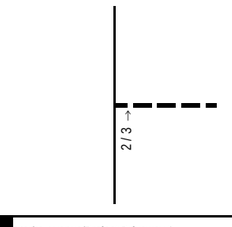
8 Marks Avenue/Project Driveway 1



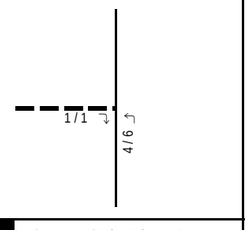
13 Hughes Avenue/Project Driveway 6



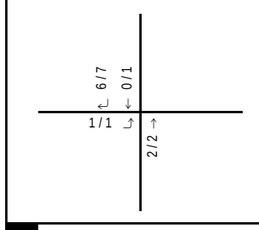
4 Marks Avenue/SR-180 Westbound Ramps



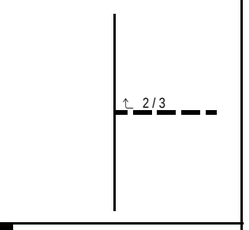
9 Marks Avenue/Project Driveway 2



14 Hughes Avenue/Project Driveway 7



5 Marks Avenue/SR-180 Eastbound Ramps



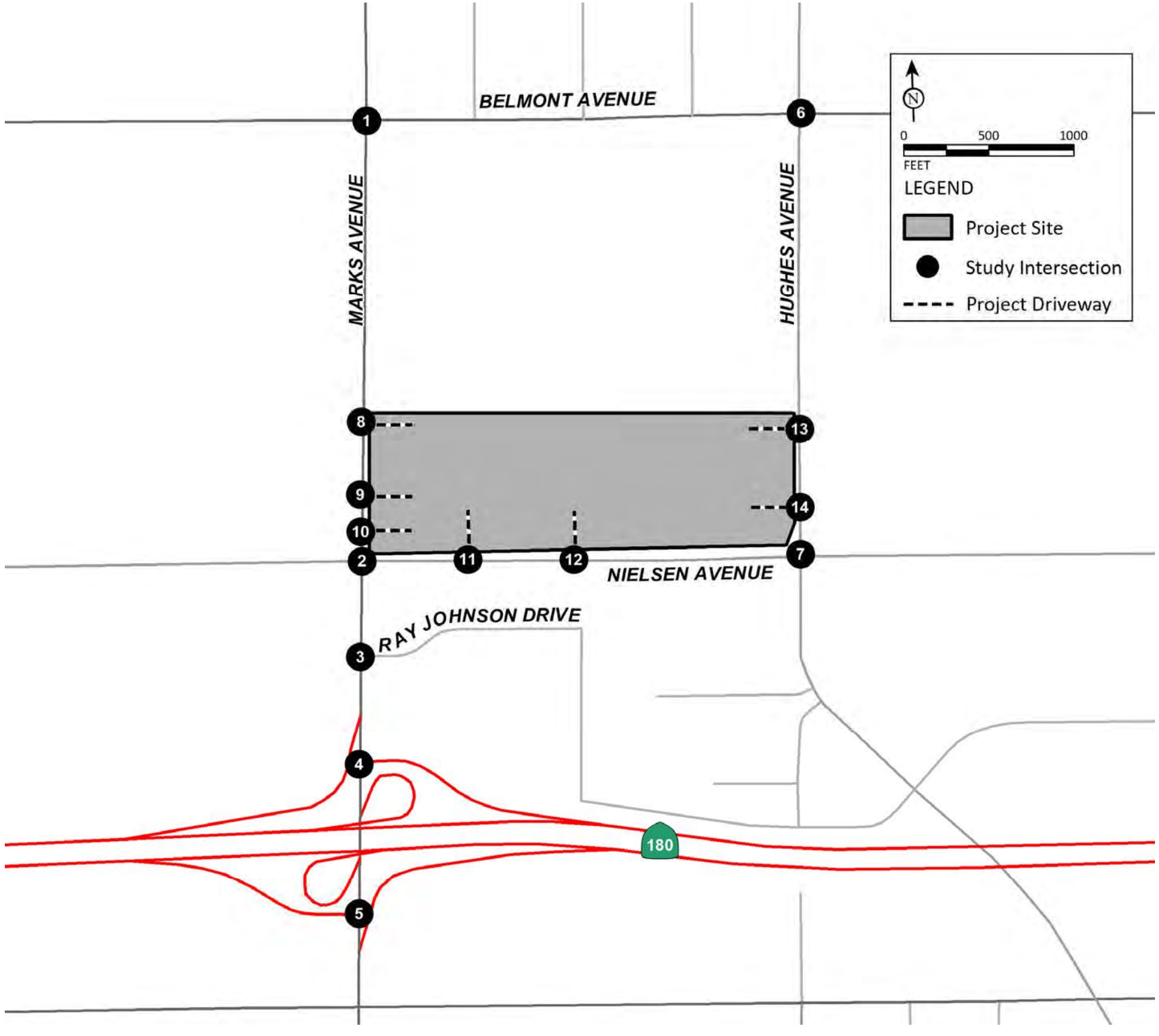
10 Marks Avenue/Project Driveway 3

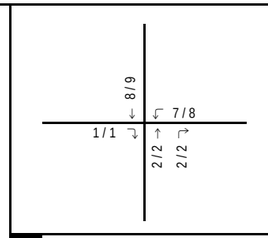
LSA

FIGURE 5-A

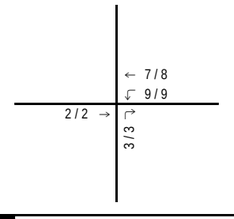
XX / YY
AM / PM Peak Hour Traffic Volumes

2740 West Nielsen Warehouse
Traffic Impact Study
Project Trip Assignment - Passenger Vehicles

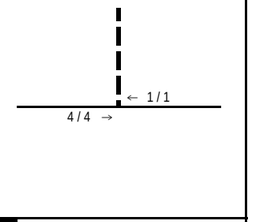




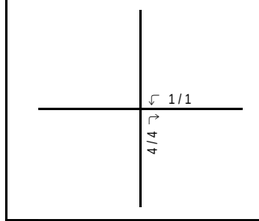
1 Marks Avenue/Belmont Avenue



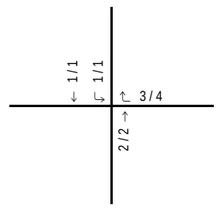
6 Hughes Avenue/Belmont Avenue



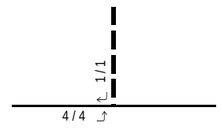
11 Project Driveway 4/Nielsen Avenue



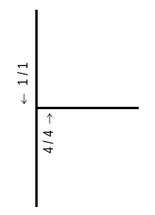
2 Marks Avenue/Nielsen Avenue



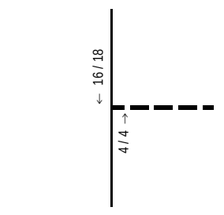
7 Hughes Avenue/Nielsen Avenue



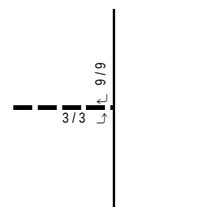
12 Project Driveway 5/Nielsen Avenue



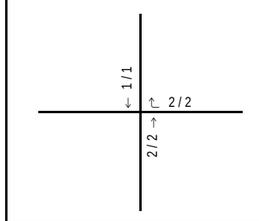
3 Marks Avenue/Ray Johnson Drive



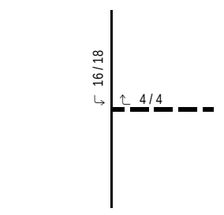
8 Marks Avenue/Project Driveway 1



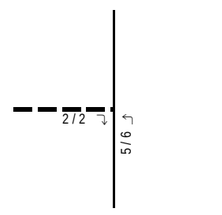
13 Hughes Avenue/Project Driveway 6



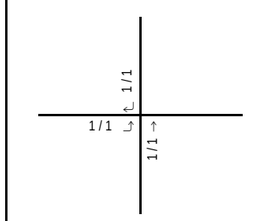
4 Marks Avenue/SR-180 Westbound Ramps



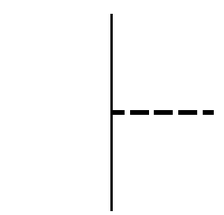
9 Marks Avenue/Project Driveway 2



14 Project Driveway 7



5 Marks Avenue/SR-180 Eastbound Ramps



10 Marks Avenue/Project Driveway 3

LSA

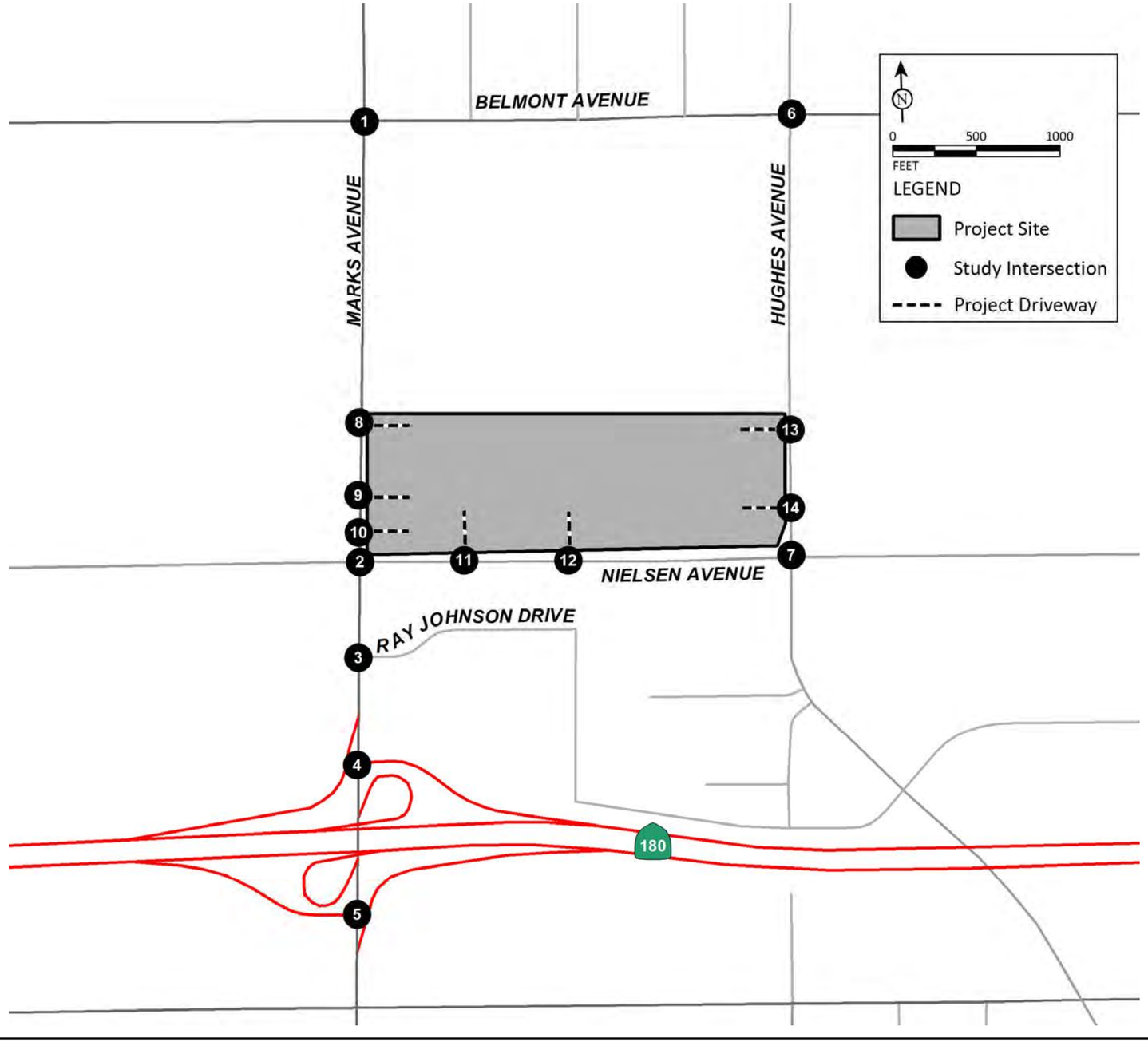
FIGURE 5-B

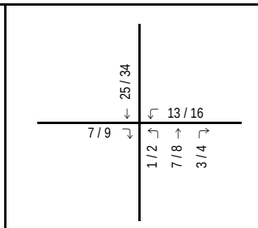
XX / YY

AM / PM Peak Hour Traffic Volumes (In PCE)

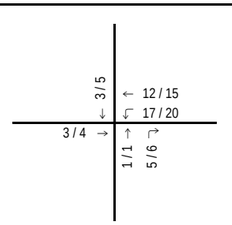
2740 West Nielsen Warehouse
Traffic Impact Study

Project Trip Assignment - Trucks

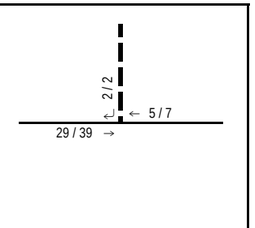




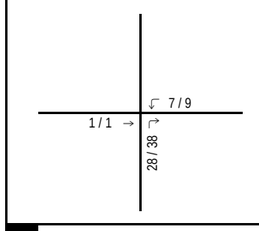
1 Marks Avenue/Belmont Avenue



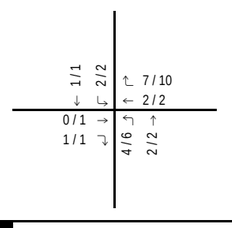
6 Hughes Avenue/Belmont Avenue



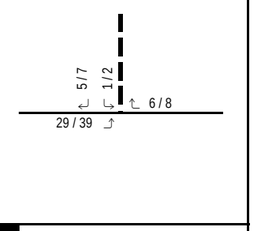
11 Project Driveway 4/Nielsen Avenue



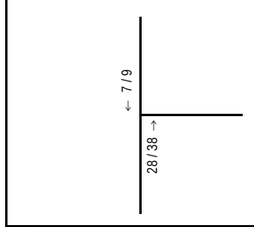
2 Marks Avenue/Nielsen Avenue



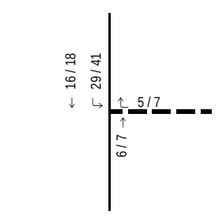
7 Hughes Avenue/Nielsen Avenue



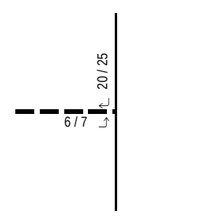
12 Project Driveway 5/Nielsen Avenue



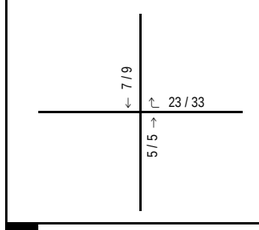
3 Marks Avenue/Ray Johnson Drive



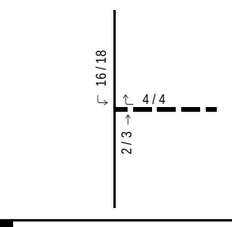
8 Marks Avenue/Project Driveway 1



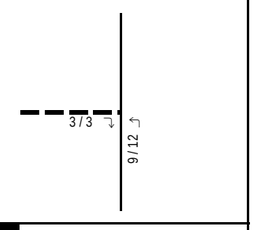
13 Hughes Avenue/Project Driveway 6



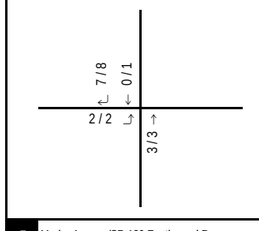
4 Marks Avenue/SR-180 Westbound Ramps



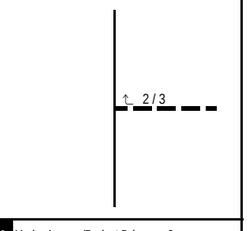
9 Marks Avenue/Project Driveway 2



14 Hughes Avenue/Project Driveway 7



5 Marks Avenue/SR-180 Eastbound Ramps



10 Marks Avenue/Project Driveway 3

LSA

FIGURE 6

XX / YY

AM / PM Peak Hour Traffic Volumes (In PCE)

2740 West Nielsen Warehouse
Traffic Impact Study

Total Project Trip Assignment

R:\SNN2101\TIS\z45_Asgn_Total.xlsx (7/6/2021)

APPENDICES

Technical Memorandum

To: Daniel Ramirez-Cornejo, Program Manager, WRCOG

From: Billy Park, Supervising Transportation Planner, WSP

Subject: **TUMF High-Cube Warehouse Trip Generation Study**

Date: January 29, 2019

Background

High-cube warehousing is emerging as an important development type in the Inland Empire. Studies such as Logistics & Distribution: *An Answer to Regional Upward Social Mobility*[1] and *Multi-County Goods Movement Action Plan*[2] suggests that this trend is likely to increase over time due to the Inland Empire's relative abundance of suitable sites compared to coastal counties.

A recurring analytical problem for the analyses of traffic impacts associated with proposed high-cube warehouses is the lack of reliable data regarding the number and vehicle mix of trips generated by this land development type. Specifically:

- The *2003 Fontana Truck Trip Generation Study*, which has been used for years by agencies in the Inland Empire, is based on the older type of high-cube warehouse. Newer warehouses generally are larger (often over 1 million square feet), much more automated, and generate far fewer trips per square foot.
- The use of overly-conservative estimates has produced results that were unreasonable when compared to actual field conditions. For example, the Environmental Impact Report (EIR) for the Skechers high-cube warehouse building in Moreno Valley included traffic forecasts that were substantially higher than the actual post-construction trip generation for both cars and trucks. Overstated forecasts are misleading to decision makers and could result in oversized infrastructure that could itself have environmental consequences, creates an undue burden on development, and could even have adverse legal consequences for the agencies involved.
- In 2011 the Commercial Real Estate Development Association, also known by its former acronym NAIOP, commissioned a trip generation study of high-cube warehouses focused on large highly-automated warehouses in the Inland Empire. NAIOP had hoped that their study, which found trip-gen rates considerably lower than previous studies, would be used in CEQA analyses going forward. However, concerns about potential bias by the sponsoring party have placed into question the validity of the study results. Similarly, a study commissioned by SCAQMD was viewed as possibly having an anti-development bias.
- Finally, in 2015 NAIOP and SCAQMD jointly sponsored a trip-gen study for high-cube warehouses through a respected neutral party, the Institute of Transportation Engineers (ITE). The report for this study, *High-Cube Warehouse Vehicle Trip Generation Analysis*, was completed in 2016.

The joint NAIOP/SCAQMD/ITE study resulted in a consensus on the trip generation rates to be used for the most common type of high-cube warehouse, a category they call "transload and short-term storage". The findings of the joint study generally indicated the trip generation rates for this use as being consistent with the trip generation rates for the broader category of high-cube warehouses as described by ITE in the 9th Edition of the *Trip*

[1] *Logistics & Distribution: An Answer to Regional Upward Social Mobility*, Dr. John Husing for SCAG, June 2004
[2] *Multi-County Goods Movement Action Plan*, Wilbur Smith Associates, August 2008

Generation Manual. However, the report did not settle the issue of trip generation rates for two other specific types of high-cube warehouses:

> *"The single data points for fulfillment centers and parcel hubs indicate that they have significantly different vehicle trip generation characteristics compared to other HCWs. However, there are insufficient data from which to derive useable trip generation rates."*

The purpose of this technical memorandum is to gather sufficient data to develop reliable trip generation rates for fulfillment centers and parcel hubs for use in traffic impact studies in the Inland Empire.

Methodology

Number of Sites: The study team reviewed ITE's *Trip Generation Handbook 2nd* Edition, Chapter 4 of which describes how to perform a trip generation study that meets ITE's standards (which improves the defensibility of the results if they are used for CEQA analyses). ITE recommends that at least three sites, and preferably five, be surveyed for a given land use category. Based on the review of candidate sites identified by Western Riverside Council of Governments (WRCOG) staff, it was recommended that data be collected at a total of 16 sites for the purposes of this study.

Independent Variables: ITE's Trip Generation Manual measures the size of proposed developments using more than a dozen different independent variables, such as students (for schools), acres (for parks), etc. All High-Cube related categories in both 9th and 10th Editions of the Trip Generation Manual are reported in Square Foot Gross Floor Area (GFA) measured in thousands of square feet (TSF), which is also the independent variable used for the TUMF program. Some other ITE employment categories use employment as the independent variable, as does SCAG in its Sustainable Communities Strategy. WRCOG provided GFA for all sites and employment data for eight fulfillment centers and one parcel hub site.

The ITE *Trip Generation Manual* typically reports trip generation rates two ways; namely as the average rate and using the "best fit" mathematical relationship between the number of trips generated and the independent variable. R-squared, also known as the coefficient of determination, is used to measure how well the best fit equations match the surveyed traffic counts. The *Trip Generation Manual* recommends that the best fit equation only be used when the R^2 is greater than or equal to 0.50 and certain other conditions being met; otherwise the average rate should be used.

Data Collection

WRCOG provided a list of recommended trip generation study sites after reviewing potential sites within the Inland Empire with its member agencies. The list included 11 fulfillment centers and 5 parcel hub sites as follows:

Fulfillment Centers

1. Walmart: 6750 Kimball Ave, Chino, CA 91708
2. Amazon: 24208 San Michele Rd, Moreno Valley, CA 92551
3. Lineage Logistics: 1001 Columbia Ave Riverside, CA 92507
4. P&G: 16110 Cosmos Street, Moreno Valley, CA 92551
5. Big 5: 6125 Sycamore Canyon Blvd, Riverside, CA 92507
6. Nestle USA: 3450 Dulles Drive, Jurupa Valley, CA
7. Home Depot: 11650 Venture Drive, Jurupa Valley, CA
8. ACT Fulfillment Center: 3155 Universe Drive, Jurupa Valley, CA
9. Petco: 4345 Parkhurst Street, Jurupa Valley, CA
10. Komer: 11850 Riverside Drive, Jurupa Valley, CA
11. Ross: 3404 Indian Ave Perris, CA 92571

Parcel Hubs

12. UPS: 15801 Meridian Pkwy, Riverside, CA 92518
13. FedEx: 330 Resource Dr, Bloomington, CA 92316
14. FedEx Freight: 12100 Riverside Drive, Jurupa Valley, CA
15. UPS Chain Logistics: 11811/11991 Landon Drive, Jurupa Valley, CA
16. DHL: 12249 Holly St N, Riverside, CA 92509

Traffic counts were collected at all of these sites. These were 72-hour driveway counts collected using video cameras for three-midweek days starting June 26, 2018. Video collection was determined to be preferable to collection data by means of machine counts, which can be problematic for driveways where vehicles are maneuvering at slow speeds. Video counts provide the ability for human viewers to review the captured footage to classify vehicles into 5 types (car, large 2-axle, 3-axle, 4-axle, and 5+ axle truck). The three-day average was calculated and used for the purposes of this study.

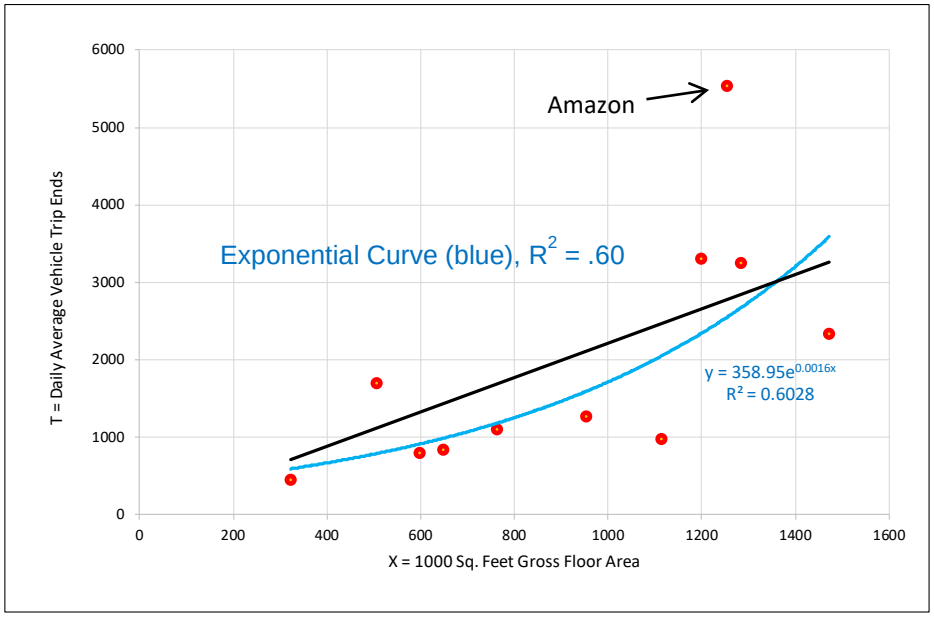
Fulfillment Centers

By Building Size

Exhibit 1 displays a data plot of daily vehicle trips for the 11 fulfillment centers against building size as the independent variable. The average trip generation rate for fulfillments centers (see black line in Exhibit 1) was found to be 2.2 trips/TSF, compared to the 1.4 trips/TSF found for conventional high-cube warehouses in the ITE/SCAQMD/NAIOP study (i.e. about 50% higher).

Exhibit 1 denotes one outlier data point representing the Amazon site in the upper right of the chart. As shown, the average daily trips generated at this facility is over 50% higher than the trips generated at the two sites of similar size (Walmart and Ross), which appears indicative of a greater frequency of same day e-commerce deliveries from Amazon to individual consumers.

Exhibit 1: Data Plot for Daily Total Vehicle Trip Ends against Building Size (Fulfillment Center)



The best fit equation was an exponential relationship with R^2 of 0.60 (i.e. high enough to meet the criteria of acceptability). This is shown as a blue line in Exhibit 1. An exponential relationship, meaning that the larger the

building the higher the trip generation rate, is quite unusual. Exhibit 2 takes a deeper look at this by showing the daily vehicle trip generation rates for each of the 11 surveyed fulfillment centers sorted by the smallest to the largest building size from left to right. As shown, small sites tend to generate fewer trips per thousand square feet, but higher percentage of trucks. On the other hand, largest sites tend to generate a higher number of car trips, but fewer truck trips. So not only is the overall trip generation rate affected by building size, the vehicle mix is affected as well.

Exhibit 2: Daily Vehicle Trip Generation Rates by Building Size for Each Fulfillment Center

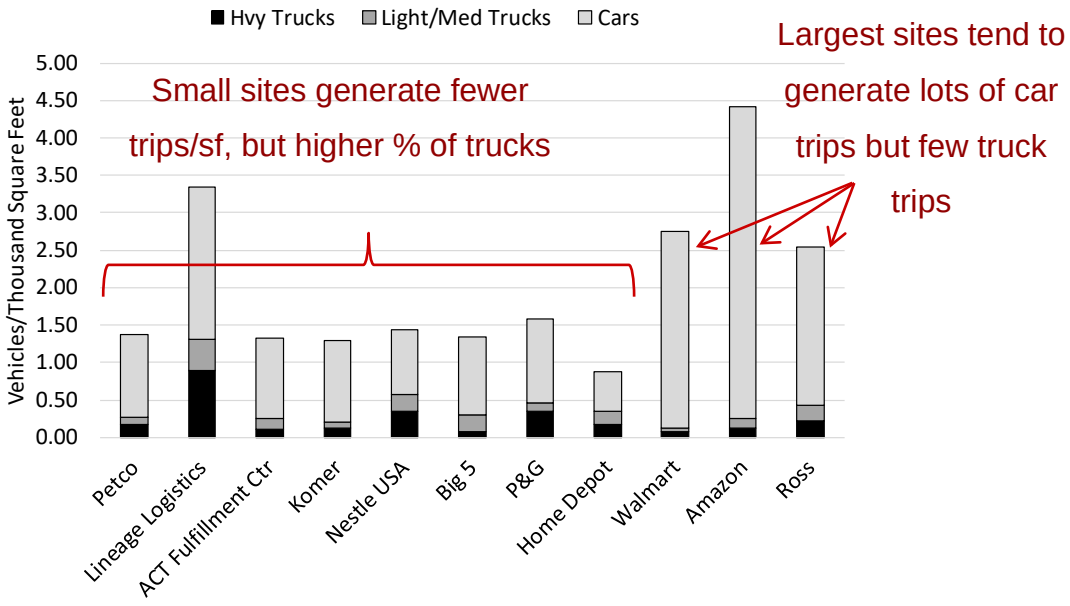


Exhibit 3 and Exhibit 4 show data plots for AM and PM peak hour vehicle trip ends against building size (respectively). The fitted curves had a low R^2, and so we recommend using the average rate.

Exhibit 3: Data Plot for AM Peak Hour Vehicle Trip Ends against Building Size (Fulfillment Center)

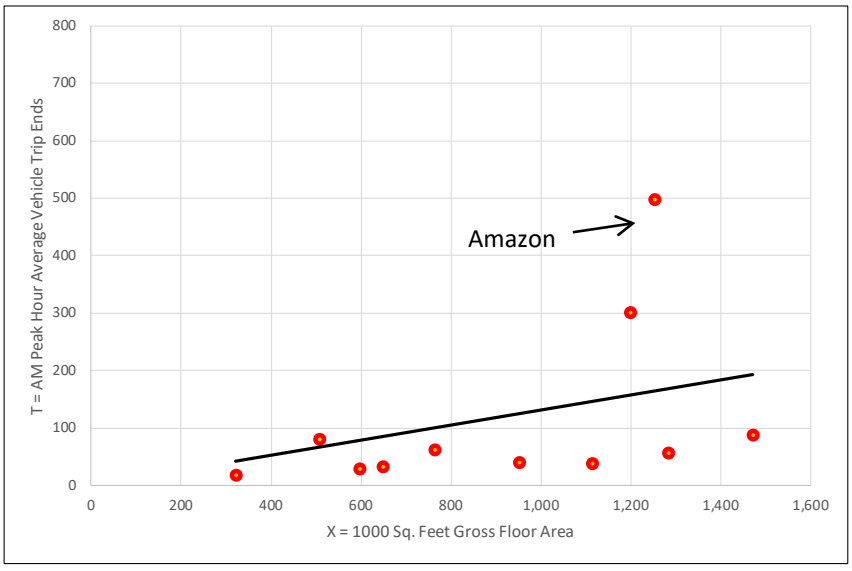


Exhibit 4: Data Plot for PM Peak Hour Vehicle Trip Ends against Building Size (Fulfillment Center)

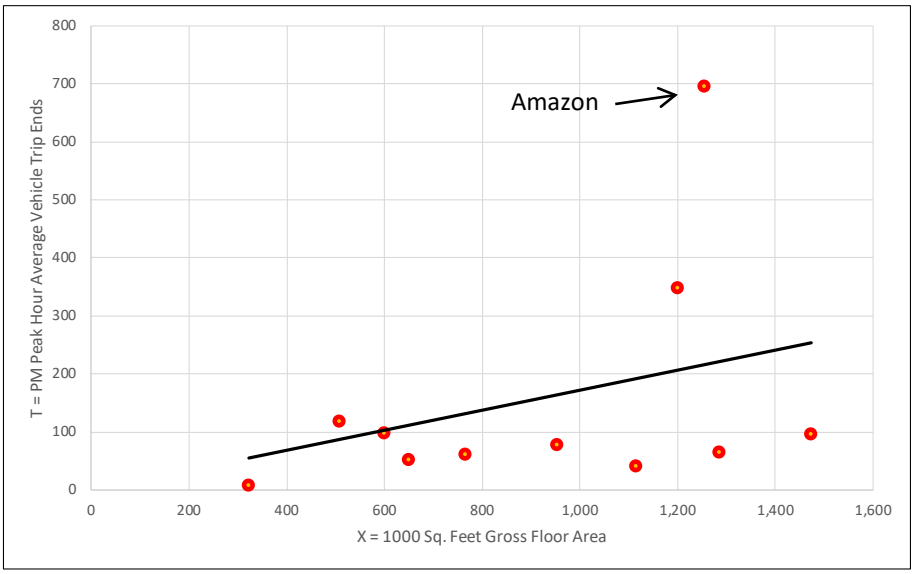
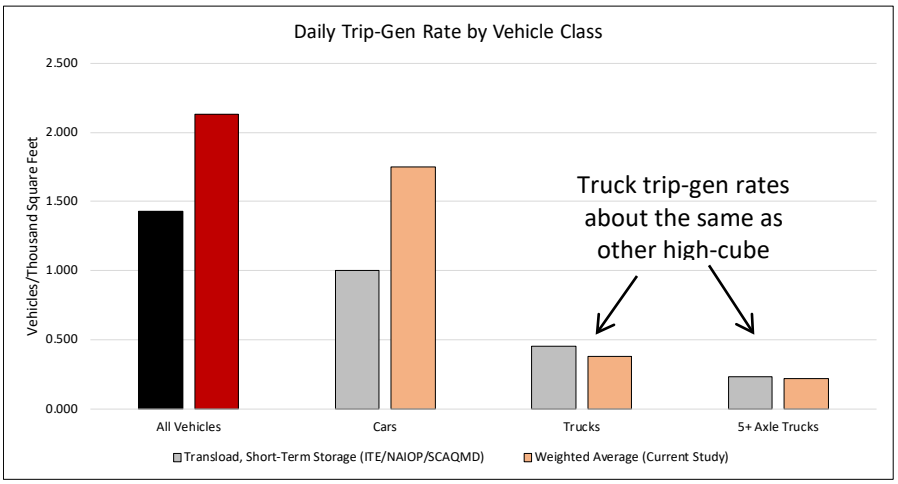


Exhibit 5 compares the average trip generation rates of 11 fulfillment centers with the rates found for conventional transload and short-term storage warehouses in the 2016 high-cube warehouse trip generation study[3] by SCAQMD/NAIOP/ITE. As shown, the fulfillment centers generate more daily vehicle trips than conventional warehouse facilities although trucks are roughly the same. This means that the additional trips by fulfillment centers are entirely due to additional car traffic, which is almost double the rate of car trips generated by conventional warehouses.

Exhibit 5: Conventional Warehouse vs Fulfillment Centers



Visual observation of the fulfillment center sites indicates the higher trip generation rates for cars appears to be mostly due to the use vans and passenger cars as delivery vehicles, particularly for the larger facilities operated by retailers such as Amazon and Walmart.

[3] *High-Cube Warehouse Vehicle Trip Generation Analysis*, Institute of Transportation Engineers, 2016

Exhibit 6 summarizes the AM and PM peak hour trip rates and the daily rates for fulfillment centers based on the findings of this study, and compares the results to rates for conventional transload and short-term storage warehouses.

Exhibit 6: Summary of Trip Generation Rates per Thousand Square Feet of Gross Floor Area for Fulfillment Centers

Vehicle Class	AM Peak Hour		PM Peak Hour		Daily	
	Conventional Warehouse*	Fulfillment Center	Conventional Warehouse	Fulfillment Center	Conventional Warehouse	Fulfillment Center
Cars	0.057	0.103	0.086	0.144	1.000	1.750
2-4 Axle Trucks	0.009	0.008	0.013	0.011	0.221	0.162
5-Axle Trucks	0.015	0.011	0.010	0.010	0.233	0.217
Total	0.082	0.122	0.108	0.165	1.432	2.129
% Higher than Conventional		49%		52%		49%

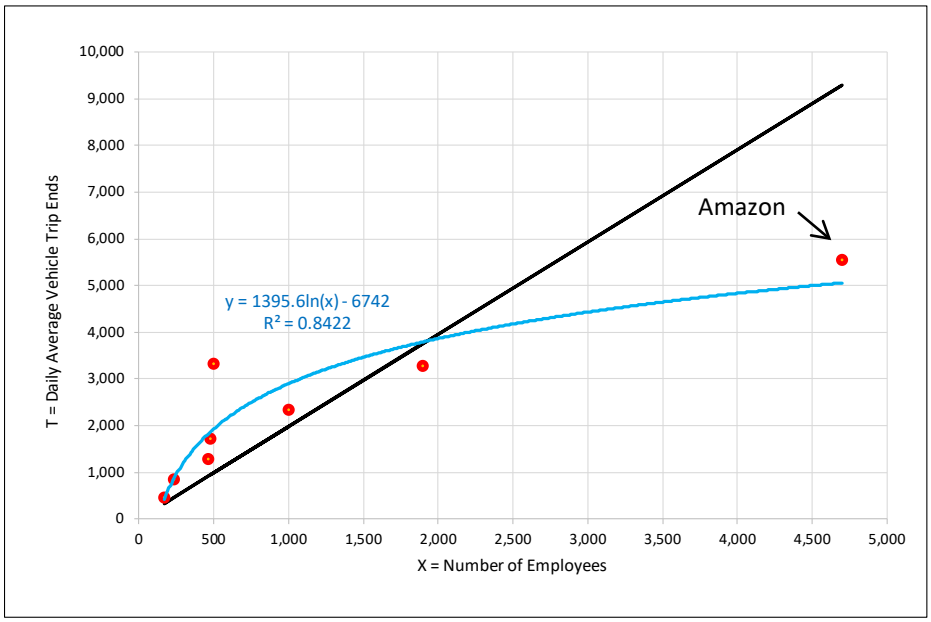
* Transload, Short-Term Storage category in 2016 TIE/ NAIOP/ SCAQMD study

By Employee

The WRCOG contacted the surveyed fulfillment centers and obtained employment data for eight of the eleven sites. Exhibit 7 shows a data plot for those eight sites for daily total vehicle trip ends against the number of employees. The best fit equation was logarithmic function which had an R^2 of 0.84, indicating a very good fit. Notably, the Amazon site, which was an outlier for trip generation based on floor area (see Exhibit 1), correlates more closely to other sites when employment is used instead. The average trip generation rate for fulfillments centers (represented by the black line in Exhibit 7) was found to be 2.0 trips/TSF

No comparison was made to any previous rates per employees because none of the previous high-cube warehouse related trip generation studies included correlation of trips with employment data.

Exhibit 7: Data Plot for Daily Total Vehicle Trip Ends against Employee (Fulfillment Center)



The data plots for the AM and PM peak hour total vehicle trip ends against the number of fulfillment center employees are shown in Exhibit 8 and Exhibit 9. The best fit equations are linear regressions (shown with black lines) which show a good R^2 for both the AM and PM peak periods.

Exhibit 8: Data Plot for AM Peak Hour Total Vehicle Trip Ends against Employee (Fulfillment Center)

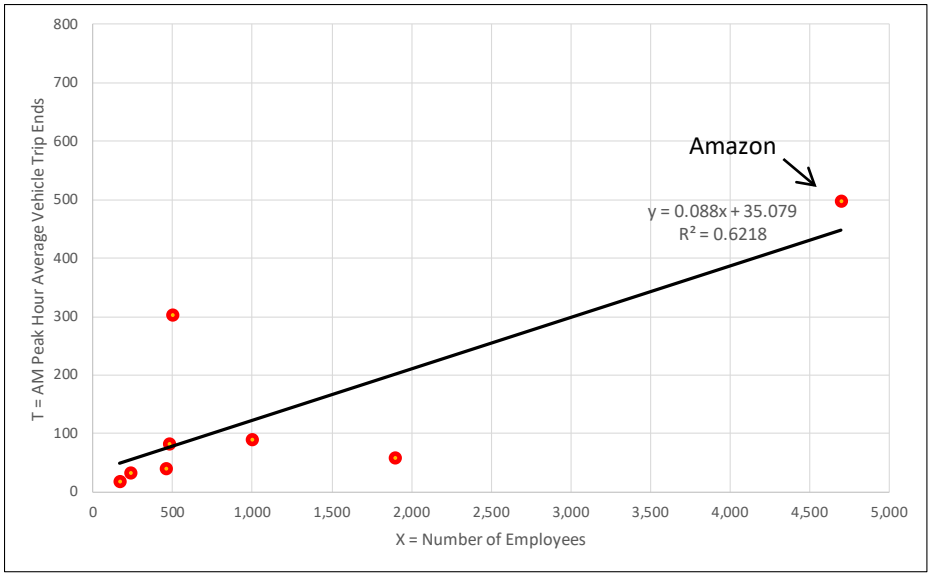


Exhibit 9: Data Plot for PM Peak Hour Total Vehicle Trip Ends against Employee (Fulfillment Center)

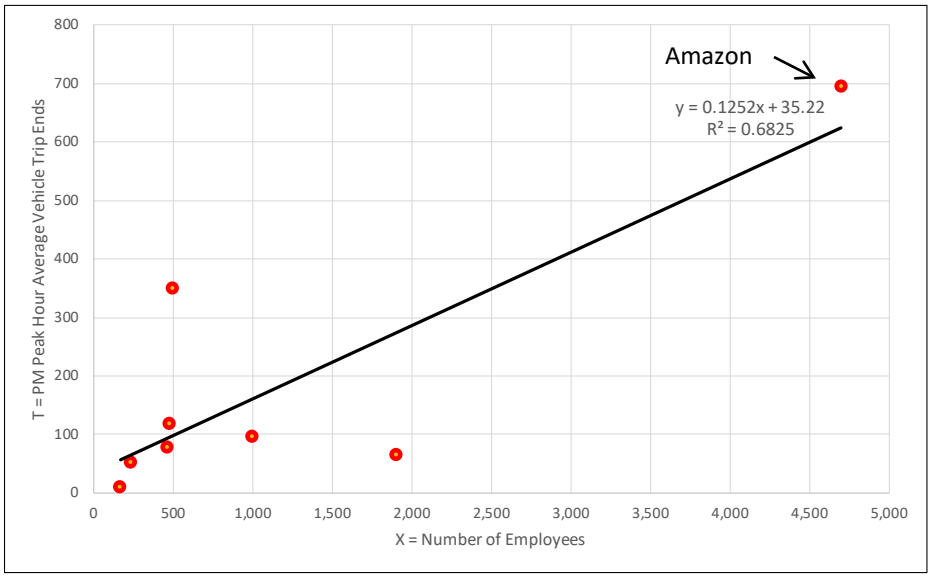


Exhibit 10 summarizes the AM and PM peak hour trip rates and the daily rates for trip generation per employee at fulfillment centers based on the findings of this study.

Exhibit 10: Summary of Trip Generation Rates per Employee for Fulfillment Centers

Vehicle Class	AM Peak Hour	PM Peak Hour	Daily
Cars	0.102	0.139	1.673
2-4 Axle Trucks	0.006	0.008	0.125
5-Axle Trucks	0.009	0.008	0.178
Total	0.118	0.155	1.977

Parcel Hubs

By Building Size

Exhibit 11 displays daily vehicle trip generation rates by building size for each of five parcel hub sites. They are sorted by the smallest to the largest building size from left to right. In this case the small sites generate significantly more trips of every kind than the larger sites, which is the opposite to the pattern observed for fulfillment centers.

Exhibit 11: Daily Trip Generation Rates at Parcel Hubs

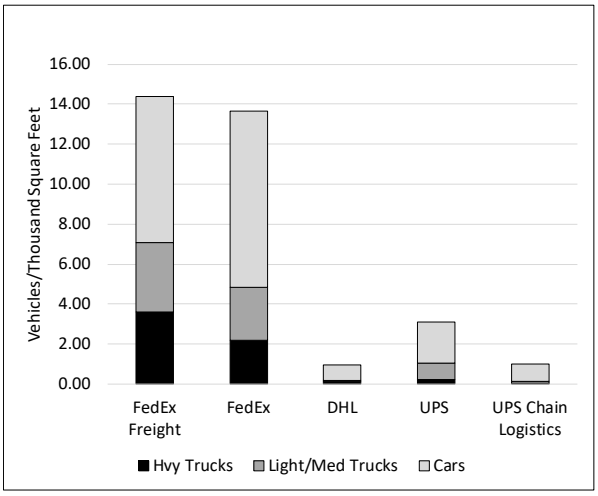


Exhibit 12 shows a data plot of daily vehicle trips of five parcel hubs against building size. As shown, a linear best fit was negative. During the collection of traffic data, construction activity was observed at the FedEx site potentially tainting the validity of these data to represent typical trip generation characteristics. To determine if the trip generation at this site was contributing to the poor data correlation, Exhibit 13 displays the same daily data plot without the FedEx site. The linear best fit shows a positive slope, but remains almost flat effectively indicating no correlation between the daily trips and building size based on the analysis of these sites.

The basic premise of the ITE trip generation approach is that the number of trips generated by a project is proportional to its size. That premise does not hold true for the parcel hubs in this sample and so no meaningful trip generation rates could be determined based on the data collected in support of this study. It should be recognized that a sample size of four or five sites represents the minimum recommended by ITE for valid trip generation studies, and for this reason, it is recommended that additional sites would need to be investigated and included in the data set to develop a more definitive finding on trip generation rates. Furthermore, it may be appropriate to determine the specific function at each site, due to the disparity between the rates observed at the FedEx sites versus the other three sites. It is likely that the function served by the respective sites is significantly different, as reflected in the trip generation rates, thereby necessitating reclassification of these uses for comparative purposes.

Exhibit 12: Data Plot for Daily Total Vehicle Trip Ends against Building Size (Parcel Hubs)

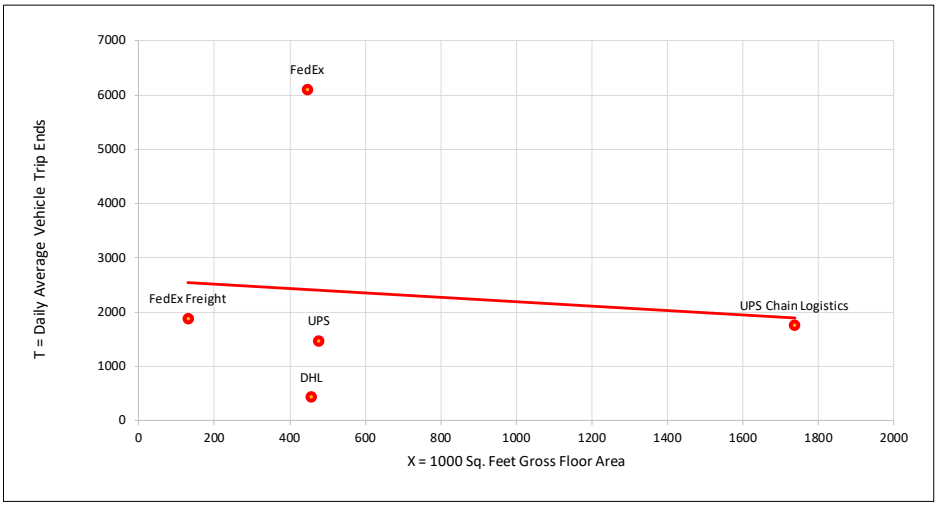
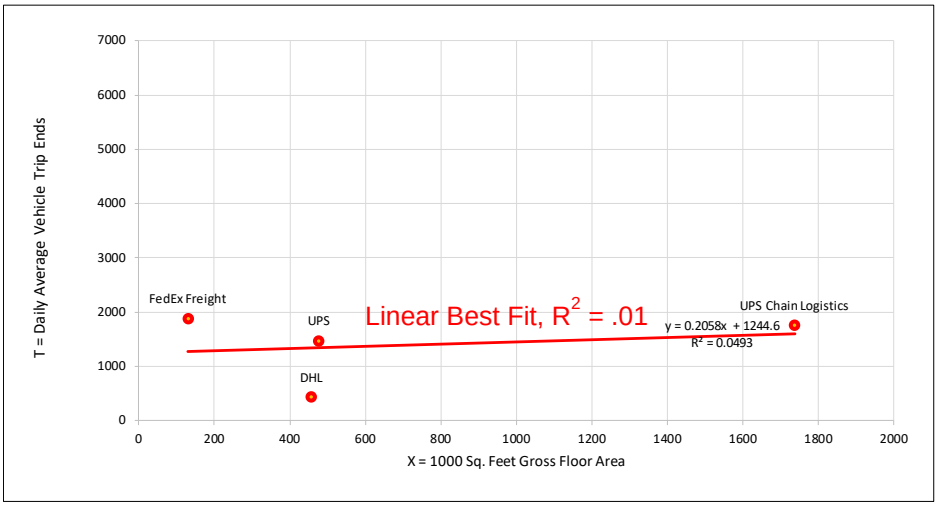


Exhibit 13: Data Plot for Daily Vehicle Trip Ends against Building Size without Construction Site



Conclusions

Our survey of 11 fulfillment centers produced trip generation rates based on the gross floor area of the sites that satisfies ITE's standards for use. The findings of the study indicate that the daily trip generation rates for fulfillment centers is approximately 2.1 trips per thousand square feet of gross floor area, which is roughly 50% higher than the comparable rate for conventional transload and short term storage warehouses previously defined in the ITE *Trip Generation Manual* Version 10. The results of the study further indicate that the higher rates were entirely due to more cars traffic at these sites; the trip generation rates for trucks was found to comparable to those at conventional warehouses.

Employment data were available for eight out of 11 fulfillment center sites. This provided the ability to determine trip generation rates per employee. The study results indicate that that trip generation for fulfillment centers is approximately 2.0 trips per employee. The study also found that the trip generation rate per employee correlated more closely that the trip generation rate per thousand square feet of gross floor area.

The data from the five parcel hubs did not show any statistically meaningful relationship between trips and building size. Therefore, no trip generation rate could be calculated. However, the data collected at these sites may provide a useful basis for further comparison with additional sites to provide more data points for analysis.

Page Intentionally Left Blank

Item 7.D

High-Cube Warehouse Calculation

Attachment 2

TUMF Calculation Handbook – High Cube Warehouse

Page Intentionally Left Blank

1.1. High-Cube Warehouses

1.1.1. Summary

For the purpose of determining the TUMF obligation, all types of high-cube warehouses, including fulfillment centers, transload and short-term storage warehouses and other similar distribution facilities will be considered industrial use types. The methodology outlined in **Worksheet A.2.8** and described as follows will be applied to determine the equivalent floor area for high-cube warehouses/fulfillment centers with a minimum gross floor area of 200,000 square feet, a minimum ceiling height of 24 feet and a minimum dock-high door loading ratio of 1 door per 10,000 square feet *(for the example calculation assume a high-cube warehouse with a gross floor area of 450,000 square feet, a ceiling height exceeding 24 feet and a dock-high door loading ratio exceeding 1:10,000)*:

1. Subtract 200,000 square feet from the total gross floor area
   (*i.e. for the example facility it is 450,000 – 200,000 = 250,000 square feet*)
2. Multiply the resultant value from step 1 which is total gross floor area in excess of 200,000 square feet by 0.36
   (*i.e. for the example facility it is 250,000 x 0.36 = 90,000 square feet*)
3. Add 200,000 square feet to the resultant value of step 2
   (*i.e. for the example facility it is 200,000 + 90,000 = 290,000 square feet*)
4. Use the resultant value of step 3 as the gross floor area to calculate the TUMF obligation using **Worksheet A.2.1** for standard non-residential fee calculations.

The TUMF obligation for a warehouse facility with a gross floor area of less than 200,000 square feet, a ceiling height of less than 24 feet and/or a dock-high door loading ratio of less than 1 door per 10,000 square feet will be calculated based on the actual gross floor area using **Worksheet A.2.1** for standard non-residential fee calculations. Furthermore, where other uses such as wholesale showrooms, retail showrooms or office suites are co-located with qualifying high-cube warehouse facilities, only the qualifying warehouse portion of the premises will be calculated using **Worksheet A.2.8**. The fee obligation for all other co-located facilities will be calculated based on the actual gross floor area and the appropriate land use category using **Worksheet A.2.1** for standard non-residential fee calculations.

1.1.2. Detailed Narrative

High-cube warehouses are primarily for the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. These facilities typically have a high level of on-site automation and logistics management enable highly-efficient processing of goods through the facility. High-cube warehouses include, but may not be limited to, the following types of facilities:

- High-cube transload and short-term storage facilities typically provide for consolidation and distribution of loads for manufacturers, wholesalers or retailers.

Transload and short-term storage facilities typically provide limited storage duration, high throughput and high-efficiency distribution.

- Fulfillment centers include high-cube warehouses typically characterized by significant storage and direct distribution of ecommerce products to the end users. These facilities typically handle smaller packages and quantities than other types of high-cube warehouses.
- High-cube parcel hub warehouses typically serve as regional and local freight-forwarding facilities of time sensitive shipments via air freight and ground carriers. These sites may also include truck maintenance, wash, and/or fueling facilities ancillary to the primary use of the site.
- High-cube cold storage warehouses are facilities that provide temperature-controlled environments for the storage and distribution of frozen foods or other perishable products.

For the purpose of determining the TUMF obligation, all high-cube warehouses are defined as follows:

> *Very large shell buildings commonly constructed using steel framed and/or concrete tilt-up techniques with a minimum gross floor area of 200,000 square feet, a minimum ceiling height of 24 feet and a minimum dock-high door loading ratio of 1 door per 10,000 square feet.*

In accordance with Section 6.2 and Appendix B of the Transportation Uniform Mitigation Fee Nexus Study 2016 Update Final Report (Western Riverside Council of Governments, As Adopted July 10, 2017), high-cube warehouses are considered to be industrial use types with the primary use of the facility generally meeting the description of Motor Freight Transportation and Warehousing (SIC Major Category 42). The TUMF obligation for industrial (and all non-residential) land uses is based on the gross floor area of buildings associated with the specific land use and is calculated using **Worksheet A.2.1** for standard non-residential fee calculations. However, in the case of high-cube warehouses, vehicle trips generated to and from the site are typically lower than traditional industrial uses due to the high-level of on-site automation and logistics management. For this reason, it is necessary to determine the gross floor area equivalency for the purpose of calculating the TUMF obligation.

A review of Trip Generation 9th Edition (Institute of Traffic Engineers, 2012) indicates the average weekday daily trip generation rate for high-cube warehouses is 1.68 trips per thousand square feet, while the weekday PM peak-hour trip generation rate for the same uses is approximately 0.16 trips per thousand square feet of building area. By comparison, traditional warehouse uses have a weekday daily trip generation rate of 3.56 trips per thousand square feet, and PM peak-hour trip generation rates of 0.45 trips per thousand square feet and 0.58 trips per employee. A study of the trip generation characteristics of fulfillment centers in the Inland Empire of Southern California completed in January 2019 by WSP for the Western Riverside Council of Governments (WRCOG) found trip generation rates of these facilities to be generally consistent with the rates prescribed in Trip Generation 9th Edition for all high-cube warehouse uses, with an average weekday daily trip generation rate of 2.13 trips per thousand square feet and an average weekday PM peak rate of 0.16 trips per thousand square feet.

Table 5.7 summarizes the various characteristics of high-cube warehouses, including trip generation, and establishes the equivalent square feet for the purpose of calculating the TUMF obligation for all high-cube warehouse facilities.

Table 5.7 – Characteristics of High-Cube Warehouses and Distribution Centers

Land Use Type	*Average Daily Vehicle Trips per 1,000 sqft*	*Average PM Peak Vehicle Trips per 1,000 sqft*	*Average PM Peak Trips per Employee*	*TUMF Weighted Equivalent sqft **
Warehousing (i) (150)	3.56	0.45	0.58	
High-Cube Warehouse (i) (152)	1.68	0.16		*0.36*
Fulfillment Centers (ii)	2.13	0.16	0.16	
Warehouse/Distribution Center (iii)	1.10	0.08		
All TUMF Industrial Use Types (i)	5.33			

Source: (i) Trip Generation 9th Edition, Institute of Traffic Engineers, 2012

(ii) TUMF High-Cube Warehouse Trip Generation Study, WRCOG, January 2019

(iii) San Bernardino/Riverside County Warehouse/Distribution Center Vehicle Trip Generation Study, Crain and Associates, January 2005

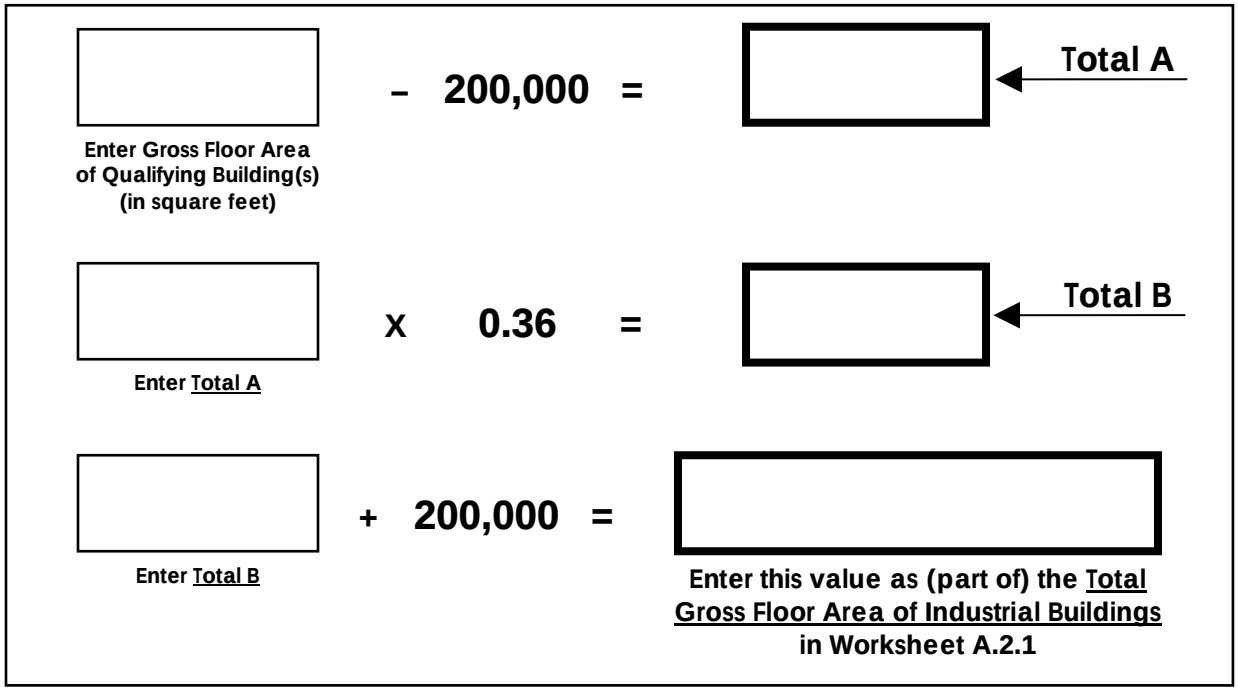
Note: * - TUMF weighted equivalent square feet based on relative trip generation per 1000 sqft between the average of High-Cube Warehouse and Fulfillment Centers and the median of all TUMF Industrial Uses (consistent with TUMF Nexus Study Trip Generation Rate Comparison).

The gross floor area equivalency for High-Cube Warehouses is based on the average of the trip generation characteristics of High-Cube Warehouse, which is quantified in the Trip Generation 9th Edition in terms of both daily and peak trips per thousand square feet gross floor area, and Fulfillment Centers, which is quantified in the TUMF High-Cube Warehouse Trip Generation Study in terms of both daily and peak trips per thousand square feet gross floor area as well as per employees. Based on this information, the simple average daily trip generation rate for a high-cube warehouse, including fulfillment centers, is approximately 1.90 trips per thousand square feet of gross floor area. To account for the variation in trip generation rates between high-cube warehouses, including fulfillment centers, and all TUMF industrial land use types, the gross floor area equivalency was weighted based on the relative trip generation between high-cube warehouses, including fulfillment centers, and the median of all TUMF Industrial Uses as used in the TUMF Nexus Study. The weighted gross floor area equivalency for high-cube warehouses is 0.36.

For the purpose of calculating the TUMF obligation for *High-Cube Warehouses* with a minimum gross floor area of 200,000 square feet, a minimum ceiling height of 24 feet and a minimum dock-high door loading ratio of 1 door per 10,000 square feet, the gross floor area *in excess of 200,000 square feet* will be multiplied by *0.36* and the resultant value *increased by 200,000 square feet* to determine the equivalent number of square feet of floor area. The *equivalent floor area will be used for the purpose of calculating the TUMF* at the rate prescribed by the respective local jurisdictions TUMF Ordinance and supported by the TUMF Nexus Study. For example, a high-cube warehouse with a gross floor area of 450,000 square feet, a ceiling height exceeding 24 feet and a dock-high door loading ratio exceeding 1:10,000 (for the example facility it is at least 45 dock-high door loading bays i.e. 450,000/10,000 = 45) the equivalent floor area would be 290,000 square feet ({[450,000 - 200,000] x 0.36} + 200,000 = 290,000)

The TUMF obligation for a warehouse facility with a gross floor area of less than 200,000 square feet, a ceiling height of less than 24 feet and/or a dock-high door loading ratio of less than 1 door per 10,000 square feet will be calculated based on the actual gross floor area using **Worksheet A.2.1** for standard non-residential fee calculations. Furthermore, where other uses such as wholesale showrooms, retail showrooms or office suites are co-located with qualifying high-cube warehouse facilities, only the qualifying warehouse portion of the premises will be calculated using **Worksheet A.2.8**. The fee obligation for all other co-located facilities will be calculated based on the actual gross floor area and the appropriate land use category using **Worksheet A.2.1** for standard non-residential fee calculations.

Worksheet A.2.8 High-Cube Warehouse TUMF Calculation Worksheet



Item 7.D

High-Cube Warehouse Calculation

Attachment 3

Trip Generation Study – Stakeholder comments

Page Intentionally Left Blank

Daniel Ramirez-Cornejo

From: Frank Sherkow <fsherkow@earthlink.net>
Sent: Thursday, January 17, 2019 1:00 PM
To: Daniel Ramirez-Cornejo
Cc: 'Jonathan Shardlow'; Chris Gray; 'Sandipan Bhattacharjee, P.E., AICP'; Matt Englhard
Subject: RE: E-Commerce Trip Generation Rates
Attachments: Survey Trip Gen Average-01.16.19_v2.xlsx

Daniel:

Here are some preliminary results from our analysis. As you open the excel file, you will see a summary of facilities sorted by groups that we believe are relevant and as consistent as possible with ITE and sound traffic engineering practices. I will refer to items on this file/tab in this email.

1. We believe that the square footage used in the report for the P&G facility is wrong, and reflects the Floor & Décor company (next door). The real square footage for the P&G facility should be 1,560,046 SF.
2. We conducted a hand-count of the parking spaces using aerial photos from Google Maps.
3. The consultant's reports refers to the size of facilities' sites as the driving factor as to whether they are e-commerce (fulfillment) facilities and how much traffic they might generate. The bigger the site the more trips, they say. "Largest sites tend to generate lots of car trips but few truck trips." The size of the site is NOT the cause for more trips. The auto parking spaces per building SF is the real relationship. It is one of the key factors as to whether the building is/will be e-commerce vs. High Cube Distribution Center. When reviewing a site plan, does it have a large number of auto parking spaces or not? Directly related is also the Total Trips (employees) per 1,000 SF. More goods handling will necessitate more employees, until/unless additional automation comes on the scene.

From our analysis, the group of facilities that were studied actually consists of 5 separate land use types or combinations of land uses:

a. Fulfillment centers (e-commerce) – Walmart (Chino) and Amazon (MV)
b. Distribution with Cold Storage (maybe mixed land uses on one site) – Walmart (Columbia Ave.)
c. Distribution without Cold Storage – P&G, Big 5, Home Depot, Nestles, Petco, Komar, ACT
d. Aggregation Distribution & Handling (probably mixed land uses on one site) – Ross
e. Parcel Hubs – FedEx, UPS, DHL

Referring to the spreadsheet column "S", note the significant differences between sub groups in Total Trips per 1,000 SF (building). True High Cube facilities (Distribution Centers without Cold Storage) will have a small trip rate, because there aren't as many employees per SF. Due to their efficiency of goods movements (with less handling), the truck traffic compared to all trips is a relatively high percentage for High Cube – see column "N". These trip rates are similar to those for Transloading or High Cube facilities in the ITE Trip Generation Handbook. They are also similar to previous data points collected by ITE and AQMD. They are NOT e-commerce of fulfillment facilities.

We know (from work with AQMD and ITE) that cold storage will have slightly higher trip rates, dependent on the type of goods (frozen vs. perishable). Clearly, the Walmart facility on Columbia Ave. is partially or totally cold storage. There is evidence online about its cold storage function.

The Ross facility (Perris) is a mixture of High Cube and goods handling (but not e-commerce). The trip rates and truck % is evidence of this. Ross's business model depends on selling goods that have been for sale in other stores. So, the facilities like the one in Perris are used to resort and regroup goods for sale in Ross stores. Thus, there are many more

employees than at High Cube facilities per SF, but less than an e-commerce building. This mixture is NOT a recognized ITE land use, so we have set it aside.

The only facilities that are acting like true Fulfillment Centers or E-commerce facilities are Amazon (MV) and Walmart (Chino). Note that both of these companies have other facilities that are more like High Cube or Cold Storage, and even Parcel Hub facilities. So, each site should be viewed separately. See column "N" for the small proportion of truck trips vs. total trips. Also see column "S" to compare the higher total trip rates compared to High Cube Distribution Centers (similar for column "Q").

For purposes of establishing traffic impacts or development fees, the group of facilities that the consultant studied does NOT represent Fulfillment Centers. This is also reinforced by the data plot diagrams from the consultant's report.

The other item of note is that true e-commerce facilities are a relatively small portion of the warehouses built or being developed. Even when a facility uses the label of "fulfillment center," it does not mean that it functions as, or has the necessary characteristics of, a true e-commerce facility.

In reference to Parcel Hubs, these facilities are different from other warehouse facilities in size, shape, height, and design. Thus, they can easily be identified as a separate group for your purposes.

We welcome your questions or comments. We hope you will share this information with members of the Public Works Committee.

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

Daniel Ramirez-Cornejo

From: Frank Sherkow <fsherkow@earthlink.net>
Sent: Friday, January 11, 2019 3:46 PM
To: Daniel Ramirez-Cornejo
Cc: 'Jonathan Shardlow'; Chris Gray; 'Sandipan Bhattacharjee, P.E., AICP'
Subject: RE: E-Commerce Trip Generation Rates

Daniel:

Thanks for the quick response.

On the P&G building, here is what we had in our data:

Tenant	Address Line 1	City	Building Total SF	Building Dock High Doors	Orignial Database - Parking Stalls
Floor & Décor	24101 Iris Avenue	Moreno Valley	1,103,003	166	400
P&G	24015 Iris Avenue	Moreno Valley	1,560,046	268	862

I believe that someone has used the Floor & Decor square footage for the P&G building in your excel spreadsheet. Can you clarify?

Are you aware of any transit usage to these site? Any signs of significant ridesharing at any of these sites? The reason I ask, is that when you take each site's daily traffic flow and divide by the number of employees, the results are very puzzling in some cases. Don't know if you really care about the employment levels, but they should be within reason ranges.

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

From: Daniel Ramirez-Cornejo [mailto:dramirez-cornejo@wrcog.us]
Sent: Friday, January 11, 2019 9:34 AM
To: Frank Sherkow
Cc: 'Jonathan Shardlow'; Chris Gray; 'Sandipan Bhattacharjee, P.E., AICP'
Subject: RE: E-Commerce Trip Generation Rates

Good morning Frank,

The employment numbers were provided by the agencies in which the sites are located.

We have also provided responses to your previous questions on two sites as shown below:

1. For the P&G site, the physical address is shown as 24015 Iris Ave, Moreno Valley, CA 92551. The driveways were selected based on the building called out in the aerial photo below. Cosmos Street is an internal road of the same property as shown in the aerial photo.

2. The below is a street view from Riverside Drive to the shared driveway of Komar (building on the left) and Damco (on the right). As shown, the access from Damco (on the right) to the shared driveway is prohibited. Komar does the same for the northern aisle (on the left).

For reference, all traffic counts were collected with video cameras.

-Daniel

Daniel Ramirez-Cornejo
Program Manager
Western Riverside Council of Governments
3390 University Ave., Suite 450
Riverside, CA 92501-3315

Phone: (951) 405-6712
www.wrcog.us

"Respect Local Control...Provide Regional Perspective"

From: Frank Sherkow <fsherkow@earthlink.net>
Sent: Wednesday, January 9, 2019 11:52 AM
To: Daniel Ramirez-Cornejo <dramirez-cornejo@wrcog.us>
Cc: 'Jonathan Shardlow' <Jonathan.Shardlow@GreshamSavage.com>; Chris Gray <cgray@wrcog.us>; 'Sandipan Bhattacharjee, P.E., AICP' <sandipan@translutions.com>
Subject: RE: E-Commerce Trip Generation Rates

Daniel:

Thanks for the update.

A few items. We know from our work on development activities and working with tenants, plus our work on traffic impact studies, that the employment levels at these (and most other sites) fluctuates based on a regular seasonal pattern. Since the traffic counts appear have been gathered in Aug. 2018, we understand that this would represent an off-peak season period. This period last about 10 months during the year, but can vary based on local circumstances.

Can you tell us how you determined the employment numbers from your spreadsheet?

Based on our very preliminary work on the information from the consultant's report and other data that we possess (omitting the parcel hubs for the time being), it appears that there is a mixture of High Cube, E-commerce, and Cold Storage facilities in the list provided (11 sites). Some individual sites may have a mixture of several of these land uses, and therefore, in our opinion, would not be good candidates for this type of analysis. They don't have a pure representation of any of the recognized ITE land uses, thus, it would be difficult to apply the trips rates (and other factors) to a broader analysis or draw generalized conclusions about this sites.

When AQMD and NAIOP conducted similar studies, we always made sure of two things: 1. The sites were as pure a representative land uses as possible (not a mixture, like cold storage and high cube), and 2. The site possess driveways that could be isolated for traffic counts.

Unfortunately, some of these facilities, from your list, violate one or both of these criteria.

We are continuing to dig, so stay tuned. Thanks.

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

From: Daniel Ramirez-Cornejo [mailto:dramirez-cornejo@wrcog.us]
Sent: Wednesday, January 9, 2019 11:26 AM
To: Frank Sherkow
Cc: 'Jonathan Shardlow'; Chris Gray; 'Sandipan Bhattacharjee, P.E., AICP'
Subject: RE: E-Commerce Trip Generation Rates

Hi Frank,

Thank you for your comments on WRCOG's High-Cube Warehouse Trip Generation Study with regard to use of the facilities in the study to represent e-commerce trip rates.

We wanted to give you some further background on the study, why we did it, and how the study was performed.

Back in 2017 the Nexus Study was approved, we received some broad direction from our Executive Committee to look into the issue of whether the Nexus Study and the TUMF Program accurately reflects impacts associated with industrial uses. There was some limited direction provided to Staff to look at different industrial uses such parcel hubs, distribution centers, etc. given the perception that these uses generate more trips than typical industrial or high-cube uses.

We convened a working group of local agency staff who recommended a series of locations they were familiar with and also worked with a consultant (WSP) to identify facilities that could be classified as either a distribution center or a parcel hub.

After that, we collected data for each of the sites and summarized the data. We then presented the information to first our working group and then our Public Works Committee to get their feedback. They also recommended that we not have a separate category for these types of uses.

We will be reaching out to WSP to provide a detailed response with respect to the questions below. As requested we are including the worksheet with the data from each facility.

We would be happy to answer any additional questions that you have regarding the work that we've done and will be doing in the future.

Thank you,

-Daniel

Daniel Ramirez-Cornejo
Program Manager
Western Riverside Council of Governments
3390 University Ave., Suite 450
Riverside, CA 92501-3315
Phone: (951) 405-6712
www.wrcog.us

"Respect Local Control...Provide Regional Perspective"

From: Frank Sherkow <fsherkow@earthlink.net>
Sent: Monday, January 7, 2019 3:36 PM
To: Daniel Ramirez-Cornejo <dramirez-cornejo@wrcog.us>
Cc: 'Jonathan Shardlow' <Jonathan.Shardlow@GreshamSavage.com>; Chris Gray <cgray@wrcog.us>; 'Sandipan Bhattacharjee, P.E., AICP' <sandipan@translutions.com>
Subject: RE: E-Commerce Trip Generation Rates

Daniel:

Two preliminary questions:

1. Floor & Décor with an address of 24101 Iris and P&G with an address of 16110 Cosmos Street in MV. The traffic sheets and report says that the P&G facility was studied at 24015 Iris Ave. Can you clarify?
2. The Komar facility shares a driveway with a neighboring distribution center (Damco) onto Riverside Dr. What steps were taken to isolate the Komar traffic from other?

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

From: Frank Sherkow [mailto:fsherkow@earthlink.net]
Sent: Thursday, January 3, 2019 10:07 AM
To: 'Daniel Ramirez-Cornejo'
Cc: 'Jonathan Shardlow'; 'Chris Gray'; 'Sandipan Bhattacharjee, P.E., AICP'
Subject: RE: E-Commerce Trip Generation Rates

Daniel:

Thanks so much for your quick response. We stand ready to work with you on this important matter.

In the meantime, we will start to examine the traffic counts provided. Perhaps, we will have some comments in the near future.

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

From: Daniel Ramirez-Cornejo [mailto:dramirez-cornejo@wrcog.us]
Sent: Thursday, January 3, 2019 9:40 AM
To: Frank Sherkow
Cc: Jonathan Shardlow; Chris Gray; Sandipan Bhattacharjee, P.E., AICP
Subject: RE: E-Commerce Trip Generation Rates

Good morning Frank,

We will begin reviewing your comments and will respond accordingly. However, we wanted to ensure you receive the data requested. Per your request, we are attaching the spreadsheets with the counts taken in summer 2018.

Please let us know if you have any questions. Thank you,

-Daniel

Daniel Ramirez-Cornejo
Program Manager
Western Riverside Council of Governments
3390 University Ave., Suite 450
Riverside, CA 92501-3315
Phone: (951) 405-6712
www.wrcog.us

"Respect Local Control...Provide Regional Perspective"

From: Frank Sherkow <fsherkow@earthlink.net>
Sent: Wednesday, January 2, 2019 3:05 PM
To: Daniel Ramirez-Cornejo <dramirez-cornejo@wrcog.us>
Cc: Jonathan Shardlow <Jonathan.Shardlow@GreshamSavage.com>; Sandipan Bhattacharjee, P.E., AICP <sandipan@translutions.com>
Subject: E-Commerce Trip Generation Rates

Daniel:

I am writing to you concerning the Dec. 13, 2018 staff report about the High-Cube Warehouse Trip Generation Study and possible adjustments related to E-commerce facilities. To give you a bit of history, I represented NAIOP when the original High Cube fee levels were set. We continue to do consulting work for NAIOP and some of their members.

I have read your consultant's report about E-commerce facilities. The staff report states that, "The Trip Generation Study was conducted in a manner that meets the ITE standards for performing studies of this nature." Although the traffic counts may have done in accordance with the ITE Trip Generation Manual, the facilities selected and definitions for the E-commerce facilities do not seem to done in accordance with the ITE recent work on this issue.

I have attached a recent working prepare (referred to on page 2 of your staff report). Note that the ITE working paper refers to definitions for many of the large warehouse facilities, which I authored for ITE, with support of NAIOP members. There are physical site and buildings differences between the warehouse categories.

Having said that, not all E-commerce facilities are the same. For example, Amazon facilities may be "sort", "non-sort", "cross-dock", or some hybrids. My firm has done extensive traffic work on High Cube and E-commerce facilities in the Inland Empire. Some of these E-commerce facilities operate like High Cube facilities, while others have higher trip generation rates due to higher employee activities.

One major note of concern: Using the label, by the consultant, as "Fulfillment Centers" is most probably NOT ACCURATE.

The trip rates and parking capacity at some of these sites are significant indicators that some of these facilities are true High Cube buildings that feed local retail outlets, and not the end-customer. Even if the establishment uses the name "fulfillment center" in the title, it does not make them true E-commerce facilities for trip rates purposes.

Grouping these particular facilities together as a representation of E-commerce trip rates is not correct.

We would be glad to work with you, on behalf of NAIOP, to ensure that WRCOG has the most recent and correct information. We are glad to hear that, the WRCOG "staff is not recommending the inclusion of a separate component of the TUMF Calculation Handbook for fulfillment centers." However, as you explore possible adjustments to the TUMF fee program, NAIOP would like the opportunity to correct the record about this data and give WRCOG better information about this issue.

In the meantime, we would **formally request the electronic spreadsheets with the actual traffic counts for the 16 facilities** mentioned in the study. Please advise. Thanks.

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

Western Riverside Council of Governments
Public Works Committee

Staff Report

Subject: **TUMF Calculation Handbook Revisions**

Contact: **Daniel Ramirez-Cornejo, Program Manager, dramirez-cornejo@wrcog.us, (951) 405-6712**

Date: **February 14, 2019**

The purpose of this item is to *present several proposed minor revisions to the Transportation Uniform Mitigation Fee (TUMF) Calculation Handbook and request input on additional revisions from the Committee.*

Requested Actions:

1. Recommend that the Executive Committee approve the proposed revisions to the TUMF Fee Calculation Handbook to include clarification language on the 3,000 square foot deduction policy for retail and service uses.
2. Discuss and provide input on proposed clarification to the issuance of credit for existing uses for the exemption outlined in the TUMF Administrative Plan.

WRCOG's Transportation Uniform Mitigation Fee (TUMF) Program is a regional fee program designed to provide transportation and transit infrastructure that mitigates the impact of new growth in Western Riverside County. Each of WRCOG's member jurisdictions and the March JPA participates in the Program through an adopted ordinance, collects fees from new development, and remits the fees to WRCOG. WRCOG, as administrator of the TUMF Program, allocates TUMF to the Riverside County Transportation Commission (RCTC), groupings of jurisdictions – referred to as TUMF Zones – based on the amounts of fees collected in these groups, the Western Riverside County Regional Conservation Authority (RCA) and the Riverside Transit Agency (RTA). The TUMF Fee Calculation Handbook details the methodology for calculating the TUMF obligation for different categories of new development and, where necessary, clarifies the definition and calculation methodology for uses not clearly defined in the respective TUMF Ordinances.

As part of the annual review of TUMF Program documents, staff has identified several items to be added or modified in the TUMF Fee Calculation Handbook.

3,000 Square Foot Deduction Policy

On August 7, 2017, the Executive Committee approved a 3,000 square foot (SF) deduction for all service and retail land use types. Since approval of the policy on August 7, 2017, most project applicants are not required to pay TUMF fees on the first 3,000 SF of retail and service projects. This policy benefits both new uses and existing uses that are expanding their operation to provide more economic development in the region. Staff have also interpreted this policy to include Class A and Class B office buildings, to each independent tenant space of a multi-tenant building, and to all defined land uses in the TUMF Fee Calculation Handbook.

On October 1, 2018, the Executive Committee approved an update to the 3,000 SF deduction to retail and service TUMF land uses that limits the reduction to development projects that are less than 20,000 SF, effective immediately. This means that a retail / service project that is 19,999 SF would receive the 3,000 SF deduction but a 20,000 SF retail / service project would not receive the 3,000 SF deduction.

There is currently no specific language in the TUMF Fee Calculation Handbook or any of the TUMF governing documents detailing how the 3,000 SF deduction policy is to be implemented. Staff have proposed clarifying language for addition to the TUMF Fee Calculation Handbook and has added a line in Worksheet A.2.1 for standard, non-residential TUMF calculations to provide guidance on administration of the 3,000 SF deduction. These proposed updates to the TUMF Fee Calculation Handbook are included as an attachment to this Staff Report.

Credit for Existing Uses

The TUMF Program contains an exemption for the reuse / reconstruction of existing buildings and the language in the TUMF Administrative Plan is as follows:

> "The rehabilitation and/or reconstruction of any habitable structure in use on or after January 1, 2000, provided that the same or fewer traffic trips are generated as a result thereof"

There is currently no official calculation methodology to guide staff in implementation of this exemption. Staff currently calculate credits for existing uses utilizing the fees and policies currently in effect. Staff is requesting input from the Public Works Committee (PWC) on the following two proposed implementation strategies for potential inclusion in the TUMF Fee Calculation Handbook:

- Option 1: Calculate credit based on the fees in effect at the time that the building was last in use, no earlier than January 1, 2000. This would mean that a credit would be awarded on the full building square footage for existing uses that were in place prior to introduction of the 3,000 SF deduction policy in August 2017; or

- Option 2: Continue calculating credits for existing uses based on the current fee schedules and calculation policies, including the 3,000 SF deduction.

The developer and/or member agency would continue to be responsible for providing documentation showing that the building was in use and occupied after January 1, 2000, to receive credit. If the PWC elects to move forward with Option 1, the developer and/or member agency would also be required to provide documentation of termination of use after January 1, 2000, in order to have credit calculated based on a previous fee schedule and calculation policy. If insufficient documentation is provided, credit would be awarded using the fees and policies currently in place.

Next Steps

Staff is requesting input from member agencies on the potential addition to the TUMF Fee Calculation Handbook to clarify application of the 3,000 SF deduction policy. Once staff has direction on allocating credit for existing uses, draft language will be brought to the PWC for possible recommendation to the Executive Committee for action.

Prior Action:

None.

Fiscal Impact:

Transportation Department activities are included in the Agency's adopted FY 2018/2019 Budget under the Transportation Department.

Attachment:

1. 3,000 SF Deduction Revisions for Fee Calculation Handbook.

Item 7.E

TUMF Calculation Handbook Revisions

Attachment 1

3,000 SF Deduction Revisions for Fee Calculation Handbook

Page Intentionally Left Blank

1.1. 3,000 Square Foot Reduction for Retail and Service TUMF Land Uses

1.1.1. Summary

On August 7, 2017, the WRCOG Executive Committee implemented a policy of waiving the TUMF obligation for the first 3,000 square feet (SF) of gross floor area for all service and retail land uses due to concerns raised during the 2016 Nexus Study update over the impact of TUMF on retail uses. On October 1, 2018, the WRCOG Executive Committee updated the provisions of this policy to limit the fee reduction to only those retail and service land uses that have a total gross floor area of less than 20,000 SF.

1.1.2. Implementation

The policy enacted in August 2017 and updated in October 2018 provides a waiver from the TUMF obligation for the first 3,000 SF of gross floor area for new retail and service development projects as well as expansions to existing retail and service land uses where the net increase in the total gross floor area of the building(s) will be less than 20,000 SF. As such, no TUMF is paid on retail or service projects that increase the total gross floor area of the building(s) by less than 3,000 SF, and the gross floor area used as the basis to determine the fee obligation is reduced by 3,000 SF for retail or service projects that increase the total gross floor area of the building(s) by more than 3,000 SF but less than 20,000 SF. For the purposes of this policy, Class A/B offices are considered Service uses.

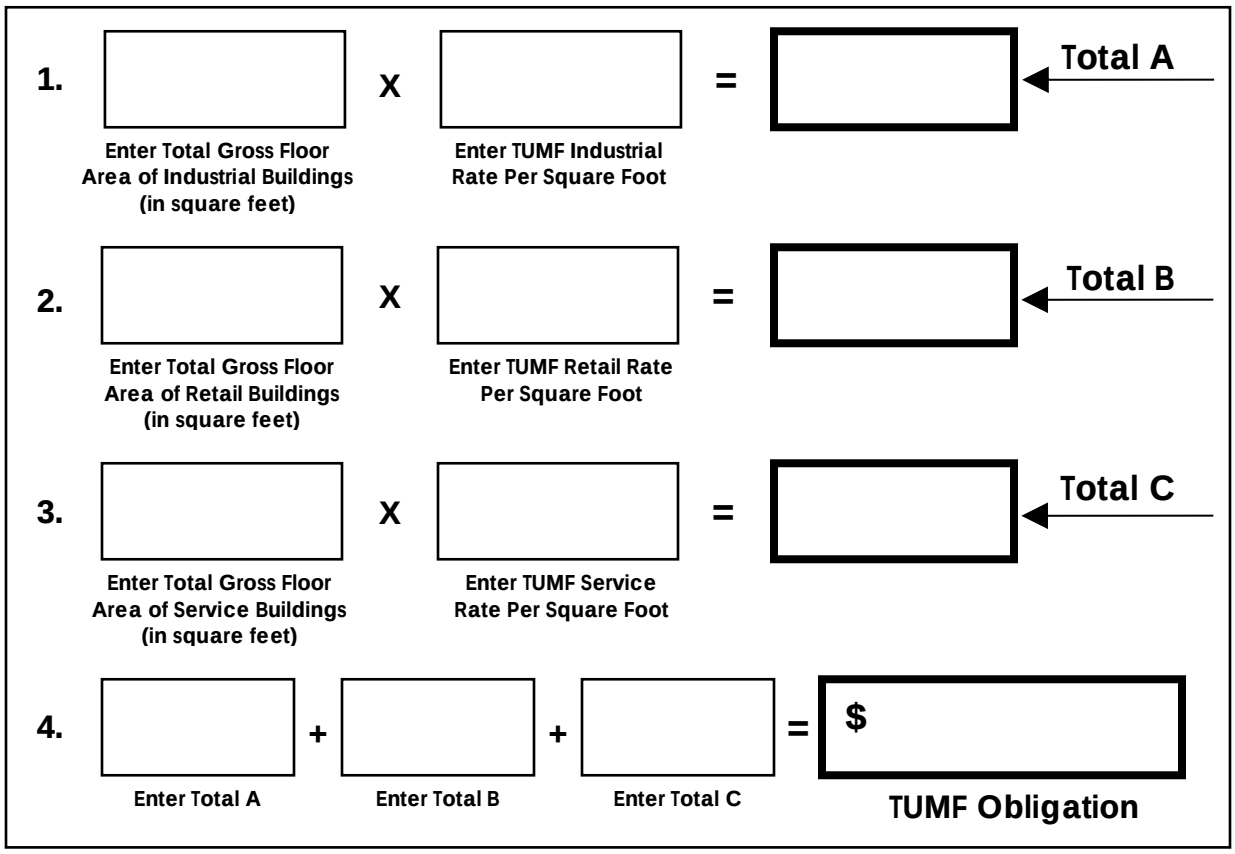
For mixed-use projects or projects with multiple tenants, the 3,000 SF reduction would apply to each individual use or each individual tenant to the extent that each tenant is operating independently of one another, and each is viewed as separate uses. This deduction is applied at the time of TUMF fee assessment and is based on the building as shown on plans at that time. Therefore, if a building is subdivided after TUMF fees are paid, TUMF would not be refunded.

1.1.3. Background

In response to concerns raised during the 2016 Nexus Study update, WRCOG staff undertook a study of several mid-size shopping centers in the subregion. Results from this study show that these shopping centers are generally anchored by a large tenant, typically occupying a space over 20,000 SF, and that these large spaces are surrounded by a number of smaller tenant spaces. The larger spaces are commonly occupied by large retailers such as grocery stores, clothing stores, and supermarkets; however, smaller tenant spaces are more commonly occupied by restaurants, beauty salons, dental offices, or electronics shops. Whereas the larger spaces may create a regional traffic draw, these smaller uses are generally more local-serving. For example, a new 200,000 SF retail super center may draw traffic from adjacent jurisdictions, as there may be a limited number of these retailers in the region. However, the smaller uses, such as a beauty salon or dental office, are generally located in every jurisdiction and will not likely create a large regional draw. Thus, even if a smaller use does generate additional traffic, this traffic will generally be local (i.e., new drive-through coffee shop locations, as there are numerous locations throughout the region).

A.2 Fee Calculation Worksheets for Non-Residential Use Types

Worksheet A.2.1 Standard Non-Residential TUMF Calculation Worksheet

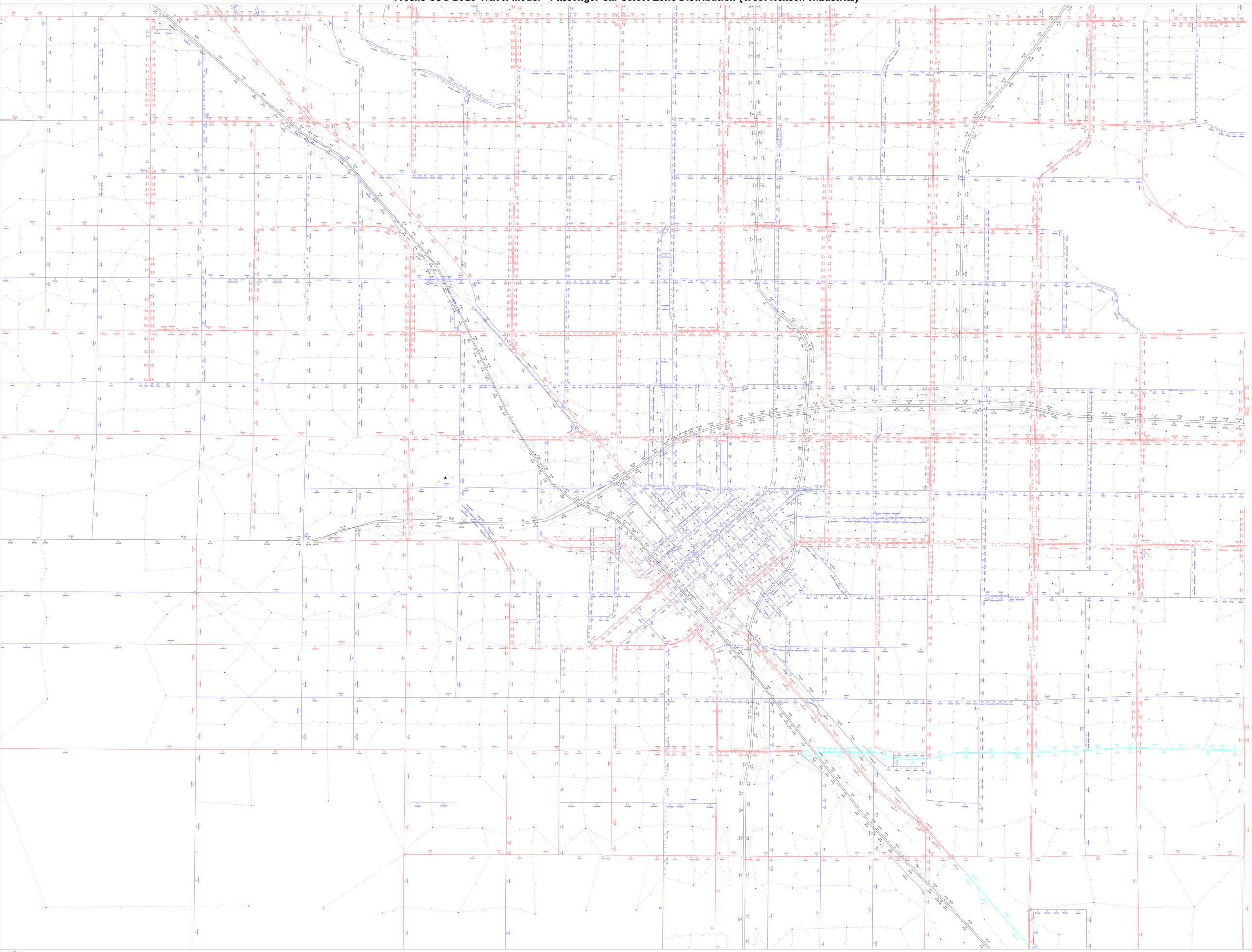


☐ 3,000 SF Deduction Awarded (Total SF: _____; Adjusted SF: _____)

August 7, 2017 the WRCOG Executive Committee approved a 3,000 SF deduction for all service and retail TUMF land use types.

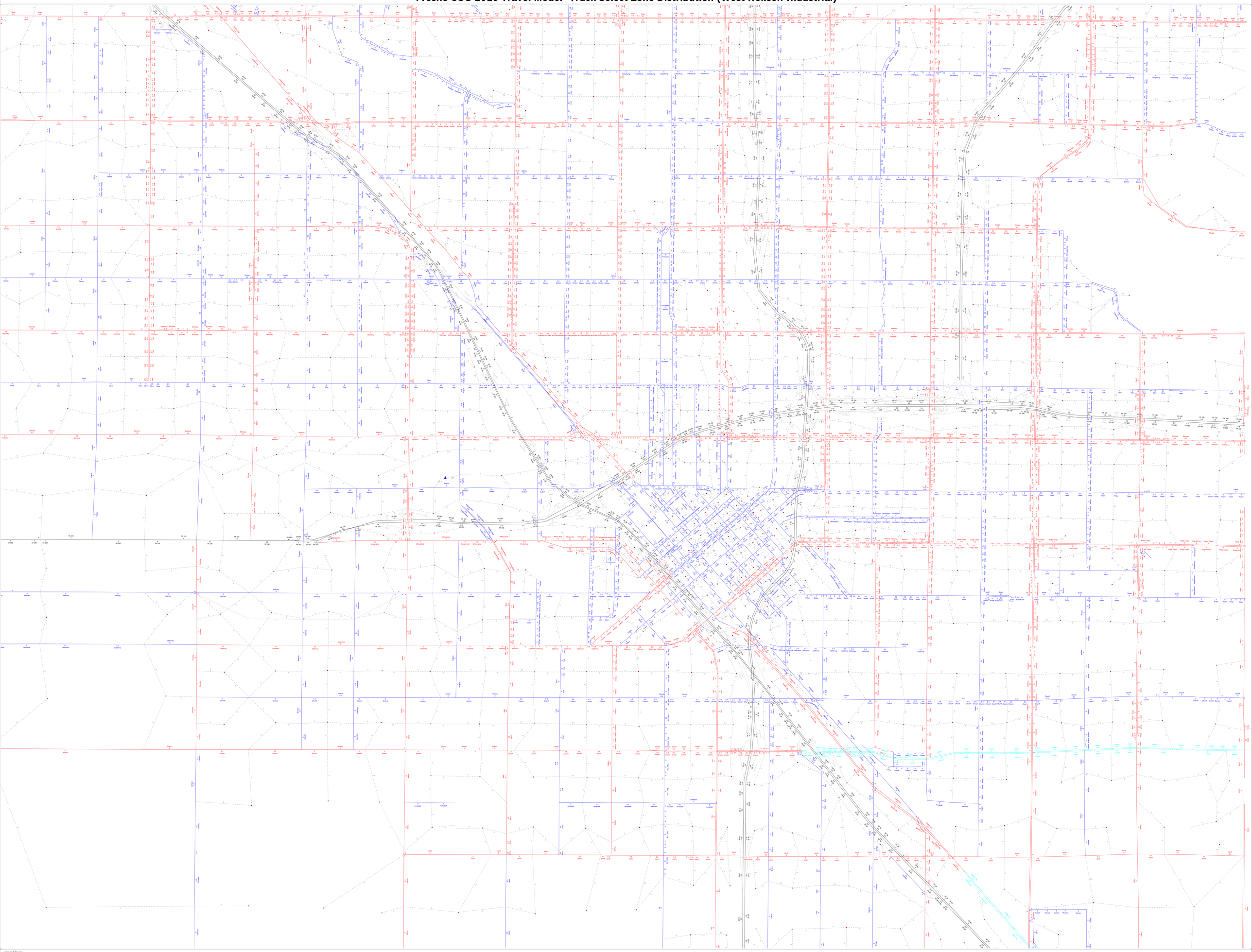
October 1, 2018 the WRCOG Executive Committee approved a revision to the 3,000 SF reduction policy for retail and service uses to limit this reduction to projects that are less than 20,000 SF.

Fresno COG 2019 Travel Model - Passenger Car Select Zone Distribution (West Neilsen Industrial)



(Licensed to LSA Associates Inc)

Fresno COG 2019 Travel Model -Truck Select Zone Distribution (West Neilsen Industrial)



(Licensed to LSA Associates Inc)

APPENDIX B:

TRAFFIC COUNT SHEETS AND SIGNAL TIMING SHEETS

Prepared by National Data & Surveying Services

N Marks Ave & W Belmont Ave

Peak Hour Turning Movement Count

ID: 21-030058-001
City: Fresno

Day: Tuesday
Date: 8/3/2021

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:00 PM - 05:00 PM	4:00 PM - 06:00 PM

SOUTHBOUND (N Marks Ave)

AM	14	112	38	0	134	AM
NOON	0	0	0	0	0	NOON
PM	22	110	24	0	289	PM
	0	3	1	0		

EASTBOUND (W Belmont Ave)

AM	NOON	PM	
122	0	222	
0	0	0	0
18	0	19	1
115	0	163	2
68	0	44	0
AM	NOON	PM	

WESTBOUND (W Belmont Ave)

PM	NOON	AM	
53	0	11	1
115	0	66	1
35	0	32	1
0	0	1	0
258	0	211	
PM	NOON	AM	

NORTHBOUND (N Marks Ave)

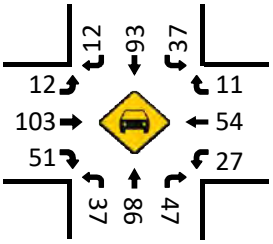
PM	191	2	85	217	71	PM
NOON	0	0	0	0	0	NOON
AM	213	1	42	105	57	AM
		0	1	1	1	

CONTROL

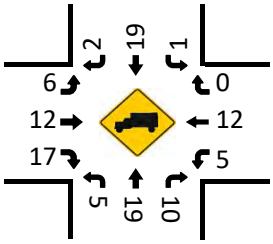
4-Way Stop

TEV	680	0	960
	AM	NOON	PM
PHF	0.83		0.88

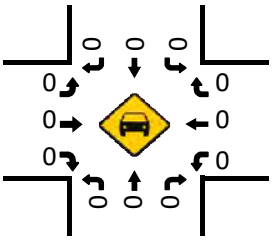
Cars (AM)



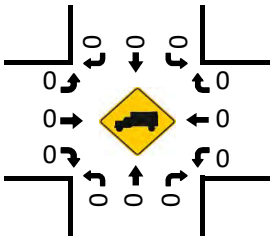
HT (AM)



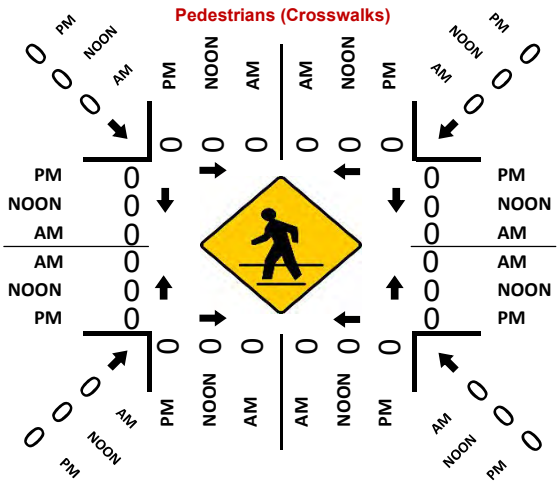
Cars (NOON)



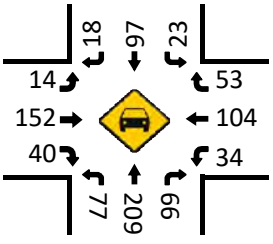
HT (NOON)



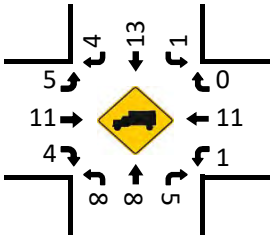
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

N Marks Ave & W Nielsen Ave

Peak Hour Turning Movement Count

ID: 21-030058-002
City: Fresno

Day: Tuesday
Date: 8/3/2021

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 7:00 AM - 09:00 AM
NOON: NONE
PM: 4:00 PM - 06:00 PM

SOUTHBOUND (N Marks Ave)

AM	27	176	8	0	213	AM
NOON	0	0	0	0	0	NOON
PM	13	182	2	3	388	PM
	1	2	1	0		

EASTBOUND (W Nielsen Ave)

AM	NOON	PM	
82	0	47	
0	0	0	0
10	0	22	1
6	0	2	1
30	0	33	1
AM	NOON	PM	

WESTBOUND (W Nielsen Ave)

PM	NOON	AM	
10	0	8	1
7	0	4	1
64	0	14	1
0	0	0	0
29	0	74	
PM	NOON	AM	

NORTHBOUND (N Marks Ave)

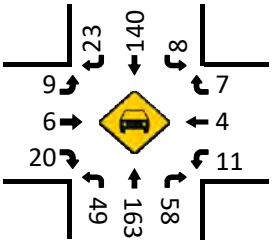
PM	280	1	27	353	25	PM
NOON	0	0	0	0	0	NOON
AM	221	1	51	195	60	AM
		0	1	2	1	

CONTROL

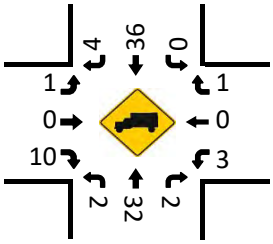
Signalized

TEV	590 AM	0 NOON	744 PM
PHF	0.81		0.96

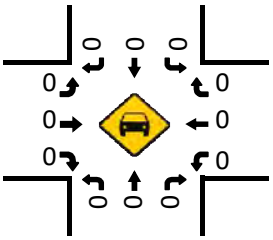
Cars (AM)



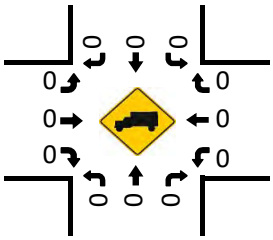
HT (AM)



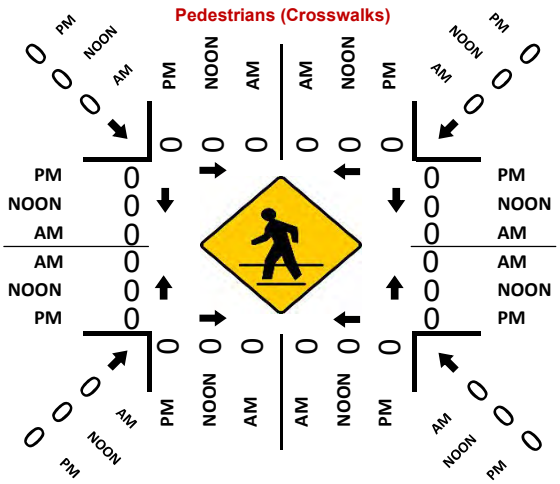
Cars (NOON)



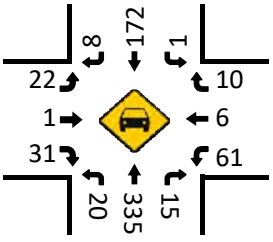
HT (NOON)



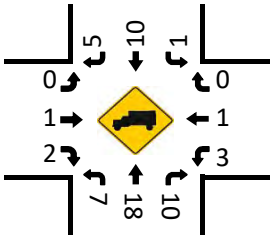
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

N Marks Ave & W Ray Johnson Dr

Peak Hour Turning Movement Count

ID: 21-030058-003
City: Fresno

Day: Tuesday
Date: 8/3/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (N Marks Ave)

AM	0	223	1	1	305	AM
NOON	0	0	0	0	0	NOON
PM	0	281	4	0	404	PM

EASTBOUND (W Ray Johnson Dr)

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND (W Ray Johnson Dr)

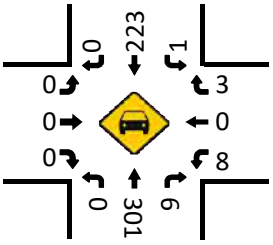
PM	NOON	AM	
6	0	3	1
0	0	0	0
17	0	8	1
0	0	0	0
14	0	7	
PM	NOON	AM	

NORTHBOUND (N Marks Ave)

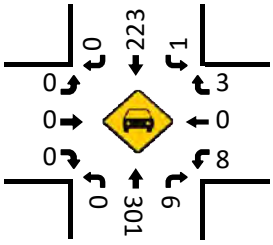
PM	298	0	0	398	10	PM
NOON	0	0	0	0	0	NOON
AM	231	0	0	301	6	AM

CONTROL			
Signalized			
TEV	543 AM	0 NOON	716 PM
PHF	0.80		0.92

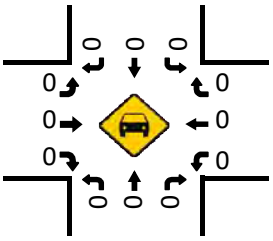
Totals (AM)



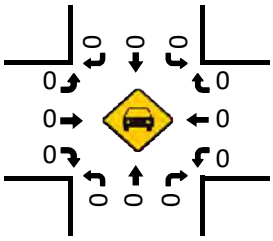
Totals (AM)



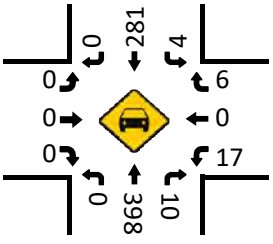
Totals (NOON)



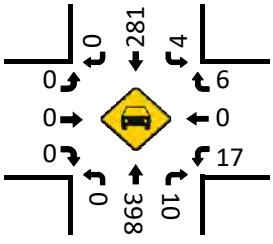
Totals (NOON)



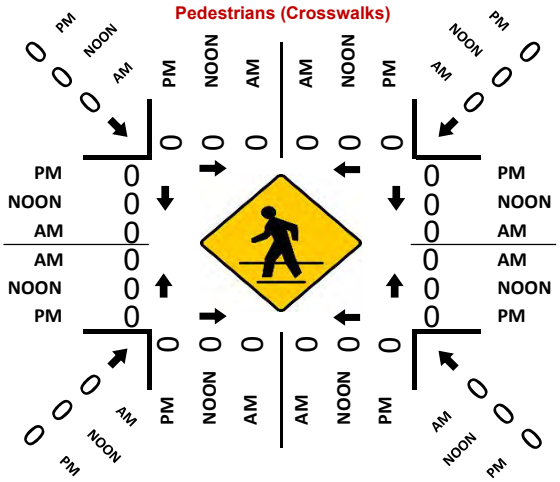
Totals (PM)



Totals (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

N Marks Ave & SR-180 WB Ramps

Peak Hour Turning Movement Count

ID: 21-030058-004
City: Fresno

Day: Tuesday
Date: 8/3/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (N Marks Ave)

AM	19	212	0	0	314	AM
NOON	0	0	0	0	0	NOON
PM	20	286	0	0	413	PM
	1	2	0	0		

EASTBOUND (SR-180 WB Ramps)

AM	NOON	PM	
19	0	20	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND (SR-180 WB Ramps)

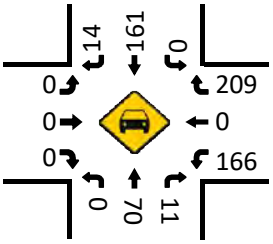
PM	NOON	AM	
273	0	238	2
0	0	0	0
219	0	173	2
0	0	0	0
15	0	11	
PM	NOON	AM	

NORTHBOUND (N Marks Ave)

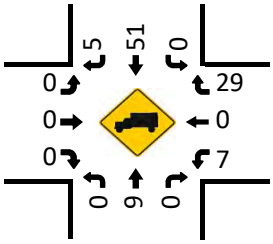
PM	505	0	0	140	15	PM
NOON	0	0	0	0	0	NOON
AM	385	0	0	76	11	AM
		0	0	2	1	

CONTROL			
Signalized			
TEV	729 AM	0 NOON	953 PM
PHF	0.84		0.98

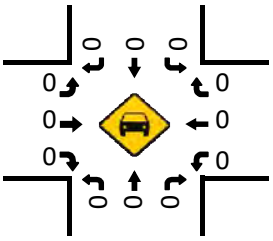
Cars (AM)



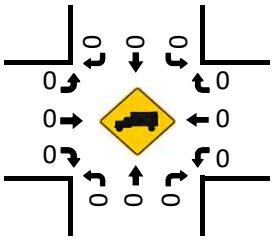
HT (AM)



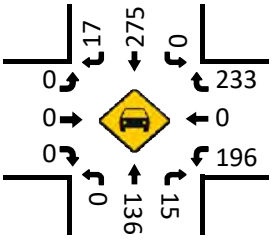
Cars (NOON)



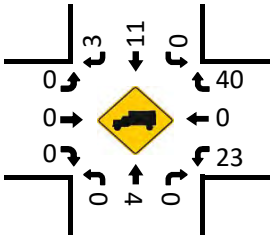
HT (NOON)



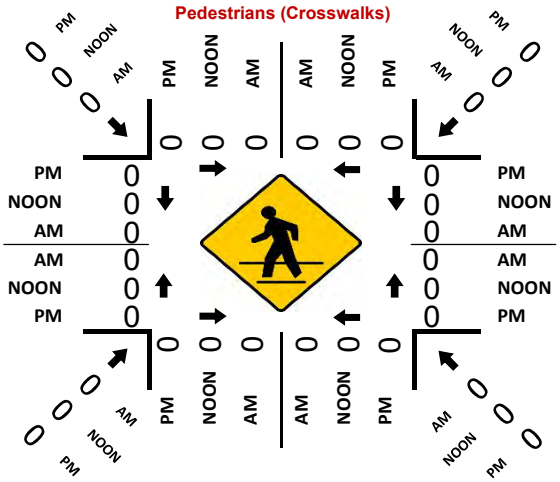
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

N Marks Ave & SR-180 EB Ramps

Peak Hour Turning Movement Count

ID: 21-030058-005
City: Fresno

Day: Tuesday
Date: 8/3/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (N Marks Ave)

	Left	Thru	Right	U-Turn	Total	
AM	122	261	0	0	87	AM
NOON	0	0	0	0	0	NOON
PM	171	336	0	0	155	PM

EASTBOUND (SR-180 EB Ramps)

AM	NOON	PM	
122	0	171	⇦
0	0	0	↶ 0
10	0	17	↱ 1
0	0	0	→ 0
11	0	18	↱ 1
AM	NOON	PM	

WESTBOUND (SR-180 EB Ramps)

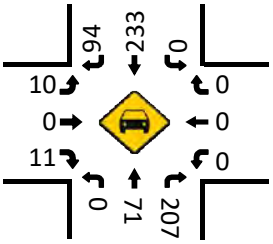
PM	NOON	AM	
0	0	0	↰ 0
0	0	0	← 0
0	0	0	↶ 0
0	0	0	↶ 0
264	0	215	⇨
PM	NOON	AM	

NORTHBOUND (N Marks Ave)

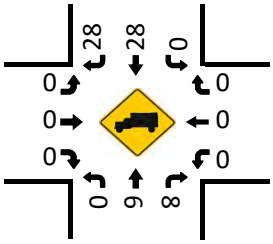
	Left	Thru	Right	U-Turn	Total	
PM	354	0	0	138	264	PM
NOON	0	0	0	0	0	NOON
AM	272	0	0	77	215	AM

CONTROL			
Signalized			
TEV	696 AM	0 NOON	944 PM
PHF	0.92		0.92

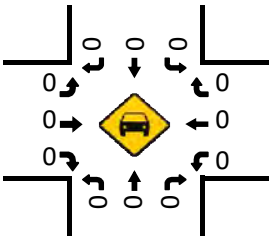
Cars (AM)



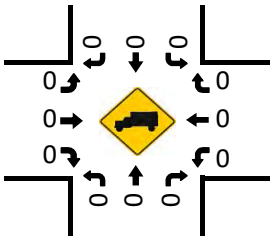
HT (AM)



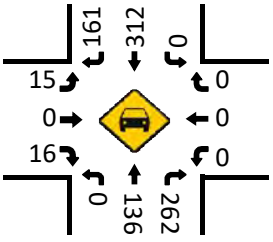
Cars (NOON)



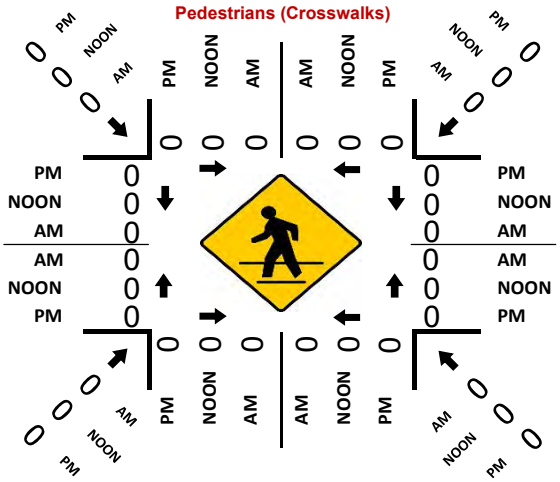
HT (NOON)



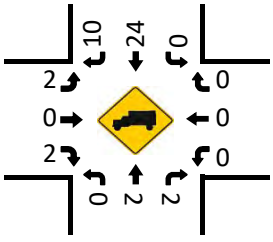
Cars (PM)



Pedestrians (Crosswalks)



HT (PM)



Prepared by National Data & Surveying Services

N Hughes Ave & W Belmont Ave

Peak Hour Turning Movement Count

ID: 21-030058-006
City: Fresno

Day: Tuesday
Date: 8/3/2021

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS

AM: 7:00 AM - 09:00 AM
NOON: NONE
PM: 4:00 PM - 06:00 PM

SOUTHBOUND (N Hughes Ave)

AM	15	22	26	0	62	AM
NOON	0	0	0	0	0	NOON
PM	15	47	40	0	113	PM

EASTBOUND (W Belmont Ave)

AM	NOON	PM		
156	0	208		
0	0	0	0	
20	0	37	1	
171	0	225	2	
17	0	10	0	
AM	NOON	PM		

WESTBOUND (W Belmont Ave)

PM	NOON	AM	
34	0	15	0
179	0	135	2
39	0	27	1
2	0	0	0
323	0	230	
PM	NOON	AM	

NORTHBOUND (N Hughes Ave)

PM	96	0	14	42	56	PM
NOON	0	0	0	0	0	NOON
AM	66	0	6	27	33	AM

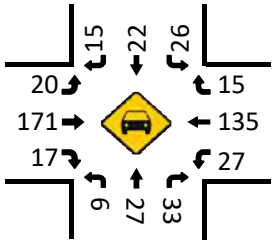
	0	0	1	0

CONTROL

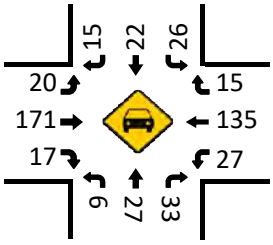
4-Way Stop

TEV	514	0	740
	AM	NOON	PM
PHF	0.91		0.82

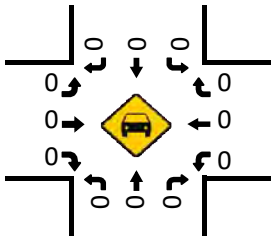
Totals (AM)



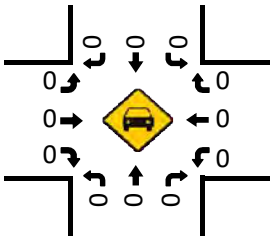
Totals (AM)



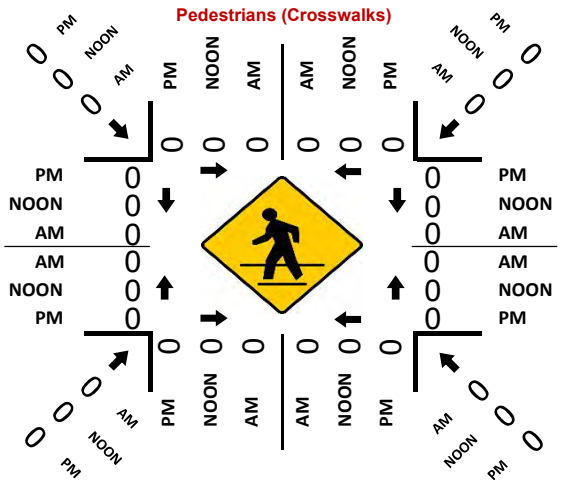
Totals (NOON)



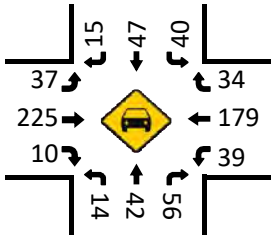
Totals (NOON)



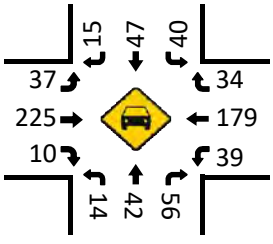
Pedestrians (Crosswalks)



Totals (PM)



Totals (PM)



Prepared by National Data & Surveying Services

N Hughes Ave & W Nielsen Ave

Peak Hour Turning Movement Count

ID: 21-030058-007
City: Fresno

Day: Tuesday
Date: 8/3/2021

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS

AM: 7:00 AM - 09:00 AM
NOON: NONE
PM: 4:00 PM - 06:00 PM

SOUTHBOUND — N Hughes Ave

AM	10	46	8	0	60	AM
NOON	0	0	0	0	0	NOON
PM	13	73	9	0	105	PM

EASTBOUND — W Nielsen Ave

AM	NOON	PM		
24	0	69		
0	0	0	0	
8	0	8	1	
33	0	22	1	
24	0	11	0	
AM	NOON	PM		

WESTBOUND — W Nielsen Ave

PM	NOON	AM		
			0	
14	0	8	1	
31	0	9	1	
4	0	2	0	
0	0	0		
34	0	42		
PM	NOON	AM		

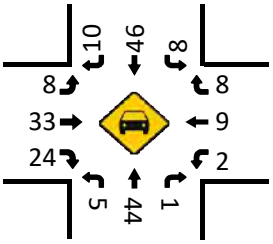
NORTHBOUND — N Hughes Ave

PM	88	0	25	83	3	PM
NOON	0	0	0	0	0	NOON
AM	72	0	5	44	1	AM

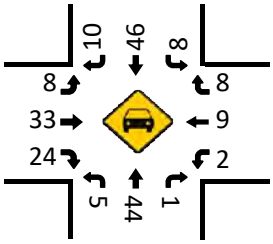
CONTROL: 4-Way Stop

		AM	NOON	PM
TEV	198	0	296	
PHF	0.84		0.82	

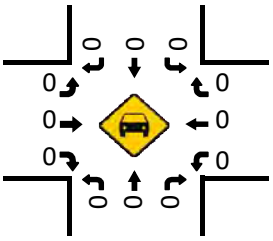
Totals (AM)



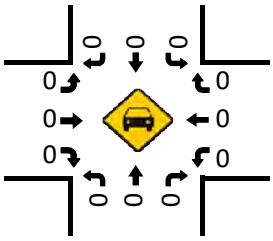
Totals (AM)



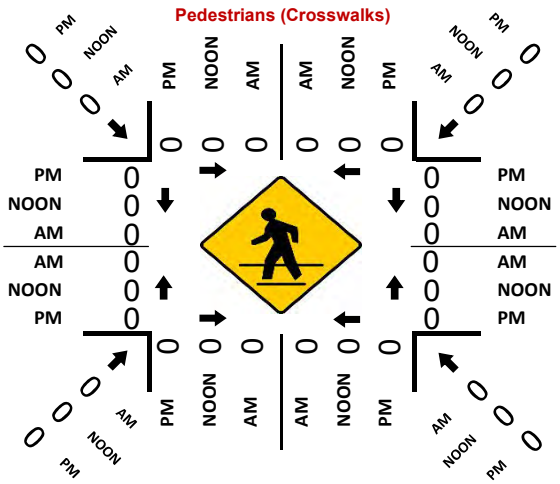
Totals (NOON)



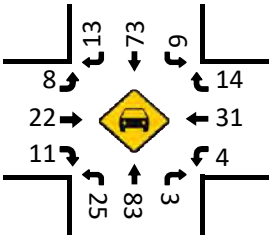
Totals (NOON)



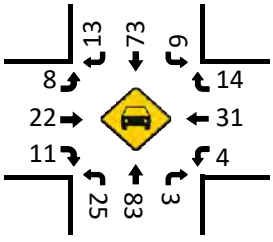
Pedestrians (Crosswalks)



Totals (PM)



Totals (PM)



ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

N Marks Ave and W Belmont Ave , Fresno

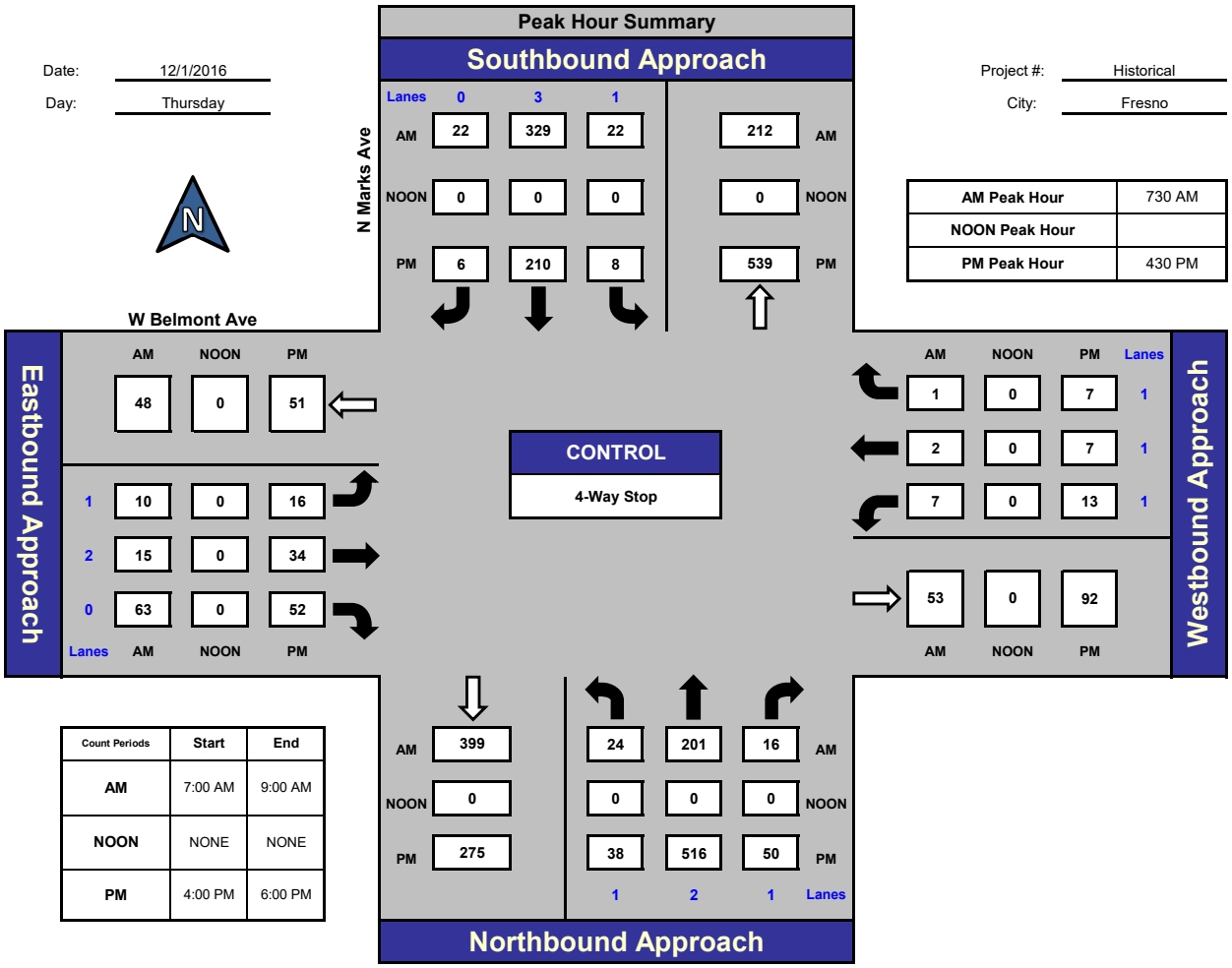
Date: 12/1/2016

Day: Thursday

Project #: Historical

City: Fresno

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	430 PM



Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		
AM	373	212	AM
NOON	0	0	NOON
PM	224	539	PM

West Leg				East Leg		
AM	NOON	PM		AM	NOON	PM
48	0	51		10	0	27
88	0	102		53	0	92

	South Leg	
AM	399	241
NOON	0	0
PM	275	604

Total Volume Per Leg

	North Leg	
AM	585	AM
NOON	0	NOON
PM	763	PM

West Leg			East Leg		
AM	NOON	PM	AM	NOON	PM
136	0	153	63	0	119

	South Leg
AM	640
NOON	0
PM	879

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: Historical

Day: Thursday

City: Fresno

Cars

Date: 12/1/2016

AM

NS/EW Streets:	N Marks Ave			N Marks Ave			W Belmont Ave			W Belmont Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	3	0	1	2	0	1	1	1	
7:00 AM	2	33	2	3	37	1	2	4	11	0	1	0	96
7:15 AM	4	26	4	8	47	4	3	2	13	3	3	0	117
7:30 AM	9	48	3	8	101	6	3	6	17	1	0	0	202
7:45 AM	5	58	2	4	97	7	3	1	16	0	1	0	194
8:00 AM	4	55	4	3	73	2	2	5	19	2	1	1	171
8:15 AM	4	38	7	4	54	6	2	2	8	2	0	0	127
8:30 AM	7	48	12	6	61	4	5	5	9	1	0	0	158
8:45 AM	5	39	6	1	51	3	4	1	8	2	0	0	120
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	40	345	40	37	521	33	24	26	101	11	6	1	1185
APPROACH %'s :	9.41%	81.18%	9.41%	6.26%	88.16%	5.58%	15.89%	17.22%	66.89%	61.11%	33.33%	5.56%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	22	199	16	19	325	21	10	14	60	5	2	1	694
PEAK HR FACTOR :		0.912			0.793			0.808			0.500		0.859

UTURNS	NB	SB	EB	WB
	0	0	0	0
	0	0	0	0
	0	2	0	0
	0	3	0	0
	1	1	0	0
	0	0	0	0
	0	2	0	0
	0	0	0	0
	NB	SB	EB	WB
	1	8	0	0

CONTROL : 4-Way Stop

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: Historical

Day: Thursday

City: Fresno

Cars

Date: 12/1/2016

PM

NS/EW Streets:	N Marks Ave			N Marks Ave			W Belmont Ave			W Belmont Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	3	0	1	2	0	1	1	1	
4:00 PM	10	121	11	2	58	5	2	5	14	1	2	1	232
4:15 PM	5	110	14	0	49	6	4	10	15	5	0	2	220
4:30 PM	6	104	8	0	63	1	3	8	12	8	3	4	220
4:45 PM	4	134	10	4	46	1	4	13	17	3	2	0	238
5:00 PM	9	131	17	4	50	1	6	5	13	2	2	2	242
5:15 PM	13	147	13	0	50	2	3	8	4	0	0	1	241
5:30 PM	3	147	11	1	38	3	0	2	12	2	0	0	219
5:45 PM	2	114	7	2	27	3	1	6	9	1	1	1	174
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	52	1008	91	13	381	22	23	57	96	22	10	11	1786
APPROACH %'s :	4.52%	87.58%	7.91%	3.13%	91.59%	5.29%	13.07%	32.39%	54.55%	51.16%	23.26%	25.58%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	32	516	48	8	209	5	16	34	46	13	7	7	941
PEAK HR FACTOR :	0.861			0.867			0.706			0.450			0.972

UTURNS	NB	SB	EB	WB
	1	2	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	NB	SB	EB	WB
	1	2	0	0

CONTROL : 4-Way Stop

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: Historical

City: Fresno

HT

AM

Day: Thursday

Date: 12/1/2016

NS/EW Streets:	N Marks Ave			N Marks Ave			W Belmont Ave			W Belmont Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	3	0	1	2	0	1	1	1	
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	1	0	0	0	1	1	1	0	0	4
7:30 AM	1	0	0	1	0	1	0	0	0	0	0	0	3
7:45 AM	0	1	0	0	1	0	0	0	1	0	0	0	3
8:00 AM	1	1	0	0	1	0	0	1	2	1	0	0	7
8:15 AM	0	0	0	2	2	0	0	0	0	1	0	0	5
8:30 AM	0	0	1	0	0	0	1	0	0	1	0	0	3
8:45 AM	0	0	1	0	1	0	0	1	0	1	0	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	3	2	4	5	1	1	3	4	5	0	0	30
APPROACH %'s :	28.57%	42.86%	28.57%	40.00%	50.00%	10.00%	12.50%	37.50%	50.00%	100.00%	0.00%	0.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	2	2	0	3	4	1	0	1	3	2	0	0	18
PEAK HR FACTOR :	0.500			0.500			0.333			0.500			0.859

UTURNS

	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	2	0	0
7:45 AM	0	3	0	0
8:00 AM	1	1	0	0
8:15 AM	0	0	0	0
8:30 AM	0	2	0	0
8:45 AM	0	0	0	0
TOTAL VOLUMES :	1	8	0	0

CONTROL : 4-Way Stop

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: Historical

City: Fresno

HT

PM

Day: Thursday

Date: 12/1/2016

NS/EW Streets:	N Marks Ave			N Marks Ave			W Belmont Ave			W Belmont Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	3	0	1	2	0	1	1	1	
4:00 PM	2	1	0	0	0	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	1	0	1	0	0	0	0	0	2
4:30 PM	2	0	0	0	0	0	0	0	1	0	0	0	3
4:45 PM	1	0	0	0	0	1	0	0	4	0	0	0	6
5:00 PM	1	0	1	0	1	0	0	0	0	0	0	0	3
5:15 PM	2	0	1	0	0	0	0	0	1	0	0	0	4
5:30 PM	0	0	0	0	1	0	0	0	2	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	8	1	2	0	3	1	1	0	8	0	0	0	24
APPROACH %'s :	72.73%	9.09%	18.18%	0.00%	75.00%	25.00%	11.11%	0.00%	88.89%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	6	0	2	0	1	1	0	0	6	0	0	0	16
PEAK HR FACTOR :	0.667			0.500			0.375			0.000			0.972

UTURNS

	NB	SB	EB	WB
4:00 PM	1	2	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL VOLUMES :	NB	SB	EB	WB
	1	2	0	0

CONTROL : 4-Way Stop

Prepared by National Data & Surveying Services

VOLUME

Marks Ave Bet. Belmont Ave & Nielsen Ave

Day: Tuesday
Date: 8/3/2021

City: Riverside
Project #: CA21_030059_001

DAILY TOTALS	NB	SB	EB	WB	Total
	3,857	3,312	0	0	7,169

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	10		11				21		12:00	85		35				120	
00:15	7		5				12		12:15	44		64				108	
00:30	5		4				9		12:30	75		50				125	
00:45	4	26	12	32			16	58	12:45	55	259	52	201			107	460
01:00	7		9				16		13:00	71		36				107	
01:15	5		18				23		13:15	80		51				131	
01:30	3		9				12		13:30	66		44				110	
01:45	4	19	7	43			11	62	13:45	54	271	59	190			113	461
02:00	3		4				7		14:00	72		70				142	
02:15	8		3				11		14:15	59		66				125	
02:30	2		7				9		14:30	97		62				159	
02:45	9	22	5	19			14	41	14:45	125	353	73	271			198	624
03:00	4		2				6		15:00	117		65				182	
03:15	4		1				5		15:15	116		41				157	
03:30	6		1				7		15:30	113		36				149	
03:45	8	22	7	11			15	33	15:45	102	448	42	184			144	632
04:00	4		5				9		16:00	93		46				139	
04:15	8		8				16		16:15	74		54				128	
04:30	10		24				34		16:30	91		51				142	
04:45	16	38	10	47			26	85	16:45	101	359	56	207			157	566
05:00	15		13				28		17:00	77		50				127	
05:15	25		16				41		17:15	103		53				156	
05:30	23		18				41		17:30	75		45				120	
05:45	21	84	17	64			38	148	17:45	49	304	53	201			102	505
06:00	35		19				54		18:00	50		42				92	
06:15	21		27				48		18:15	54		45				99	
06:30	15		25				40		18:30	60		48				108	
06:45	49	120	50	121			99	241	18:45	36	200	40	175			76	375
07:00	36		44				80		19:00	25		38				63	
07:15	34		47				81		19:15	22		16				38	
07:30	33		46				79		19:30	14		26				40	
07:45	66	169	53	190			119	359	19:45	21	82	47	127			68	209
08:00	56		57				113		20:00	48		26				74	
08:15	39		55				94		20:15	30		13				43	
08:30	43		49				92		20:30	25		4				29	
08:45	52	190	47	208			99	398	20:45	21	124	16	59			37	183
09:00	47		84				131		21:00	22		22				44	
09:15	41		70				111		21:15	21		21				42	
09:30	41		87				128		21:30	31		10				41	
09:45	47	176	67	308			114	484	21:45	25	99	17	70			42	169
10:00	48		59				107		22:00	16		15				31	
10:15	39		90				129		22:15	14		20				34	
10:30	52		37				89		22:30	14		20				34	
10:45	53	192	66	252			119	444	22:45	11	55	10	65			21	120
11:00	45		70				115		23:00	13		11				24	
11:15	34		60				94		23:15	7		6				13	
11:30	68		54				122		23:30	11		7				18	
11:45	59	206	55	239			114	445	23:45	8	39	4	28			12	67
TOTALS		1264		1534				2798	TOTALS		2593		1778				4371
SPLIT %		45.2%		54.8%				39.0%	SPLIT %		59.3%		40.7%				61.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	3,857	3,312	0	0	7,169

AM Peak Hour	11:45	09:00				09:00	PM Peak Hour	14:45	14:00				14:30
AM Pk Volume	263	308				484	PM Pk Volume	471	271				696
Pk Hr Factor	0.774	0.885				0.924	Pk Hr Factor	0.942	0.928				0.879
7 - 9 Volume	359	398	0	0		757	4 - 6 Volume	663	408	0	0		1071
7 - 9 Peak Hour	07:45	07:45				07:45	4 - 6 Peak Hour	16:30	16:15				16:30
7 - 9 Pk Volume	204	214	0	0		418	4 - 6 Pk Volume	372	211	0	0		582
Pk Hr Factor	0.773	0.939	0.000	0.000		0.878	Pk Hr Factor	0.903	0.942	0.000	0.000		0.927

Prepared by National Data & Surveying Services

VOLUME

Marks Ave Bet. Nielsen Ave & Ray Johnson Dr

Day: Tuesday
Date: 8/3/2021

City: Riverside
Project #: CA21_030059_002

DAILY TOTALS	NB	SB	EB	WB	Total
	5,128	3,822	0	0	8,950

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	12		22				34		12:00	97		63				160	
00:15	11		10				21		12:15	78		51				129	
00:30	6		6				12		12:30	99		68				167	
00:45	8	37	5	43			13	80	12:45	77	351	87	269			164	620
01:00	6		5				11		13:00	98		62				160	
01:15	7		6				13		13:15	99		69				168	
01:30	3		5				8		13:30	80		82				162	
01:45	7	23	5	21			12	44	13:45	91	368	63	276			154	644
02:00	3		1				4		14:00	94		64				158	
02:15	8		1				9		14:15	85		59				144	
02:30	5		3				8		14:30	119		76				195	
02:45	14	30	7	12			21	42	14:45	150	448	49	248			199	696
03:00	9		4				13		15:00	141		72				213	
03:15	9		19				28		15:15	123		81				204	
03:30	10		13				23		15:30	126		79				205	
03:45	13	41	14	50			27	91	15:45	125	515	75	307			200	822
04:00	8		16				24		16:00	93		84				177	
04:15	10		17				27		16:15	83		68				151	
04:30	16		23				39		16:30	115		80				195	
04:45	32	66	24	80			56	146	16:45	113	404	56	288			169	692
05:00	29		33				62		17:00	89		91				180	
05:15	31		39				70		17:15	106		65				171	
05:30	35		51				86		17:30	83		58				141	
05:45	45	140	43	166			88	306	17:45	57	335	56	270			113	605
06:00	53		51				104		18:00	50		30				80	
06:15	44		33				77		18:15	65		38				103	
06:30	33		50				83		18:30	64		47				111	
06:45	67	197	69	203			136	400	18:45	43	222	34	149			77	371
07:00	56		49				105		19:00	39		18				57	
07:15	55		61				116		19:15	47		13				60	
07:30	67		60				127		19:30	45		21				66	
07:45	102	280	66	236			168	516	19:45	38	169	24	76			62	245
08:00	91		52				143		20:00	42		20				62	
08:15	56		59				115		20:15	37		15				52	
08:30	61		52				113		20:30	31		19				50	
08:45	75	283	41	204			116	487	20:45	29	139	22	76			51	215
09:00	74		76				150		21:00	27		25				52	
09:15	89		30				119		21:15	28		24				52	
09:30	63		65				128		21:30	34		16				50	
09:45	76	302	62	233			138	535	21:45	25	114	15	80			40	194
10:00	65		55				120		22:00	17		8				25	
10:15	53		67				120		22:15	14		8				22	
10:30	72		50				122		22:30	17		11				28	
10:45	83	273	49	221			132	494	22:45	16	64	13	40			29	104
11:00	63		61				124		23:00	13		4				17	
11:15	51		61				112		23:15	17		5				22	
11:30	74		59				133		23:30	9		11				20	
11:45	91	279	62	243			153	522	23:45	9	48	11	31			20	79
TOTALS		1951		1712				3663	TOTALS		3177		2110				5287
SPLIT %		53.3%		46.7%				40.9%	SPLIT %		60.1%		39.9%				59.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	5,128	3,822	0	0	8,950

AM Peak Hour	11:45	09:30				11:45	PM Peak Hour	14:45	15:15				15:00
AM Pk Volume	365	249				609	PM Pk Volume	540	319				822
Pk Hr Factor	0.922	0.929				0.912	Pk Hr Factor	0.900	0.949				0.965
7 - 9 Volume	563	440	0	0		1003	4 - 6 Volume	739	558	0	0		1297
7 - 9 Peak Hour	07:30	07:15				07:15	4 - 6 Peak Hour	16:30	16:15				16:30
7 - 9 Pk Volume	316	239	0	0		554	4 - 6 Pk Volume	423	295	0	0		715
Pk Hr Factor	0.775	0.905	0.000	0.000		0.824	Pk Hr Factor	0.920	0.810	0.000	0.000		0.917

Prepared by National Data & Surveying Services

VOLUME

Marks Ave Bet. Ray Johnson Dr & SR-180 WB Ramps

Day: Tuesday
Date: 8/3/2021

City: Riverside
Project #: CA21_030059_003

DAILY TOTALS	NB	SB	EB	WB	Total
	5,301	4,079	0	0	9,380

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	14		21				35		12:00	95		64				159	
00:15	11		11				22		12:15	84		56				140	
00:30	7		8				15		12:30	93		75				168	
00:45	6	38	5	45			11	83	12:45	76	348	82	277			158	625
01:00	8		5				13		13:00	99		75				174	
01:15	8		9				17		13:15	104		70				174	
01:30	3		5				8		13:30	84		89				173	
01:45	9	28	8	27			17	55	13:45	98	385	65	299			163	684
02:00	3		1				4		14:00	90		72				162	
02:15	9		3				12		14:15	84		69				153	
02:30	5		3				8		14:30	126		79				205	
02:45	16	33	6	13			22	46	14:45	157	457	53	273			210	730
03:00	9		6				15		15:00	146		78				224	
03:15	10		17				27		15:15	131		83				214	
03:30	10		14				24		15:30	129		87				216	
03:45	12	41	17	54			29	95	15:45	125	531	81	329			206	860
04:00	8		16				24		16:00	91		85				176	
04:15	10		19				29		16:15	84		71				155	
04:30	17		26				43		16:30	115		93				208	
04:45	34	69	26	87			60	156	16:45	114	404	61	310			175	714
05:00	33		34				67		17:00	92		104				196	
05:15	32		41				73		17:15	107		70				177	
05:30	38		51				89		17:30	81		58				139	
05:45	48	151	40	166			88	317	17:45	60	340	57	289			117	629
06:00	52		48				100		18:00	49		37				86	
06:15	43		36				79		18:15	63		43				106	
06:30	34		51				85		18:30	71		47				118	
06:45	68	197	72	207			140	404	18:45	49	232	36	163			85	395
07:00	57		50				107		19:00	41		26				67	
07:15	54		65				119		19:15	51		15				66	
07:30	72		60				132		19:30	46		25				71	
07:45	100	283	73	248			173	531	19:45	37	175	29	95			66	270
08:00	103		55				158		20:00	50		21				71	
08:15	61		59				120		20:15	34		18				52	
08:30	73		52				125		20:30	36		24				60	
08:45	82	319	40	206			122	525	20:45	30	150	22	85			52	235
09:00	77		75				152		21:00	27		26				53	
09:15	92		40				132		21:15	27		21				48	
09:30	66		73				139		21:30	33		17				50	
09:45	78	313	66	254			144	567	21:45	27	114	17	81			44	195
10:00	68		58				126		22:00	19		10				29	
10:15	55		73				128		22:15	16		7				23	
10:30	71		52				123		22:30	18		10				28	
10:45	89	283	57	240			146	523	22:45	17	70	13	40			30	110
11:00	63		63				126		23:00	15		4				19	
11:15	54		69				123		23:15	11		7				18	
11:30	78		59				137		23:30	12		12				24	
11:45	100	295	65	256			165	551	23:45	7	45	12	35			19	80
TOTALS		2050		1803				3853	TOTALS		3251		2276				5527
SPLIT %		53.2%		46.8%				41.1%	SPLIT %		58.8%		41.2%				58.9%

DAILY TOTALS	NB	SB	EB	WB	Total
	5,301	4,079	0	0	9,380

AM Peak Hour	11:45	09:30				11:45	PM Peak Hour	14:45	15:15				14:45
AM Pk Volume	372	270				632	PM Pk Volume	563	336				864
Pk Hr Factor	0.930	0.925				0.940	Pk Hr Factor	0.896	0.966				0.964
7 - 9 Volume	602	454	0	0		1056	4 - 6 Volume	744	599	0	0		1343
7 - 9 Peak Hour	07:45	07:15				07:30	4 - 6 Peak Hour	16:30	16:15				16:30
7 - 9 Pk Volume	337	253	0	0		583	4 - 6 Pk Volume	428	329	0	0		756
Pk Hr Factor	0.818	0.866	0.000	0.000		0.842	Pk Hr Factor	0.930	0.791	0.000	0.000		0.909

Prepared by National Data & Surveying Services

VOLUME

Marks Ave Bet. SR-180 WB Ramps & SR-180 EB Ramps

Day: Tuesday
Date: 8/3/2021

City: Riverside
Project #: CA21_030059_004

DAILY TOTALS	NB	SB	EB	WB	Total
	5,209	4,576	0	0	9,785

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	9		23				32		12:00	88		65				153	
00:15	17		20				37		12:15	66		57				123	
00:30	12		14				26		12:30	73		59				132	
00:45	7	45	14	71			21	116	12:45	81	308	68	249			149	557
01:00	13		12				25		13:00	63		66				129	
01:15	13		17				30		13:15	88		54				142	
01:30	11		10				21		13:30	83		75				158	
01:45	10	47	7	46			17	93	13:45	71	305	69	264			140	569
02:00	6		5				11		14:00	98		88				186	
02:15	7		2				9		14:15	79		74				153	
02:30	7		6				13		14:30	92		57				149	
02:45	12	32	10	23			22	55	14:45	94	363	64	283			158	646
03:00	7		8				15		15:00	89		79				168	
03:15	10		8				18		15:15	96		81				177	
03:30	14		8				22		15:30	104		74				178	
03:45	8	39	19	43			27	82	15:45	83	372	77	311			160	683
04:00	6		18				24		16:00	99		77				176	
04:15	10		24				34		16:15	104		71				175	
04:30	28		21				49		16:30	114		77				191	
04:45	34	78	39	102			73	180	16:45	92	409	98	323			190	732
05:00	34		44				78		17:00	94		93				187	
05:15	50		39				89		17:15	89		93				182	
05:30	59		40				99		17:30	77		71				148	
05:45	47	190	66	189			113	379	17:45	57	317	81	338			138	655
06:00	42		49				91		18:00	74		62				136	
06:15	52		43				95		18:15	73		67				140	
06:30	51		46				97		18:30	75		64				139	
06:45	58	203	68	206			126	409	18:45	74	296	70	263			144	559
07:00	72		70				142		19:00	63		54				117	
07:15	70		72				142		19:15	54		55				109	
07:30	93		68				161		19:30	73		42				115	
07:45	106	341	71	281			177	622	19:45	44	234	50	201			94	435
08:00	73		62				135		20:00	70		40				110	
08:15	66		78				144		20:15	50		43				93	
08:30	79		58				137		20:30	56		48				104	
08:45	68	286	55	253			123	539	20:45	35	211	45	176			80	387
09:00	68		56				124		21:00	33		37				70	
09:15	67		40				107		21:15	46		46				92	
09:30	60		49				109		21:30	35		20				55	
09:45	87	282	51	196			138	478	21:45	38	152	50	153			88	305
10:00	61		54				115		22:00	35		23				58	
10:15	63		48				111		22:15	30		16				46	
10:30	62		56				118		22:30	35		23				58	
10:45	48	234	50	208			98	442	22:45	26	126	20	82			46	208
11:00	71		44				115		23:00	12		16				28	
11:15	60		64				124		23:15	12		15				27	
11:30	80		59				139		23:30	17		15				32	
11:45	78	289	82	249			160	538	23:45	9	50	20	66			29	116
TOTALS		2066		1867				3933	TOTALS		3143		2709				5852
SPLIT %		52.5%		47.5%				40.2%	SPLIT %		53.7%		46.3%				59.8%

DAILY TOTALS	NB	SB	EB	WB	Total
	5,209	4,576	0	0	9,785

AM Peak Hour	07:15	07:00				07:00	PM Peak Hour	16:00	16:30				16:30
AM Pk Volume	342	281				622	PM Pk Volume	409	361				750
Pk Hr Factor	0.807	0.976				0.879	Pk Hr Factor	0.897	0.921				0.982
7 - 9 Volume	627	534	0	0		1161	4 - 6 Volume	726	661	0	0		1387
7 - 9 Peak Hour	07:15	07:00				07:00	4 - 6 Peak Hour	16:00	16:30				16:30
7 - 9 Pk Volume	342	281	0	0		622	4 - 6 Pk Volume	409	361	0	0		750
Pk Hr Factor	0.807	0.976	0.000	0.000		0.879	Pk Hr Factor	0.897	0.921	0.000	0.000		0.982

Prepared by National Data & Surveying Services

VOLUME

Belmont Ave Bet. Marks Ave & Hughes Ave

Day: Tuesday
Date: 8/3/2021

City: Riverside
Project #: CA21_030059_005

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,991	3,249	7,240

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			9		12		21		12:00			73		59		132	
00:15			6		4		10		12:15			58		63		121	
00:30			5		11		16		12:30			90		51		141	
00:45			7	27	12	39	19	66	12:45			75	296	61	234	136	530
01:00			1		0		1		13:00			76		56		132	
01:15			0		0		0		13:15			70		62		132	
01:30			0		0		0		13:30			82		64		146	
01:45			0	1	0		0	1	13:45			63	291	60	242	123	533
02:00			0		0		0		14:00			77		59		136	
02:15			0		0		0		14:15			72		49		121	
02:30			1		1		2		14:30			67		81		148	
02:45			12	13	5	6	17	19	14:45			77	293	60	249	137	542
03:00			10		2		12		15:00			76		65		141	
03:15			10		4		14		15:15			92		79		171	
03:30			5		3		8		15:30			106		71		177	
03:45			7	32	9	18	16	50	15:45			79	353	70	285	149	638
04:00			6		6		12		16:00			91		72		163	
04:15			14		16		30		16:15			68		62		130	
04:30			14		12		26		16:30			71		56		127	
04:45			21	55	28	62	49	117	16:45			69	299	46	236	115	535
05:00			41		17		58		17:00			56		40		96	
05:15			53		16		69		17:15			46		57		103	
05:30			26		23		49		17:30			53		50		103	
05:45			35	155	29	85	64	240	17:45			61	216	44	191	105	407
06:00			27		23		50		18:00			55		38		93	
06:15			46		26		72		18:15			44		26		70	
06:30			42		26		68		18:30			40		34		74	
06:45			50	165	30	105	80	270	18:45			42	181	38	136	80	317
07:00			27		26		53		19:00			37		42		79	
07:15			47		22		69		19:15			52		39		91	
07:30			56		37		93		19:30			39		27		66	
07:45			70	200	45	130	115	330	19:45			29	157	38	146	67	303
08:00			55		34		89		20:00			29		31		60	
08:15			47		47		94		20:15			31		30		61	
08:30			49		40		89		20:30			29		15		44	
08:45			63	214	41	162	104	376	20:45			21	110	15	91	36	201
09:00			36		44		80		21:00			21		21		42	
09:15			53		39		92		21:15			13		26		39	
09:30			65		39		104		21:30			33		26		59	
09:45			59	213	51	173	110	386	21:45			12	79	13	86	25	165
10:00			48		59		107		22:00			15		26		41	
10:15			64		53		117		22:15			19		9		28	
10:30			72		51		123		22:30			11		16		27	
10:45			73	257	58	221	131	478	22:45			18	63	16	67	34	130
11:00			56		59		115		23:00			18		15		33	
11:15			66		63		129		23:15			12		11		23	
11:30			75		54		129		23:30			18		9		27	
11:45			69	266	63	239	132	505	23:45			7	55	11	46	18	101
TOTALS				1598		1240		2838	TOTALS				2393		2009		4402
SPLIT %				56.3%		43.7%		39.2%	SPLIT %				54.4%		45.6%		60.8%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,991	3,249	7,240

AM Peak Hour			11:45	11:00	11:45	PM Peak Hour			15:15	15:15	15:15
AM Pk Volume			290	239	526	PM Pk Volume			368	292	660
Pk Hr Factor			0.806	0.948	0.933	Pk Hr Factor			0.868	0.924	0.932
7 - 9 Volume	0	0	414	292	706	4 - 6 Volume	0	0	515	427	942
7 - 9 Peak Hour			07:15	07:45	07:30	4 - 6 Peak Hour			16:00	16:00	16:00
7 - 9 Pk Volume	0	0	228	166	391	4 - 6 Pk Volume	0	0	299	236	535
Pk Hr Factor	0.000	0.000	0.814	0.883	0.850	Pk Hr Factor	0.000	0.000	0.821	0.819	0.821

Prepared by National Data & Surveying Services

VOLUME

Nielsen Ave Bet. Marks Ave & Hughes Ave

Day: Tuesday
Date: 8/3/2021

City: Riverside
Project #: CA21_030059_006

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	869	746	1,615

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			3		3		6		12:00			20		6		26	
00:15			0		3		3		12:15			10		3		13	
00:30			1		0		1		12:30			16		18		34	
00:45			3	7	2	8	5	15	12:45			17	63	13	40	30	103
01:00			1		1		2		13:00			16		21		37	
01:15			0		0		0		13:15			16		20		36	
01:30			3		0		3		13:30			17		18		35	
01:45			1	5	1	2	2	7	13:45			13	62	13	72	26	134
02:00			1		3		4		14:00			20		16		36	
02:15			1		0		1		14:15			14		16		30	
02:30			1		1		2		14:30			17		25		42	
02:45			1	4	2	6	3	10	14:45			15	66	13	70	28	136
03:00			0		0		0		15:00			19		23		42	
03:15			0		2		2		15:15			12		14		26	
03:30			1		2		3		15:30			11		27		38	
03:45			1	2	1	5	2	7	15:45			21	63	7	71	28	134
04:00			1		0		1		16:00			10		18		28	
04:15			1		0		1		16:15			12		7		19	
04:30			7		4		11		16:30			12		28		40	
04:45			14	23	3	7	17	30	16:45			10	44	18	71	28	115
05:00			4		3		7		17:00			7		22		29	
05:15			7		5		12		17:15			8		12		20	
05:30			12		13		25		17:30			10		8		18	
05:45			21	44	1	22	22	66	17:45			8	33	8	50	16	83
06:00			10		5		15		18:00			3		12		15	
06:15			8		3		11		18:15			12		13		25	
06:30			15		5		20		18:30			6		8		14	
06:45			22	55	4	17	26	72	18:45			12	33	15	48	27	81
07:00			10		5		15		19:00			17		11		28	
07:15			12		19		31		19:15			16		9		25	
07:30			17		4		21		19:30			20		14		34	
07:45			22	61	6	34	28	95	19:45			11	64	7	41	18	105
08:00			25		14		39		20:00			6		3		9	
08:15			7		5		12		20:15			3		5		8	
08:30			12		4		16		20:30			6		4		10	
08:45			12	56	9	32	21	88	20:45			7	22	4	16	11	38
09:00			8		5		13		21:00			4		3		7	
09:15			13		3		16		21:15			1		0		1	
09:30			12		9		21		21:30			5		2		7	
09:45			11	44	13	30	24	74	21:45			2	12	3	8	5	20
10:00			17		10		27		22:00			1		0		1	
10:15			12		9		21		22:15			4		1		5	
10:30			9		11		20		22:30			4		3		7	
10:45			8	46	6	36	14	82	22:45			1	10	1	5	2	15
11:00			16		11		27		23:00			1		0		1	
11:15			8		14		22		23:15			3		2		5	
11:30			9		9		18		23:30			0		0		0	
11:45			11	44	18	52	29	96	23:45			2	6	1	3	3	9
TOTALS				391		251		**642**	**TOTALS**				478		495		**973**
SPLIT %				60.9%		39.1%		**39.8%**	**SPLIT %**				49.1%		50.9%		**60.2%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	869	746	1,615

AM Peak Hour			07:15	11:00	**07:15**	**PM Peak Hour**			12:45	16:30	**14:15**
AM Pk Volume			76	52	**119**	**PM Pk Volume**			66	80	**142**
Pk Hr Factor			0.760	0.722	**0.763**	**Pk Hr Factor**			0.971	0.714	**0.845**
7 - 9 Volume	0	0	117	66	**183**	**4 - 6 Volume**	0	0	77	121	**198**
7 - 9 Peak Hour			07:15	07:15	**07:15**	**4 - 6 Peak Hour**			16:00	16:30	**16:30**
7 - 9 Pk Volume	0	0	76	43	**119**	**4 - 6 Pk Volume**	0	0	44	80	**117**
Pk Hr Factor	0.000	0.000	0.760	0.566	**0.763**	**Pk Hr Factor**	0.000	0.000	0.917	0.714	**0.731**

Prepared by National Data & Surveying Services

VOLUME

Hughes Ave Bet. Belmont Ave & Nielsen Ave

Day: Tuesday
Date: 8/3/2021

City: Riverside
Project #: CA21_030059_007

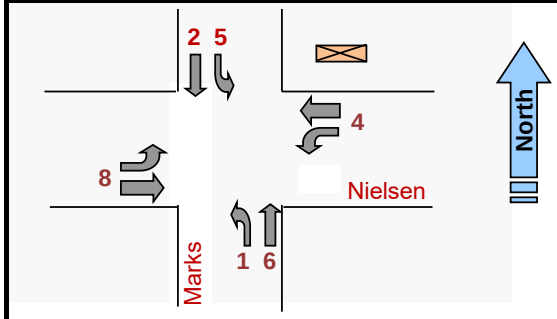
DAILY TOTALS	NB	SB	EB	WB	Total
	1,421	1,183	0	0	2,604

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	6		2				8		12:00	34		21				55	
00:15	5		3				8		12:15	31		14				45	
00:30	5		3				8		12:30	26		25				51	
00:45	1	17	4	12			5	29	12:45	23	114	28	88			51	202
01:00	2		3				5		13:00	11		12				23	
01:15	5		4				9		13:15	19		26				45	
01:30	7		3				10		13:30	22		17				39	
01:45	3	17	2	12			5	29	13:45	28	80	16	71			44	151
02:00	1		1				2		14:00	12		24				36	
02:15	3		6				9		14:15	27		29				56	
02:30	1		2				3		14:30	33		21				54	
02:45	2	7	2	11			4	18	14:45	37	109	24	98			61	207
03:00	1		4				5		15:00	33		20				53	
03:15	3		2				5		15:15	40		12				52	
03:30	3		4				7		15:30	29		26				55	
03:45	1	8	0	10			1	18	15:45	26	128	20	78			46	206
04:00	1		0				1		16:00	33		32				65	
04:15	3		0				3		16:15	27		21				48	
04:30	2		3				5		16:30	30		25				55	
04:45	7	13	8	11			15	24	16:45	19	109	18	96			37	205
05:00	12		8				20		17:00	48		11				59	
05:15	7		12				19		17:15	27		16				43	
05:30	16		14				30		17:30	17		21				38	
05:45	17	52	15	49			32	101	17:45	21	113	18	66			39	179
06:00	4		7				11		18:00	17		16				33	
06:15	14		7				21		18:15	17		18				35	
06:30	9		9				18		18:30	6		4				10	
06:45	16	43	15	38			31	81	18:45	0	40	2	40			2	80
07:00	12		12				24		19:00	8		2				10	
07:15	17		16				33		19:15	5		3				8	
07:30	14		11				25		19:30	2		0				2	
07:45	23	66	17	56			40	122	19:45	3	18	2	7			5	25
08:00	25		18				43		20:00	6		11				17	
08:15	19		15				34		20:15	10		14				24	
08:30	17		15				32		20:30	18		10				28	
08:45	16	77	16	64			32	141	20:45	15	49	9	44			24	93
09:00	28		17				45		21:00	12		13				25	
09:15	10		23				33		21:15	11		7				18	
09:30	21		16				37		21:30	15		5				20	
09:45	14	73	24	80			38	153	21:45	8	46	14	39			22	85
10:00	28		19				47		22:00	10		9				19	
10:15	27		15				42		22:15	11		8				19	
10:30	29		9				38		22:30	4		2				6	
10:45	20	104	32	75			52	179	22:45	5	30	3	22			8	52
11:00	27		22				49		23:00	4		8				12	
11:15	24		23				47		23:15	2		5				7	
11:30	20		22				42		23:30	4		6				10	
11:45	23	94	24	91			47	185	23:45	4	14	6	25			10	39
TOTALS		571		509				1080	TOTALS		850		674				1524
SPLIT %		52.9%		47.1%				41.5%	SPLIT %		55.8%		44.2%				58.5%

DAILY TOTALS	NB	SB	EB	WB	Total
	1,421	1,183	0	0	2,604

AM Peak Hour	11:45	10:45			11:45	PM Peak Hour	14:30	15:30			14:15
AM Pk Volume	114	99			198	PM Pk Volume	143	99			224
Pk Hr Factor	0.838	0.773			0.900	Pk Hr Factor	0.894	0.773			0.918
7 - 9 Volume	143	120	0	0	263	4 - 6 Volume	222	162	0	0	384
7 - 9 Peak Hour	07:45	07:45			07:45	4 - 6 Peak Hour	16:15	16:00			16:00
7 - 9 Pk Volume	84	65	0	0	149	4 - 6 Pk Volume	124	96	0	0	205
Pk Hr Factor	0.840	0.903	0.000	0.000	0.866	Pk Hr Factor	0.646	0.750	0.000	0.000	0.788

Movement	NL	ST		WT	SL	NT		ET		
Times [1.1.1]	1	2	3	4	5	6	7	8	9	10
Min Green	8	8	0	8	8	8		8		0
Gap, Ext	2	5.5	0	5.2	2	5.4		5.2		0
Max 1	20	35	0	48	20	35		48		0
Max 2	12	25	0	38	12	25		38		0
Yel Clearance	3.9	4.3	0	3.9	3.9	4.3		3.9		0
Red Clearance	1	1	0	2	1	1		2		0
Walk	0	5	0	5		5		5		0
Ped Clearance	0	22	0	28		21		28		0
Red Revert	2	2	0	2	2	2		2		0
Add Initial	0		0			0		0		0
Max Initial	0		0			0		0		0
Time B4 Reduct	0	8	0	8		8		8		0
Cars B4 Reduct	0		0			0		0		0
Time To Reduce	0	18	0	27		18		27		0
Reduce By	0		0			0		0		0
Min Gap	2	2	0	2	2	2		2		0
DyMaxLim	0		0			0		0		0
Max Step	0		0			0		0		0
Options [1.1.2]	1	2	3	4	5	6	7	8	9	10
Enable	X	X		X	X	X		X		
Min Recall										
Max Recall										
Ped Recall										
Soft Recall		X				X				
Lock Calls										
Auto Flash Entry										
Auto Flash Exit										
Dual Entry		X		X		X		X		
Enable Simul Gap										
Gaurantee Passage										
Rest In Walk										
Conditonal Service										
Non-Actuated 1										
Non-Actuated 2										
Add Init Calc										



Phase Options+ [1.1.3]

Options+	1	2	3	4	5	6	7	8	9	10
Reservice										
PedClr Thru Yel										
SkipRed-NoCall										
Red Rest										
Max II										
*Max III										
Max Inhibit										
Ped Delay										
Red Rest on Gap										
Conflicting Phase	0	0	0	0	0	0	0	0	0	0
Grn/Ped Delay										
Omit Yel, Yel P	0	0	0	0	0	0	0	0	0	0
Ped Out/Olp Ped										
StartYel, Next P	0	0	0	0	0	0	0	0	0	0
*StartupVehCall	1	2		4	5	6		8		
*StartupPedCall										

Phase Concurrency [1.1.4]

Phase	Ring	StartUp	Concurrent Phases							
1	1	RED	5	6	0	0				
2	1	GREEN	5	6	0	0				
3	1	RED	7	8	0	0				
4	1	RED	7	8	0	0				
5	2	RED	1	2	0	0				
6	2	GREEN	1	2	0	0				
7	2	RED	3	4	0	0				
8	2	RED	3	4	0	0				
9	0	RED	0	0	0	0				
10	0	RED	0	0	0	0				
11	0	RED	0	0	0	0				
12	0	RED	0	0	0	0				

Comm Ports [6.6]

Channel	Port	Echo	Mode
Async 1	SP1	NONE	0
Async 2	SP2	NONE	0
Async 3	SP8	NONE	0
Async 4	OFF	NONE	0
Sync 1	SP5S		
Sync 2	OFF		
TS2CVM	NONE		
Opticom	NONE		
GPS	NONE		

Unit Params [1.2.1]

Screen Size	8	Metric	OFF
Startup Flash	0	Red Revert	2
MCE Timeout	0	Auto Ped Clear	OFF
Loc Flsh Start	RSt	Display Time	60
Yellow < 3"	OFF	Tone Disable	ON
Allow Skip Yel	OFF	AudioPedTime	0
Start Red Tm	6	Phase Mode	STD8
Startup Calls	UseProg	CNA FreeTime	0
TOD Dimming	OFF	Diamond Mode	4Ph
ST over Prmpt	OFF	Free Ring Seq	1
Feature Profile	1	IO Mode	USER
Mx Seek TrkTm	0	Max Cyc Timer	0
Mx Seek Dwell	0	CycFlt Actn	ALARM
Prmpt/Ext Coor	EXT	Clrnc Decide	OFF
Aux Switch	STOPTM	LPAlt Srs	3-6
*InhFYA Red St	OFF	Security Delay	0
RingA1go	0		

* - 76.12B or newer

Times+ [1.1.7]

	1	2	3	4	5	6	7	8
Walk2	0	0	0	0	0	0	0	0
BikeClr	0	0	0	0	0	0	0	0
GrnFlash	0	0	0	0	0	0	0	0
SfClrMn	0	0	0	0	0	0	0	0
SfClrNoFlsh	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
NoPed Reserv								

Comm [6.2]

Port	Baud Rate	FCM
1	38400	6
2	9600	6
3	9600	6
4	9600	6

Comm [6.5] — Host IPs

IP Address:	0	0	0	77	ATMS			
Mask:	255	255	255	0	10	50	10	22
Gateway:	0	0	0	1	SG			
Port #:	5001				0	0	0	0

City of FRESNO

Phase Seq. (2 ring) Chart [1.2.4]

Seq #	Ring	Phases					
1	1	1	2	3	4	0	0
	2	5	6	7	8	0	0
2	1	1	2	3	4	0	0
	2	6	5	7	8	0	0
3	1	2	1	3	4	0	0
	2	5	6	7	8	0	0
4	1	2	1	3	4	0	0
	2	6	5	7	8	0	0
5	1	1	2	3	4	0	0
	2	5	6	8	7	0	0
6	1	1	2	3	4	0	0
	2	6	5	8	7	0	0
7	1	2	1	3	4	0	0
	2	5	6	8	7	0	0
8	1	2	1	3	4	0	0
	2	6	5	8	7	0	0
9	1	1	2	4	3	0	0
	2	5	6	7	8	0	0
10	1	1	2	4	3	0	0
	2	6	5	7	8	0	0
11	1	2	1	4	3	0	0
	2	5	6	7	8	0	0
12	1	2	1	4	3	0	0
	2	6	5	7	8	0	0
13	1	1	2	4	3	0	0
	2	5	6	8	7	0	0
14	1	1	2	4	3	0	0
	2	6	5	8	7	0	0
15	1	2	1	4	3	0	0
	2	5	6	8	7	0	0
16	1	2	1	4	3	0	0
	2	6	5	8	7	0	0

Advance Warning [1.1.9]

	Ph	Tm
Aux Out #1	0	0
Aux Out #2	0	0

NAME: Marks & Nielsen **ID:** 1342 **Configuration:** Standard File

V76.12/13
Updated 12/6/17

Prepared by:	JT	Date Installed / By:	
Checked by:	PG	Date Superseded:	

Date Printed: 12/4/20

[2.1] Coord Modes+

Test OpMode	0
Correction	SHRT/LNG
Maximum	MAX INH
Force Mode	FIXED
Flash Mode	CHANNEL

Coord Modes+ (Page 2)

FreeonSeqCh	ON
Closed Loop	OFF
External	OFF
Latch Sec Frc	OFF
Stop-in-Walk	OFF
Ped Recycle	P1256_INH
Expand Split	OFF
Easy Float	OFF
Auto Reset	ON
NTCIP Yield	+ 0

Leave Walk

Before	TIMED
After	TIMED

Intersection Name: Marks & Nielsen

ID: 1342

Date Printed: 12/4/2020

[2.4] Patterns

Pat#	Cyc	Off	Split	Seq
1	0	0	1	1
2	0	0	2	1
3	0	0	3	1
4	0	0	4	1
5	0	0	5	1
6	0	0	6	1
7	0	0	7	1
8	0	0	8	1
9	0	0	9	1
10	0	0	10	1
11	0	0	0	1
12	0	0	0	1
13	0	0	0	1

[2.7.1-24] Splits

Split	[2.7]	1	2	3	4	5	6	7	8	9	10
1	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
2	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
3	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
4	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
5	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
6	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
7	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
8	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
9	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
10	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
11	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
12	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
13	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON

[2.5] Transition

Pat#	Short	Long	Dwell	No Shortway Ø				E-Yld	Offset	Ret Hold	Flt	Min Veh	Min Ped	MI
1	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
2	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
3	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
4	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
5	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
6	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
7	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
8	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
9	10	25	0	0	0	0	0	0	EndGRN	-	-	-	-	OFF
10	10	25	0	0	0	0	0	0	EndGRN	-	-	-	-	OFF
11		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
12	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
13		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF

[2.1] Coord Modes+

Test OpMode	0
Correction	SHRT/LNG
Maximum	MAX INH
Force Mode	FIXED
Flash Mode	CHANNEL

Coord Modes+ (Page 2)

FreeonSeqCh	ON
Closed Loop	OFF
External	OFF
Latch Sec Frc	OFF
Stop-in-Walk	OFF
Ped Recycle	P1256_INH
Expand Splt	OFF
Easy Float	OFF
Auto Reset	ON
NTCIP Yield	+ 0

Leave Walk

Before	TIMED
After	TIMED

Intersection Name: Marks & Nielsen

ID: 1342

City of FRESNO

Date Printed: 12/4/2020

[2.4] Patterns

Pat#	Cyc	Off	Split	Seq
20	0	0	0	1
21	0	0	0	1
22	0	0	0	1
23	0	0	0	1
24	0	0	0	1
25	0	0	0	1
26	0	0	0	1
27	0	0	0	1
28	0	0	0	1
29	0	0	0	1
30	0	0	0	1
31	0	0	0	1
32	0	0	0	1

[2.7.1-24] Splits

Split	[2.7]	1	2	3	4	5	6	7	8	9	10
20	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
21	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
22	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
23	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
24	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
25	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
26	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
27	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
28	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
29	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
30	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
31	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
32	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON

[2.5] Transition

Pat#	Short	Long	Dwell	No Shortway Ø				E-Yld	Offset	Ret Hold	Flt	Min Veh	Min Ped	MI
20		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
21	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
22		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
23	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
24		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
25	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
26		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
27	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
28		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
29	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
30		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
31	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
32		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF

[2.7.X.3] TSP Split Table

Pat#	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
1	0	0	1	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
2	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	2	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
3	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	3	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
4	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	4	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
5	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	5	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
6	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	6	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
9 - FREE	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	9	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						

[2.9.2.(1-8)] Strategy Tables

STRATEGY_1

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_2

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_3

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_4

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_5

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_6

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_7

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_8

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

Overlap 1-8 Program Parms & Parm+ [1.5.2.1] [1.5.2.8]

1	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
A	Conflict Olap									Red	1
	Conflict Ped										
2	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
B	Conflict Olap									Red	1
	Conflict Ped										
3	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
C	Conflict Olap									Red	1
	Conflict Ped										
4	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
D	Conflict Olap									Red	1
	Conflict Ped										
5	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
E	Conflict Olap									Red	1
	Conflict Ped										
6	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
F	Conflict Olap									Red	1
	Conflict Ped										
7	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
G	Conflict Olap									Red	1
	Conflict Ped										
8	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
H	Conflict Olap									Red	1
	Conflict Ped										

OLP GENERAL PARAMETERS [1.5.1]

Lock Inhibit	OFF
Conflict Lock Enable	OFF
Parent P Clearance	ON
Xtra Incl Phases	OFF
InhibitLockInterval	Always

Channel Parameters [1.8.3]

Pre Invert Rail Input	OFF

Preemption Options+ [3.Pre #.6]

Pre #	Enable	Type	Output	Pattern	Skip	Co+Pre	Flash	Max/Min
1	OFF	RAIL	TS2		OFF	OFF	OFF	MAX
2	OFF	RAIL	TS2	0	OFF	OFF	OFF	MAX
3	ON	EMERG	TS2		OFF	OFF	OFF	MAX
4	ON	EMERG	TS2	0	OFF	OFF	OFF	MAX
5	ON	EMERG	TS2		OFF	OFF	OFF	MAX
6	ON	EMERG	TS2	0	OFF	OFF	OFF	MAX

Preemption Times [3.#.1]

Pre #	Delay	MinDura	MaxPres	MinGrn	MinWlk	PedClr	Track Grn	Min Dwell
1								
2	0	0	0	0	0	0	0	0
3		10	60	6		25		10
4	0	10	60	6	0	25	0	10
5		10	60	6		25		10
6	0	10	60	6	0	25	0	10

Preemption, Options [3.#.3]

Pre #	Lock Input	Over-ride Auto Flash	Over-ride Higher Preempt	Flash Dwell	Link
1	OFF	OFF	OFF	ON	
2	OFF	OFF	OFF	OFF	0
3	OFF	OFF	OFF	OFF	
4	OFF	OFF	OFF	OFF	0
5	OFF	OFF	OFF	OFF	
6	OFF	OFF	OFF	OFF	0

Preemption, Times+ [3.#.4]

Pre No.	Extend Dwell	Return Max	Ped Clr	Yel	Red
1					
2	0	0	0	0	0
3		20	10	3.9	2
4	0	20	10	3.9	2
5		20	10	3.9	2
6	0	20	10	3.9	2

Pre 1 = RR1
Pre 2 = RR2
Pre 3 = EVA
Pre 4 = EVB
Pre 5 = EVC
Pre 6 = EVD

Prog Parms+ (MM>1>5>2>X>3)

Leading Green	OFF	FYA MCE Disable	OFF
Transit Input	0	FYA Skip Red	OFF
FYA Delay Time	0	FYA AfterPreempt	OFF
Ped Call Clear	OFF		
Ped ClearTime	0	FYA ImmedReturn	OFF
Green Ext Inh	0	0	0

OverlapB+: 1-A

Leading Green	OFF	FYA MCE Disable	OFF
Transit Input	0	FYA Skip Red	OFF
FYA Delay Time	0	FYA AfterPreempt	OFF
Ped Call Clear	OFF		
Ped ClearTime	0	FYA ImmedReturn	OFF
Green Ext Inh	0	0	0

OverlapB+: 2-B

Leading Green	OFF	FYA MCE Disable	OFF
Transit Input	0	FYA Skip Red	OFF
FYA Delay Time	0	FYA AfterPreempt	OFF
Ped Call Clear	OFF		
Ped ClearTime	0	FYA ImmedReturn	OFF
Green Ext Inh	0	0	0

OverlapB+: 3-C

Leading Green	OFF	FYA MCE Disable	OFF
Transit Input	0	FYA Skip Red	OFF
FYA Delay Time	0	FYA AfterPreempt	OFF
Ped Call Clear	OFF		
Ped ClearTime	0	FYA ImmedReturn	OFF
Green Ext Inh	0	0	0

OverlapB+: 4-D

Leading Green	OFF	FYA MCE Disable	OFF
Transit Input	0	FYA Skip Red	OFF
FYA Delay Time	0	FYA AfterPreempt	OFF
Ped Call Clear	OFF		
Ped ClearTime	0	FYA ImmedReturn	OFF
Green Ext Inh	0	0	0

Phases [3.#.2] - set the Dwell Phases

Pre #	Column	1	2	3	4	5	6	7	8	9	10
1	Dwell Veh										
	Peds										
2	Dwell Veh										
	Peds										
3	Dwell Veh	2	5								
	Peds										
4	Dwell Veh	4									
	Peds										
5	Dwell Veh	6	1								
	Peds										
6	Dwell Veh	8									
	Peds										

Phases [3.#.2] - Trk Veh

Pre #	Phases			
1				
2				
3				
4				
5				
6				

Exit Phases [3.#.2]

No.	Exit Phase			
1				
2				
3	2	5		
4	2	6		
5	1	6		
6	2	6		

Overlaps+ [3.#.5]

Pre #		Preempt Overlaps +									
1	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										
2	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										
3	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										
4	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										
5	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										
6	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										

City of FRESNO

ID: 1342 **Name:** Marks & Nielsen **Date Printed:** 12/4/2020

CHANNEL SETTINGS [1.8] plus UNIT PARAMETERS [1.2.1]

CHANNEL SETTINGS [1.8.1]

Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phase / Olap #	1	2	3	4	5	6	7	8	1	2	3	4	2	4	6	8
Channel Type	VEH	VEH	VEH	VEH	VEH	VEH	VEH	VEH	OLP	OLP	OLP	OLP	PED	PED	PED	PED
Channel Flash	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	DRK	DRK	DRK	DRK
Flash 1-2 Hertz		X		X		X		X								
	Page 1								Page 2							

Chan Settings [1.8.2]

17	18	19	20	21	22	23	24
VEH	VEH	VEH	VEH	VEH	VEH	VEH	VEH
DRK	DRK	DRK	DRK	DRK	DRK	DRK	DRK

CHANNEL PARMETERS [1.8.3]

CH 17-24 Mapping:	DEFAULT
D-Conn Mapping:	NONE
Invert Rail Inputs:	OFF
C1-C11-ABC IO Mode:	USER

IO PARAMETERS [1.8.6]

C1-C11-ABC IO Mode:	USER
D-Conn Mapping:	NONE
T & F BIU Mapping	DEFAULT
Invert Rail Inputs:	OFF
EVP Ped Confirm	OFF

CHANNELS+ [1.8.4]

Channel	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
Flash Green	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Flash Red	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Flash Yellow	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Inh Red Fl in Preempt	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Olap Ovrd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Override Type	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID: 1342 **NAME:** Marks & Nielsen

I/O LOGIC [1.8.7]

Prt Date: 12/4/2020

Row#	Result			Operand_1					Operand_2					Operand_3					Timer	
	I/O	Fcn	=	Inv	Src	I/0	Fun	Logic Func	Inv	Src	I/0	Fun	Logic Func	Inv	Src	I/0	Fun	Logic Func	Dly	Sec
1	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
2	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
3	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
4	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
5	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
6	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
7	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
8	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
9	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
10	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0

Ped Parms (MM>5>4)

Det#	Call	No Act	Max Pres	Err Cnt
1	0	0	0	0
2	2	0	0	0
3	0	0	0	0
4	4	0	0	0
5	0	0	0	0
6	6	0	0	0
7	0	0	0	0
8	8	0	0	0

Veh Par 1-32 [5.1]											Vehicle Options 1-32 [5.2]									Parameters+ 1-32 [5.3]								Info Only	
Det #	Input Slot	Call Ø	Swi Ø	Dlay	Ext	Que	No Act	Max Pres	Err Cnt	Fail Time	Det #	Call	Ext	Que	Add Init	Red Lock	Yell Lock	occ	vol	Det #	Occupancy G	Y	R	Delay 1	2	Type	Src	Dir	Det #
1	1I1U	1					0	0	0	255	1	X	X	-	-	-	-	X	X	1	X	X	-			NORM		NBL1	1
2	2I2U	2	0	0	0	0	0	0	0	255	2	-	X	-	-	-	-	X	X	2	X	X	-	0	0	NORM	0		2
3	2I2L	2	0	0	2	0	0	0	0	255	3	X	-	-	-	-	-	X	X	3	X	X	-	0	0	STOPB	0		3
4	2I3U	2	0	0	2	0	0	0	0	255	4	X	-	-	-	-	-	X	X	4	X	X	-	0	0	STOPB	0		4
5	2I3L	2	0	0	2	0	0	0	0	255	5	X	-	-	-	-	-	X	X	5	X	X	-	0	0	STOPB	0	SBR1	5
6	2I4U	2	0	0	2	0	0	0	0	255	6	X	-	-	-	-	-	X	X	6	X	X	-	0	0	STOPB	0	SBT1	6
7	3I5U	8					0	0	0	255	7	X	X	-	-	-	-	X	X	7	X	X	-			NORM		EBL1	7
8	4I6U	4	0	0	0	0	0	0	0	255	8	-	X	-	-	-	-	X	X	8	X	X	-	0	0	NORM	0		8
9	4I6L	4	0	0	2	0	0	0	0	255	9	X	-	-	-	-	-	X	X	9	X	X	-	0	0	STOPB	0		9
10	4I7U	4	0	0	2	0	0	0	0	255	10	X	-	-	-	-	-	X	X	10	X	X	-	0	0	STOPB	0		10
11	4I7L	4		15	2		0	0	0	255	11	X	-	-	-	-	-	X	X	11	X	X	-			STOPB		WBR1	11
12	4I8U	4			2		0	0	0	255	12	X	-	-	-	-	-	X	X	12	X	X	-			STOPB		WBT1	12
13	1I9U	1	0	0	0	0	0	0	0	255	13	X	X	-	-	-	-	X	X	13	X	X	-	0	0	NORM	0		13
14	3I9L	8	0	0	0	0	0	0	0	255	14	X	X	-	-	-	-	X	X	14	X	X	-	0	0	NORM	0		14
15	5J1U	5	0	0	0	0	0	0	0	255	15	X	X	-	-	-	-	X	X	15	X	X	-	0	0	NORM	0	SBL1	15
16	6J2U	6					0	0	0	255	16	-	X	-	-	-	-	X	X	16	X	X	-			NORM			16
17	6J2L	6			2		0	0	0	255	17	X	-	-	-	-	-	X	X	17	X	X	-			STOPB			17
18	6J3U	6			2		0	0	0	255	18	X	-	-	-	-	-	X	X	18	X	X	-			STOPB			18
19	6J3L	6			2		0	0	0	255	19	X	-	-	-	-	-	X	X	19	X	X	-			STOPB		NBR1	19
20	6J4U	6			2		0	0	0	255	20	X	-	-	-	-	-	X	X	20	X	X	-			STOPB		NBT1	20
21	7J5U	4					0	0	0	255	21	X	X	-	-	-	-	X	X	21	X	X	-			NORM		WBL1	21
22	8J6U	8	0	0	0	0	0	0	0	255	22	-	X	-	-	-	-	X	X	22	X	X	-	0	0	NORM	0		22
23	8J6L	8	0	0	2	0	0	0	0	255	23	X	-	-	-	-	-	X	X	23	X	X	-	0	0	STOPB	0		23
24	8J7U	8	0	0	2	0	0	0	0	255	24	X	-	-	-	-	-	X	X	24	X	X	-	0	0	STOPB	0		24
25	8J7L	8	0	15	2	0	0	0	0	255	25	X	-	-	-	-	-	X	X	25	X	X	-	0	0	STOPB	0	EBR1	25
26	8J8U	8	0	0	2	0	0	0	0	255	26	X	-	-	-	-	-	X	X	26	X	X	-	0	0	STOPB	0	EBT1	26
27	5J9U	5					0	0	0	255	27	X	X	-	-	-	-	X	X	27	X	X	-			NORM			27
28	7J9L	4					0	0	0	255	28	X	X	-	-	-	-	X	X	28	X	X	-			NORM			28
29	2I11U	2	0	0	2	0	0	0	0	255	29	X	-	-	-	-	-	X	X	29	X	X	-	0	0	STOPB	0		29
30	4I11L	4	0	15	2	0	0	0	0	255	30	X	-	-	-	-	-	X	X	30	X	X	-	0	0	STOPB	0		30
31	6J11U	6			2		0	0	0	255	31	X	-	-	-	-	-	X	X	31	X	X	-			STOPB			31
32	8J11L	8		15	2		0	0	0	255	32	X	-	-	-	-	-	X	X	32	X	X	-			STOPB			32
33	1I1L	1	0	0	0	0	0	0	0	255	33	X	X	-	-	-	-	X	X	33	X	X	-	0	0	NORM	0		33
34	2I4L	2			2		0	0	0	255	34	X	-	-	-	-	-	X	X	34	X	X	-			STOPB		SBT2	34
35	3I5L	3	0	0	0	0	0	0	0	255	35	X	X	-	-	-	-	X	X	35	X	X	-	0	0	NORM	0		35
36	4I8L	4			2		0	0	0	255	36	X	-	-	-	-	-	X	X	36	X	X	-			STOPB			36
37	5J1L	5	0	0	0	0	0	0	0	255	37	X	X	-	-	-	-	X	X	37	X	X	-	0	0	NORM	0		37
38	6J4L	6			2		0	0	0	255	38	X	-	-	-	-	-	X	X	38	X	X	-			STOPB		NBT2	38
39	7J5L	7	0	0	0	0	0	0	0	255	39	X	X	-	-	-	-	X	X	39	X	X	-	0	0	NORM	0		39
40	8J8L	8			2		0	0	0	255	40	X	-	-	-	-	-	X	X	40	X	X	-			STOPB			40
41	4I10U	2					0	0	0	255	41	-	X	-	-	-	-	X	X	41	X	X	-			NORM			41
42	4I10L	2					0	0	0	255	42	-	X	-	-	-	-	X	X	42	X	X	-			NORM			42
43	8J10U	6					0	0	0	255	43	-	X	-	-	-	-	X	X	43	X	X	-			NORM			43
44	8J10L	6					0	0	0	255	44	-	X	-	-	-	-	X	X	44	X	X	-			NORM			44

ID: 1342 Name: Marks & Nielsen

Vol/Occ Period 0 Seconds 5 Minutes

12/4/2020

Alt# 1 Times Table [1.1.6.1]

Column#... ->	1	2	3	4	5	6	7	8
Assign Ø								
Min Grn								
Gap, Ext								
Max 1								
Max 2								
Yel Clr								
Red Clr								
Walk								
Ped Clr								

Alt# 2 Times Table [1.1.6.1]

Column#... ->	1	2	3	4	5	6	7	8
Assign Ø								
Min Grn								
Gap, Ext								
Max 1								
Max 2								
Yel Clr								
Red Clr								
Walk								
Ped Clr								

Alt# 3 Times Table [1.1.6.1]

Column#... ->	1	2	3	4	5	6	7	8
Assign Ø								
Min Grn								
Gap, Ext								
Max 1								
Max 2								
Yel Clr								
Red Clr								
Walk								
Ped Clr								

Alt# 1 Options Table [1.1.6.2]

Column # ->	1	2	3	4	5	6	7	8
Assign Ø		0		0		0		0
Lock Calls	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-	-	-
Enabl SimGap	-	-	-	-	-	-	-	-
Guar Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Cond Service	-	-	-	-	-	-	-	-
Reservice	-	-	-	-	-	-	-	-
Non-Act 1	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max2	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Conflicting Ø1		0		0		0		0

Alt# 2 Options Table [1.1.6.2]

Column # ->	1	2	3	4	5	6	7	8
Assign Ø		0		0		0		0
Lock Calls	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Dual Enrty	-	-	-	-	-	-	-	-
Enabl SimGap	-	-	-	-	-	-	-	-
Gaur Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Cond Service	-	-	-	-	-	-	-	-
Reservice	-	-	-	-	-	-	-	-
Non-Act 1	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max2	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Conflicting Ø1		0		0		0		0

Alt# 3 Options Table [1.1.6.2]

Column # ->	1	2	3	4	5	6	7	8
Assign Ø		0		0		0		0
Lock Calls	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Dual Enrty	-	-	-	-	-	-	-	-
Enabl SimGap	-	-	-	-	-	-	-	-
Gaur Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Cond Service	-	-	-	-	-	-	-	-
Reservice	-	-	-	-	-	-	-	-
Non-Act 1	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max2	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Conflicting Ø1		0		0		0		0

Alt# 4 Options Table [1.1.6.2]

Column # ->	1	2	3	4	5	6	7	8
Assign Ø		0		0		0		0
Lock Calls	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-	-	-
Enabl SimGap	-	-	-	-	-	-	-	-
Gaur Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Cond Service	-	-	-	-	-	-	-	-
Reservice	-	-	-	-	-	-	-	-
Non-Act 1	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max2	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Conflicting Ø1		0		0		0		0

Alternate Tables [2.6]

Pat#	POpt	PTime	DetGrp	Call/Inh	Olp Off 1	2	3	4	5	6	7	8	ASC	CNA1	Max2	Dia
1	0	0	0	0									0	Off		DFT
2													0	Off		DFT
3	0	0	0	0									0	Off		DFT
4													0	Off		DFT
5	0	0	0	0									0	Off		DFT
6													0	Off		DFT
7	0	0	0	0									0	Off		DFT
8													0	Off		DFT
9	0	0	0	0									0	Off		DFT
10													0	Off		DFT
11	0	0	0	0									0	Off		DFT
12													0	Off		DFT
13	0	0	0	0									0	Off		DFT
14													0	Off		DFT
15	0	0	0	0									0	Off		DFT
16													0	Off		DFT
17	0	0	0	0									0	Off		DFT
18													0	Off		DFT
19	0	0	0	0									0	Off		DFT
20													0	Off		DFT
21	0	0	0	0									0	Off		DFT
22													0	Off		DFT
23	0	0	0	0									0	Off		DFT
24													0	Off		DFT

Time Base Parameters [4.6]

Daylight Savings Time	ENABLE	
Time Base Sync Ref	0	
GMT Offset	-	8
Daylight Savings	**Mon**	**Week**
Spring	3	2
Fall	11	1

NOTE: % and MI parameters are not used and are not shown above.

City of FRESNO

NAME: Marks & Nielsen

12/4/2020 **ID:** 1342

| Annual Schedule [4.3] | Month | | | | | | | | | | | | Day of Week | | | | | | | Date | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Day Plan |
|---|---|---

#	Alarm	Ev	Alr
1	Power Up Alarm.	X	X
2	Stop Timing	X	X
3	Cabinet Door Activation	-	-
4	Coordination Failure	X	X
5	External Alarm # 1	-	-
6	External Alarm # 2	-	-
7	External Alarm # 3	-	-
8	External Alarm # 4	-	-
9	Closed Loop Disabled	-	-
10	External Alarm # 5	-	-
11	External Alarm # 6	-	-
12	Manual Control Enable	X	X
13	Coord Free Input	-	-
14	Local Flash Input	X	X
15	CMU/MMU Flash Input	-	-
16	MMU Fault	X	X
17	Cycle Fault	X	-
18	Cycle Failure	X	-
19	Coordination Fault	X	X
20	Controller Fault	X	X
25	EEPROM CRC Fault	X	X
30	Coord Diagnostic Fault	X	X
37	Download Request	X	X
38	Pattern Change	-	-
49	Preempt 1 Input	X	X
50	Preempt 2 Input	X	X
51	Preempt 3 Input	X	X
52	Preempt 4 Input	X	X
53	Preempt 5 Input	X	X
54	Preempt 6 Input	X	X
55	Preempt 7 Input	-	-
56	Preempt 8 Input	-	-
57	Preempt 9 Input	-	-
58	Preempt 10 Input	-	-
59	EEPROM Compare Fault	X	X
60	Coordination Failure	X	X
63	TSP Active Trigger	-	-
73	Controller Access	X	X
81	FIO Changed Status	X	X

#1 Bus Preempt

		Times		Prior. Phases			
Enable	OFF	Min	0	0	0	0	0
Coor+Pre	OFF	Max	0	---TSP---			
Lock Mode	MAX	Lock	0	Headway	0		
No Skip	OFF	Alt Table	0	GrpLock	OFF		
Qjump	OFF	HoldDwell	#N/A	FreeMod	OFF		

#2 Bus Preempt

		Times		Prior. Phases			
Enable	OFF	Min	0	0	0	0	0
Coor+Pre	OFF	Max	0	---TSP---			
Lock Mode	MAX	Lock	0	Headway	0		
No Skip	OFF	Alt Table	0	GrpLock	OFF		
Qjump	OFF	HoldDwell	#N/A	FreeMod	OFF		

#3 Bus Preempt

		Times		Prior. Phases			
Enable	OFF	Min	0	0	0	0	0
Coor+Pre	OFF	Max	0	---TSP---			
Lock Mode	MAX	Lock	0	Headway	0		
No Skip	OFF	Alt Table	0	GrpLock	OFF		
Qjump	OFF	HoldDwell	#N/A	FreeMod	OFF		

#4 Bus Preempt

		Times		Prior. Phases			
Enable	OFF	Min	0	0	0	0	0
Coor+Pre	OFF	Max	0	---TSP---			
Lock Mode	MAX	Lock	0	Headway	0		
No Skip	OFF	Alt Table	0	GrpLock	OFF		
Qjump	OFF	HoldDwell	#N/A	FreeMod	OFF		

I/O INPUT TABLE

	1	2	3	4	5	6	7	8
1	2	16	8	22	3	17	9	23
2	6	20	12	26	198	199	30	31
3	15	1	21	7	27	13	28	14
4	189	189	189	189	4	18	10	24
5	130	134	132	136	200	201	202	203
6	32	5	19	11	25	29	208	207
7	33	34	35	36	37	38	39	40
8	41	42	43	44	189	189	189	189

ACTION Table [4.5]

Act	Pat#	A1	A2	A3	S1	S2	S3	S4	S5	S6	S7	S8	P1	P2
1	1	-	-	-	-	-	-	-	-	-	-	-	0	0
2	2	-	-	-	-	-	-	-	-	-	-	-	0	0
3	3	-	-	-	-	-	-	-	-	-	-	-	0	0
4	4	-	-	-	-	-	-	-	-	-	-	-	0	0
5	5	-	-	-	-	-	-	-	-	-	-	-	0	0
6	6	-	-	-	-	-	-	-	-	-	-	-	0	0
7	7	-	-	-	-	-	-	-	-	-	-	-	0	0
8	8	-	-	-	-	-	-	-	-	-	-	-	0	0
9	9	-	-	-	-	-	-	-	-	-	-	-	0	0
10	10	-	-	-	-	-	-	-	-	-	-	-	0	0
11	11	-	-	-	-	-	-	-	-	-	-	-	0	0
12	12	-	-	-	-	-	-	-	-	-	-	-	0	0
13	13	-	-	-	-	-	-	-	-	-	-	-	0	0
14	14	-	-	-	-	-	-	-	-	-	-	-	0	0
15	15	-	-	-	-	-	-	-	-	-	-	-	0	0
16	0	-	-	-	-	-	-	-	-	-	-	-	0	0
54	254	-	-	-	-	-	-	-	-	-	-	-	0	0
55	0	-	-	-	-	-	-	-	-	-	-	-	0	0

Alarm Parameters [1.6.7.1]

Pattern Events:	ON
Local Txmt Alarms:	OFF
Reassign User Alarm #1 In (5):	0
Reassign User Alarm #2 In (6):	0
Preempt Events:	ON

City of FRESNO

Date Printed
12/4/2020

ID: 1342 **Name:** Marks & Nielsen

I/O Inputs - 1.8.9.1.5

C-1 PIN	I/O Source	Function	Input Name
39	I1-1	2	Veh Det 2
40	I1-2	16	Veh Det 16
41	I1-3	8	Veh Det 8
42	I1-4	22	Veh Det 22
43	I1-5	3	Veh Det 3
44	I1-6	17	Veh Det 17
45	I1-7	9	Veh Det 9
46	I1-8	23	Veh Det 23
47	I2-1	6	Veh Det 6
48	I2-2	20	Veh Det 20
49	I2-3	12	Veh Det 12
50	I2-4	26	Veh Det 26
51	I2-5	198	Pre 1 In
52	I2-6	199	Pre 2 In
53	I2-7	30	Veh Det 30
54	I2-8	31	Veh Det 31
55	I3-1	15	Veh Det 15
56	I3-2	1	Veh Det 1
57	I3-3	21	Veh Det 21
58	I3-4	7	Veh Det 7
59	I3-5	27	Veh Det 27
60	I3-6	13	Veh Det 13
61	I3-7	28	Veh Det 28
62	I3-8	14	Veh Det 14
63	I4-5	4	Veh Det 4
64	I4-6	18	Veh Det 18
65	I4-7	10	Veh Det 10
66	I4-8	24	Veh Det 24
67	I5-1	130	Ped Call 2
68	I5-2	134	Ped Call 6
69	I5-3	132	Ped Call 4
70	I5-4	136	Ped Call 8
71	I5-5	200	Pre 3 In
72	I5-6	201	Pre 4 In
73	I5-7	202	Pre 5 In
74	I5-8	203	Pre 6 In
75	I6-1	32	Veh Det 32
76	I6-2	5	Veh Det 5
77	I6-3	19	Veh Det 19
78	I6-4	11	Veh Det 11
79	I6-5	25	Veh Det 25
80	I6-6	29	Veh Det 29
81	I6-7	208	Local Flash
82	I6-8	207	Comp StopTm

I/O OUTPUTS - 1.8.9.2.5

C-1 PIN	I/O Source	Function	Output Name
1	Logic Grd		
2	O1-1	14	Red Ch 14
3	O1-2	62	Grn Chan 14
4	O1-3	4	Red Ch 4
5	O1-4	28	Yel Chan 4
6	O1-5	52	Grn Chan 4
7	O1-6	3	Red Ch 3
8	O1-7	27	Yel Chan 3
9	O1-8	51	Grn Chan 3
10	O2-1	13	Red Ch 13
11	O2-2	61	Grn Chan 13
12	O2-3	2	Red Ch 2
13	O2-4	26	Yel Chan 2
14	Logic Grd		
15	O2-5	50	Grn Chan 2
16	O2-6	1	Red Ch 1
17	O2-7	25	Yel Chan 1
18	O2-8	49	Grn Chan 1
19	O3-1	16	Red Ch 16
20	O3-2	64	Grn Chan 16
21	O3-3	8	Red Ch 8
22	O3-4	32	Yel Chan 8
23	O3-5	56	Grn Chan 8
24	O3-6	7	Red Ch 7
25	O3-7	31	Yel Chan 7
26	O3-8	55	Grn Chan 7
27	O4-1	15	Red Ch 15
28	O4-2	63	Grn Chan 15
29	O4-3	6	Red Ch 6
30	O4-4	30	Yel Chan 6
31	O4-5	54	Grn Chan 6
32	O4-6	5	Red Ch 5
33	O4-7	29	Yel Chan 5
34	O4-8	53	Grn Chan 5
35	O5-1	37	Yel Chan 13
36	O5-2	39	Yel Chan 15
37	O5-3	38	Yel Chan 14
38	O5-4	40	Yel Chan 16
100	O5-5	42	Yel Chan 18
101	O5-6	41	Yel Chan 17
102	O5-7	115	Not Used
103	O5-8	114	Watchdog

C-1 PIN	I/O Source	Function	Output Name
83	O6-1	18	Red Ch 18
84	O6-2	66	Grn Chan 18
85	O6-3	12	Red Ch 12
86	O6-4	36	Yel Chan 12
87	O6-5	60	Grn Chan 12
88	O6-6	11	Red Ch 11
89	O6-7	35	Yel Chan 11
90	O6-8	59	Grn Chan 11
91	O7-1	17	Red Ch 17
92	Logic Grd		
93	O7-2	65	Grn Chan 17
94	O7-3	10	Red Ch 10
95	O7-4	34	Yel Chan 10
96	O7-5	58	Grn Chan 10
97	O7-6	9	Red Ch 9
98	O7-7	33	Yel Chan 9
99	O7-8	57	Grn Chan 9

I/O Outputs - 1.8.9.2.5
C-11 OUTPUTS

1	O8-1	115	Not Used
2	O8-2	115	Not Used
3	O8-3	115	Not Used
4	O8-4	115	Not Used

I/O Inputs - 1.8.9.1.5
C-11 INPUTS

15	I7-1	33	Veh Det 33
16	I7-2	34	Veh Det 34
17	I7-3	35	Veh Det 35
18	I7-4	36	Veh Det 36
19	I7-5	37	Veh Det 37
20	I7-6	38	Veh Det 38
21	I7-7	39	Veh Det 39
22	I7-8	40	Veh Det 40
23	I8-1	41	Veh Det 41
24	I8-2	42	Veh Det 42
25	I8-3	43	Veh Det 43
26	I8-4	44	Veh Det 44
27	I8-5	189	Unused
28	I8-6	189	Unused
29	I8-7	189	Unused
30	I8-8	189	Unused

City of FRESNO

ID: 1342

NAME: Marks & Nielsen

Date Printed: 12/4/2020

ID Number: 1342

LOCATION: Marks & Nielsen

City of Fresno
332 Cabinet
44 Detector Plus Setup

DETECTOR ASSIGNMENTS

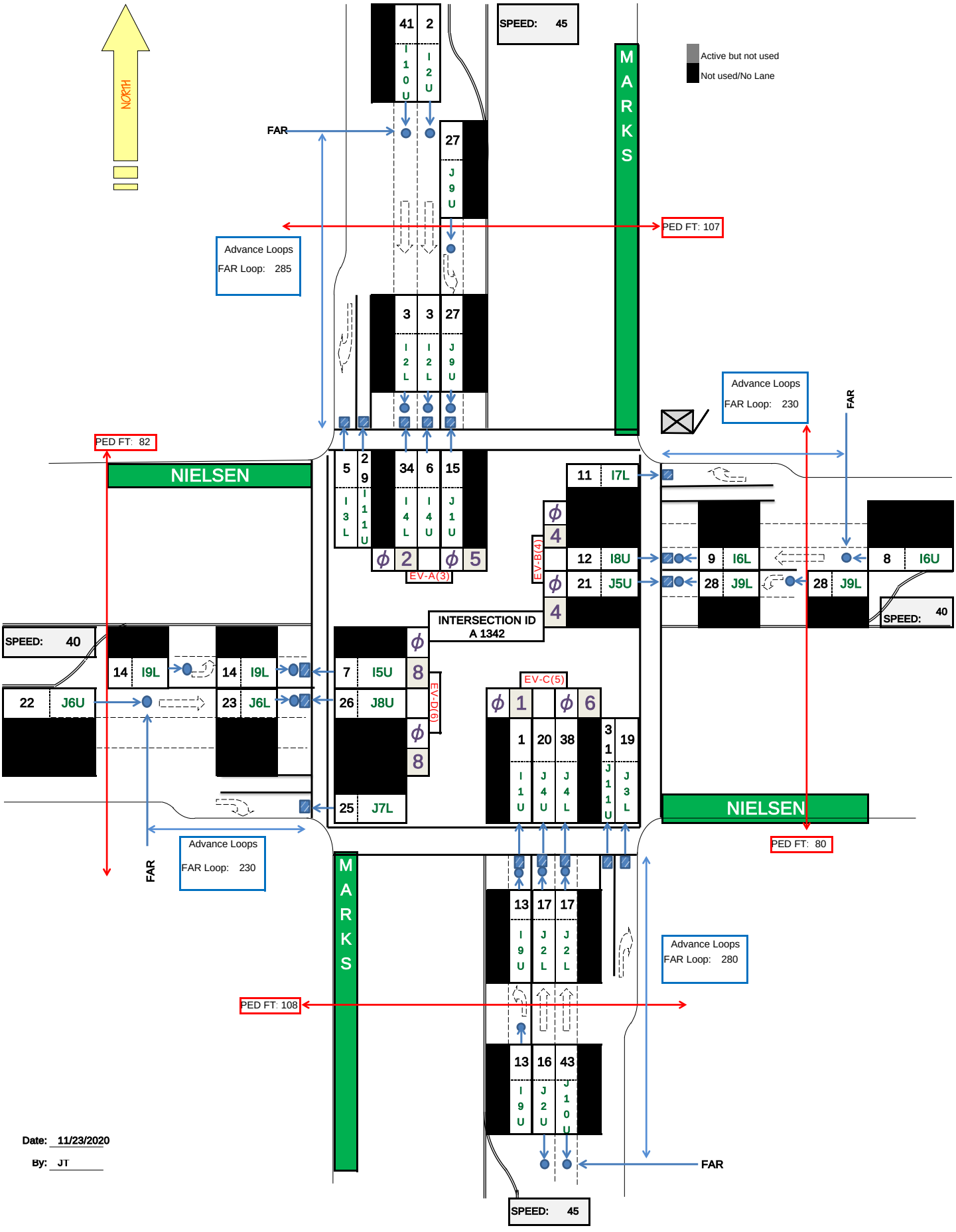
"I"	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	ISOLATORS I12	I13	I14
UPPER	Ph 1 Call&Ext T2-1&2 C1-56 Det 1 NBL1	Ph 2 Ext T2-5&6 C1-39 Det 2 SB Far	Ph 2 Call&TP3 T2-9&10 C1-63 Det 4 SB Mid	Ph 2 Call&TP3 T4-1&2 C1-47 Det 6 SBT1	Ph 3 Call&Ext T4-5&6 C1-58 Det 7 EBL1	Ph 4 Ext T4-9&10 C1-41 Det 8 WB Far	Ph 4 Call&TP3 T6-1&2 C1-65 Det 10 WB Mid	Ph 4 Call&TP3 T6-5&6 C1-49 Det 12 WBT1	Ph 1 Call&Ext T6-9&10 C1-60 Det 13 NBLt Bk	Ph 2/4 Ext T10-5&6 C11-23 Det 41	Ph 2 Call&Ext T8-1 C1-80 Det 29 BIKE	Ph 2 PPB T8-4 C1-67	Ph 6 PPB T8-7 C1-68	FLASH SENSE T8-10 C1-81
LOWER	Ph 1 Call&Ext T2-3&4 C11-15 Det 33 NBL2	Ph 2 Call&TP3 T2-7&8 C1-43 Det 3 SB Bk	Ph 2 Call&Ext T2-11&12 C1-76 Det 5 SBRt	Ph 2 Call&TP3 T4-3&4 C11-16 Det 34 SBT2	Ph 3 Call&Ext T4-7&8 C11-17 Det 35 EBL2	Ph 4 Call&TP3 T4-11&12 C1-45 Det 9 WB Bk	Ph 4 Call&Ext T6-3&4 C1-78 Det 11 WBRt	Ph 4 Call&TP3 T6-7&8 C11-18 Det 36 WBT2	Ph 3 Call&Ext T6-11&12 C1-62 Det 14 EBLt Bk	Ph 2/4 Ext T10-7&8 C11-24 Det 42	Ph 4 Call&Ext T8-2 C1-53 Det 30 BIKE	Ph 4 PPB T8-5 C1-69	Ph 8 PPB T8-8 C1-70	STOP TIMING T8-11 C1-82
"J"	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	J13	J14
UPPER	Ph 5 Call&Ext T3-1&2 C1-55 Det 15 SBL1	Ph 6 Ext T3-5&6 C1-40 Det 16 NB Far	Ph 6 Call&TP3 T3-9&10 C1-64 Det 18 NB Mid	Ph 6 Call&TP3 T5-1&2 C1-48 Det 20 NBT1	Ph 7 Call&Ext T5-5&6 C1-57 Det 21 WBL1	Ph 8 Ext T5-9&10 C1-42 Det 22 EB Far	Ph 8 Call&TP3 T7-1&2 C1-66 Det 24 EB Mid	Ph 8 Call&TP3 T7-5&6 C1-50 Det 26 EBT1	Ph 5 Call&Ext T7-9&10 C1-59 Det 27 SBLt Bk	Ph 6/8 Ext T10-9&10 C11-25 Det 43	Ph 6 Call&Ext T9-1 C1-54 Det 31 BIKE	EMER A Ph 2 + 5 T9-4 C1-71	EMER B Ph 4 + 7 T9-5 C1-72	RR1 FLASH T9-10 C1-51
LOWER	Ph 5 Call&Ext T3-3&4 C11-19 Det 37 SBL2	Ph 6 Call&TP3 T3-7&8 C1-44 Det 17 NB Bk	Ph 6 Call&Ext T3-11&12 C1-77 Det 19 NBRt	Ph 6 Call&TP3 T5-3&4 C11-20 Det 38 NBT2	Ph 7 Call&Ext T5-7&8 C11-21 Det 39 WBL2	Ph 8 Call&TP3 T5-11&12 C1-46 Det 23 EB Bk	Ph 8 Call&Ext T7-3&4 C1-79 Det 25 EBRt	Ph 8 Call&TP3 T7-7&8 C11-22 Det 40 EBT2	Ph 7 Call&Ext T7-11&12 C1-61 Det 28 WBLt Bk	Ph 6/8 EXT T10-11&12 C11-26 Det 44	Ph 8 Call&Ext T9-2 C1-75 Det 32 BIKE	EMER C Ph 1 + 6 T9-7 C1-73	EMER D Ph 3 + 8 T9-8 C1-74	RR2 LTD OP T9-11 C1-52

COMMENTS:

TIMING UPDATES AND MODIFICATIONS

ID: 1342 **NAME:** Marks & Nielsen

DATE	CHANGES MADE	ATMS or CABINET	BY
12/4/2020	New Intersection - Created timing calculations, FDW, & detector attributes per plan specifications.	ATMS	JT



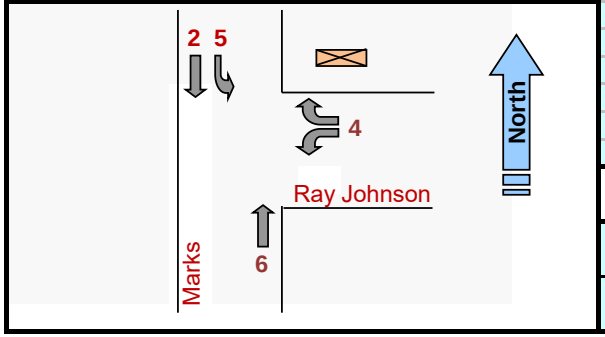
Date: 11/23/2020

By: JT

Detector Layout for the intersection of: MARKS & NIELSEN

Movement		ST		WT	SL	NT				
Times [1.1.1]	1	2	3	4	5	6	7	8	9	10
Min Green	0	8	0	6	6	8		0		0
Gap, Ext	0	4.3	0	5	2	4.3		0		0
Max 1	0	30	0	30	20	30		0		0
Max 2	0	20	0	20	15	20		0		0
Yel Clearance	0	4.3	0	3	3	4.3		0		0
Red Clearance	0	1	0	1	1	1		0		0
Walk	0		0	7		7		0		0
Ped Clearance	0		0	12		12		0		0
Red Revert	0	2	0	2	2	2		0		0
Add Initial	0		0			0		0		0
Max Initial	0		0			0		0		0
Time B4 Reduct	0	8	0	8		8		0		0
Cars B4 Reduct	0		0			0		0		0
Time To Reduce	0	15	0	15		15		0		0
Reduce By	0	0.6	0			0.6		0		0
Min Gap	0	2	0	2	2	2		0		0
DyMaxLim	0		0			0		0		0
Max Step	0		0			0		0		0

Options [1.1.2]	1	2	3	4	5	6	7	8	9	10
Enable		X		X	X	X				
Min Recall										
Max Recall										
Ped Recall										
Soft Recall		X				X				
Lock Calls										
Auto Flash Entry										
Auto Flash Exit										
Dual Entry		X				X				
Enable Simul Gap										
Gaurantee Passage										
Rest In Walk										
Conditonal Service										
Non-Actuated 1										
Non-Actuated 2										
Add Init Calc										



Phase Options+ [1.1.3]

Options+	1	2	3	4	5	6	7	8	9	10
Reservice										
PedClr Thru Yel										
SkipRed-NoCall										
Red Rest										
Max II										
*Max III										
Max Inhibit										
Ped Delay										
Red Rest on Gap										
Conflicting Phase	0	0	0	0	0	0	0	0	0	0
Grn/Ped Delay										
Omit Yel, Yel P	0	0	0	0	0	0	0	0	0	0
Ped Out/Olp Ped										
StartYel, Next P	0	0	0	0	0	0	0	0	0	0
*StartupVehCall		2		4	5	6				
*StartupPedCall										

Phase Concurrency [1.1.4]

Phase	Ring	StartUp	Concurrent Phases							
1	1	RED	5	6	0	0				
2	1	GREEN	5	6	0	0				
3	1	RED	7	8	0	0				
4	1	RED	7	8	0	0				
5	2	RED	1	2	0	0				
6	2	GREEN	1	2	0	0				
7	2	RED	3	4	0	0				
8	2	RED	3	4	0	0				
9	0	RED	0	0	0	0				
10	0	RED	0	0	0	0				
11	0	RED	0	0	0	0				
12	0	RED	0	0	0	0				

Comm Ports [6.6]

Channel	Port	Echo	Mode
Async 1	SP1	NONE	0
Async 2	SP2	NONE	0
Async 3	SP8	NONE	0
Async 4	OFF	NONE	0
Sync 1	SP5S		
Sync 2	OFF		
TS2CVM	NONE		
Opticom	NONE		
GPS	NONE		

Unit Params [1.2.1]

Screen Size	8	Metric	OFF
Startup Flash	0	Red Revert	2
MCE Timeout	0	Auto Ped Clear	OFF
Loc Flsh Start	RSt	Display Time	60
Yellow < 3"	OFF	Tone Disable	ON
Allow Skip Yel	OFF	AudioPedTime	0
Start Red Tm	6	Phase Mode	STD8
Startup Calls	UseProg	CNA FreeTime	0
TOD Dimming	OFF	Diamond Mode	4Ph
ST over Prmpt	OFF	Free Ring Seq	1
Feature Profile	1	IO Mode	USER
Mx Seek TrkTm	0	Max Cyc Timer	0
Mx Seek Dwell	0	CycFlt Actn	ALARM
Prmpt/Ext Coor	EXT	Clrnc Decide	OFF
Aux Switch	STOPTM	LPAlt Srs	3-6
*InhFYA Red St	OFF	Security Delay	0
RingA1go	0		

* - 76.12B or newer

Times+ [1.1.7]

	1	2	3	4	5	6	7	8
Walk2	0	0	0	0	0	0	0	0
BikeClr	0	0	0	0	0	0	0	0
GrnFlash	0	0	0	0	0	0	0	0
SfClrMn	0	0	0	0	0	0	0	0
SfClrNoFlsh	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
NoPed Reserv								

Comm [6.2]

Port	Baud Rate	FCM
1	38400	6
2	9600	6
3	9600	6
4	9600	6

Comm [6.5] — Host IPs

					ATMS			
IP Address:	10	50	20	32				
Mask:	255	255	255	0	10	50	10	22
Gateway:	10	50	20	1	SG			
Port #:	5003				0	0	0	0

City of FRESNO

Phase Seq. (2 ring) Chart [1.2.4]

Seq #	Ring	Phases					
1	1	1	2	3	4	0	0
	2	5	6	7	8	0	0
2	1	1	2	3	4	0	0
	2	6	5	7	8	0	0
3	1	2	1	3	4	0	0
	2	5	6	7	8	0	0
4	1	2	1	3	4	0	0
	2	6	5	7	8	0	0
5	1	1	2	3	4	0	0
	2	5	6	8	7	0	0
6	1	1	2	3	4	0	0
	2	6	5	8	7	0	0
7	1	2	1	3	4	0	0
	2	5	6	8	7	0	0
8	1	2	1	3	4	0	0
	2	6	5	8	7	0	0
9	1	1	2	4	3	0	0
	2	5	6	7	8	0	0
10	1	1	2	4	3	0	0
	2	6	5	7	8	0	0
11	1	2	1	4	3	0	0
	2	5	6	7	8	0	0
12	1	2	1	4	3	0	0
	2	6	5	7	8	0	0
13	1	1	2	4	3	0	0
	2	5	6	8	7	0	0
14	1	1	2	4	3	0	0
	2	6	5	8	7	0	0
15	1	2	1	4	3	0	0
	2	5	6	8	7	0	0
16	1	2	1	4	3	0	0
	2	6	5	8	7	0	0

Advance Warning [1.1.9]

	Ph	Tm
Aux Out #1	0	0
Aux Out #2	0	0

NAME: Marks @ Ray Johnson **ID:** 1337 **Configuration:** Standard File

Prepared by:	JT	**Date Installed / By:**	3/1/2021 (JT)
Checked by:	JT	**Date Superseded:**	

V76.12/13
Updated 12/6/17

Date Printed: 2/23/21

[2.1] Coord Modes+

Test OpMode	0
Correction	SHRT/LNG
Maximum	MAX INH
Force Mode	FIXED
Flash Mode	CHANNEL

Coord Modes+ (Page 2)

FreeonSeqCh	ON
Closed Loop	OFF
External	OFF
Latch Sec Frc	OFF
Stop-in-Walk	OFF
Ped Recycle	P1256_INH
Expand Split	OFF
Easy Float	OFF
Auto Reset	ON
NTCIP Yield	+ 0

Leave Walk

Before	TIMED
After	TIMED

Intersection Name: Marks @ Ray Johnson

ID: 1337

City of FRESNO

Date Printed: 2/23/2021

[2.4] Patterns

Pat#	Cyc	Off	Split	Seq
1	0	0	1	1
2	0	0	2	1
3	0	0	3	1
4	0	0	4	1
5	0	0	5	1
6	0	0	6	1
7	0	0	7	1
8	0	0	8	1
9	0	0	9	1
10	0	0	10	1
11	0	0	0	1
12	0	0	0	1
13	0	0	0	1

[2.7.1-24] Splits

Split	[2.7]	1	2	3	4	5	6	7	8	9	10
1	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
2	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
3	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
4	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
5	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
6	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
7	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
8	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
9	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
10	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
11	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
12	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
13	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON

[2.5] Transition

Pat#	Short	Long	Dwell	No Shortway Ø				E-Yld	Offset	Ret Hold	Flt	Min Veh	Min Ped	MI
1	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
2	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
3	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
4	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
5	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
6	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
7	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
8	10	25	0	0	0	0	0	0	EndGRN	-	-	-	X	OFF
9	10	25	0	0	0	0	0	0	EndGRN	-	-	-	-	OFF
10	10	25	0	0	0	0	0	0	EndGRN	-	-	-	-	OFF
11		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
12	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
13		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF

[2.1] Coord Modes+

Test OpMode	0
Correction	SHRT/LNG
Maximum	MAX INH
Force Mode	FIXED
Flash Mode	CHANNEL

Coord Modes+ (Page 2)

FreeonSeqCh	ON
Closed Loop	OFF
External	OFF
Latch Sec Frc	OFF
Stop-in-Walk	OFF
Ped Recycle	P1256_INH
Expand Splt	OFF
Easy Float	OFF
Auto Reset	ON
NTCIP Yield	+ 0

Leave Walk

Before	TIMED
After	TIMED

Intersection Name: Marks @ Ray Johnson

ID: 1337

City of FRESNO

Date Printed: 2/23/2021

[2.4] Patterns

Pat#	Cyc	Off	Split	Seq
20	0	0	0	1
21	0	0	0	1
22	0	0	0	1
23	0	0	0	1
24	0	0	0	1
25	0	0	0	1
26	0	0	0	1
27	0	0	0	1
28	0	0	0	1
29	0	0	0	1
30	0	0	0	1
31	0	0	0	1
32	0	0	0	1

[2.7.1-24] Splits

Split	[2.7]	1	2	3	4	5	6	7	8	9	10
20	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
21	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
22	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
23	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
24	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
25	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
26	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
27	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
28	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
29	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
30	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
31	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
32	Split	0	0	0	0	0	0	0	0	0	0
	Crd-P										
	Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON

[2.5] Transition

Pat#	Short	Long	Dwell	No Shortway Ø				E-Yld	Offset	Ret Hold	Flt	Min Veh	Min Ped	MI
20		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
21	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
22		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
23	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
24		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
25	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
26		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
27	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
28		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
29	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
30		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
31	0	17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF
32		17	0	0	0	0	0	0	BegGRN	-	-	-	-	OFF

[2.7.X.3] TSP Split Table

Pat#	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
1	0	0	1	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
2	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	2	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
3	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	3	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
4	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	4	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
5	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	5	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
6	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	6	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						
9 - FREE	Cyc	Off	Split	Seq	SPLITS	1	2	3	4	5	6	7	8	9	10
	0	0	9	1		0	0	0	0	0	0	0	0	0	0
					TSP - Max Reduction	0	0	0	0	0	0	0	0	0	0
					TSP - Max Extend	0	0	0	0	0	0	0	0	0	0
					Request	1	2	3	4						
					Strategy	0	0	0	0						
					TimSvcDes	0	0	0	0						
					TimEstDep	0	0	0	0						

[2.9.2.(1-8)] Strategy Tables

STRATEGY_1

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_2

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_3

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_4

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_5

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_6

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_7

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

STRATEGY_8

SvcPhases	0	0	0	0
Phs Omits	0	0	0	0
Ped Omits	0	0	0	0

Overlap 1-8 Program Parms & Parm+ [1.5.2.1] [1.5.2.8]

1	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
A	Conflict Olap									Red	1
	Conflict Ped										
2	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
B	Conflict Olap									Red	1
	Conflict Ped										
3	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
C	Conflict Olap									Red	1
	Conflict Ped										
4	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
D	Conflict Olap									Red	1
	Conflict Ped										
5	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
E	Conflict Olap									Red	1
	Conflict Ped										
6	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
F	Conflict Olap									Red	1
	Conflict Ped										
7	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
G	Conflict Olap									Red	1
	Conflict Ped										
8	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3
H	Conflict Olap									Red	1
	Conflict Ped										

OLP GENERAL PARAMETERS [1.5.1]

Lock Inhibit	OFF
Conflict Lock Enable	OFF
Parent P Clearance	ON
Xtra Incl Phases	OFF
InhibitLockInterval	Always

Channel Parameters [1.8.3]

Pre Invert Rail Input	OFF

Preemption Options+ [3.Pre #.6]

Pre #	Enable	Type	Output	Pattern	Skip	Co+Pre	Flash	Max/Min
1	OFF	RAIL	TS2		OFF	OFF	OFF	MAX
2	OFF	RAIL	TS2	0	OFF	OFF	OFF	MAX
3	ON	EMERG	TS2		OFF	OFF	OFF	MAX
4	ON	EMERG	TS2	0	OFF	OFF	OFF	MAX
5	ON	EMERG	TS2		OFF	OFF	OFF	MAX
6	OFF	EMERG	TS2	0	OFF	OFF	OFF	MAX

Preemption Times [3.#.1]

Pre #	Delay	MinDura	MaxPres	MinGrn	MinWlk	PedClr	Track Grn	Min Dwell
1								
2	0	0	0	0	0	0	0	0
3		10	60	6		10		10
4	0	10	60	6	0	10	0	10
5		10	60	6		10		10
6	0	10	60	6	0	10	0	10

Preemption, Options [3.#.3]

Pre #	Lock Input	Over-ride Auto Flash	Over-ride Higher Preempt	Flash Dwell	Link
1	OFF	OFF	OFF	ON	
2	OFF	OFF	OFF	OFF	0
3	OFF	OFF	OFF	OFF	
4	OFF	OFF	OFF	OFF	0
5	OFF	OFF	OFF	OFF	
6	OFF	OFF	OFF	OFF	0

Preemption, Times+ [3.#.4]

Pre No.	Extend Dwell	Return Max	Ped Clr	Yel	Red
1					
2	0	0	0	0	0
3		20	10	3.6	1
4	0	20	10	3.6	1
5		20	10	3.6	1
6	0	20	10	3.6	1

Pre 1 = RR1
Pre 2 = RR2
Pre 3 = EVA
Pre 4 = EVB
Pre 5 = EVC
Pre 6 = EVD

Prog Parms+ (MM>1>5>2>X>3)

Leading Green	OFF	FYA MCE Disable	OFF
Transit Input	0	FYA Skip Red	OFF
FYA Delay Time	0	FYA AfterPreempt	OFF
Ped Call Clear	OFF		
Ped ClearTime	0	FYA ImmedReturn	OFF
Green Ext Inh	0	0 0 0 0 0	

OverlapB+: 1-A

Leading Green	OFF	FYA MCE Disable	OFF
Transit Input	0	FYA Skip Red	OFF
FYA Delay Time	0	FYA AfterPreempt	OFF
Ped Call Clear	OFF		
Ped ClearTime	0	FYA ImmedReturn	OFF
Green Ext Inh	0	0 0 0 0 0	

OverlapB+: 2-B

Leading Green	OFF	FYA MCE Disable	OFF
Transit Input	0	FYA Skip Red	OFF
FYA Delay Time	0	FYA AfterPreempt	OFF
Ped Call Clear	OFF		
Ped ClearTime	0	FYA ImmedReturn	OFF
Green Ext Inh	0	0 0 0 0 0	

OverlapB+: 3-C

Leading Green	OFF	FYA MCE Disable	OFF
Transit Input	0	FYA Skip Red	OFF
FYA Delay Time	0	FYA AfterPreempt	OFF
Ped Call Clear	OFF		
Ped ClearTime	0	FYA ImmedReturn	OFF
Green Ext Inh	0	0 0 0 0 0	

OverlapB+: 4-D

Leading Green	OFF	FYA MCE Disable	OFF
Transit Input	0	FYA Skip Red	OFF
FYA Delay Time	0	FYA AfterPreempt	OFF
Ped Call Clear	OFF		
Ped ClearTime	0	FYA ImmedReturn	OFF
Green Ext Inh	0	0 0 0 0 0	

Phases [3.#.2] - set the Dwell Phases

Pre #	Column	1	2	3	4	5	6	7	8	9	10
1	Dwell Veh										
	Peds										
2	Dwell Veh										
	Peds										
3	Dwell Veh	2	5								
	Peds										
4	Dwell Veh	4									
	Peds										
5	Dwell Veh	6									
	Peds										
6	Dwell Veh										
	Peds										

Phases [3.#.2] - Trk Veh

Pre #	Phases			
1				
2				
3				
4				
5				
6				

Exit Phases [3.#.2]

No.	Exit Phase			
1				
2				
3	2	5		
4	4			
5	6			
6				

Overlaps+ [3.#.5]

Pre #		Preempt Overlaps +									
1	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										
2	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										
3	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										
4	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										
5	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										
6	Track	0	0	0	0	0	0	0	0	0	0
	Dwell										

City of FRESNO

ID: 1337 **Name:** Marks @ Ray Johnson **Date Printed:** 2/23/2021

CHANNEL SETTINGS [1.8] plus UNIT PARAMETERS [1.2.1]

CHANNEL SETTINGS [1.8.1]

Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phase / Olap #	1	2	3	4	5	6	7	8	1	2	3	4	2	4	6	8
Channel Type	VEH	VEH	VEH	VEH	VEH	VEH	VEH	VEH	OLP	OLP	OLP	OLP	PED	PED	PED	PED
Channel Flash	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	DRK	DRK	DRK	DRK
Flash 1-2 Hertz		X		X		X		X								
	Page 1								Page 2							

Chan Settings [1.8.2]

Channel	17	18	19	20	21	22	23	24
Phase / Olap #								
Channel Type	VEH	VEH	VEH	VEH	VEH	VEH	VEH	VEH
Channel Flash	DRK	DRK	DRK	DRK	DRK	DRK	DRK	DRK
Flash 1-2 Hertz								

CHANNEL PARMETERS [1.8.3]

CH 17-24 Mapping:	DEFAULT
D-Conn Mapping:	NONE
Invert Rail Inputs:	OFF
C1-C11-ABC IO Mode:	USER

IO PARAMETERS [1.8.6]

C1-C11-ABC IO Mode:	USER
D-Conn Mapping:	NONE
T & F BIU Mapping	DEFAULT
Invert Rail Inputs:	OFF
EVP Ped Confirm	OFF

CHANNELS+ [1.8.4]

Channel	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
Flash Green	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Flash Red	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Flash Yellow	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Inh Red Fl in Preempt	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Olap Ovrd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Override Type	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID: 1337 **NAME:** Marks @ Ray Johnson

I/O LOGIC [1.8.7]

Prt Date: 2/23/2021

Row#	Result			Operand_1					Operand_2					Operand_3					Timer	
	I/O	Fcn	=	Inv	Src	I/0	Fun	Logic Func	Inv	Src	I/0	Fun	Logic Func	Inv	Src	I/0	Fun	Logic Func	Dly	Sec
1	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
2	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
3	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
4	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
5	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
6	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
7	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
8	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
9	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0
10	I	0	=	-	0	I	OFF	----	-	0	I	OFF	----	-	0	I	OFF	----	DLY	0

Ped Parms (MM>5>4)

Det#	Call	No Act	Max Pres	Err Cnt
1	0	0	0	0
2	2	0	0	0
3	0	0	0	0
4	4	0	0	0
5	0	0	0	0
6	6	0	0	0
7	0	0	0	0
8	8	0	0	0

Veh Par 1-32 [5.1]											Vehicle Options 1-32 [5.2]									Parameters+ 1-32 [5.3]								Info Only	
Det #	Input Slot	Call Ø	Swi Ø	Dlay	Ext	Que	No Act	Max Pres	Err Cnt	Fail Time	Det #	Call	Ext	Que	Add Init	Red Lock	Yell Lock	occ	vol	Det #	Occupancy G	Y	R	Delay 1	2	Type	Src	Dir	Det #
1	1I1U	1					0	0	0	255	1	X	X	-	-	-	-	X	X	1	X	X	-			NORM			1
2	2I2U	2	0	0	0	0	0	0	0	255	2	-	X	-	-	-	-	X	X	2	X	X	-	0	0	NORM	0		2
3	2I2L	2	0	0	0	0	0	0	0	255	3	X	X	-	-	-	-	X	X	3	X	X	-	0	0	NORM	0		3
4	2I3U	2	0	0	2	20	0	0	0	255	4	X	-	X	-	-	-	X	X	4	X	X	-	0	0	NORM	0		4
5	2I3L	2	0	0	2	10	0	0	0	255	5	X	-	X	-	-	-	X	X	5	X	X	-	0	0	NORM	0		5
6	2I4U	2	0	0	2	20	0	0	0	255	6	X	-	X	-	-	-	X	X	6	X	X	-	0	0	NORM	0	SBT1	6
7	3I5U	3					0	0	0	255	7	X	X	-	-	-	-	X	X	7	X	X	-			NORM			7
8	4I6U	4	0	0	0	0	0	0	0	255	8	-	X	-	-	-	-	X	X	8	X	X	-	0	0	NORM	0		8
9	4I6L	4	0	0	0	0	0	0	0	255	9	X	X	-	-	-	-	X	X	9	X	X	-	0	0	NORM	0		9
10	4I7U	4	0	0	2	20	0	0	0	255	10	X	-	X	-	-	-	X	X	10	X	X	-	0	0	NORM	0		10
11	4I7L	4		15	2	10	0	0	0	255	11	X	-	X	-	-	-	X	X	11	X	X	-			NORM		WBT2	11
12	4I8U	4			2	20	0	0	0	255	12	X	-	X	-	-	-	X	X	12	X	X	-			NORM		WBT1	12
13	1I9U	1	0	0	0	0	0	0	0	255	13	X	X	-	-	-	-	X	X	13	X	X	-	0	0	NORM	0		13
14	3I9L	3	0	0	0	0	0	0	0	255	14	X	X	-	-	-	-	X	X	14	X	X	-	0	0	NORM	0		14
15	5J1U	5	0	0	0	0	0	0	0	255	15	X	X	-	-	-	-	X	X	15	X	X	-	0	0	NORM	0	SBL1	15
16	6J2U	6					0	0	0	255	16	-	X	-	-	-	-	X	X	16	X	X	-			NORM			16
17	6J2L	6					0	0	0	255	17	X	X	-	-	-	-	X	X	17	X	X	-			NORM			17
18	6J3U	6			2	20	0	0	0	255	18	X	-	X	-	-	-	X	X	18	X	X	-			NORM			18
19	6J3L	6			2	10	0	0	0	255	19	X	-	X	-	-	-	X	X	19	X	X	-			NORM			19
20	6J4U	6			2	20	0	0	0	255	20	X	-	X	-	-	-	X	X	20	X	X	-			NORM		NBT1	20
21	7J5U	7					0	0	0	255	21	X	X	-	-	-	-	X	X	21	X	X	-			NORM			21
22	8J6U	8	0	0	0	0	0	0	0	255	22	-	X	-	-	-	-	X	X	22	X	X	-	0	0	NORM	0		22
23	8J6L	8	0	0	2	20	0	0	0	255	23	X	-	X	-	-	-	X	X	23	X	X	-	0	0	NORM	0		23
24	8J7U	8	0	0	2	20	0	0	0	255	24	X	-	X	-	-	-	X	X	24	X	X	-	0	0	NORM	0		24
25	8J7L	8	0	0	2	10	0	0	0	255	25	X	-	X	-	-	-	X	X	25	X	X	-	0	0	NORM	0		25
26	8J8U	8	0	0	2	20	0	0	0	255	26	X	-	X	-	-	-	X	X	26	X	X	-	0	0	NORM	0		26
27	5J9U	5					0	0	0	255	27	X	X	-	-	-	-	X	X	27	X	X	-			NORM			27
28	7J9L	7					0	0	0	255	28	X	X	-	-	-	-	X	X	28	X	X	-			NORM			28
29	2I11U	2	0	0	0	0	0	0	0	255	29	X	-	-	X	-	-	X	X	29	X	X	-	0	0	BIKE	0		29
30	4I11L	4	0	0	0	0	0	0	0	255	30	X	-	-	X	-	-	X	X	30	X	X	-	0	0	BIKE	0	SBT3	30
31	6J11U	6					0	0	0	255	31	X	-	-	X	-	-	X	X	31	X	X	-			BIKE		NBR1	31
32	8J11L	8					0	0	0	255	32	X	-	-	X	-	-	X	X	32	X	X	-			BIKE			32
33	1I1L	1	0	0	0	0	0	0	0	255	33	X	X	-	-	-	-	X	X	33	X	X	-	0	0	NORM	0		33
34	2I4L	2			2	20	0	0	0	255	34	X	-	X	-	-	-	X	X	34	X	X	-			NORM		SBT2	34
35	3I5L	3	0	0	0	0	0	0	0	255	35	X	X	-	-	-	-	X	X	35	X	X	-	0	0	NORM	0		35
36	4I8L	4			2	20	0	0	0	255	36	X	-	X	-	-	-	X	X	36	X	X	-			NORM			36
37	5J1L	5	0	0	0	0	0	0	0	255	37	X	X	-	-	-	-	X	X	37	X	X	-	0	0	NORM	0		37
38	6J4L	6			2	20	0	0	0	255	38	X	-	X	-	-	-	X	X	38	X	X	-			NORM		NBT2	38
39	7J5L	7	0	0	0	0	0	0	0	255	39	X	X	-	-	-	-	X	X	39	X	X	-	0	0	NORM	0		39
40	8J8L	8			2	20	0	0	0	255	40	X	-	X	-	-	-	X	X	40	X	X	-			NORM			40
41	4I10U	4					0	0	0	255	41	-	X	-	-	-	-	X	X	41	X	X	-			NORM			41
42	4I10L	4					0	0	0	255	42	-	X	-	-	-	-	X	X	42	X	X	-			NORM			42
43	8J10U	8					0	0	0	255	43	-	X	-	-	-	-	X	X	43	X	X	-			NORM			43
44	8J10L	8					0	0	0	255	44	-	X	-	-	-	-	X	X	44	X	X	-			NORM			44

ID: 1337 **Name:** Marks @ Ray Johnson

Vol/Occ Period 0 Seconds 5 Minutes

2/23/2021

Alt# 1 Times Table [1.1.6.1]

Column#... ->	1	2	3	4	5	6	7	8
Assign Ø								
Min Grn								
Gap, Ext								
Max 1								
Max 2								
Yel Clr								
Red Clr								
Walk								
Ped Clr								

Alt# 2 Times Table [1.1.6.1]

Column#... ->	1	2	3	4	5	6	7	8
Assign Ø								
Min Grn								
Gap, Ext								
Max 1								
Max 2								
Yel Clr								
Red Clr								
Walk								
Ped Clr								

Alt# 3 Times Table [1.1.6.1]

Column#... ->	1	2	3	4	5	6	7	8
Assign Ø								
Min Grn								
Gap, Ext								
Max 1								
Max 2								
Yel Clr								
Red Clr								
Walk								
Ped Clr								

Alt# 1 Options Table [1.1.6.2]

Column # ->	1	2	3	4	5	6	7	8
Assign Ø		0		0		0		0
Lock Calls	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-	-	-
Enabl SimGap	-	-	-	-	-	-	-	-
Guar Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Cond Service	-	-	-	-	-	-	-	-
Reservice	-	-	-	-	-	-	-	-
Non-Act 1	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max2	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Conflicting Ø1		0		0		0		0

Alt# 2 Options Table [1.1.6.2]

Column # ->	1	2	3	4	5	6	7	8
Assign Ø		0		0		0		0
Lock Calls	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Dual Enrty	-	-	-	-	-	-	-	-
Enabl SimGap	-	-	-	-	-	-	-	-
Gaur Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Cond Service	-	-	-	-	-	-	-	-
Reservice	-	-	-	-	-	-	-	-
Non-Act 1	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max2	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Conflicting Ø1		0		0		0		0

Alt# 3 Options Table [1.1.6.2]

Column # ->	1	2	3	4	5	6	7	8
Assign Ø		0		0		0		0
Lock Calls	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Dual Enrty	-	-	-	-	-	-	-	-
Enabl SimGap	-	-	-	-	-	-	-	-
Gaur Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Cond Service	-	-	-	-	-	-	-	-
Reservice	-	-	-	-	-	-	-	-
Non-Act 1	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max2	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Conflicting Ø1		0		0		0		0

Alt# 4 Options Table [1.1.6.2]

Column # ->	1	2	3	4	5	6	7	8
Assign Ø		0		0		0		0
Lock Calls	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-	-	-
Enabl SimGap	-	-	-	-	-	-	-	-
Gaur Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Cond Service	-	-	-	-	-	-	-	-
Reservice	-	-	-	-	-	-	-	-
Non-Act 1	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max2	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Conflicting Ø1		0		0		0		0

Alternate Tables [2.6]

Pat#	POpt	PTime	DetGrp	Call/Inh	Olp Off 1	2	3	4	5	6	7	8	ASC	CNA1	Max2	Dia
1	0	0	0	0									0	Off		DFT
2													0	Off		DFT
3	0	0	0	0									0	Off		DFT
4													0	Off		DFT
5	0	0	0	0									0	Off		DFT
6													0	Off		DFT
7	0	0	0	0									0	Off		DFT
8													0	Off		DFT
9	0	0	0	0									0	Off		DFT
10													0	Off		DFT
11	0	0	0	0									0	Off		DFT
12													0	Off		DFT
13	0	0	0	0									0	Off		DFT
14													0	Off		DFT
15	0	0	0	0									0	Off		DFT
16													0	Off		DFT
17	0	0	0	0									0	Off		DFT
18													0	Off		DFT
19	0	0	0	0									0	Off		DFT
20													0	Off		DFT
21	0	0	0	0									0	Off		DFT
22													0	Off		DFT
23	0	0	0	0									0	Off		DFT
24													0	Off		DFT

Time Base Parameters [4.6]

Daylight Savings Time	ENABLE	
Time Base Sync Ref	0	
GMT Offset	-	8
Daylight Savings	**Mon**	**Week**
Spring	3	2
Fall	11	1

NOTE: % and MI parameters are not used and are not shown above.

City of FRESNO

NAME: Marks @ Ray Johnson

2/23/2021 **ID:** 1337

| Annual Schedule [4.3] | Month | | | | | | | | | | | | Day of Week | | | | | | | Date | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Day Plan |
|---|---|---

#	Alarm	Ev	Alr
1	Power Up Alarm.	X	X
2	Stop Timing	X	X
3	Cabinet Door Activation	-	-
4	Coordination Failure	X	X
5	External Alarm # 1	-	-
6	External Alarm # 2	-	-
7	External Alarm # 3	-	-
8	External Alarm # 4	-	-
9	Closed Loop Disabled	-	-
10	External Alarm # 5	-	-
11	External Alarm # 6	-	-
12	Manual Control Enable	X	X
13	Coord Free Input	-	-
14	Local Flash Input	X	X
15	CMU/MMU Flash Input	-	-
16	MMU Fault	X	X
17	Cycle Fault	X	-
18	Cycle Failure	X	-
19	Coordination Fault	X	X
20	Controller Fault	X	X
25	EEPROM CRC Fault	X	X
30	Coord Diagnostic Fault	X	X
37	Download Request	X	X
38	Pattern Change	-	-
49	Preempt 1 Input	X	X
50	Preempt 2 Input	X	X
51	Preempt 3 Input	X	X
52	Preempt 4 Input	X	X
53	Preempt 5 Input	X	X
54	Preempt 6 Input	X	X
55	Preempt 7 Input	-	-
56	Preempt 8 Input	-	-
57	Preempt 9 Input	-	-
58	Preempt 10 Input	-	-
59	EEPROM Compare Fault	X	X
60	Coordination Failure	X	X
63	TSP Active Trigger	-	-
73	Controller Access	X	X
81	FIO Changed Status	X	X

#1 Bus Preempt

				Times		Prior. Phases			
Enable	OFF	Min	0	0	0	0	0		
Coor+Pre	OFF	Max	0	---TSP---					
Lock Mode	MAX	Lock	0	Headway	0				
No Skip	OFF	Alt Table	0	GrpLock	OFF				
Qjump	OFF	HoldDwell	#N/A	FreeMod	OFF				

#2 Bus Preempt

				Times		Prior. Phases			
Enable	OFF	Min	0	0	0	0	0		
Coor+Pre	OFF	Max	0	---TSP---					
Lock Mode	MAX	Lock	0	Headway	0				
No Skip	OFF	Alt Table	0	GrpLock	OFF				
Qjump	OFF	HoldDwell	#N/A	FreeMod	OFF				

#3 Bus Preempt

				Times		Prior. Phases			
Enable	OFF	Min	0	0	0	0	0		
Coor+Pre	OFF	Max	0	---TSP---					
Lock Mode	MAX	Lock	0	Headway	0				
No Skip	OFF	Alt Table	0	GrpLock	OFF				
Qjump	OFF	HoldDwell	#N/A	FreeMod	OFF				

#4 Bus Preempt

				Times		Prior. Phases			
Enable	OFF	Min	0	0	0	0	0		
Coor+Pre	OFF	Max	0	---TSP---					
Lock Mode	MAX	Lock	0	Headway	0				
No Skip	OFF	Alt Table	0	GrpLock	OFF				
Qjump	OFF	HoldDwell	#N/A	FreeMod	OFF				

I/O INPUT TABLE

	1	2	3	4	5	6	7	8
1	2	16	8	22	3	17	9	23
2	6	20	12	26	198	199	30	31
3	15	1	21	7	27	13	28	14
4	189	189	189	189	4	18	10	24
5	130	134	132	136	200	201	202	203
6	32	5	19	11	25	29	208	207
7	33	34	35	36	37	38	39	40
8	41	42	43	44	189	189	189	189

ACTION Table [4.5]

Act	Pat#	A1	A2	A3	S1	S2	S3	S4	S5	S6	S7	S8	P1	P2
1	1	-	-	-	-	-	-	-	-	-	-	-	0	0
2	2	-	-	-	-	-	-	-	-	-	-	-	0	0
3	3	-	-	-	-	-	-	-	-	-	-	-	0	0
4	4	-	-	-	-	-	-	-	-	-	-	-	0	0
5	5	-	-	-	-	-	-	-	-	-	-	-	0	0
6	6	-	-	-	-	-	-	-	-	-	-	-	0	0
7	7	-	-	-	-	-	-	-	-	-	-	-	0	0
8	8	-	-	-	-	-	-	-	-	-	-	-	0	0
9	9	-	-	-	-	-	-	-	-	-	-	-	0	0
10	10	-	-	-	-	-	-	-	-	-	-	-	0	0
11	11	-	-	-	-	-	-	-	-	-	-	-	0	0
12	12	-	-	-	-	-	-	-	-	-	-	-	0	0
13	13	-	-	-	-	-	-	-	-	-	-	-	0	0
14	14	-	-	-	-	-	-	-	-	-	-	-	0	0
15	15	-	-	-	-	-	-	-	-	-	-	-	0	0
16	0	-	-	-	-	-	-	-	-	-	-	-	0	0
54	254	-	-	-	-	-	-	-	-	-	-	-	0	0
55	0	-	-	-	-	-	-	-	-	-	-	-	0	0

Alarm Parameters [1.6.7.1]

Pattern Events:	ON
Local Txmt Alarms:	OFF
Reassign User Alarm #1 In (5):	0
Reassign User Alarm #2 In (6):	0
Preempt Events:	ON

City of FRESNO

Date Printed
2/23/2021

ID: 1337 **Name:** Marks @ Ray Johnson

I/O Inputs - 1.8.9.1.5

C-1 PIN	I/O Source	Function	Input Name
39	I1-1	2	Veh Det 2
40	I1-2	16	Veh Det 16
41	I1-3	8	Veh Det 8
42	I1-4	22	Veh Det 22
43	I1-5	3	Veh Det 3
44	I1-6	17	Veh Det 17
45	I1-7	9	Veh Det 9
46	I1-8	23	Veh Det 23
47	I2-1	6	Veh Det 6
48	I2-2	20	Veh Det 20
49	I2-3	12	Veh Det 12
50	I2-4	26	Veh Det 26
51	I2-5	198	Pre 1 In
52	I2-6	199	Pre 2 In
53	I2-7	30	Veh Det 30
54	I2-8	31	Veh Det 31
55	I3-1	15	Veh Det 15
56	I3-2	1	Veh Det 1
57	I3-3	21	Veh Det 21
58	I3-4	7	Veh Det 7
59	I3-5	27	Veh Det 27
60	I3-6	13	Veh Det 13
61	I3-7	28	Veh Det 28
62	I3-8	14	Veh Det 14
63	I4-5	4	Veh Det 4
64	I4-6	18	Veh Det 18
65	I4-7	10	Veh Det 10
66	I4-8	24	Veh Det 24
67	I5-1	130	Ped Call 2
68	I5-2	134	Ped Call 6
69	I5-3	132	Ped Call 4
70	I5-4	136	Ped Call 8
71	I5-5	200	Pre 3 In
72	I5-6	201	Pre 4 In
73	I5-7	202	Pre 5 In
74	I5-8	203	Pre 6 In
75	I6-1	32	Veh Det 32
76	I6-2	5	Veh Det 5
77	I6-3	19	Veh Det 19
78	I6-4	11	Veh Det 11
79	I6-5	25	Veh Det 25
80	I6-6	29	Veh Det 29
81	I6-7	208	Local Flash
82	I6-8	207	Comp StopTm

I/O OUTPUTS - 1.8.9.2.5

C-1 PIN	I/O Source	Function	Output Name
1	Logic Grd		
2	O1-1	14	Red Ch 14
3	O1-2	62	Grn Chan 14
4	O1-3	4	Red Ch 4
5	O1-4	28	Yel Chan 4
6	O1-5	52	Grn Chan 4
7	O1-6	3	Red Ch 3
8	O1-7	27	Yel Chan 3
9	O1-8	51	Grn Chan 3
10	O2-1	13	Red Ch 13
11	O2-2	61	Grn Chan 13
12	O2-3	2	Red Ch 2
13	O2-4	26	Yel Chan 2
14	Logic Grd		
15	O2-5	50	Grn Chan 2
16	O2-6	1	Red Ch 1
17	O2-7	25	Yel Chan 1
18	O2-8	49	Grn Chan 1
19	O3-1	16	Red Ch 16
20	O3-2	64	Grn Chan 16
21	O3-3	8	Red Ch 8
22	O3-4	32	Yel Chan 8
23	O3-5	56	Grn Chan 8
24	O3-6	7	Red Ch 7
25	O3-7	31	Yel Chan 7
26	O3-8	55	Grn Chan 7
27	O4-1	15	Red Ch 15
28	O4-2	63	Grn Chan 15
29	O4-3	6	Red Ch 6
30	O4-4	30	Yel Chan 6
31	O4-5	54	Grn Chan 6
32	O4-6	5	Red Ch 5
33	O4-7	29	Yel Chan 5
34	O4-8	53	Grn Chan 5
35	O5-1	37	Yel Chan 13
36	O5-2	39	Yel Chan 15
37	O5-3	38	Yel Chan 14
38	O5-4	40	Yel Chan 16
100	O5-5	42	Yel Chan 18
101	O5-6	41	Yel Chan 17
102	O5-7	115	Not Used
103	O5-8	114	Watchdog

C-1 PIN	I/O Source	Function	Output Name
83	O6-1	18	Red Ch 18
84	O6-2	66	Grn Chan 18
85	O6-3	12	Red Ch 12
86	O6-4	36	Yel Chan 12
87	O6-5	60	Grn Chan 12
88	O6-6	11	Red Ch 11
89	O6-7	35	Yel Chan 11
90	O6-8	59	Grn Chan 11
91	O7-1	17	Red Ch 17
92	Logic Grd		
93	O7-2	65	Grn Chan 17
94	O7-3	10	Red Ch 10
95	O7-4	34	Yel Chan 10
96	O7-5	58	Grn Chan 10
97	O7-6	9	Red Ch 9
98	O7-7	33	Yel Chan 9
99	O7-8	57	Grn Chan 9

I/O Outputs - 1.8.9.2.5
C-11 OUTPUTS

1	O8-1	115	Not Used
2	O8-2	115	Not Used
3	O8-3	115	Not Used
4	O8-4	115	Not Used

I/O Inputs - 1.8.9.1.5
C-11 INPUTS

15	I7-1	33	Veh Det 33
16	I7-2	34	Veh Det 34
17	I7-3	35	Veh Det 35
18	I7-4	36	Veh Det 36
19	I7-5	37	Veh Det 37
20	I7-6	38	Veh Det 38
21	I7-7	39	Veh Det 39
22	I7-8	40	Veh Det 40
23	I8-1	41	Veh Det 41
24	I8-2	42	Veh Det 42
25	I8-3	43	Veh Det 43
26	I8-4	44	Veh Det 44
27	I8-5	189	Unused
28	I8-6	189	Unused
29	I8-7	189	Unused
30	I8-8	189	Unused

City of FRESNO

ID: 1337

NAME: Marks @ Ray Johnson

Date Printed: 2/23/2021

ID Number: 1337

LOCATION: Marks @ Ray Johnson

City of Fresno
332 Cabinet
44 Detector Plus Setup

DETECTOR ASSIGNMENTS

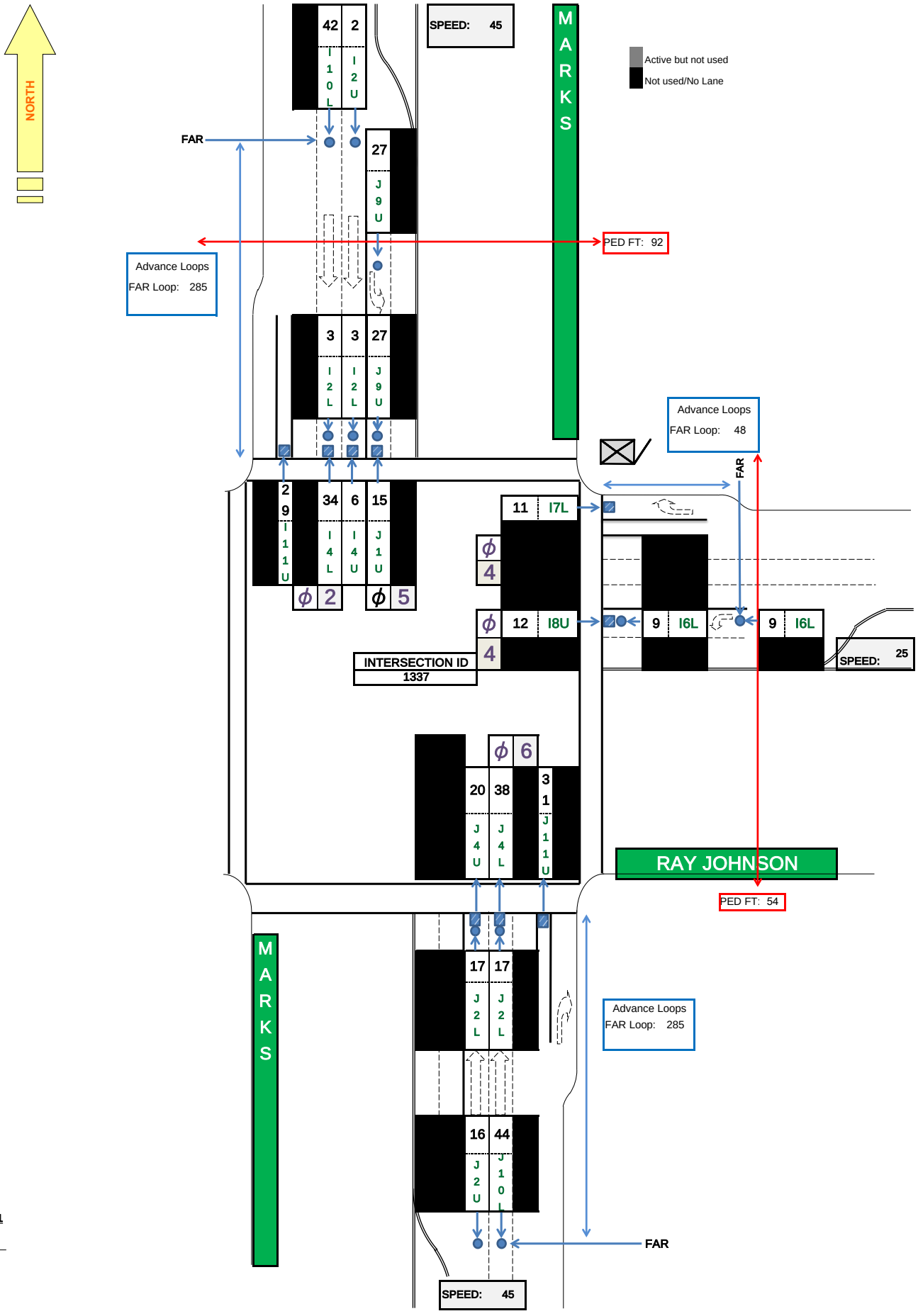
												ISOLATORS		
"I"	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13	I14
UPPER	Ph 1 Call&Ext T2-1&2 C1-56 Det 1 NBL1	Ph 2 Ext T2-5&6 C1-39 Det 2 SB Far	Ph 2 Call&TP3 T2-9&10 C1-63 Det 4 SB Mid	Ph 2 Call&TP3 T4-1&2 C1-47 Det 6 SBT1	Ph 3 Call&Ext T4-5&6 C1-58 Det 7 EBL1	Ph 4 Ext T4-9&10 C1-41 Det 8 WB Far	Ph 4 Call&TP3 T6-1&2 C1-65 Det 10 WB Mid	Ph 4 Call&TP3 T6-5&6 C1-49 Det 12 WBT1	Ph 1 Call&Ext T6-9&10 C1-60 Det 13 NBLt Bk	Ph 2/4 Ext T10-5&6 C11-23 Det 41	Ph 2 Call&Ext T8-1 C1-80 Det 29 BIKE	Ph 2 PPB T8-4 C1-67	Ph 6 PPB T8-7 C1-68	FLASH SENSE T8-10 C1-81
LOWER	Ph 1 Call&Ext T2-3&4 C11-15 Det 33 NBL2	Ph 2 Call&TP3 T2-7&8 C1-43 Det 3 SB Bk	Ph 2 Call&Ext T2-11&12 C1-76 Det 5 SBRt	Ph 2 Call&TP3 T4-3&4 C11-16 Det 34 SBT2	Ph 3 Call&Ext T4-7&8 C11-17 Det 35 EBL2	Ph 4 Call&TP3 T4-11&12 C1-45 Det 9 WB Bk	Ph 4 Call&Ext T6-3&4 C1-78 Det 11 WBRt	Ph 4 Call&TP3 T6-7&8 C11-18 Det 36 WBT2	Ph 3 Call&Ext T6-11&12 C1-62 Det 14 EBLt Bk	Ph 2/4 Ext T10-7&8 C11-24 Det 42	Ph 4 Call&Ext T8-2 C1-53 Det 30 BIKE	Ph 4 PPB T8-5 C1-69	Ph 8 PPB T8-8 C1-70	STOP TIMING T8-11 C1-82
"J"	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	J13	J14
UPPER	Ph 5 Call&Ext T3-1&2 C1-55 Det 15 SBL1	Ph 6 Ext T3-5&6 C1-40 Det 16 NB Far	Ph 6 Call&TP3 T3-9&10 C1-64 Det 18 NB Mid	Ph 6 Call&TP3 T5-1&2 C1-48 Det 20 NBT1	Ph 7 Call&Ext T5-5&6 C1-57 Det 21 WBL1	Ph 8 Ext T5-9&10 C1-42 Det 22 EB Far	Ph 8 Call&TP3 T7-1&2 C1-66 Det 24 EB Mid	Ph 8 Call&TP3 T7-5&6 C1-50 Det 26 EBT1	Ph 5 Call&Ext T7-9&10 C1-59 Det 27 SBLt Bk	Ph 6/8 Ext T10-9&10 C11-25 Det 43	Ph 6 Call&Ext T9-1 C1-54 Det 31 BIKE	EMER A Ph 2 + 5 T9-4 C1-71	EMER B Ph 4 + 7 T9-5 C1-72	RR1 FLASH T9-10 C1-51
LOWER	Ph 5 Call&Ext T3-3&4 C11-19 Det 37 SBL2	Ph 6 Call&TP3 T3-7&8 C1-44 Det 17 NB Bk	Ph 6 Call&Ext T3-11&12 C1-77 Det 19 NBRt	Ph 6 Call&TP3 T5-3&4 C11-20 Det 38 NBT2	Ph 7 Call&Ext T5-7&8 C11-21 Det 39 WBL2	Ph 8 Call&TP3 T5-11&12 C1-46 Det 23 EB Bk	Ph 8 Call&Ext T7-3&4 C1-79 Det 25 EBRt	Ph 8 Call&TP3 T7-7&8 C11-22 Det 40 EBT2	Ph 7 Call&Ext T7-11&12 C1-61 Det 28 WBLt Bk	Ph 6/8 EXT T10-11&12 C11-26 Det 44	Ph 8 Call&Ext T9-2 C1-75 Det 32 BIKE	EMER C Ph 1 + 6 T9-7 C1-73	EMER D Ph 3 + 8 T9-8 C1-74	RR2 LTD OP T9-11 C1-52

COMMENTS:

TIMING UPDATES AND MODIFICATIONS

ID: 1337 **NAME:** Marks @ Ray Johnson

DATE	CHANGES MADE	ATMS or CABINET	BY
2/23/2021	Updated First Phases Ø2 & Ø6 to start green with a 6 second All Red-Start and removed Yellow Start from phases Ø4 & Ø8.		
	Also updated the Advanced Schedule, Console Parameters, and turned ON the Occupancy & Volume attributes for all 44 detectors.	ATMS	JT



Date: 2/23/2021

By: JT

Detector Layout for the intersection of: MARKS & RAY JOHNSON

State of California
DEPARTMENT OF TRANSPORTATION

2070 Controller Timing Chart

Caltrans TSCP Ver 2.21

Location:		Designed By:	
System:	District:	Intalled By:	
Master At:	I/C:	Service Info:	

Timing Change:	By:	Date Start:	Date End:	Designed:	Installed:

		FLASH
PHASE	1)	[ ]
	2)	[ ]
	3)	[ ]
	4)	[ ]
	5)	[ ]
	6)	[ ]
	7)	[ ]
	8)	[ ]
OVERLAP	A)	[ ]
	B)	[ ]
	C)	[ ]
	D)	[ ]
	E)	[ ]
	F)	[ ]

Intersection Layout

Comments and Notes:

RAM Checksum

Page 2:	D7FF	Page 8:	85AF
Page 3:	B2AB	Page 9:	FEC4
Page 4:	F29E	Page 10:	68FD
Page 5:	191A	Page 11:	C3CB
Page 6:	191A	Page 12:	D68F
Page 7:	0D5D	Page 13:	86F7

CONFIGURATION PHASE FLAGS

Phases (2-1-1-1)	
Permitted	- 2 - - - 6 - 8
Restricted	- - - - - - - -

Phase Recalls (2-1-1-2)	
Vehicle Min	- 2 - - - 6 - -
vehicle Max	- - - - - - - -
Pedestrian	- - - - - - - -
Bicyle	- - - - - - - -

Phase Locks (2-1-1-3)	
Red	- - - - - - - -
Yellow	- - - - - - - -
Force/Max	- - - - - - - -

Phase Features (2-1-1-4)	
Double Entry	- - - - - - - -
Rest In Walk	- - - - - - - -
Rest In Red	- - - - - - - -
Walk2	- - - - - - - -
Max Green 2	- - - - - - - -
Max Green 3	- - - - - - - -

Startup (2-1-1-5)	
First Green Phases	- 2 - - - 6 - -
Yellow Start Phases	- - - - - - - -
Vehicle Calls	- 2 - - - 6 - 8
Pedestrian Calls	- 2 - - - 6 - 8
Yellow Start Overlaps	- - - - - - - -
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	- - - - - - - -	1	- - - - - - - -
2	- - - - - - - -	2	- - - - - - - -
3	- - - - - - - -	3	- - - - - - - -
4	- - - - - - - -	4	- - - - - - - -
5	- - - - - - - -	5	- - - - - - - -
6	- - - - - - - -	6	- - - - - - - -
7	- - - - - - - -	7	- - - - - - - -
8	- - - - - - - -	8	- - - - - - - -

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	- - - - - - - -
Yellow Flash Overlap	- - - - - - - -
Flash In Red Phases	- - - - - - - -
Flash In Red Overlap	- - - - - - - -

Special Operation (2-1-2-3)	
Single Exit Phase	- - - - - - - -
Driveway Signal Phases	- - - - - - - -
Driveway Signal Overlaps	- - - - - - - -
Leading Ped Phases	- - - - - - - -

Protected Permissive (2-1-2-4)	
Protected Permissive	- - - - - - - -

Pedestrian (2-1-3)	
P1	- - - - - - - -
P2	- 2 - - - - - -
P3	- - - - - - - -
P4	- - - 4 - - - -
P5	- - - - - - - -
P6	- - - - - 6 - -
P7	- - - - - - - -
P8	- - - - - - - 8

Overlap (2-1-4)				
Overlap	Parent	Omit	No Start	Not
A [Arrow A]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -
B [Arrow B]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -
C [OL A]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -
D [OL B]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -
E [OL C]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -
F [OL D]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -

[-] 332 Cabinet Overlap Assignment - For Reference Only

PAGE 2 CHECKSUM: D7FF

PHASE TIMING

PHASE (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	7	0	0	0	0	0	0
Flash Don't Walk	0	18	0	0	0	0	0	0
Minimum Green	0	10	0	0	0	10	0	8
Det Limit	0	20	0	0	0	20	0	20
Max Initial	0	0	0	0	0	0	0	0
Max Green 1	0	25	0	0	0	25	0	25
Max Green 2	0	35	0	0	0	35	0	35
Max Green 3	0	0	0	0	0	0	0	0
Extension	0.0	4.9	0.0	0.0	0.0	4.9	0.0	5.2
Maximum Gap	0.0	6.8	0.0	0.0	0.0	6.8	0.0	7.2
Minimum Gap	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1
Reduce Every	1.0	0.5	1.0	1.0	1.0	0.5	1.0	0.4
Yellow	3.0	4.8	3.0	3.0	3.0	4.8	3.0	4.4
All-Red	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0
Ped/Bike (2-3)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	0	0	0	0	0	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A [Arrow A]	B [Arrow B]	C [OL A]	D [OL B]	E [OL C]	F [OL D]
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert (2-5)	
Time	5.0

Red To Se (2-6)	
Red To Sec	OFF

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

PAGE 3 CHECKSUM: B2AB

DETECTORS

Detector Attributes (5-1)				Slot
Det	Type	Phases	Lock	
1	Count+Call+Extend	1 - - - - - - -	NO	1I1U
2	Count+Call+Extend	1 - - - - - - -	NO	1I1L
3	Extend	- 2 - - - - - -	NO	2I2U
4	Extend	- 2 - - - - - -	NO	2I2L
5	Call+Extend	- 2 - - - - - -	NO	2I3U
6	Limited	- 2 - - - - - -	NO	2I3L
7	Limited	- 2 - - - - - -	NO	2I4U
8	Limited	- 2 - - - - - -	NO	2I4L
9	Count+Call+Extend	- - 3 - - - - -	NO	3I5U
10	Count+Call+Extend	- - 3 - - - - -	NO	3I5L
11	Extend	- - - 4 - - - -	NO	4I6U
12	Extend	- - - 4 - - - -	NO	4I6L
13	Call+Extend	- - - 4 - - - -	NO	4I7U
14	Limited	- - - 4 - - - -	NO	4I7L
15	Limited	- - - 4 - - - -	NO	4I8U
16	Limited	- - - 4 - - - -	NO	4I8L
17	Call+Extend	1 - - - - - - -	NO	1I9U
18	Call+Extend	- - 3 - - - - -	NO	3I9L
19	Count+Call	- 2 - - - - - -	NO	2I10U
20	Count+Call	- - - 4 - - - -	NO	4I10L
21	Count+Call+Extend	- - - - 5 - - -	NO	5J1U
22	Count+Call+Extend	- - - - 5 - - -	NO	5J1L
23	Extend	- - - - - 6 - -	NO	6J2U
24	Extend	- - - - - 6 - -	NO	6J2L
25	Call+Extend	- - - - - 6 - -	NO	6J3U
26	Limited	- - - - - 6 - -	NO	6J3L
27	Limited	- - - - - 6 - -	NO	6J4U
28	Limited	- - - - - 6 - -	NO	6J4L
29	Count+Call+Extend	- - - - - - 7 -	NO	7J5U
30	Count+Call+Extend	- - - - - - 7 -	NO	7J5L
31	Extend	- - - - - - - 8	NO	8J6U
32	Extend	- - - - - - - 8	NO	8J6L
33	Call+Extend	- - - - - - - 8	NO	8J7U
34	Limited	- - - - - - - 8	NO	8J7L
35	Limited	- - - - - - - 8	NO	8J8U
36	Limited	- - - - - - - 8	NO	8J8L
37	Call+Extend	- - - - 5 - - -	NO	5J9U
38	Call+Extend	- - - - - - 7 -	NO	7J9L
39	Count+Call	- - - - - 6 - -	NO	6J10U
40	Count+Call	- - - - - - - 8	NO	8J10L
41	Pedestrian	- 2 - - - - - -	NO	2I12U
42	Pedestrian	- - - 4 - - - -	NO	4I12L
43	Pedestrian	- - - - - 6 - -	NO	6I13U
44	Pedestrian	- - - - - - - 8	NO	8I13L

Detector Configuration (5-2)				
Det	Delay	Extend	Recall	Port
1	0	0.0	10	3.2
2	0	0.0	10	7.2
3	0	0.0	10	1.1
4	0	0.0	10	1.5
5	0	0.0	10	4.5
6	0	0.0	10	6.2
7	0	2.0	10	2.1
8	0	2.0	10	7.4
9	0	0.0	10	3.4
10	0	0.0	10	7.6
11	0	0.0	10	1.3
12	0	0.0	10	1.7
13	0	0.0	10	4.7
14	15	0.0	10	6.4
15	0	0.0	10	2.3
16	0	0.0	10	7.8
17	0	0.0	10	3.6
18	0	0.0	10	3.8
19	0	0.0	10	4.1
20	0	0.0	10	4.2
21	0	0.0	10	3.1
22	0	0.0	10	7.1
23	0	0.0	10	1.2
24	0	0.0	10	1.6
25	0	0.0	10	4.6
26	0	0.0	10	6.3
27	0	2.0	10	2.2
28	0	2.0	10	7.3
29	0	0.0	10	3.3
30	0	0.0	10	7.5
31	0	0.0	10	1.4
32	2	0.0	10	1.8
33	15	0.0	10	4.8
34	15	0.0	10	6.5
35	0	0.0	10	2.4
36	0	0.0	10	7.7
37	0	0.0	10	3.5
38	0	0.0	10	3.7
39	0	0.0	10	4.3
40	0	0.0	10	4.4
41	0	0.0	10	5.1
42	0	0.0	10	5.3
43	0	0.0	10	5.2
44	0	0.0	10	5.4

Failure Times (5-3)	Minutes
Maximum On Time	0
Fail Reset Time	0

Failure Override (5-4)	
Detectors 1-8	- - - - - - - -
Detectors 9-16	- - - - - - - -
Detectors 17-24	- - - - - - - -
Detectors 25-32	- - - - - - - -
Detectors 33-40	- - - - - - - -
Detectors 41-44	- - - - - - - -

System Detector Assignment (5-5)								
Sys Det	1	2	3	4	5	6	7	8
Det Num	0	0	0	0	0	0	0	0
Sys Det	9	10	11	12	13	14	15	16
Det Num	0	0	0	0	0	0	0	0

CIC Operation (5-6-1)	
Enable in Plans	- - - - - - - -

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.0	

Detector-to-Phase Assignment (5-6-3)								
Sys Det	1	2	3	4	5	6	7	8
Phase	0	0	0	0	0	0	0	0
Sys Det	9	10	11	12	13	14	15	16
Phase	0	0	0	0	0	0	0	0

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

CHECKSUM: 0D5D

TOD SCHEDULE

Table 1 (8-2-1)		
Time	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

Table 2 (8-2-2)		
Hour	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

Table 3 (8-2-3)		
Hour	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

Table 4 (8-2-4)		
Hour	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

Table 5 (8-2-5)		
Hour	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

Table 6 (8-2-6)		
Hour	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

PAGE 8 **CHECKSUM:** 85AF

HOLIDAY TABLES

Floating Holiday Table (8-2-8)

#	Mnth	Week	DOW	Table
1	0	0	- - - - - - - -	0
2	0	0	- - - - - - - -	0
3	0	0	- - - - - - - -	0
4	0	0	- - - - - - - -	0
5	0	0	- - - - - - - -	0
6	0	0	- - - - - - - -	0
7	0	0	- - - - - - - -	0
8	0	0	- - - - - - - -	0
9	0	0	- - - - - - - -	0
10	0	0	- - - - - - - -	0
11	0	0	- - - - - - - -	0
12	0	0	- - - - - - - -	0
13	0	0	- - - - - - - -	0
14	0	0	- - - - - - - -	0
15	0	0	- - - - - - - -	0
16	0	0	- - - - - - - -	0

Fixed Holiday Table (8-2-9)

#	Mnth	Day	DOW	Table
1	0	0	- - - - - - - -	0
2	0	0	- - - - - - - -	0
3	0	0	- - - - - - - -	0
4	0	0	- - - - - - - -	0
5	0	0	- - - - - - - -	0
6	0	0	- - - - - - - -	0
7	0	0	- - - - - - - -	0
8	0	0	- - - - - - - -	0
9	0	0	- - - - - - - -	0
10	0	0	- - - - - - - -	0
11	0	0	- - - - - - - -	0
12	0	0	- - - - - - - -	0
13	0	0	- - - - - - - -	0
14	0	0	- - - - - - - -	0
15	0	0	- - - - - - - -	0
16	0	0	- - - - - - - -	0

Solar Clock Data (8-4)

North Latidude	34
West Longitude	118
Local Time Zone	8

Sabbatical Clock (8-5)

Hebrew	Ped Recall
Sabbath	- - - - - - - -
Holiday	- - - - - - - -

Daylight Saving (8-6)

Daylight Saving	YES

TOD Functions (8-3)

#	Start	End	DOW	Action	Phases
1	0530	2100	1 2 3 4 5 6 7	27	- 2 - - - 6 - 8
2	0000	0000	- - - - - - - -	0	- - - - - - - -
3	0000	0000	- - - - - - - -	0	- - - - - - - -
4	0000	0000	- - - - - - - -	0	- - - - - - - -
5	0000	0000	- - - - - - - -	0	- - - - - - - -
6	0000	0000	- - - - - - - -	0	- - - - - - - -
7	0000	0000	- - - - - - - -	0	- - - - - - - -
8	0000	0000	- - - - - - - -	0	- - - - - - - -
9	0000	0000	- - - - - - - -	0	- - - - - - - -
10	0000	0000	- - - - - - - -	0	- - - - - - - -
11	0000	0000	- - - - - - - -	0	- - - - - - - -
12	0000	0000	- - - - - - - -	0	- - - - - - - -
13	0000	0000	- - - - - - - -	0	- - - - - - - -
14	0000	0000	- - - - - - - -	0	- - - - - - - -
15	0000	0000	- - - - - - - -	0	- - - - - - - -
16	0000	0000	- - - - - - - -	0	- - - - - - - -

Action Codes:
0. None
1. Permitted
2. Restricted
4. Veh Min Recall
5. Veh Max Recall
6. Ped Recall
7. Bike Recall
8. Red Lock
9. Yellow Lock
10. Force/Max Lock
11.Double Entry
12. Y-Coord C
13. Y-Coord D
14. Free
15. Flashing
16. Walk 2
17. Max Green 2
18. Max Green 3
19. Rest in Walk
20. Rest in Red
21. Free Lag Phases
22. Special Functions
23. Truck Preempt
24. Conditional Service
25. Conditional Service
26. Leading Ped
41. Protected Permissive
42. Protected Permissive

Action Code = Phases added to normal setting

100+Action Code = Phases removed
200+Action Code = Phases replaced

COMMUNICATIONS

C2 (6-1-1)	
Address	0
Protocol	AB3418
Limit Access	None
Baud	1200
Parity	None
Data Bits	8 data bits
Stop Bits	1 stop bit
RTS On Time	20
RTS Off Time	20
Handshaking	Normal

C20 (6-1-2)	
Address	0
Protocol	AB3418
Limit Access	None
Baud	1200
Parity	None
Data Bits	8 data bits
Stop Bits	1 stop bit
RTS On Time	20
RTS Off Time	20
Handshaking	Normal

C21 (6-1-3)	
Address	0
Protocol	AB3418
Limit Access	None
Baud	1200
Parity	None
Data Bits	8 data bits
Stop Bits	1 stop bit
RTS On Time	20
RTS Off Time	20
Handshaking	Normal

SOFT LOGIC

Soft Logic (6-2)							
#	Data	OP	Data	OP	Data	OP	Data
1	00.0	00	00.0	00	00.0	00	00.0
2	00.0	00	00.0	00	00.0	00	00.0
3	00.0	00	00.0	00	00.0	00	00.0
4	00.0	00	00.0	00	00.0	00	00.0
5	00.0	00	00.0	00	00.0	00	00.0
6	00.0	00	00.0	00	00.0	00	00.0
7	00.0	00	00.0	00	00.0	00	00.0
8	00.0	00	00.0	00	00.0	00	00.0
9	00.0	00	00.0	00	00.0	00	00.0
10	00.0	00	00.0	00	00.0	00	00.0
11	00.0	00	00.0	00	00.0	00	00.0
12	00.0	00	00.0	00	00.0	00	00.0
13	00.0	00	00.0	00	00.0	00	00.0
14	00.0	00	00.0	00	00.0	00	00.0
15	00.0	00	00.0	00	00.0	00	00.0
16	00.0	00	00.0	00	00.0	00	00.0

CALLBACK NUMBERS

Callback Numbers (6-3...3)	
Line Out	0
Local Toll	0
Long Distance	0
Delay	10
Area Code	0
Phone Number	0 - 0

Line Out	0
Local Toll	0
Long Distance	0
Delay	10
Area Code	0
Phone Number	0 - 0

Line Out	0
Local Toll	0
Long Distance	0
Delay	10
Area Code	0
Phone Number	0 - 0

NETWORK

Network (6-4)				
Address	1			
Protocol	AB3418			
Port	27000			
IP Mode	Static IP			
IP Address	10	53	52	17
Netmask	255	255	255	0
Broadcast	10	53	52	255
Gateway	10	53	52	254

PAGE 10 **CHECKSUM:** 68FD

RAILROAD PREEMPTION

RR 1	(3-1-1)	Timing	Phase Flags (3-1-2)			Pedestrian Flags (3-1-3)			Overlap Flags (3-1-4)		
	Delay	0	Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
	Clear 1	10	- 2 - - 5 - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- 2 - 4 - 6 - 8	- - - - - - -	- - - - - - -	- - - - - - -
	Clear 2	0	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - -	- - - - - - -	- - - - - - -
	Clear 3	0	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - -	- - - - - - -	- - - - - - -
	Hold	0	- - - - - - - -	- - - - - - - -	1 2 3 4 5 6 7 8	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - -	- - - - - - -	A B C D E F
	Exit	5									
	Min Grn	0									
	Ped Clr	0									

Exit Parameters (3-1-5)			
Phase Green	Overlap Green	Vehicle Recall	Ped Call
- - - - - - - -	- - - - - - -	1 2 3 4 5 6 7 8	- 2 - 4 - 6 - 8

Configuration (3-1-6)			
Port	Gate Port	Latching	Power-Up
2.5	0.0	Yes	Flashing

RR 2	(3-2-1)	Timing	Phase Flags (3-2-2)			Pedestrian Flags (3-2-3)			Overlap Flags (3-2-4)		
	Delay	0	Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
	Clear 1	10	- - - 4 - - 7 -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- 2 - 4 - 6 - 8	- - - - - - -	- - - - - - -	- - - - - - -
	Clear 2	0	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - -	- - - - - - -	- - - - - - -
	Clear 3	0	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - -	- - - - - - -	- - - - - - -
	Hold	0	1 2 3 - - 6 - -	- - - - - - - -	- - - - - - - -	- 2 - - - 6 - -	- - - - - - - -	- - - 4 - - - 8	- - - - - - -	- - - - - - -	- - - - - - -
	Exit	0									
	Min Grn	0									
	Ped Clr	0									

Exit Parameters (3-2-5)			
Exit Ph Grn	Exit Ovl Grn	Exit Veh Recall	Exit Ped Call
- - - - - - - -	- - - - - - -	- - - 4 - - 7 -	- - - - - - - -

Configuration (3-2-6)			
Port	Gate Port	Latching	Power-Up
2.6	0.0	Yes	Dark

EMERGENCY VEHICLE PREEMPTION

EVA (3-A)	Preempt Timers			Phase Green	Overlap Grn
	Delay	Clear	Max		
	0	30	30	- 2 - - 5 - - -	- - - - - - -

Port	Latching	Phase Termination
5.5	No	Advance

EVB (3-B)	Preempt Timers			Phase Green	Overlap Grn
	Delay	Clear	Max		
	0	30	30	- - - 4 - - 7 -	- - - - - - -

Port	Latching	Phase	Phase Termination
5.6	No		Advance

EVC (3-C)	Preempt Timers			Phase Green	Overlap Grn
	Delay	Clear	Max		
	0	30	30	1 - - - - 6 - -	- - - - - - -

Port	Latching	Phase Termination
5.7	No	Advance

EVD (3-D)	Preempt Timers			Phase Green	Overlap Grn
	Delay	Clear	Max		
	0	30	30	- - 3 - - - - 8	- - - - - - -

Port	Latching	Phase	Phase Termination
5.8	No		Advance

INPUTS

		7 Wire I/C(2-1-5-1)			
		Input	Port	Input	Port
Enable	No	R1	3.8	Free	3.6
Max ON	0	R2	3.5	D2	2.8
Max OFF	0	R3	3.7	D3	6.1

Manual Control(2-1-5-2)	
Input	Port
Manual Adv	0.0
Adv Enable	0.0

Battery Backup (2-1-5-5)	
Port	Operation
2.7	Flashing

Cabinet Staus (2-1-5-3)	
Input	Port
Flash Bus	0.0
Door Ajar	0.0
Flash Sense	6.7
Stop Time	6.8

Special Function (2-1-5-4)	
Input	Port
1	0.0
2	0.0
3	0.0
4	0.0

Y-Coordination (2-1-5-6)	
Port C	Port D
6.1	2.8

OUTPUTS

Loadswitch Assignments (2-1-6)							
A	1	2	22	3	4	24	9
B	5	6	26	7	8	28	10
X	13	14	0	11	12	0	0

Loadswitch Codes:
0 Unused (no output)
1-8 Vehicle 1-8
9-14 Overlap A-F
21-28 Ped 1-8
41-47 Special Functions
41 Protected Permissive Flashing Phase 1
43 Protected Permissive Flashing Phase 3
45 Protected Permissive Flashing Phase 5
47 Protected Permissive Flashing Phase 7
51-57 Special Functions
71-72 Seven Wire I/C
+ middle output of loadswitches 3 and 6

YELLOW YIELD COORDINATION

					Force-Offs											
Y-Coord Plans (7-C,D)	Long Grn	No Grn	Offset	Perm	1	2	3	4	5	6	7	8	Coord	Lag	Min Recall	Restricted
Plan C	0	0	0	0	0	0	0	0	0	0	0	0	- 2 - - - 6 - -	- 2 - 4 - 6 - 8	- - - - - - - -	- - - - - - - -
Plan D	0	0	0	0	0	0	0	0	0	0	0	0	- 2 - - - 6 - -	- 2 - 4 - 6 - 8	- - - - - - - -	- - - - - - - -

TRANSIT PRIORITY

Local Plans (3-E) 1...9 1...19		Early Green	Green Extend	Inhibit Cycles	Phase 1 Minimum	Phase 2 Minimum	Phase 3 Minimum	Phase 4 Minimum	Phase 5 Minimum	Phase 6 Minimum	Phase 7 Minimum	Phase 8 Minimum
Plan 1	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 2	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 3	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 4	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 5	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 6	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 7	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 8	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 9	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 11	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 12	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 13	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 14	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 15	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 16	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 17	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 18	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 19	Green Factor	0	0	0	0	0	0	0	0	0	0	0

Enable Priority in Plan (3-E-A)					
Enable in Plans		Input	Type	Stop	Go
Plan 1-9	- - - - - - - -	0.0	OPT	0	0
Plan 11-19	- - - - - - - -	0.0	OPT	0	0

Queue Jump (3-E-B)	
Grn Hold	Hold Phase
0	- - - - - - - -
0	- - - - - - - -

Free Plans (3-E-E)	
Max Green	Hold Phase
0	- - - - - - - -

Access Utilities (9-5)	
Password	***
Timeout	30

TRUCK PRIORITY

Truck Priority (3-F)	Passage	CarryOver	Clearance	Next Priority	Phase Green	Det 2 Port	Det 3 Port	Det 4 Port	Sign Output	Slave Input	Slave Output
	0.0	0.0	0.0	0	- - - - - - - -	0.0	0.0	0.0	0	0.0	0

CONTROLLER ID

Manufacturer ID	Caltrans TSCP Ver 2.21
Model ID	Model 2070
Protocol Revision ID	AB3418

State of California
DEPARTMENT OF TRANSPORTATION

2070 Controller Timing Chart

Caltrans TSCP Ver 2.21

Location:		Designed By:	
System:	District:	Intalled By:	
Master At:	I/C:	Service Info:	

Timing Change:	By:	Date Start:	Date End:	Designed:	Installed:

		FLASH
PHASE	1)	[ ]
	2)	[ ]
	3)	[ ]
	4)	[ ]
	5)	[ ]
	6)	[ ]
	7)	[ ]
	8)	[ ]
OVERLAP	A)	[ ]
	B)	[ ]
	C)	[ ]
	D)	[ ]
	E)	[ ]
	F)	[ ]

Intersection Layout

Comments and Notes:

RAM Checksum

Page 2:	7579	Page 8:	85AF
Page 3:	A4C9	Page 9:	46BF
Page 4:	F29E	Page 10:	BAC2
Page 5:	191A	Page 11:	C3CB
Page 6:	191A	Page 12:	EF20
Page 7:	D8B5	Page 13:	86F7

CONFIGURATION PHASE FLAGS

Phases (2-1-1-1)	
Permitted	- 2 - 4 - 6 - -
Restricted	- - - - - - - -

Phase Recalls (2-1-1-2)	
Vehicle Min	- 2 - - - 6 - -
vehicle Max	- - - - - - - -
Pedestrian	- - - - - - - -
Bicyle	- - - - - - - -

Phase Locks (2-1-1-3)	
Red	- - - - - - - -
Yellow	- - - - - - - -
Force/Max	- - - - - - - -

Phase Features (2-1-1-4)	
Double Entry	- 2 - - - 6 - -
Rest In Walk	- - - - - - - -
Rest In Red	- - - - - - - -
Walk2	- - - - - - - -
Max Green 2	- 2 - 4 - 6 - -
Max Green 3	- - - - - - - -

Startup (2-1-1-5)	
First Green Phases	- 2 - - - 6 - -
Yellow Start Phases	- - - - - - - -
Vehicle Calls	- 2 - 4 - 6 - -
Pedestrian Calls	- 2 - 4 - 6 - -
Yellow Start Overlaps	- - - - - - - -
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	- - - - - - - -	1	- - - - - - - -
2	- - - - - - - -	2	- - - - - - - -
3	- - - - - - - -	3	- - - - - - - -
4	- - - - - - - -	4	- - - - - - - -
5	- - - - - - - -	5	- - - - - - - -
6	- - - - - - - -	6	- - - - - - - -
7	- - - - - - - -	7	- - - - - - - -
8	- - - - - - - -	8	- - - - - - - -

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	- - - - - - - -
Yellow Flash Overlap	- - - - - - - -
Flash In Red Phases	- - - - - - - -
Flash In Red Overlap	- - - - - - - -

Special Operation (2-1-2-3)	
Single Exit Phase	- - - - - - - -
Driveway Signal Phases	- - - - - - - -
Driveway Signal Overlaps	- - - - - - - -
Leading Ped Phases	- - - - - - - -

Protected Permissive (2-1-2-4)	
Protected Permissive	- - - - - - - -

Pedestrian (2-1-3)	
P1	- - - - - - - -
P2	- - - - - - - -
P3	- - - - - - - -
P4	- - - - - - - -
P5	- - - - - - - -
P6	- - - - - 6 - -
P7	- - - - - - - -
P8	- - - - - - - -

Overlap (2-1-4)				
Overlap	Parent	Omit	No Start	Not
A [Arrow A]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -
B [Arrow B]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -
C [OL A]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -
D [OL B]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -
E [OL C]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -
F [OL D]	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -

[-] 332 Cabinet Overlap Assignment - For Reference Only

PAGE 2 **CHECKSUM:** 7579

PHASE TIMING

PHASE (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	0	0	0	0	7	0	0
Flash Don't Walk	0	0	0	0	0	12	0	0
Minimum Green	0	10	0	8	0	10	0	0
Det Limit	0	20	0	20	0	20	0	0
Max Initial	0	0	0	0	0	0	0	0
Max Green 1	0	25	0	20	0	25	0	0
Max Green 2	0	35	0	30	0	35	0	0
Max Green 3	0	0	0	0	0	0	0	0
Extension	0.0	4.9	0.0	4.9	0.0	4.9	0.0	0.0
Maximum Gap	0.0	6.8	0.0	6.8	0.0	6.8	0.0	0.0
Minimum Gap	0.0	2.0	0.0	2.0	0.0	2.0	0.0	0.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0
Reduce Every	0.0	0.5	0.0	0.4	0.0	0.5	0.0	0.0
Yellow	3.0	4.8	3.0	4.8	3.0	4.8	3.0	3.0
All-Red	0.0	2.1	0.0	2.0	0.0	2.1	0.0	0.0
Ped/Bike (2-3)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	0	0	0	0	0	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A [Arrow A]	B [Arrow B]	C [OL A]	D [OL B]	E [OL C]	F [OL D]
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert (2-5)	
Time	5.0

Red To Se (2-6)	
Red To Sec	OFF

Max/Gap Out (2-7)	
Max Cnt	3
Gap Cnt	4

PAGE 3 CHECKSUM: A4C9

DETECTORS

Detector Attributes (5-1)				Slot
Det	Type	Phases	Lock	
1	Count+Call+Extend	1 - - - - - - -	NO	1I1U
2	Count+Call+Extend	1 - - - - - - -	NO	1I1L
3	Extend	- 2 - - - - - -	NO	2I2U
4	Extend	- 2 - - - - - -	NO	2I2L
5	Call+Extend	- 2 - - - - - -	NO	2I3U
6	Limited	- 2 - - - - - -	NO	2I3L
7	Limited	- 2 - - - - - -	NO	2I4U
8	Limited	- 2 - - - - - -	NO	2I4L
9	Count+Call+Extend	- - 3 - - - - -	NO	3I5U
10	Count+Call+Extend	- - 3 - - - - -	NO	3I5L
11	Count+Call+Extend	- - - 4 - - - -	NO	4I6U
12	Count+Call+Extend	- - - 4 - - - -	NO	4I6L
13	Call+Extend	- - - 4 - - - -	NO	4I7U
14	Limited	- - - 4 - - - -	NO	4I7L
15	Limited	- - - 4 - - - -	NO	4I8U
16	Limited	- - - 4 - - - -	NO	4I8L
17	Call+Extend	1 - - - - - - -	NO	1I9U
18	Call+Extend	- - 3 - - - - -	NO	3I9L
19	Count+Call	- 2 - - - - - -	NO	2I10U
20	Count+Call	- - - 4 - - - -	NO	4I10L
21	Count+Call+Extend	- - - - 5 - - -	NO	5J1U
22	Count+Call+Extend	- - - - 5 - - -	NO	5J1L
23	Extend	- - - - - 6 - -	NO	6J2U
24	Extend	- - - - - 6 - -	NO	6J2L
25	Call+Extend	- - - - - 6 - -	NO	6J3U
26	Limited	- - - - - 6 - -	NO	6J3L
27	Limited	- - - - - 6 - -	NO	6J4U
28	Limited	- - - - - 6 - -	NO	6J4L
29	Count+Call+Extend	- - - - - - 7 -	NO	7J5U
30	Count+Call+Extend	- - - - - - 7 -	NO	7J5L
31	Extend	- - - - - - - 8	NO	8J6U
32	Extend	- - - - - - - 8	NO	8J6L
33	Call+Extend	- - - - - - - 8	NO	8J7U
34	Limited	- - - - - - - 8	NO	8J7L
35	Limited	- - - - - - - 8	NO	8J8U
36	Limited	- - - - - - - 8	NO	8J8L
37	Call+Extend	- - - - 5 - - -	NO	5J9U
38	Call+Extend	- - - - - - 7 -	NO	7J9L
39	Count+Call	- - - - - 6 - -	NO	6J10U
40	Count+Call	- - - - - - - 8	NO	8J10L
41	Pedestrian	- 2 - - - - - -	NO	2I12U
42	Pedestrian	- - - 4 - - - -	NO	4I12L
43	Pedestrian	- - - - - 6 - -	NO	6I13U
44	Pedestrian	- - - - - - - 8	NO	8I13L

Detector Configuration (5-2)				
Det	Delay	Extend	Recall	Port
1	0	0.0	10	3.2
2	0	0.0	10	7.2
3	0	0.0	10	1.1
4	0	0.0	10	1.5
5	0	0.0	10	4.5
6	0	0.0	10	6.2
7	0	2.0	10	2.1
8	0	2.0	10	7.4
9	0	0.0	10	3.4
10	0	0.0	10	7.6
11	2	0.0	10	1.3
12	2	0.0	10	1.7
13	0	0.0	10	4.7
14	15	2.0	10	6.4
15	0	2.0	10	2.3
16	0	0.0	10	7.8
17	0	0.0	10	3.6
18	0	0.0	10	3.8
19	0	0.0	10	4.1
20	0	0.0	10	4.2
21	0	0.0	10	3.1
22	0	0.0	10	7.1
23	0	0.0	10	1.2
24	0	0.0	10	1.6
25	0	0.0	10	4.6
26	0	0.0	10	6.3
27	0	0.0	10	2.2
28	0	0.0	10	7.3
29	0	0.0	10	3.3
30	0	0.0	10	7.5
31	0	2.0	10	1.4
32	0	2.0	10	1.8
33	0	0.0	10	4.8
34	0	0.0	10	6.5
35	0	0.0	10	2.4
36	0	0.0	10	7.7
37	0	0.0	10	3.5
38	0	0.0	10	3.7
39	0	0.0	10	4.3
40	0	0.0	10	4.4
41	0	0.0	10	5.1
42	0	0.0	10	5.3
43	0	0.0	10	5.2
44	0	0.0	10	5.4

Failure Times (5-3)	Minutes
Maximum On Time	0
Fail Reset Time	0

Failure Override (5-4)	
Detectors 1-8	- - - - - - - -
Detectors 9-16	- - - - - - - -
Detectors 17-24	- - - - - - - -
Detectors 25-32	- - - - - - - -
Detectors 33-40	- - - - - - - -
Detectors 41-44	- - - - - - - -

System Detector Assignment (5-5)								
Sys Det	1	2	3	4	5	6	7	8
Det Num	0	0	0	0	0	0	0	0
Sys Det	9	10	11	12	13	14	15	16
Det Num	0	0	0	0	0	0	0	0

CIC Operation (5-6-1)	
Enable in Plans	- - - - - - - -

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.0	

Detector-to-Phase Assignment (5-6-3)								
Sys Det	1	2	3	4	5	6	7	8
Phase	0	0	0	0	0	0	0	0
Sys Det	9	10	11	12	13	14	15	16
Phase	0	0	0	0	0	0	0	0

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

CHECKSUM: D8B5

TOD SCHEDULE

Table 1 (8-2-1)		
Time	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

Table 2 (8-2-2)		
Hour	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

Table 3 (8-2-3)		
Hour	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

Table 4 (8-2-4)		
Hour	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

Table 5 (8-2-5)		
Hour	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

Table 6 (8-2-6)		
Hour	Plan	OS
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A
0000	0	A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

PAGE 8 CHECKSUM: 85AF

HOLIDAY TABLES

Floating Holiday Table (8-2-8)

#	Mnth	Week	DOW	Table
1	0	0	- - - - - - - -	0
2	0	0	- - - - - - - -	0
3	0	0	- - - - - - - -	0
4	0	0	- - - - - - - -	0
5	0	0	- - - - - - - -	0
6	0	0	- - - - - - - -	0
7	0	0	- - - - - - - -	0
8	0	0	- - - - - - - -	0
9	0	0	- - - - - - - -	0
10	0	0	- - - - - - - -	0
11	0	0	- - - - - - - -	0
12	0	0	- - - - - - - -	0
13	0	0	- - - - - - - -	0
14	0	0	- - - - - - - -	0
15	0	0	- - - - - - - -	0
16	0	0	- - - - - - - -	0

Fixed Holiday Table (8-2-9)

#	Mnth	Day	DOW	Table
1	0	0	- - - - - - - -	0
2	0	0	- - - - - - - -	0
3	0	0	- - - - - - - -	0
4	0	0	- - - - - - - -	0
5	0	0	- - - - - - - -	0
6	0	0	- - - - - - - -	0
7	0	0	- - - - - - - -	0
8	0	0	- - - - - - - -	0
9	0	0	- - - - - - - -	0
10	0	0	- - - - - - - -	0
11	0	0	- - - - - - - -	0
12	0	0	- - - - - - - -	0
13	0	0	- - - - - - - -	0
14	0	0	- - - - - - - -	0
15	0	0	- - - - - - - -	0
16	0	0	- - - - - - - -	0

Solar Clock Data (8-4)

North Latidude	34
West Longitude	118
Local Time Zone	8

Sabbatical Clock (8-5)

Hebrew	Ped Recall
Sabbath	- - - - - - - -
Holiday	- - - - - - - -

Daylight Saving (8-6)

Daylight Saving	YES

TOD Functions (8-3)

#	Start	End	DOW	Action	Phases
1	0530	2100	1 2 3 4 5 6 7	27	- 2 - 4 - 6 - -
2	0000	0000	- - - - - - - -	0	- - - - - - - -
3	0000	0000	- - - - - - - -	0	- - - - - - - -
4	0000	0000	- - - - - - - -	0	- - - - - - - -
5	0000	0000	- - - - - - - -	0	- - - - - - - -
6	0000	0000	- - - - - - - -	0	- - - - - - - -
7	0000	0000	- - - - - - - -	0	- - - - - - - -
8	0000	0000	- - - - - - - -	0	- - - - - - - -
9	0000	0000	- - - - - - - -	0	- - - - - - - -
10	0000	0000	- - - - - - - -	0	- - - - - - - -
11	0000	0000	- - - - - - - -	0	- - - - - - - -
12	0000	0000	- - - - - - - -	0	- - - - - - - -
13	0000	0000	- - - - - - - -	0	- - - - - - - -
14	0000	0000	- - - - - - - -	0	- - - - - - - -
15	0000	0000	- - - - - - - -	0	- - - - - - - -
16	0000	0000	- - - - - - - -	0	- - - - - - - -

Action Codes:
0. None
1. Permitted
2. Restricted
4. Veh Min Recall
5. Veh Max Recall
6. Ped Recall
7. Bike Recall
8. Red Lock
9. Yellow Lock
10. Force/Max Lock
11.Double Entry
12. Y-Coord C
13. Y-Coord D
14. Free
15. Flashing
16. Walk 2
17. Max Green 2
18. Max Green 3
19. Rest in Walk
20. Rest in Red
21. Free Lag Phases
22. Special Functions
23. Truck Preempt
24. Conditional Service
25. Conditional Service
26. Leading Ped
41. Protected Permissive
42. Protected Permissive

Action Code = Phases added to normal setting

100+Action Code = Phases removed
200+Action Code = Phases replaced

COMMUNICATIONS

C2 (6-1-1)	
Address	0
Protocol	AB3418
Limit Access	None
Baud	1200
Parity	None
Data Bits	8 data bits
Stop Bits	1 stop bit
RTS On Time	20
RTS Off Time	20
Handshaking	Normal

C20 (6-1-2)	
Address	0
Protocol	AB3418
Limit Access	None
Baud	1200
Parity	None
Data Bits	8 data bits
Stop Bits	1 stop bit
RTS On Time	20
RTS Off Time	20
Handshaking	Normal

C21 (6-1-3)	
Address	0
Protocol	AB3418
Limit Access	None
Baud	1200
Parity	None
Data Bits	8 data bits
Stop Bits	1 stop bit
RTS On Time	20
RTS Off Time	20
Handshaking	Normal

SOFT LOGIC

Soft Logic (6-2)							
#	Data	OP	Data	OP	Data	OP	Data
1	00.0	00	00.0	00	00.0	00	00.0
2	00.0	00	00.0	00	00.0	00	00.0
3	00.0	00	00.0	00	00.0	00	00.0
4	00.0	00	00.0	00	00.0	00	00.0
5	00.0	00	00.0	00	00.0	00	00.0
6	00.0	00	00.0	00	00.0	00	00.0
7	00.0	00	00.0	00	00.0	00	00.0
8	00.0	00	00.0	00	00.0	00	00.0
9	00.0	00	00.0	00	00.0	00	00.0
10	00.0	00	00.0	00	00.0	00	00.0
11	00.0	00	00.0	00	00.0	00	00.0
12	00.0	00	00.0	00	00.0	00	00.0
13	00.0	00	00.0	00	00.0	00	00.0
14	00.0	00	00.0	00	00.0	00	00.0
15	00.0	00	00.0	00	00.0	00	00.0
16	00.0	00	00.0	00	00.0	00	00.0

CALLBACK NUMBERS

Callback Numbers (6-3...3)	
Line Out	0
Local Toll	0
Long Distance	0
Delay	10
Area Code	0
Phone Number	0 - 0

Line Out	0
Local Toll	0
Long Distance	0
Delay	10
Area Code	0
Phone Number	0 - 0

Line Out	0
Local Toll	0
Long Distance	0
Delay	10
Area Code	0
Phone Number	0 - 0

NETWORK

Network (6-4)				
Address	1			
Protocol	AB3418			
Port	27000			
IP Mode	Static IP			
IP Address	192	168	13	1
Netmask	255	255	255	0
Broadcast	192	168	13	255
Gateway	192	168	13	254

RAILROAD PREEMPTION

RR 1	(3-1-1)	Timing	Phase Flags (3-1-2)			Pedestrian Flags (3-1-3)			Overlap Flags (3-1-4)		
	Delay	0	Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
	Clear 1	10	- 2 - - 5 - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- 2 - 4 - 6 - 8	- - - - - - -	- - - - - - -	- - - - - - -
	Clear 2	0	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - -	- - - - - - -	- - - - - - -
	Clear 3	0	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - -	- - - - - - -	- - - - - - -
	Hold	0	- - - - - - - -	- - - - - - - -	1 2 3 4 5 6 7 8	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - -	- - - - - - -	A B C D E F
	Exit	5									
	Min Grn	0									
	Ped Clr	0									

Exit Parameters (3-1-5)			
Phase Green	Overlap Green	Vehicle Recall	Ped Call
- - - - - - - -	- - - - - - -	1 2 3 4 5 6 7 8	- 2 - 4 - 6 - 8

Configuration (3-1-6)			
Port	Gate Port	Latching	Power-Up
2.5	0.0	Yes	Flashing

RR 2	(3-2-1)	Timing	Phase Flags (3-2-2)			Pedestrian Flags (3-2-3)			Overlap Flags (3-2-4)		
	Delay	0	Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
	Clear 1	10	- - - 4 - - 7 -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- 2 - 4 - 6 - 8	- - - - - - -	- - - - - - -	- - - - - - -
	Clear 2	0	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - -	- - - - - - -	- - - - - - -
	Clear 3	0	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - -	- - - - - - -	- - - - - - -
	Hold	0	1 2 3 - - 6 - -	- - - - - - - -	- - - - - - - -	- 2 - - - 6 - -	- - - - - - - -	- - - 4 - - - 8	- - - - - - -	- - - - - - -	- - - - - - -
	Exit	0									
	Min Grn	0									
	Ped Clr	0									

Exit Parameters (3-2-5)			
Exit Ph Grn	Exit Ovl Grn	Exit Veh Recall	Exit Ped Call
- - - - - - - -	- - - - - - -	- - - 4 - - 7 -	- - - - - - - -

Configuration (3-2-6)			
Port	Gate Port	Latching	Power-Up
2.6	0.0	Yes	Dark

EMERGENCY VEHICLE PREEMPTION

EVA (3-A)	Preempt Timers			Phase Green	Overlap Grn
	Delay	Clear	Max		
	0	30	30	- 2 - - 5 - - -	- - - - - - -

Port	Latching	Phase Termination
5.5	No	Advance

EVB (3-B)	Preempt Timers			Phase Green	Overlap Grn
	Delay	Clear	Max		
	0	30	30	- - - 4 - - 7 -	- - - - - - -

Port	Latching	Phase	Phase Termination
5.6	No		Advance

EVC (3-C)	Preempt Timers			Phase Green	Overlap Grn
	Delay	Clear	Max		
	0	30	30	1 - - - - 6 - -	- - - - - - -

Port	Latching	Phase Termination
5.7	No	Advance

EVD (3-D)	Preempt Timers			Phase Green	Overlap Grn
	Delay	Clear	Max		
	0	30	30	- - 3 - - - - 8	- - - - - - -

Port	Latching	Phase	Phase Termination
5.8	No		Advance

INPUTS

		7 Wire I/C(2-1-5-1)			
		Input	Port	Input	Port
Enable	No	R1	3.8	Free	3.6
Max ON	0	R2	3.5	D2	2.8
Max OFF	0	R3	3.7	D3	6.1

Manual Control(2-1-5-2)	
Input	Port
Manual Adv	6.6
Adv Enable	6.6

Battery Backup (2-1-5-5)	
Port	Operation
2.7	Flashing

Cabinet Staus (2-1-5-3)	
Input	Port
Flash Bus	0.0
Door Ajar	0.0
Flash Sense	6.7
Stop Time	6.8

Special Function (2-1-5-4)	
Input	Port
1	0.0
2	0.0
3	0.0
4	0.0

Y-Coordination (2-1-5-6)	
Port C	Port D
6.1	2.8

OUTPUTS

Loadswitch Assignments (2-1-6)							
A	1	2	22	3	4	24	9
B	5	6	26	7	8	28	10
X	13	14	0	11	12	0	0

Loadswitch Codes:
0 Unused (no output)
1-8 Vehicle 1-8
9-14 Overlap A-F
21-28 Ped 1-8
41-47 Special Functions
41 Protected Permissive Flashing Phase 1
43 Protected Permissive Flashing Phase 3
45 Protected Permissive Flashing Phase 5
47 Protected Permissive Flashing Phase 7
51-57 Special Functions
71-72 Seven Wire I/C
+ middle output of loadswitches 3 and 6

YELLOW YIELD COORDINATION

					Force-Offs											
Y-Coord Plans (7-C,D)	Long Grn	No Grn	Offset	Perm	1	2	3	4	5	6	7	8	Coord	Lag	Min Recall	Restricted
Plan C	0	0	0	0	0	0	0	0	0	0	0	0	- 2 - - - 6 - -	- 2 - 4 - 6 - 8	- - - - - - - -	- - - - - - - -
Plan D	0	0	0	0	0	0	0	0	0	0	0	0	- 2 - - - 6 - -	- 2 - 4 - 6 - 8	- - - - - - - -	- - - - - - - -

TRANSIT PRIORITY

Local Plans (3-E) 1...9 1...19		Early Green	Green Extend	Inhibit Cycles	Phase 1 Minimum	Phase 2 Minimum	Phase 3 Minimum	Phase 4 Minimum	Phase 5 Minimum	Phase 6 Minimum	Phase 7 Minimum	Phase 8 Minimum
Plan 1	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 2	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 3	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 4	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 5	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 6	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 7	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 8	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 9	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 11	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 12	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 13	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 14	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 15	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 16	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 17	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 18	Green Factor	0	0	0	0	0	0	0	0	0	0	0
Plan 19	Green Factor	0	0	0	0	0	0	0	0	0	0	0

Enable Priority in Plan (3-E-A)					
Enable in Plans		Input	Type	Stop	Go
Plan 1-9	- - - - - - - -	0.0	OPT	0	0
Plan 11-19	- - - - - - - -	0.0	OPT	0	0

Queue Jump (3-E-B)	
Grn Hold	Hold Phase
0	- - - - - - - -
0	- - - - - - - -

Free Plans (3-E-E)	
Max Green	Hold Phase
0	- - - - - - - -

Access Utilities (9-5)	
Password	***
Timeout	30

TRUCK PRIORITY

Truck Priority (3-F)	Passage	CarryOver	Clearance	Next Priority	Phase Green	Det 2 Port	Det 3 Port	Det 4 Port	Sign Output	Slave Input	Slave Output
	0.0	0.0	0.0	0	- - - - - - - -	0.0	0.0	0.0	0	0.0	0

CONTROLLER ID

Manufacturer ID	Caltrans TSCP Ver 2.21
Model ID	Model 2070
Protocol Revision ID	AB3418

APPENDIX C:

VOLUME DEVELOPMENT WORKSHEETS

LSA

Table B-1 - Existing (2021) Peak Hour Volume Summary

	A.M. Peak Hour						P.M. Peak Hour					
	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project
1 Marks Avenue/Belmont Avenue												
2016 count												
NBL			49	49	1	50			97	97	2	99
NBT			261	261	7	268			589	589	7	596
NBR			67	67	3	70			76	76	4	80
SBL			39	39	0	39			25	25	0	25
SBT			424	424	25	449			259	259	34	293
SBR			28	28	0	28			26	26	0	26
EBL			24	24	0	24			24	24	0	24
EBT			127	127	0	127			174	174	0	174
EBR			87	87	7	94			63	63	9	72
WBL			39	39	13	52			36	36	16	52
WBT			78	78	0	78			126	126	0	126
WBR			11	11	0	11			53	53	0	53
North Leg												
Approach	0	0	491	491	25	516	0	0	310	310	34	344
Departure	0	0	296	296	7	303	0	0	666	666	7	673
Total	0	0	787	787	32	819	0	0	976	976	41	1,017
South Leg												
Approach	0	0	377	377	11	388	0	0	762	762	13	775
Departure	0	0	550	550	45	595	0	0	358	358	59	417
Total	0	0	927	927	56	983	0	0	1,120	1,120	72	1,192
East Leg												
Approach	0	0	128	128	13	141	0	0	215	215	16	231
Departure	0	0	233	233	3	236	0	0	275	275	4	279
Total	0	0	361	361	16	377	0	0	490	490	20	510
West Leg												
Approach	0	0	238	238	7	245	0	0	261	261	9	270
Departure	0	0	155	155	1	156	0	0	249	249	2	251
Total	0	0	393	393	8	401	0	0	510	510	11	521
Total Approaches												
Approach	0	0	1,234	1,234	56	1,290	0	0	1,548	1,548	72	1,620
Departure	0	0	1,234	1,234	56	1,290	0	0	1,548	1,548	72	1,620
Total	0	0	2,468	2,468	112	2,580	0	0	3,096	3,096	144	3,240

LSA

Table B-1 - Existing (2021) Peak Hour Volume Summary

	A.M. Peak Hour						P.M. Peak Hour					
	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project
2 Marks Avenue/Nielsen Avenue												
NBL	55		55	62	0	62	36		36	37	0	37
NBT	227	82	309	349	0	349	371	177	548	568	0	568
NBR	62		62	70	28	98	35		35	36	38	74
SBL	8		8	9	0	9	9		9	10	0	10
SBT	212	114	326	343	0	343	192	81	273	318	0	318
SBR	31		31	34	0	34	18		18	20	0	20
EBL	11		11	12	0	12	22		22	24	0	24
EBT	6		6	7	1	8	3		3	3	1	4
EBR	40		40	42	0	42	35		35	41	0	41
WBL	17		17	18	7	25	67		67	78	9	87
WBT	4		4	4	0	4	8		8	9	0	9
WBR	9		9	10	0	10	10		10	11	0	11
North Leg												
Approach	251	114	365	386	0	386	219	81	300	348	0	348
Departure	247	82	329	371	0	371	403	177	580	603	0	603
Total	498	196	694	757	0	757	622	258	880	951	0	951
South Leg												
Approach	344	82	426	481	28	509	442	177	619	641	38	679
Departure	269	114	383	403	7	410	294	81	375	437	9	446
Total	613	196	809	884	35	919	736	258	994	1,078	47	1,125
East Leg												
Approach	30	0	30	32	7	39	85	0	85	98	9	107
Departure	76	0	76	86	29	115	47	0	47	49	39	88
Total	106	0	106	118	36	154	132	0	132	147	48	195
West Leg												
Approach	57	0	57	61	1	62	60	0	60	68	1	69
Departure	90	0	90	100	0	100	62	0	62	66	0	66
Total	147	0	147	161	1	162	122	0	122	134	1	135
Total Approaches												
Approach	682	196	878	960	36	996	806	258	1,064	1,155	48	1,203
Departure	682	196	878	960	36	996	806	258	1,064	1,155	48	1,203
Total	1,364	392	1,756	1,920	72	1,992	1,612	516	2,128	2,310	96	2,406

LSA

Table B-1 - Existing (2021) Peak Hour Volume Summary

	A.M. Peak Hour						P.M. Peak Hour					
	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project
3 Marks Avenue/Ray Johnson Drive												
NBL	0		0	0	0	0	0		0	0	0	0
NBT	351	128	479	479	28	507	430	205	635	635	38	673
NBR	6		6	6	0	6	10		10	10	0	10
SBL	3		3	3	0	3	4		4	4	0	4
SBT	260	139	399	399	7	406	304	128	432	432	9	441
SBR	0		0	0	0	0	0		0	0	0	0
EBL	0		0	0	0	0	0		0	0	0	0
EBT	0		0	0	0	0	0		0	0	0	0
EBR	0		0	0	0	0	0		0	0	0	0
WBL	8		8	8	0	8	17		17	17	0	17
WBT	0		0	0	0	0	0		0	0	0	0
WBR	3		3	3	0	3	6		6	6	0	6
North Leg												
Approach	263	139	402	402	7	409	308	128	436	436	9	445
Departure	354	128	482	482	28	510	436	205	641	641	38	679
Total	617	267	884	884	35	919	744	334	1,078	1,078	47	1,125
South Leg												
Approach	357	128	485	485	28	513	440	205	645	645	38	683
Departure	268	139	407	407	7	414	321	128	449	449	9	458
Total	625	267	892	892	35	927	761	334	1,095	1,095	47	1,142
East Leg												
Approach	11	0	11	11	0	11	23	0	23	23	0	23
Departure	9	0	9	9	0	9	14	0	14	14	0	14
Total	20	0	20	20	0	20	37	0	37	37	0	37
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches												
Approach	631	267	898	898	35	933	771	334	1,105	1,105	47	1,152
Departure	631	267	898	898	35	933	771	334	1,105	1,105	47	1,152
Total	1,262	534	1,796	1,796	70	1,866	1,542	667	2,209	2,209	94	2,303

LSA

Table B-1 - Existing (2021) Peak Hour Volume Summary

	A.M. Peak Hour						P.M. Peak Hour					
	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project
4 Marks Avenue/SR-180 Westbound Ramps												
NBL	0		0	0	0	0	0		0	0	0	0
NBT	82		82	82	5	87	144		144	144	5	149
NBR	11		11	11	0	11	15		15	15	0	15
SBL	0		0	0	0	0	0		0	0	0	0
SBT	263	139	402	402	7	409	297	128	425	425	9	434
SBR	24		24	24	0	24	23		23	23	0	23
EBL	0		0	0	0	0	0		0	0	0	0
EBT	0		0	0	0	0	0		0	0	0	0
EBR	0		0	0	0	0	0		0	0	0	0
WBL	180		180	180	0	180	242		242	242	0	242
WBT	0		0	0	0	0	0		0	0	0	0
WBR	267	128	395	395	23	418	313	205	518	518	32	550
North Leg												
Approach	287	139	426	426	7	433	320	128	448	448	9	457
Departure	349	128	477	477	28	505	457	205	662	662	37	699
Total	636	267	903	903	35	938	777	334	1,111	1,111	46	1,157
South Leg												
Approach	93	0	93	93	5	98	159	0	159	159	5	164
Departure	443	139	582	582	7	589	539	128	667	667	9	676
Total	536	139	675	675	12	687	698	128	826	826	14	840
East Leg												
Approach	447	128	575	575	23	598	555	205	760	760	32	792
Departure	11	0	11	11	0	11	15	0	15	15	0	15
Total	458	128	586	586	23	609	570	205	775	775	32	807
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	24	0	24	24	0	24	23	0	23	23	0	23
Total	24	0	24	24	0	24	23	0	23	23	0	23
Total Approaches												
Approach	827	267	1,094	1,094	35	1,129	1,034	334	1,368	1,368	46	1,414
Departure	827	267	1,094	1,094	35	1,129	1,034	334	1,368	1,368	46	1,414
Total	1,654	534	2,188	2,188	70	2,258	2,068	667	2,735	2,735	92	2,827

LSA

Table B-1 - Existing (2021) Peak Hour Volume Summary

	A.M. Peak Hour						P.M. Peak Hour					
	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project
5 Marks Avenue/SR-180 Eastbound Ramps												
NBL	0		0	0	0	0	0		0	0	0	0
NBT	83		83	83	3	86	140		140	140	3	143
NBR	223		223	223	0	223	266		266	266	0	266
SBL	0		0	0	0	0	0		0	0	0	0
SBT	289		289	291	0	291	360		360	359	1	360
SBR	150	139	289	291	7	298	181	128	309	308	8	316
EBL	10		10	10	2	12	19		19	19	2	21
EBT	0		0	0	0	0	0		0	0	0	0
EBR	11		11	11	0	11	20		20	20	0	20
WBL	0		0	0	0	0	0		0	0	0	0
WBT	0		0	0	0	0	0		0	0	0	0
WBR	0		0	0	0	0	0		0	0	0	0
North Leg												
Approach	439	139	578	582	7	589	541	128	669	667	9	676
Departure	93	0	93	93	5	98	159	0	159	159	5	164
Total	532	139	671	675	12	687	700	128	828	826	14	840
South Leg												
Approach	306	0	306	306	3	309	406	0	406	406	3	409
Departure	300	0	300	302	0	302	380	0	380	379	1	380
Total	606	0	606	608	3	611	786	0	786	785	4	789
East Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	223	0	223	223	0	223	266	0	266	266	0	266
Total	223	0	223	223	0	223	266	0	266	266	0	266
West Leg												
Approach	21	0	21	21	2	23	39	0	39	39	2	41
Departure	150	139	289	291	7	298	181	128	309	308	8	316
Total	171	139	310	312	9	321	220	128	348	347	10	357
Total Approaches												
Approach	766	139	905	909	12	921	986	128	1,114	1,112	14	1,126
Departure	766	139	905	909	12	921	986	128	1,114	1,112	14	1,126
Total	1,532	279	1,811	1,819	24	1,843	1,972	256	2,228	2,224	28	2,252

LSA

Table B-1 - Existing (2021) Peak Hour Volume Summary

	A.M. Peak Hour						P.M. Peak Hour					
	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project
6 Hughes Avenue/Belmont Avenue												
NBL	6		6	6	0	6	14		14	14	0	14
NBT	27		27	27	1	28	42		42	42	1	43
NBR	33		33	33	5	38	56		56	56	5	61
SBL	26		26	26	0	26	40		40	40	0	40
SBT	22		22	22	3	25	47		47	47	5	52
SBR	15		15	15	0	15	15		15	15	0	15
EBL	20		20	20	0	20	37		37	37	0	37
EBT	192		192	192	3	195	239		239	239	4	243
EBR	17		17	17	0	17	10		10	10	0	10
WBL	27		27	27	17	44	43		43	43	20	63
WBT	152		152	152	12	164	190		190	190	15	205
WBR	15		15	15	0	15	34		34	34	0	34
North Leg												
Approach	63	0	63	63	3	66	102	0	102	102	5	107
Departure	62	0	62	62	1	63	113	0	113	113	1	114
Total	125	0	125	125	4	129	215	0	215	215	6	221
South Leg												
Approach	66	0	66	66	6	72	112	0	112	112	6	118
Departure	66	0	66	66	20	86	100	0	100	100	25	125
Total	132	0	132	132	26	158	212	0	212	212	31	243
East Leg												
Approach	194	0	194	194	29	223	267	0	267	267	35	302
Departure	251	0	251	251	8	259	335	0	335	335	9	344
Total	445	0	445	445	37	482	602	0	602	602	44	646
West Leg												
Approach	229	0	229	229	3	232	286	0	286	286	4	290
Departure	173	0	173	173	12	185	219	0	219	219	15	234
Total	402	0	402	402	15	417	505	0	505	505	19	524
Total Approaches												
Approach	552	0	552	552	41	593	767	0	767	767	50	817
Departure	552	0	552	552	41	593	767	0	767	767	50	817
Total	1,104	0	1,104	1,104	82	1,186	1,534	0	1,534	1,534	100	1,634

LSA

Table B-1 - Existing (2021) Peak Hour Volume Summary

	A.M. Peak Hour						P.M. Peak Hour					
	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project	Year 2,021 Counts	COVID Non-COVID Adjustments	Adjusted 2,021 Volumes	Balanced 2,021 Volumes	Net Project Trips	Existing With Project
7 Hughes Avenue/Nielsen Avenue												
NBL	5		5	5	4	9	25		25	25	6	31
NBT	44		44	44	2	46	83		83	83	2	85
NBR	1		1	1	0	1	3		3	3	0	3
SBL	8		8	8	2	10	9		9	9	2	11
SBT	46		46	46	1	47	73		73	73	1	74
SBR	10		10	10	0	10	13		13	13	0	13
EBL	8		8	8	0	8	8		8	8	0	8
EBT	35		35	35	0	35	25		25	25	0	25
EBR	24		24	24	1	25	11		11	11	2	13
WBL	2		2	2	0	2	4		4	4	0	4
WBT	10		10	10	2	12	35		35	35	2	37
WBR	8		8	8	7	15	14		14	14	9	23
North Leg												
Approach	64	0	64	64	3	67	95	0	95	95	3	98
Departure	60	0	60	60	9	69	105	0	105	105	11	116
Total	124	0	124	124	12	136	200	0	200	200	14	214
South Leg												
Approach	50	0	50	50	6	56	111	0	111	111	8	119
Departure	72	0	72	72	2	74	88	0	88	88	3	91
Total	122	0	122	122	8	130	199	0	199	199	11	210
East Leg												
Approach	20	0	20	20	9	29	53	0	53	53	11	64
Departure	44	0	44	44	2	46	37	0	37	37	2	39
Total	64	0	64	64	11	75	90	0	90	90	13	103
West Leg												
Approach	67	0	67	67	1	68	44	0	44	44	2	46
Departure	25	0	25	25	6	31	73	0	73	73	8	81
Total	92	0	92	92	7	99	117	0	117	117	10	127
Total Approaches												
Approach	201	0	201	201	19	220	303	0	303	303	24	327
Departure	201	0	201	201	19	220	303	0	303	303	24	327
Total	402	0	402	402	38	440	606	0	606	606	48	654

LSA

Table B-2 - Opening Year Cumulative (2023) Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project
1 Marks Avenue/Belmont Avenue												
NBL	49	2	3	54	1	55	97	4	4	105	2	107
NBT	261	10	3	274	7	281	589	24	10	623	7	630
NBR	67	3	1	71	3	74	76	3	2	81	4	85
SBL	39	2	1	42	0	42	25	1	0	26	0	26
SBT	424	17	8	449	25	474	259	10	7	276	34	310
SBR	28	1	2	31	0	31	26	1	2	29	0	29
EBL	24	1	0	25	0	25	24	1	0	25	0	25
EBT	127	5	13	145	0	145	174	7	16	197	0	197
EBR	87	3	1	91	7	98	63	3	1	67	9	76
WBL	39	2	0	41	13	54	36	1	2	39	16	55
WBT	78	3	18	99	0	99	126	5	16	147	0	147
WBR	11	0	1	12	0	12	53	2	0	55	0	55
North Leg												
Approach	491	20	11	522	25	547	310	12	9	331	34	365
Departure	296	11	4	311	7	318	666	27	10	703	7	710
Total	787	31	15	833	32	865	976	39	19	1,034	41	1,075
South Leg												
Approach	377	15	7	399	11	410	762	31	16	809	13	822
Departure	550	22	9	581	45	626	358	14	10	382	59	441
Total	927	37	16	980	56	1,036	1,120	45	26	1,191	72	1,263
East Leg												
Approach	128	5	19	152	13	165	215	8	18	241	16	257
Departure	233	10	15	258	3	261	275	11	18	304	4	308
Total	361	15	34	410	16	426	490	19	36	545	20	565
West Leg												
Approach	238	9	14	261	7	268	261	11	17	289	9	298
Departure	155	6	23	184	1	185	249	10	22	281	2	283
Total	393	15	37	445	8	453	510	21	39	570	11	581
Total Approaches												
Approach	1,234	49	51	1,334	56	1,390	1,548	62	60	1,670	72	1,742
Departure	1,234	49	51	1,334	56	1,390	1,548	62	60	1,670	72	1,742
Total	2,468	98	102	2,668	112	2,780	3,096	124	120	3,340	144	3,484

LSA

Table B-2 - Opening Year Cumulative (2023) Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project
2 Marks Avenue/Nielsen Avenue												
NBL	62	2	1	65	0	65	37	1	2	40	0	40
NBT	349	14	8	371	0	371	568	23	16	607	0	607
NBR	70	3	6	79	28	107	36	1	2	39	38	77
SBL	9	0	0	9	0	9	10	0	0	10	0	10
SBT	343	14	8	365	0	365	318	13	7	338	0	338
SBR	34	1	1	36	0	36	20	1	2	23	0	23
EBL	12	0	1	13	0	13	24	1	3	28	0	28
EBT	7	0	0	7	1	8	3	0	1	4	1	5
EBR	42	2	1	45	0	45	41	2	2	45	0	45
WBL	18	1	2	21	7	28	78	3	7	88	9	97
WBT	4	0	0	4	0	4	9	0	1	10	0	10
WBR	10	0	0	10	0	10	11	0	0	11	0	11
North Leg												
Approach	386	15	9	410	0	410	348	14	9	371	0	371
Departure	371	14	9	394	0	394	603	24	19	646	0	646
Total	757	29	18	804	0	804	951	38	28	1,017	0	1,017
South Leg												
Approach	481	19	15	515	28	543	641	25	20	686	38	724
Departure	403	17	11	431	7	438	437	18	16	471	9	480
Total	884	36	26	946	35	981	1,078	43	36	1,157	47	1,204
East Leg												
Approach	32	1	2	35	7	42	98	3	8	109	9	118
Departure	86	3	6	95	29	124	49	1	3	53	39	92
Total	118	4	8	130	36	166	147	4	11	162	48	210
West Leg												
Approach	61	2	2	65	1	66	68	3	6	77	1	78
Departure	100	3	2	105	0	105	66	2	5	73	0	73
Total	161	5	4	170	1	171	134	5	11	150	1	151
Total Approaches												
Approach	960	37	28	1,025	36	1,061	1,155	45	43	1,243	48	1,291
Departure	960	37	28	1,025	36	1,061	1,155	45	43	1,243	48	1,291
Total	1,920	74	56	2,050	72	2,122	2,310	90	86	2,486	96	2,582

LSA

Table B-2 - Opening Year Cumulative (2023) Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project
3 Marks Avenue/Ray Johnson Drive												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	479	19	15	513	28	541	635	25	18	678	38	716
NBR	6	0	13	19	0	19	10	0	3	13	0	13
SBL	3	0	2	5	0	5	4	0	0	4	0	4
SBT	399	16	9	424	7	431	432	17	16	465	9	474
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	8	0	3	11	0	11	17	1	14	32	0	32
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	3	0	0	3	0	3	6	0	2	8	0	8
North Leg												
Approach	402	16	11	429	7	436	436	17	16	469	9	478
Departure	482	19	15	516	28	544	641	25	20	686	38	724
Total	884	35	26	945	35	980	1,078	42	36	1,156	47	1,202
South Leg												
Approach	485	19	28	532	28	560	645	25	21	691	38	729
Departure	407	16	12	435	7	442	449	18	30	497	9	506
Total	892	35	40	967	35	1,002	1,095	43	51	1,189	47	1,235
East Leg												
Approach	11	0	3	14	0	14	23	1	16	40	0	40
Departure	9	0	15	24	0	24	14	0	3	17	0	17
Total	20	0	18	38	0	38	37	1	19	57	0	57
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches												
Approach	898	35	42	975	35	1,010	1,105	43	53	1,201	47	1,247
Departure	898	35	42	975	35	1,010	1,105	43	53	1,201	47	1,247
Total	1,796	70	84	1,950	70	2,020	2,209	86	106	2,401	94	2,494

LSA

Table B-2 - Opening Year Cumulative (2023) Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project
4 Marks Avenue/SR-180 Westbound Ramps												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	82	3	21	106	5	111	144	6	14	164	5	169
NBR	11	0	0	11	0	11	15	1	0	16	0	16
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	402	16	3	421	7	428	425	17	10	452	9	461
SBR	24	1	8	33	0	33	23	1	20	44	0	44
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	180	7	6	193	0	193	242	10	18	270	0	270
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	395	16	3	414	23	437	518	21	3	542	32	574
North Leg												
Approach	426	17	11	454	7	461	448	18	30	496	9	505
Departure	477	19	24	520	28	548	662	27	17	706	37	743
Total	903	36	35	974	35	1,009	1,111	45	47	1,203	46	1,248
South Leg												
Approach	93	3	21	117	5	122	159	7	14	180	5	185
Departure	582	23	9	614	7	621	667	27	28	722	9	731
Total	675	26	30	731	12	743	826	34	42	902	14	916
East Leg												
Approach	575	23	9	607	23	630	760	31	21	812	32	844
Departure	11	0	0	11	0	11	15	1	0	16	0	16
Total	586	23	9	618	23	641	775	32	21	828	32	860
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	24	1	8	33	0	33	23	1	20	44	0	44
Total	24	1	8	33	0	33	23	1	20	44	0	44
Total Approaches												
Approach	1,094	43	41	1,178	35	1,213	1,368	56	65	1,489	46	1,534
Departure	1,094	43	41	1,178	35	1,213	1,368	56	65	1,489	46	1,534
Total	2,188	86	82	2,356	70	2,426	2,735	112	130	2,977	92	3,068

LSA

Table B-2 - Opening Year Cumulative (2023) Peak Hour Volume Summary

		AM Peak Hour						PM Peak Hour					
		Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project
5	**Marks Avenue/SR-180 Eastbound Ramps**												
NBL		0	0	0	0	0	0	0	0	0	0	0	0
NBT		83	3	3	89	3	92	140	6	3	149	3	152
NBR		223	9	14	246	0	246	266	11	9	286	0	286
SBL		0	0	0	0	0	0	0	0	0	0	0	0
SBT		291	12	6	309	0	309	359	14	18	391	1	392
SBR		291	12	1	304	7	311	308	12	7	327	8	335
EBL		10	0	18	28	2	30	19	1	11	31	2	33
EBT		0	0	0	0	0	0	0	0	0	0	0	0
EBR		11	0	0	11	0	11	20	1	0	21	0	21
WBL		0	0	0	0	0	0	0	0	0	0	0	0
WBT		0	0	0	0	0	0	0	0	0	0	0	0
WBR		0	0	0	0	0	0	0	0	0	0	0	0
North Leg													
	Approach	582	24	7	613	7	620	667	26	25	718	9	727
	Departure	93	3	21	117	5	122	159	7	14	180	5	185
	Total	675	27	28	730	12	742	826	33	39	898	14	912
South Leg													
	Approach	306	12	17	335	3	338	406	17	12	435	3	438
	Departure	302	12	6	320	0	320	379	15	18	412	1	413
	Total	608	24	23	655	3	658	785	32	30	847	4	851
East Leg													
	Approach	0	0	0	0	0	0	0	0	0	0	0	0
	Departure	223	9	14	246	0	246	266	11	9	286	0	286
	Total	223	9	14	246	0	246	266	11	9	286	0	286
West Leg													
	Approach	21	0	18	39	2	41	39	2	11	52	2	54
	Departure	291	12	1	304	7	311	308	12	7	327	8	335
	Total	312	12	19	343	9	352	347	14	18	379	10	389
Total Approaches													
	Approach	909	36	42	987	12	999	1,112	45	48	1,205	14	1,219
	Departure	909	36	42	987	12	999	1,112	45	48	1,205	14	1,219
	Total	1,819	72	84	1,975	24	1,998	2,224	90	96	2,410	28	2,438

LSA

Table B-2 - Opening Year Cumulative (2023) Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project
6 Hughes Avenue/Belmont Avenue												
NBL	6	0	1	7	0	7	14	1	8	23	0	23
NBT	27	1	1	29	1	30	42	2	8	52	1	53
NBR	33	1	4	38	5	43	56	2	20	78	5	83
SBL	26	1	0	27	0	27	40	2	0	42	0	42
SBT	22	1	8	31	3	34	47	2	1	50	5	55
SBR	15	1	0	16	0	16	15	1	0	16	0	16
EBL	20	1	0	21	0	21	37	1	0	38	0	38
EBT	192	8	15	215	3	218	239	10	18	267	4	271
EBR	17	1	8	26	0	26	10	0	1	11	0	11
WBL	27	1	20	48	17	65	43	2	3	48	20	68
WBT	152	6	20	178	12	190	190	8	18	216	15	231
WBR	15	1	0	16	0	16	34	1	0	35	0	35
North Leg												
Approach	63	3	8	74	3	77	102	5	1	108	5	113
Departure	62	3	1	66	1	67	113	4	8	125	1	126
Total	125	6	9	140	4	144	215	9	9	233	6	239
South Leg												
Approach	66	2	6	74	6	80	112	5	36	153	6	159
Departure	66	3	36	105	20	125	100	4	5	109	25	134
Total	132	5	42	179	26	205	212	9	41	262	31	293
East Leg												
Approach	194	8	40	242	29	271	267	11	21	299	35	334
Departure	251	10	19	280	8	288	335	14	38	387	9	396
Total	445	18	59	522	37	559	602	25	59	686	44	730
West Leg												
Approach	229	10	23	262	3	265	286	11	19	316	4	320
Departure	173	7	21	201	12	213	219	10	26	255	15	270
Total	402	17	44	463	15	478	505	21	45	571	19	590
Total Approaches												
Approach	552	23	77	652	41	693	767	32	77	876	50	926
Departure	552	23	77	652	41	693	767	32	77	876	50	926
Total	1,104	46	154	1,304	82	1,386	1,534	64	154	1,752	100	1,852

LSA

Table B-2 - Opening Year Cumulative (2023) Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project
7 Hughes Avenue/Nielsen Avenue												
NBL	5	0	2	7	4	11	25	1	7	33	6	39
NBT	44	2	4	50	2	52	83	3	35	121	2	123
NBR	1	0	1	2	0	2	3	0	4	7	0	7
SBL	8	0	0	8	2	10	9	0	0	9	2	11
SBT	46	2	34	82	1	83	73	3	4	80	1	81
SBR	10	0	0	10	0	10	13	1	0	14	0	14
EBL	8	0	0	8	0	8	8	0	0	8	0	8
EBT	35	1	0	36	0	36	25	1	1	27	0	27
EBR	24	1	6	31	1	32	11	0	2	13	2	15
WBL	2	0	3	5	0	5	4	0	1	5	0	5
WBT	10	0	0	10	2	12	35	1	0	36	2	38
WBR	8	0	0	8	7	15	14	1	0	15	9	24
North Leg												
Approach	64	2	34	100	3	103	95	4	4	103	3	106
Departure	60	2	4	66	9	75	105	4	35	144	11	155
Total	124	4	38	166	12	178	200	8	39	247	14	261
South Leg												
Approach	50	2	7	59	6	65	111	4	46	161	8	169
Departure	72	3	43	118	2	120	88	3	7	98	3	101
Total	122	5	50	177	8	185	199	7	53	259	11	270
East Leg												
Approach	20	0	3	23	9	32	53	2	1	56	11	67
Departure	44	1	1	46	2	48	37	1	5	43	2	45
Total	64	1	4	69	11	80	90	3	6	99	13	112
West Leg												
Approach	67	2	6	75	1	76	44	1	3	48	2	50
Departure	25	0	2	27	6	33	73	3	7	83	8	91
Total	92	2	8	102	7	109	117	4	10	131	10	141
Total Approaches												
Approach	201	6	50	257	19	276	303	11	54	368	24	392
Departure	201	6	50	257	19	276	303	11	54	368	24	392
Total	402	12	100	514	38	552	606	22	108	736	48	784

LSA

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
1 Marks Avenue/Belmont Avenue						
NBL	73	1	74	163	2	165
NBT	288	7	295	654	7	661
NBR	93	3	96	91	4	95
SBL	73	0	73	34	0	34
SBT	471	25	496	290	34	324
SBR	32	0	32	50	0	50
EBL	31	0	31	37	0	37
EBT	239	0	239	220	0	220
EBR	113	7	120	70	9	79
WBL	43	13	56	41	16	57
WBT	104	0	104	182	0	182
WBR	13	0	13	67	0	67
North Leg						
Approach	576	25	601	374	34	408
Departure	332	7	339	758	7	765
Total	908	32	940	1,132	41	1,173
South Leg						
Approach	454	11	465	908	13	921
Departure	627	45	672	401	59	460
Total	1,081	56	1,137	1,309	72	1,381
East Leg						
Approach	160	13	173	290	16	306
Departure	405	3	408	345	4	349
Total	565	16	581	635	20	655
West Leg						
Approach	383	7	390	327	9	336
Departure	209	1	210	395	2	397
Total	592	8	600	722	11	733
Total Approaches						
Approach	1,573	56	1,629	1,899	72	1,971
Departure	1,573	56	1,629	1,899	72	1,971
Total	3,146	112	3,258	3,798	144	3,942

LSA

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
2 Marks Avenue/Nielsen Avenue						
NBL	68	0	68	42	0	42
NBT	390	0	390	638	0	638
NBR	93	28	121	41	38	79
SBL	14	0	14	11	0	11
SBT	383	0	383	354	0	354
SBR	39	0	39	24	0	24
EBL	14	0	14	33	0	33
EBT	10	1	11	4	1	5
EBR	46	0	46	47	0	47
WBL	22	7	29	92	9	101
WBT	4	0	4	11	0	11
WBR	11	0	11	12	0	12
North Leg						
Approach	436	0	436	389	0	389
Departure	415	0	415	683	0	683
Total	851	0	851	1,072	0	1,072
South Leg						
Approach	551	28	579	721	38	759
Departure	451	7	458	493	9	502
Total	1,002	35	1,037	1,214	47	1,261
East Leg						
Approach	37	7	44	115	9	124
Departure	117	29	146	56	39	95
Total	154	36	190	171	48	219
West Leg						
Approach	70	1	71	84	1	85
Departure	111	0	111	77	0	77
Total	181	1	182	161	1	162
Total Approaches						
Approach	1,094	36	1,130	1,309	48	1,357
Departure	1,094	36	1,130	1,309	48	1,357
Total	2,188	72	2,260	2,618	96	2,714

LSA

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
3 Marks Avenue/Ray Johnson Drive						
NBL	0	0	0	0	0	0
NBT	548	28	576	712	38	750
NBR	20	0	20	14	0	14
SBL	5	0	5	4	0	4
SBT	446	7	453	488	9	497
SBR	0	0	0	0	0	0
EBL	0	0	0	0	0	0
EBT	0	0	0	0	0	0
EBR	0	0	0	0	0	0
WBL	12	0	12	34	0	34
WBT	0	0	0	0	0	0
WBR	3	0	3	9	0	9
North Leg						
Approach	451	7	458	492	9	501
Departure	551	28	579	721	38	759
Total	1,002	35	1,037	1,213	47	1,260
South Leg						
Approach	568	28	596	726	38	764
Departure	458	7	465	522	9	531
Total	1,026	35	1,061	1,248	47	1,295
East Leg						
Approach	15	0	15	43	0	43
Departure	25	0	25	18	0	18
Total	40	0	40	61	0	61
West Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
Total Approaches						
Approach	1,034	35	1,069	1,261	47	1,308
Departure	1,034	35	1,069	1,261	47	1,308
Total	2,068	70	2,138	2,522	94	2,616

LSA

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
4 Marks Avenue/SR-180 Westbound Ramps						
NBL	0	0	0	0	0	0
NBT	142	5	147	213	5	218
NBR	15	0	15	18	0	18
SBL	0	0	0	0	0	0
SBT	454	7	461	489	9	498
SBR	37	0	37	47	0	47
EBL	0	0	0	0	0	0
EBT	0	0	0	0	0	0
EBR	0	0	0	0	0	0
WBL	227	0	227	372	0	372
WBT	0	0	0	0	0	0
WBR	453	23	476	588	32	620
North Leg						
Approach	491	7	498	536	9	545
Departure	595	28	623	801	37	838
Total	1,086	35	1,121	1,337	46	1,383
South Leg						
Approach	157	5	162	231	5	236
Departure	681	7	688	861	9	870
Total	838	12	850	1,092	14	1,106
East Leg						
Approach	680	23	703	960	32	992
Departure	15	0	15	18	0	18
Total	695	23	718	978	32	1,010
West Leg						
Approach	0	0	0	0	0	0
Departure	37	0	37	47	0	47
Total	37	0	37	47	0	47
Total Approaches						
Approach	1,328	35	1,363	1,727	46	1,773
Departure	1,328	35	1,363	1,727	46	1,773
Total	2,656	70	2,726	3,454	92	3,546

LSA

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
5 Marks Avenue/SR-180 Eastbound Ramps						
NBL	0	0	0	0	0	0
NBT	128	3	131	198	3	201
NBR	358	0	358	296	0	296
SBL	0	0	0	0	0	0
SBT	361	0	361	517	1	518
SBR	320	7	327	344	8	352
EBL	29	2	31	33	2	35
EBT	0	0	0	0	0	0
EBR	11	0	11	22	0	22
WBL	0	0	0	0	0	0
WBT	0	0	0	0	0	0
WBR	0	0	0	0	0	0
North Leg						
Approach	681	7	688	861	9	870
Departure	157	5	162	231	5	236
Total	838	12	850	1,092	14	1,106
South Leg						
Approach	486	3	489	494	3	497
Departure	372	0	372	539	1	540
Total	858	3	861	1,033	4	1,037
East Leg						
Approach	0	0	0	0	0	0
Departure	358	0	358	296	0	296
Total	358	0	358	296	0	296
West Leg						
Approach	40	2	42	55	2	57
Departure	320	7	327	344	8	352
Total	360	9	369	399	10	409
Total Approaches						
Approach	1,207	12	1,219	1,410	14	1,424
Departure	1,207	12	1,219	1,410	14	1,424
Total	2,414	24	2,438	2,820	28	2,848

LSA

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
6 Hughes Avenue/Belmont Avenue						
NBL	17	0	17	35	0	35
NBT	93	1	94	55	1	56
NBR	62	5	67	82	5	87
SBL	28	0	28	44	0	44
SBT	47	3	50	107	5	112
SBR	21	0	21	37	0	37
EBL	53	0	53	55	0	55
EBT	276	3	279	281	4	285
EBR	59	0	59	28	0	28
WBL	50	17	67	48	20	68
WBT	187	12	199	233	15	248
WBR	17	0	17	37	0	37
North Leg						
Approach	96	3	99	188	5	193
Departure	163	1	164	147	1	148
Total	259	4	263	335	6	341
South Leg						
Approach	172	6	178	172	6	178
Departure	156	20	176	183	25	208
Total	328	26	354	355	31	386
East Leg						
Approach	254	29	283	318	35	353
Departure	366	8	374	407	9	416
Total	620	37	657	725	44	769
West Leg						
Approach	388	3	391	364	4	368
Departure	225	12	237	305	15	320
Total	613	15	628	669	19	688
Total Approaches						
Approach	910	41	951	1,042	50	1,092
Departure	910	41	951	1,042	50	1,092
Total	1,820	82	1,902	2,084	100	2,184

LSA

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
7 Hughes Avenue/Nielsen Avenue						
NBL	7	4	11	35	6	41
NBT	127	2	129	123	2	125
NBR	2	0	2	24	0	24
SBL	18	2	20	16	2	18
SBT	115	1	116	174	1	175
SBR	11	0	11	15	0	15
EBL	24	0	24	8	0	8
EBT	45	0	45	28	0	28
EBR	35	1	36	14	2	16
WBL	5	0	5	27	0	27
WBT	11	2	13	38	2	40
WBR	19	7	26	16	9	25
North Leg						
Approach	144	3	147	205	3	208
Departure	170	9	179	147	11	158
Total	314	12	326	352	14	366
South Leg						
Approach	136	6	142	182	8	190
Departure	155	2	157	215	3	218
Total	291	8	299	397	11	408
East Leg						
Approach	35	9	44	81	11	92
Departure	65	2	67	68	2	70
Total	100	11	111	149	13	162
West Leg						
Approach	104	1	105	50	2	52
Departure	29	6	35	88	8	96
Total	133	7	140	138	10	148
Total Approaches						
Approach	419	19	438	518	24	542
Departure	419	19	438	518	24	542
Total	838	38	876	1,036	48	1,084

LSA

Table B-2 - Near-Term Approved and Pending Project (2023) Peak Hour Volume Summary - Worst case

	AM Peak Hour						PM Peak Hour					
	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project
3 Marks Avenue/Ray Johnson Drive												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	479	19	15	513	68	581	635	25	18	678	88	766
NBR	6	0	13	19	0	19	10	0	3	13	0	13
SBL	3	0	2	5	0	5	4	0	0	4	0	4
SBT	399	16	9	424	17	441	432	17	16	465	21	486
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	8	0	3	11	0	11	17	1	14	32	0	32
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	3	0	0	3	0	3	6	0	2	8	0	8
North Leg												
Approach	402	16	11	429	17	446	436	17	16	469	21	490
Departure	482	19	15	516	68	584	641	25	20	686	88	774
Total	884	35	26	945	85	1,030	1,078	42	36	1,156	109	1,264
South Leg												
Approach	485	19	28	532	68	600	645	25	21	691	88	779
Departure	407	16	12	435	17	452	449	18	30	497	21	518
Total	892	35	40	967	85	1,052	1,095	43	51	1,189	109	1,297
East Leg												
Approach	11	0	3	14	0	14	23	1	16	40	0	40
Departure	9	0	15	24	0	24	14	0	3	17	0	17
Total	20	0	18	38	0	38	37	1	19	57	0	57
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches												
Approach	898	35	42	975	85	1,060	1,105	43	53	1,201	109	1,309
Departure	898	35	42	975	85	1,060	1,105	43	53	1,201	109	1,309
Total	1,796	70	84	1,950	170	2,120	2,209	86	106	2,401	218	2,618

LSA

Table B-2 - Near-Term Approved and Pending Project (2023) Peak Hour Volume Summary - Worst case

	AM Peak Hour						PM Peak Hour					
	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project
4 Marks Avenue/SR-180 Westbound Ramps												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	82	3	21	106	5	111	144	6	14	164	7	171
NBR	11	0	0	11	0	11	15	1	0	16	0	16
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	402	16	3	421	17	438	425	17	10	452	20	472
SBR	24	1	8	33	0	33	23	1	20	44	0	44
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	180	7	6	193	0	193	242	10	18	270	0	270
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	395	16	3	414	63	477	518	21	3	542	82	624
North Leg												
Approach	426	17	11	454	17	471	448	18	30	496	20	516
Departure	477	19	24	520	68	588	662	27	17	706	89	795
Total	903	36	35	974	85	1,059	1,111	45	47	1,203	109	1,311
South Leg												
Approach	93	3	21	117	5	122	159	7	14	180	7	187
Departure	582	23	9	614	17	631	667	27	28	722	20	742
Total	675	26	30	731	22	753	826	34	42	902	27	929
East Leg												
Approach	575	23	9	607	63	670	760	31	21	812	82	894
Departure	11	0	0	11	0	11	15	1	0	16	0	16
Total	586	23	9	618	63	681	775	32	21	828	82	910
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	24	1	8	33	0	33	23	1	20	44	0	44
Total	24	1	8	33	0	33	23	1	20	44	0	44
Total Approaches												
Approach	1,094	43	41	1,178	85	1,263	1,368	56	65	1,489	109	1,597
Departure	1,094	43	41	1,178	85	1,263	1,368	56	65	1,489	109	1,597
Total	2,188	86	82	2,356	170	2,526	2,735	112	130	2,977	218	3,194

LSA

Table B-2 - Near-Term Approved and Pending Project (2023) Peak Hour Volume Summary - Worst case

	AM Peak Hour						PM Peak Hour					
	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project	Existing Without Project	2021-2023 Growth	Cumulative Projects Trips	Cumul Without Project	Net Project Trips	Cumul With Project
5 Marks Avenue/SR-180 Eastbound Ramps												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	83	3	3	89	3	92	140	6	3	149	3	152
NBR	223	9	14	246	0	246	266	11	9	286	0	286
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	291	12	6	309	0	309	359	14	18	391	0	391
SBR	291	12	1	304	16	320	308	12	7	327	20	347
EBL	10	0	18	28	3	31	19	1	11	31	3	34
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	11	0	0	11	0	11	20	1	0	21	0	21
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0	0	0
North Leg												
Approach	582	24	7	613	16	629	667	26	25	718	20	738
Departure	93	3	21	117	6	123	159	7	14	180	6	186
Total	675	27	28	730	22	752	826	33	39	898	26	924
South Leg												
Approach	306	12	17	335	3	338	406	17	12	435	3	438
Departure	302	12	6	320	0	320	379	15	18	412	0	412
Total	608	24	23	655	3	658	785	32	30	847	3	850
East Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	223	9	14	246	0	246	266	11	9	286	0	286
Total	223	9	14	246	0	246	266	11	9	286	0	286
West Leg												
Approach	21	0	18	39	3	42	39	2	11	52	3	55
Departure	291	12	1	304	16	320	308	12	7	327	20	347
Total	312	12	19	343	19	362	347	14	18	379	23	402
Total Approaches												
Approach	909	36	42	987	22	1,009	1,112	45	48	1,205	26	1,231
Departure	909	36	42	987	22	1,009	1,112	45	48	1,205	26	1,231
Total	1,819	72	84	1,975	44	2,018	2,224	90	96	2,410	52	2,462

LSA

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
3 Marks Avenue/Ray Johnson Drive						
NBL	0	0	0	0	0	0
NBT	548	68	616	712	88	800
NBR	20	0	20	14	0	14
SBL	5	0	5	4	0	4
SBT	446	17	463	488	21	509
SBR	0	0	0	0	0	0
EBL	0	0	0	0	0	0
EBT	0	0	0	0	0	0
EBR	0	0	0	0	0	0
WBL	12	0	12	34	0	34
WBT	0	0	0	0	0	0
WBR	3	0	3	9	0	9
North Leg						
Approach	451	17	468	492	21	513
Departure	551	68	619	721	88	809
Total	1,002	85	1,087	1,213	109	1,322
South Leg						
Approach	568	68	636	726	88	814
Departure	458	17	475	522	21	543
Total	1,026	85	1,111	1,248	109	1,357
East Leg						
Approach	15	0	15	43	0	43
Departure	25	0	25	18	0	18
Total	40	0	40	61	0	61
West Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
Total Approaches						
Approach	1,034	85	1,119	1,261	109	1,370
Departure	1,034	85	1,119	1,261	109	1,370
Total	2,068	170	2,238	2,522	218	2,740

LSA

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
4 Marks Avenue/SR-180 Westbound Ramps						
NBL	0	0	0	0	0	0
NBT	142	5	147	213	7	220
NBR	15	0	15	18	0	18
SBL	0	0	0	0	0	0
SBT	454	17	471	489	20	509
SBR	37	0	37	47	0	47
EBL	0	0	0	0	0	0
EBT	0	0	0	0	0	0
EBR	0	0	0	0	0	0
WBL	227	0	227	372	0	372
WBT	0	0	0	0	0	0
WBR	453	63	516	588	82	670
North Leg						
Approach	491	17	508	536	20	556
Departure	595	68	663	801	89	890
Total	1,086	85	1,171	1,337	109	1,446
South Leg						
Approach	157	5	162	231	7	238
Departure	681	17	698	861	20	881
Total	838	22	860	1,092	27	1,119
East Leg						
Approach	680	63	743	960	82	1,042
Departure	15	0	15	18	0	18
Total	695	63	758	978	82	1,060
West Leg						
Approach	0	0	0	0	0	0
Departure	37	0	37	47	0	47
Total	37	0	37	47	0	47
Total Approaches						
Approach	1,328	85	1,413	1,727	109	1,836
Departure	1,328	85	1,413	1,727	109	1,836
Total	2,656	170	2,826	3,454	218	3,672

LSA

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
5 Marks Avenue/SR-180 Eastbound Ramps						
NBL	0	0	0	0	0	0
NBT	128	3	131	198	3	201
NBR	358	0	358	296	0	296
SBL	0	0	0	0	0	0
SBT	361	0	361	517	0	517
SBR	320	16	336	344	20	364
EBL	29	3	32	33	3	36
EBT	0	0	0	0	0	0
EBR	11	0	11	22	0	22
WBL	0	0	0	0	0	0
WBT	0	0	0	0	0	0
WBR	0	0	0	0	0	0
North Leg						
Approach	681	16	697	861	20	881
Departure	157	6	163	231	6	237
Total	838	22	860	1,092	26	1,118
South Leg						
Approach	486	3	489	494	3	497
Departure	372	0	372	539	0	539
Total	858	3	861	1,033	3	1,036
East Leg						
Approach	0	0	0	0	0	0
Departure	358	0	358	296	0	296
Total	358	0	358	296	0	296
West Leg						
Approach	40	3	43	55	3	58
Departure	320	16	336	344	20	364
Total	360	19	379	399	23	422
Total Approaches						
Approach	1,207	22	1,229	1,410	26	1,436
Departure	1,207	22	1,229	1,410	26	1,436
Total	2,414	44	2,458	2,820	52	2,872

APPENDIX D:

INTERSECTION LEVEL OF SERVICE WORKSHEETS

Intersection	
Intersection Delay, s/veh	18.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	127	87	39	78	11	49	261	67	39	424	28
Future Vol, veh/h	24	127	87	39	78	11	49	261	67	39	424	28
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	29	153	105	47	94	13	59	314	81	47	511	34
Number of Lanes	1	2	0	1	1	1	1	1	1	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	13.8	13.3	20.6	21.1
HCM LOS	B	B	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	33%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	67%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	49	261	67	24	85	129	39	78	11	39	283
LT Vol	49	0	0	24	0	0	39	0	0	39	0
Through Vol	0	261	0	0	85	42	0	78	0	0	283
RT Vol	0	0	67	0	0	87	0	0	11	0	0
Lane Flow Rate	59	314	81	29	102	156	47	94	13	47	341
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.134	0.67	0.156	0.07	0.233	0.335	0.118	0.224	0.029	0.103	0.702
Departure Headway (Hd)	8.168	7.668	6.968	8.716	8.216	7.745	9.074	8.574	7.874	7.917	7.417
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	439	472	513	410	437	463	394	418	453	452	487
Service Time	5.927	5.427	4.727	6.482	5.982	5.511	6.847	6.347	5.647	5.672	5.172
HCM Lane V/C Ratio	0.134	0.665	0.158	0.071	0.233	0.337	0.119	0.225	0.029	0.104	0.7
HCM Control Delay	12.2	24.7	11	12.1	13.5	14.4	13.1	13.8	10.9	11.6	25.9
HCM Lane LOS	B	C	B	B	B	B	B	B	B	B	D
HCM 95th-tile Q	0.5	4.9	0.5	0.2	0.9	1.5	0.4	0.8	0.1	0.3	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	7	42	18	4	10	62	349	70	9	343	34
Future Volume (veh/h)	12	7	42	18	4	10	62	349	70	9	343	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	15	9	52	22	5	12	77	431	86	11	423	42
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	169	140	118	163	140	118	123	2716	1211	38	2545	1135
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.75	0.75	0.02	0.71	0.71
Sat Flow, veh/h	1418	1900	1610	1363	1900	1610	1810	3610	1610	1810	3610	1610
Grp Volume(v), veh/h	15	9	52	22	5	12	77	431	86	11	423	42
Grp Sat Flow(s),veh/h/ln	1418	1900	1610	1363	1900	1610	1810	1805	1610	1810	1805	1610
Q Serve(g_s), s	1.0	0.5	3.2	1.6	0.3	0.7	4.3	3.5	1.5	0.6	4.1	0.8
Cycle Q Clear(g_c), s	1.3	0.5	3.2	2.1	0.3	0.7	4.3	3.5	1.5	0.6	4.1	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	169	140	118	163	140	118	123	2716	1211	38	2545	1135
V/C Ratio(X)	0.09	0.06	0.44	0.14	0.04	0.10	0.62	0.16	0.07	0.29	0.17	0.04
Avail Cap(c_a), veh/h	661	798	676	635	798	676	260	2716	1211	260	2545	1135
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.8	45.3	46.6	46.2	45.2	45.4	47.6	3.7	3.4	50.6	5.2	4.7
Incr Delay (d2), s/veh	0.5	0.5	5.9	0.9	0.2	0.9	1.9	0.1	0.1	1.6	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.2	1.5	0.6	0.1	0.3	2.0	1.0	0.4	0.3	1.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	45.7	52.5	47.1	45.4	46.3	49.5	3.8	3.5	52.2	5.3	4.8
LnGrp LOS	D	D	D	D	D	D	D	A	A	D	A	A
Approach Vol, veh/h		76			39			594			476	
Approach Delay, s/veh		50.5			46.6			9.7			6.3	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	79.3		13.6	7.1	84.3		13.6
Change Period (Y+Rc), s	4.9	5.3		5.9	4.9	5.3		5.9
Max Green Setting (Gmax), s	15.1	29.7		44.1	15.1	29.7		44.1
Max Q Clear Time (g_c+I1), s	6.3	6.1		4.1	2.6	5.5		5.2
Green Ext Time (p_c), s	0.0	5.7		0.2	0.0	6.1		0.6

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	3	479	6	3	399
Future Volume (veh/h)	8	3	479	6	3	399
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	10	4	599	8	4	499
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	48	43	2913	39	15	3094
Arrive On Green	0.03	0.03	0.80	0.80	0.01	0.86
Sat Flow, veh/h	1810	1610	3743	49	1810	3705
Grp Volume(v), veh/h	10	4	296	311	4	499
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1891	1810	1805
Q Serve(g_s), s	0.4	0.2	3.2	3.2	0.2	1.8
Cycle Q Clear(g_c), s	0.4	0.2	3.2	3.2	0.2	1.8
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	48	43	1441	1510	15	3094
V/C Ratio(X)	0.21	0.09	0.21	0.21	0.26	0.16
Avail Cap(c_a), veh/h	588	523	1441	1510	362	3094
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.88	0.88	0.99	0.99
Uniform Delay (d), s/veh	38.1	38.0	1.9	1.9	39.4	0.9
Incr Delay (d2), s/veh	4.4	2.0	0.3	0.3	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.2	0.4	0.5	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.5	40.0	2.2	2.2	42.6	1.1
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	14		607			503
Approach Delay, s/veh	41.8		2.2			1.4
Approach LOS	D		A			A

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	73.9		6.1	4.7	69.2
Change Period (Y+Rc), s	5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s	44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s	3.8		2.4	2.2	5.2
Green Ext Time (p_c), s	5.3		0.0	0.0	5.0

Intersection Summary	
HCM 6th Ctrl Delay	2.3
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	180	0	395	0	82	11	0	402	24
Future Volume (veh/h)	0	0	0	180	0	395	0	82	11	0	402	24
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				250	0	549	0	114	0	0	558	0
Peak Hour Factor				0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1071	0	953	0	1981		0	1981	
Arrive On Green				0.30	0.00	0.30	0.00	0.55	0.00	0.00	0.55	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				250	0	549	0	114	0	0	558	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				4.4	0.0	12.3	0.0	1.3	0.0	0.0	7.0	0.0
Cycle Q Clear(g_c), s				4.4	0.0	12.3	0.0	1.3	0.0	0.0	7.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1071	0	953	0	1981		0	1981	
V/C Ratio(X)				0.23	0.00	0.58	0.00	0.06		0.00	0.28	
Avail Cap(c_a), veh/h				1516	0	1349	0	1981		0	1981	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				22.6	0.0	25.4	0.0	8.9	0.0	0.0	10.2	0.0
Incr Delay (d2), s/veh				0.5	0.0	2.5	0.0	0.1	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.8	0.0	4.7	0.0	0.4	0.0	0.0	2.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				23.1	0.0	27.9	0.0	9.0	0.0	0.0	10.6	0.0
LnGrp LOS				C	A	C	A	A		A	B	
Approach Vol, veh/h					799			114	A		558	A
Approach Delay, s/veh					26.4			9.0			10.6	
Approach LOS					C			A			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	53.4		53.4		31.6			
Change Period (Y+Rc), s	6.8		6.8		6.4			
Max Green Setting (Gmax), s	36.2		36.2		35.6			
Max Q Clear Time (g_c+I1), s	3.3		9.0		14.3			
Green Ext Time (p_c), s	1.8		9.9		10.8			

Intersection Summary								
HCM 6th Ctrl Delay	19.1							
HCM 6th LOS	B							

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	0	11	0	0	0	0	83	223	0	291	291
Future Volume (veh/h)	10	0	11	0	0	0	0	83	223	0	291	291
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	11	0	12				0	90	0	0	316	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	76	0	67				0	1420		0	2698	
Arrive On Green	0.04	0.00	0.04				0.00	0.75	0.00	0.00	0.75	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	11	0	12				0	90	0	0	316	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	0.4	0.0	0.5				0.0	0.8	0.0	0.0	1.6	0.0
Cycle Q Clear(g_c), s	0.4	0.0	0.5				0.0	0.8	0.0	0.0	1.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	76	0	67				0	1420		0	2698	
V/C Ratio(X)	0.15	0.00	0.18				0.00	0.06		0.00	0.12	
Avail Cap(c_a), veh/h	646	0	575				0	1420		0	2698	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.97	0.00
Uniform Delay (d), s/veh	30.0	0.0	30.1				0.0	2.2	0.0	0.0	2.3	0.0
Incr Delay (d2), s/veh	4.0	0.0	5.7				0.0	0.1	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.3				0.0	0.1	0.0	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.0	0.0	35.8				0.0	2.3	0.0	0.0	2.4	0.0
LnGrp LOS	C	A	D				A	A		A	A	
Approach Vol, veh/h		23						90	A		316	A
Approach Delay, s/veh		34.9						2.3			2.4	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	55.5	9.5	55.5
Change Period (Y+Rc), s	6.9	6.8	6.9
Max Green Setting (Gmax), s	28.1	23.2	28.1
Max Q Clear Time (g_c+I1), s	2.8	2.5	3.6
Green Ext Time (p_c), s	1.1	0.1	5.1

Intersection Summary	
HCM 6th Ctrl Delay	4.1
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	192	17	27	152	15	6	27	33	26	22	15
Future Vol, veh/h	20	192	17	27	152	15	6	27	33	26	22	15
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	22	211	19	30	167	16	7	30	36	29	24	16
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	8.8	8.6	8.7	9.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	9%	100%	0%	0%	100%	0%	0%	41%
Vol Thru, %	41%	0%	100%	79%	0%	100%	77%	35%
Vol Right, %	50%	0%	0%	21%	0%	0%	23%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	66	20	128	81	27	101	66	63
LT Vol	6	20	0	0	27	0	0	26
Through Vol	27	0	128	64	0	101	51	22
RT Vol	33	0	0	17	0	0	15	15
Lane Flow Rate	73	22	141	89	30	111	72	69
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.107	0.034	0.199	0.122	0.046	0.159	0.1	0.109
Departure Headway (Hd)	5.32	5.601	5.098	4.95	5.636	5.133	4.972	5.662
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	671	638	703	723	635	697	719	631
Service Time	3.072	3.342	2.838	2.69	3.377	2.874	2.713	3.415
HCM Lane V/C Ratio	0.109	0.034	0.201	0.123	0.047	0.159	0.1	0.109
HCM Control Delay	8.7	8.5	9.1	8.4	8.7	8.8	8.3	9.1
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.7	0.4	0.1	0.6	0.3	0.4

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	35	24	2	10	8	5	44	1	8	46	10
Future Vol, veh/h	8	35	24	2	10	8	5	44	1	8	46	10
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	42	29	2	12	10	6	52	1	10	55	12
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	7.7	7.5	8.3	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	10%	100%	0%	100%	0%	15%	0%
Vol Thru, %	88%	0%	59%	0%	56%	85%	0%
Vol Right, %	2%	0%	41%	0%	44%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	8	59	2	18	54	10
LT Vol	5	8	0	2	0	8	0
Through Vol	44	0	35	0	10	46	0
RT Vol	1	0	24	0	8	0	10
Lane Flow Rate	60	10	70	2	21	64	12
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.08	0.014	0.089	0.004	0.027	0.085	0.013
Departure Headway (Hd)	4.842	5.359	4.572	5.407	4.593	4.779	4.004
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	743	671	787	665	783	739	878
Service Time	2.848	3.064	2.277	3.112	2.298	2.578	1.803
HCM Lane V/C Ratio	0.081	0.015	0.089	0.003	0.027	0.087	0.014
HCM Control Delay	8.3	8.1	7.7	8.1	7.4	8	6.9
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.3	0	0.3	0	0.1	0.3	0

Intersection	
Intersection Delay, s/veh	95.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	174	63	36	126	53	97	589	76	25	259	26
Future Vol, veh/h	24	174	63	36	126	53	97	589	76	25	259	26
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	27	198	72	41	143	60	110	669	86	28	294	30
Number of Lanes	1	2	0	1	1	1	1	1	1	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	15.7	15.5	176.8	17.1
HCM LOS	C	C	F	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	48%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	52%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	97	589	76	24	116	121	36	126	53	25	173
LT Vol	97	0	0	24	0	0	36	0	0	25	0
Through Vol	0	589	0	0	116	58	0	126	0	0	173
RT Vol	0	0	76	0	0	63	0	0	53	0	0
Lane Flow Rate	110	669	86	27	132	138	41	143	60	28	196
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.25	1.426	0.167	0.069	0.317	0.317	0.105	0.35	0.136	0.07	0.459
Departure Headway (Hd)	8.171	7.671	6.971	9.747	9.247	8.882	9.896	9.396	8.696	9.426	8.926
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	441	475	516	370	391	407	365	385	415	382	406
Service Time	5.904	5.404	4.704	7.447	6.947	6.582	7.596	7.096	6.396	7.126	6.626
HCM Lane V/C Ratio	0.249	1.408	0.167	0.073	0.338	0.339	0.112	0.371	0.145	0.073	0.483
HCM Control Delay	13.6	225.1	11.1	13.2	16.2	15.7	13.8	17.1	12.8	12.8	19
HCM Lane LOS	B	F	B	B	C	C	B	C	B	B	C
HCM 95th-tile Q	1	32.6	0.6	0.2	1.3	1.3	0.3	1.5	0.5	0.2	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	3	41	78	9	11	37	568	36	10	318	20
Future Volume (veh/h)	24	3	41	78	9	11	37	568	36	10	318	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	25	3	43	81	9	11	39	592	38	10	331	21
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	181	160	135	183	160	135	94	2683	1197	35	2566	1145
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.05	0.74	0.74	0.02	0.71	0.71
Sat Flow, veh/h	1414	1900	1610	1381	1900	1610	1810	3610	1610	1810	3610	1610
Grp Volume(v), veh/h	25	3	43	81	9	11	39	592	38	10	331	21
Grp Sat Flow(s),veh/h/ln	1414	1900	1610	1381	1900	1610	1810	1805	1610	1810	1805	1610
Q Serve(g_s), s	1.7	0.2	2.6	6.0	0.5	0.7	2.2	5.3	0.7	0.6	3.1	0.4
Cycle Q Clear(g_c), s	2.2	0.2	2.6	6.2	0.5	0.7	2.2	5.3	0.7	0.6	3.1	0.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	181	160	135	183	160	135	94	2683	1197	35	2566	1145
V/C Ratio(X)	0.14	0.02	0.32	0.44	0.06	0.08	0.42	0.22	0.03	0.29	0.13	0.02
Avail Cap(c_a), veh/h	656	798	676	647	798	676	260	2683	1197	260	2566	1145
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.3	44.1	45.2	46.9	44.3	44.3	48.2	4.1	3.5	50.8	4.8	4.4
Incr Delay (d2), s/veh	0.8	0.1	3.1	3.9	0.3	0.6	1.1	0.2	0.0	1.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	1.1	2.2	0.2	0.3	1.0	1.5	0.2	0.3	0.9	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.1	44.2	48.4	50.9	44.6	44.9	49.3	4.3	3.6	52.4	4.9	4.5
LnGrp LOS	D	D	D	D	D	D	D	A	A	D	A	A
Approach Vol, veh/h		71			101			669			362	
Approach Delay, s/veh		47.4			49.7			6.9			6.2	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.3	79.9		14.7	6.9	83.3		14.7
Change Period (Y+Rc), s	4.9	5.3		5.9	4.9	5.3		5.9
Max Green Setting (Gmax), s	15.1	29.7		44.1	15.1	29.7		44.1
Max Q Clear Time (g_c+I1), s	4.2	5.1		8.2	2.6	7.3		4.6
Green Ext Time (p_c), s	0.0	4.3		0.7	0.0	7.6		0.5

Intersection Summary		
HCM 6th Ctrl Delay	12.7	
HCM 6th LOS	B	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	6	635	10	4	432
Future Volume (veh/h)	17	6	635	10	4	432
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	18	7	690	11	4	470
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	77	69	2846	45	15	3036
Arrive On Green	0.04	0.04	0.78	0.78	0.01	0.84
Sat Flow, veh/h	1810	1610	3732	58	1810	3705
Grp Volume(v), veh/h	18	7	342	359	4	470
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1890	1810	1805
Q Serve(g_s), s	0.8	0.3	4.1	4.1	0.2	1.9
Cycle Q Clear(g_c), s	0.8	0.3	4.1	4.1	0.2	1.9
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	77	69	1413	1479	15	3036
V/C Ratio(X)	0.23	0.10	0.24	0.24	0.26	0.15
Avail Cap(c_a), veh/h	588	523	1413	1479	362	3036
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.88	0.88	0.99	0.99
Uniform Delay (d), s/veh	37.0	36.8	2.3	2.3	39.4	1.2
Incr Delay (d2), s/veh	3.3	1.4	0.4	0.3	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.3	0.7	0.7	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	40.3	38.2	2.7	2.7	42.6	1.3
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	25		701			474
Approach Delay, s/veh	39.7		2.7			1.6
Approach LOS	D		A			A

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	72.6		7.4	4.7	67.9
Change Period (Y+Rc), s	5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s	44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s	3.9		2.8	2.2	6.1
Green Ext Time (p_c), s	5.0		0.1	0.0	5.7

Intersection Summary	
HCM 6th Ctrl Delay	3.0
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	242	0	518	0	144	15	0	425	23
Future Volume (veh/h)	0	0	0	242	0	518	0	144	15	0	425	23
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				299	0	640	0	178	0	0	525	0
Peak Hour Factor				0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1190	0	1059	0	1862		0	1862	
Arrive On Green				0.33	0.00	0.33	0.00	0.52	0.00	0.00	0.52	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				299	0	640	0	178	0	0	525	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				5.1	0.0	14.2	0.0	2.1	0.0	0.0	7.0	0.0
Cycle Q Clear(g_c), s				5.1	0.0	14.2	0.0	2.1	0.0	0.0	7.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1190	0	1059	0	1862		0	1862	
V/C Ratio(X)				0.25	0.00	0.60	0.00	0.10		0.00	0.28	
Avail Cap(c_a), veh/h				1516	0	1349	0	1862		0	1862	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				20.9	0.0	23.9	0.0	10.5	0.0	0.0	11.7	0.0
Incr Delay (d2), s/veh				0.5	0.0	2.6	0.0	0.1	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.1	0.0	5.3	0.0	0.8	0.0	0.0	2.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				21.4	0.0	26.5	0.0	10.6	0.0	0.0	12.0	0.0
LnGrp LOS				C	A	C	A	B		A	B	
Approach Vol, veh/h					939			178	A		525	A
Approach Delay, s/veh					24.8			10.6			12.0	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	50.7		50.7		34.3			
Change Period (Y+Rc), s	6.8		6.8		6.4			
Max Green Setting (Gmax), s	36.2		36.2		35.6			
Max Q Clear Time (g_c+I1), s	4.1		9.0		16.2			
Green Ext Time (p_c), s	3.0		9.3		11.8			

Intersection Summary								
HCM 6th Ctrl Delay	19.2							
HCM 6th LOS	B							

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	0	20	0	0	0	0	140	266	0	359	308
Future Volume (veh/h)	19	0	20	0	0	0	0	140	266	0	359	308
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	21	0	22				0	152	0	0	390	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	120	0	107				0	1373		0	2609	
Arrive On Green	0.07	0.00	0.07				0.00	0.72	0.00	0.00	0.72	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	21	0	22				0	152	0	0	390	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	0.7	0.0	0.8				0.0	1.6	0.0	0.0	2.2	0.0
Cycle Q Clear(g_c), s	0.7	0.0	0.8				0.0	1.6	0.0	0.0	2.2	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	120	0	107				0	1373		0	2609	
V/C Ratio(X)	0.17	0.00	0.21				0.00	0.11		0.00	0.15	
Avail Cap(c_a), veh/h	646	0	575				0	1373		0	2609	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.97	0.00
Uniform Delay (d), s/veh	28.7	0.0	28.7				0.0	2.7	0.0	0.0	2.8	0.0
Incr Delay (d2), s/veh	3.1	0.0	4.3				0.0	0.2	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.4				0.0	0.3	0.0	0.0	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	0.0	33.0				0.0	2.9	0.0	0.0	2.9	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		43						152	A		390	A
Approach Delay, s/veh		32.4						2.9			2.9	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	53.9	11.1	53.9
Change Period (Y+Rc), s	6.9	6.8	6.9
Max Green Setting (Gmax), s	28.1	23.2	28.1
Max Q Clear Time (g_c+I1), s	3.6	2.8	4.2
Green Ext Time (p_c), s	2.1	0.3	6.4

Intersection Summary	
HCM 6th Ctrl Delay	5.1
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	239	10	43	190	34	14	42	56	40	47	15
Future Vol, veh/h	37	239	10	43	190	34	14	42	56	40	47	15
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	45	291	12	52	232	41	17	51	68	49	57	18
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	10.5	10	10.7	11.1
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	12%	100%	0%	0%	100%	0%	0%	39%
Vol Thru, %	38%	0%	100%	89%	0%	100%	65%	46%
Vol Right, %	50%	0%	0%	11%	0%	0%	35%	15%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	112	37	159	90	43	127	97	102
LT Vol	14	37	0	0	43	0	0	40
Through Vol	42	0	159	80	0	127	63	47
RT Vol	56	0	0	10	0	0	34	15
Lane Flow Rate	137	45	194	109	52	154	119	124
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.231	0.079	0.313	0.173	0.092	0.25	0.184	0.224
Departure Headway (Hd)	6.088	6.297	5.79	5.711	6.329	5.822	5.574	6.479
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	589	569	622	628	566	616	643	554
Service Time	3.832	4.034	3.526	3.447	4.067	3.56	3.311	4.223
HCM Lane V/C Ratio	0.233	0.079	0.312	0.174	0.092	0.25	0.185	0.224
HCM Control Delay	10.7	9.6	11.2	9.6	9.7	10.5	9.6	11.1
HCM Lane LOS	B	A	B	A	A	B	A	B
HCM 95th-tile Q	0.9	0.3	1.3	0.6	0.3	1	0.7	0.9

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	25	11	4	35	14	25	83	3	9	73	13
Future Vol, veh/h	8	25	11	4	35	14	25	83	3	9	73	13
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	30	13	5	43	17	30	101	4	11	89	16
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	8.1	8.2	9.1	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	23%	100%	0%	100%	0%	11%	0%
Vol Thru, %	75%	0%	69%	0%	71%	89%	0%
Vol Right, %	3%	0%	31%	0%	29%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	111	8	36	4	49	82	13
LT Vol	25	8	0	4	0	9	0
Through Vol	83	0	25	0	35	73	0
RT Vol	3	0	11	0	14	0	13
Lane Flow Rate	135	10	44	5	60	100	16
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.187	0.015	0.061	0.008	0.083	0.138	0.019
Departure Headway (Hd)	4.964	5.701	4.983	5.691	4.986	4.973	4.216
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	724	629	720	630	719	723	850
Service Time	2.984	3.426	2.707	3.414	2.709	2.693	1.936
HCM Lane V/C Ratio	0.186	0.016	0.061	0.008	0.083	0.138	0.019
HCM Control Delay	9.1	8.5	8	8.5	8.2	8.5	7
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.7	0	0.2	0	0.3	0.5	0.1

Intersection	
Intersection Delay, s/veh	20.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	127	94	52	78	11	50	268	70	39	449	28
Future Vol, veh/h	24	127	94	52	78	11	50	268	70	39	449	28
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	29	153	113	63	94	13	60	323	84	47	541	34
Number of Lanes	1	2	0	1	1	1	1	1	1	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	14.5	13.8	22.8	24.4
HCM LOS	B	B	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	31%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	69%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	268	70	24	85	136	52	78	11	39	299
LT Vol	50	0	0	24	0	0	52	0	0	39	0
Through Vol	0	268	0	0	85	42	0	78	0	0	299
RT Vol	0	0	70	0	0	94	0	0	11	0	0
Lane Flow Rate	60	323	84	29	102	164	63	94	13	47	361
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.14	0.707	0.168	0.072	0.239	0.363	0.162	0.229	0.03	0.106	0.761
Departure Headway (Hd)	8.384	7.884	7.184	8.947	8.447	7.965	9.287	8.787	8.087	8.099	7.599
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	427	459	498	399	424	450	385	407	441	442	476
Service Time	6.153	5.653	4.953	6.723	6.223	5.74	7.071	6.571	5.871	5.863	5.363
HCM Lane V/C Ratio	0.141	0.704	0.169	0.073	0.241	0.364	0.164	0.231	0.029	0.106	0.758
HCM Control Delay	12.5	27.7	11.4	12.4	13.9	15.3	13.9	14.2	11.1	11.8	30.9
HCM Lane LOS	B	D	B	B	B	C	B	B	B	B	D
HCM 95th-tile Q	0.5	5.4	0.6	0.2	0.9	1.6	0.6	0.9	0.1	0.4	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	8	42	25	4	10	62	349	98	9	343	34
Future Volume (veh/h)	12	8	42	25	4	10	62	349	98	9	343	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	15	10	52	31	5	12	77	431	121	11	423	42
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	170	141	119	163	141	119	123	2713	1210	38	2543	1134
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.75	0.75	0.02	0.70	0.70
Sat Flow, veh/h	1418	1900	1610	1362	1900	1610	1810	3610	1610	1810	3610	1610
Grp Volume(v), veh/h	15	10	52	31	5	12	77	431	121	11	423	42
Grp Sat Flow(s),veh/h/ln	1418	1900	1610	1362	1900	1610	1810	1805	1610	1810	1805	1610
Q Serve(g_s), s	1.0	0.5	3.2	2.3	0.3	0.7	4.3	3.5	2.1	0.6	4.1	0.8
Cycle Q Clear(g_c), s	1.3	0.5	3.2	2.8	0.3	0.7	4.3	3.5	2.1	0.6	4.1	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	170	141	119	163	141	119	123	2713	1210	38	2543	1134
V/C Ratio(X)	0.09	0.07	0.44	0.19	0.04	0.10	0.62	0.16	0.10	0.29	0.17	0.04
Avail Cap(c_a), veh/h	661	798	676	634	798	676	260	2713	1210	260	2543	1134
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	45.2	46.5	46.5	45.1	45.3	47.6	3.7	3.5	50.6	5.2	4.7
Incr Delay (d2), s/veh	0.5	0.5	5.8	1.3	0.2	0.9	1.9	0.1	0.2	1.6	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.3	1.5	0.8	0.1	0.3	2.0	1.0	0.5	0.3	1.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.2	45.7	52.3	47.9	45.4	46.2	49.5	3.8	3.7	52.2	5.3	4.8
LnGrp LOS	D	D	D	D	D	D	D	A	A	D	A	A
Approach Vol, veh/h		77			48			629			476	
Approach Delay, s/veh		50.3			47.2			9.4			6.4	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	79.3		13.7	7.1	84.2		13.7
Change Period (Y+Rc), s	4.9	5.3		5.9	4.9	5.3		5.9
Max Green Setting (Gmax), s	15.1	29.7		44.1	15.1	29.7		44.1
Max Q Clear Time (g_c+I1), s	6.3	6.1		4.8	2.6	5.5		5.2
Green Ext Time (p_c), s	0.0	5.7		0.3	0.0	6.4		0.6

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	3	507	6	3	406
Future Volume (veh/h)	8	3	507	6	3	406
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	10	4	634	8	4	508
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	48	43	2915	37	15	3094
Arrive On Green	0.03	0.03	0.80	0.80	0.01	0.86
Sat Flow, veh/h	1810	1610	3746	46	1810	3705
Grp Volume(v), veh/h	10	4	313	329	4	508
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1892	1810	1805
Q Serve(g_s), s	0.4	0.2	3.4	3.4	0.2	1.9
Cycle Q Clear(g_c), s	0.4	0.2	3.4	3.4	0.2	1.9
Prop In Lane	1.00	1.00		0.02	1.00	
Lane Grp Cap(c), veh/h	48	43	1441	1511	15	3094
V/C Ratio(X)	0.21	0.09	0.22	0.22	0.26	0.16
Avail Cap(c_a), veh/h	588	523	1441	1511	362	3094
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.87	0.87	0.99	0.99
Uniform Delay (d), s/veh	38.1	38.0	2.0	2.0	39.4	1.0
Incr Delay (d2), s/veh	4.4	2.0	0.3	0.3	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.2	0.5	0.5	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.5	40.0	2.3	2.3	42.6	1.1
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	14		642			512
Approach Delay, s/veh	41.8		2.3			1.4
Approach LOS	D		A			A

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	73.9		6.1	4.7	69.2
Change Period (Y+Rc), s	5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s	44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s	3.9		2.4	2.2	5.4
Green Ext Time (p_c), s	5.5		0.0	0.0	5.3

Intersection Summary	
HCM 6th Ctrl Delay	2.4
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	180	0	418	0	87	11	0	409	24
Future Volume (veh/h)	0	0	0	180	0	418	0	87	11	0	409	24
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				250	0	581	0	121	0	0	568	0
Peak Hour Factor				0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1108	0	986	0	1944		0	1944	
Arrive On Green				0.31	0.00	0.31	0.00	0.54	0.00	0.00	0.54	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				250	0	581	0	121	0	0	568	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				4.4	0.0	13.0	0.0	1.4	0.0	0.0	7.3	0.0
Cycle Q Clear(g_c), s				4.4	0.0	13.0	0.0	1.4	0.0	0.0	7.3	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1108	0	986	0	1944		0	1944	
V/C Ratio(X)				0.23	0.00	0.59	0.00	0.06		0.00	0.29	
Avail Cap(c_a), veh/h				1516	0	1349	0	1944		0	1944	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.99	0.00
Uniform Delay (d), s/veh				22.0	0.0	25.0	0.0	9.4	0.0	0.0	10.7	0.0
Incr Delay (d2), s/veh				0.5	0.0	2.6	0.0	0.1	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.8	0.0	4.9	0.0	0.5	0.0	0.0	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				22.5	0.0	27.6	0.0	9.4	0.0	0.0	11.1	0.0
LnGrp LOS				C	A	C	A	A		A	B	
Approach Vol, veh/h					831			121	A		568	A
Approach Delay, s/veh					26.0			9.4			11.1	
Approach LOS					C			A			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	52.6		52.6		32.4			
Change Period (Y+Rc), s	6.8		6.8		6.4			
Max Green Setting (Gmax), s	36.2		36.2		35.6			
Max Q Clear Time (g_c+I1), s	3.4		9.3		15.0			
Green Ext Time (p_c), s	1.9		10.1		11.0			

Intersection Summary								
HCM 6th Ctrl Delay	19.1							
HCM 6th LOS	B							

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	0	11	0	0	0	0	86	223	0	291	298
Future Volume (veh/h)	12	0	11	0	0	0	0	86	223	0	291	298
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	13	0	12				0	93	0	0	316	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	81	0	72				0	1415		0	2688	
Arrive On Green	0.04	0.00	0.04				0.00	0.74	0.00	0.00	0.74	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	13	0	12				0	93	0	0	316	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	0.4	0.0	0.5				0.0	0.9	0.0	0.0	1.6	0.0
Cycle Q Clear(g_c), s	0.4	0.0	0.5				0.0	0.9	0.0	0.0	1.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	81	0	72				0	1415		0	2688	
V/C Ratio(X)	0.16	0.00	0.17				0.00	0.07		0.00	0.12	
Avail Cap(c_a), veh/h	646	0	575				0	1415		0	2688	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.97	0.00
Uniform Delay (d), s/veh	29.9	0.0	29.9				0.0	2.2	0.0	0.0	2.3	0.0
Incr Delay (d2), s/veh	4.2	0.0	4.9				0.0	0.1	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3				0.0	0.1	0.0	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.1	0.0	34.8				0.0	2.3	0.0	0.0	2.4	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		25						93	A		316	A
Approach Delay, s/veh		34.4						2.3			2.4	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	55.3	9.7	55.3
Change Period (Y+Rc), s	6.9	6.8	6.9
Max Green Setting (Gmax), s	28.1	23.2	28.1
Max Q Clear Time (g_c+I1), s	2.9	2.5	3.6
Green Ext Time (p_c), s	1.2	0.1	5.1

Intersection Summary	
HCM 6th Ctrl Delay	4.2
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	195	17	44	164	15	6	28	38	26	25	15
Future Vol, veh/h	20	195	17	44	164	15	6	28	38	26	25	15
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	22	214	19	48	180	16	7	31	42	29	27	16
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	9	8.8	8.9	9.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	8%	100%	0%	0%	100%	0%	0%	39%
Vol Thru, %	39%	0%	100%	79%	0%	100%	78%	38%
Vol Right, %	53%	0%	0%	21%	0%	0%	22%	23%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	20	130	82	44	109	70	66
LT Vol	6	20	0	0	44	0	0	26
Through Vol	28	0	130	65	0	109	55	25
RT Vol	38	0	0	17	0	0	15	15
Lane Flow Rate	79	22	143	90	48	120	77	73
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.118	0.035	0.205	0.126	0.076	0.173	0.107	0.116
Departure Headway (Hd)	5.384	5.668	5.165	5.018	5.674	5.17	5.018	5.751
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	662	630	693	712	630	691	711	620
Service Time	3.147	3.418	2.914	2.768	3.425	2.921	2.769	3.515
HCM Lane V/C Ratio	0.119	0.035	0.206	0.126	0.076	0.174	0.108	0.118
HCM Control Delay	8.9	8.6	9.3	8.5	8.9	9	8.4	9.3
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.8	0.4	0.2	0.6	0.4	0.4

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	35	25	2	12	15	9	46	1	10	47	10
Future Vol, veh/h	8	35	25	2	12	15	9	46	1	10	47	10
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	42	30	2	14	18	11	55	1	12	56	12
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	7.8	7.5	8.4	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	16%	100%	0%	100%	0%	18%	0%
Vol Thru, %	82%	0%	58%	0%	44%	82%	0%
Vol Right, %	2%	0%	42%	0%	56%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	8	60	2	27	57	10
LT Vol	9	8	0	2	0	10	0
Through Vol	46	0	35	0	12	47	0
RT Vol	1	0	25	0	15	0	10
Lane Flow Rate	67	10	71	2	32	68	12
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.091	0.014	0.091	0.004	0.041	0.093	0.014
Departure Headway (Hd)	4.89	5.399	4.604	5.44	4.547	4.92	4.131
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	736	665	781	660	790	732	870
Service Time	2.9	3.112	2.317	3.153	2.26	2.63	1.84
HCM Lane V/C Ratio	0.091	0.015	0.091	0.003	0.041	0.093	0.014
HCM Control Delay	8.4	8.2	7.8	8.2	7.5	8.1	6.9
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.3	0	0.3	0	0.1	0.3	0

Intersection	
Intersection Delay, s/veh	104
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	174	72	52	126	53	99	596	80	25	293	26
Future Vol, veh/h	24	174	72	52	126	53	99	596	80	25	293	26
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	27	198	82	59	143	60	113	677	91	28	333	30
Number of Lanes	1	2	0	1	1	1	1	1	1	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	16.5	16	198.4	19.1
HCM LOS	C	C	F	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	45%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	55%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	99	596	80	24	116	130	52	126	53	25	195
LT Vol	99	0	0	24	0	0	52	0	0	25	0
Through Vol	0	596	0	0	116	58	0	126	0	0	195
RT Vol	0	0	80	0	0	72	0	0	53	0	0
Lane Flow Rate	112	677	91	27	132	148	59	143	60	28	222
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.263	1.492	0.183	0.071	0.325	0.349	0.156	0.358	0.139	0.072	0.53
Departure Headway (Hd)	8.431	7.931	7.231	10.063	9.563	9.175	10.19	9.69	8.99	9.673	9.173
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	426	461	496	358	378	394	354	374	401	373	395
Service Time	6.174	5.674	4.974	7.763	7.263	6.875	7.89	7.39	6.69	7.373	6.873
HCM Lane V/C Ratio	0.263	1.469	0.183	0.075	0.349	0.376	0.167	0.382	0.15	0.075	0.562
HCM Control Delay	14.2	254.1	11.6	13.5	16.8	16.7	14.8	17.7	13.1	13.1	21.8
HCM Lane LOS	B	F	B	B	C	C	B	C	B	B	C
HCM 95th-tile Q	1	35	0.7	0.2	1.4	1.5	0.5	1.6	0.5	0.2	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	4	41	87	9	11	37	568	74	10	318	20
Future Volume (veh/h)	24	4	41	87	9	11	37	568	74	10	318	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	25	4	43	91	9	11	39	592	77	10	331	21
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	193	176	149	194	176	149	94	2653	1183	35	2536	1131
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.05	0.73	0.73	0.02	0.70	0.70
Sat Flow, veh/h	1414	1900	1610	1380	1900	1610	1810	3610	1610	1810	3610	1610
Grp Volume(v), veh/h	25	4	43	91	9	11	39	592	77	10	331	21
Grp Sat Flow(s),veh/h/ln	1414	1900	1610	1380	1900	1610	1810	1805	1610	1810	1805	1610
Q Serve(g_s), s	1.7	0.2	2.6	6.7	0.5	0.7	2.2	5.5	1.4	0.6	3.2	0.4
Cycle Q Clear(g_c), s	2.2	0.2	2.6	6.9	0.5	0.7	2.2	5.5	1.4	0.6	3.2	0.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	193	176	149	194	176	149	94	2653	1183	35	2536	1131
V/C Ratio(X)	0.13	0.02	0.29	0.47	0.05	0.07	0.42	0.22	0.07	0.29	0.13	0.02
Avail Cap(c_a), veh/h	656	798	676	646	798	676	260	2653	1183	260	2536	1131
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	43.3	44.4	46.5	43.4	43.5	48.2	4.4	3.9	50.8	5.1	4.7
Incr Delay (d2), s/veh	0.7	0.1	2.5	4.1	0.3	0.5	1.1	0.2	0.1	1.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	1.1	2.5	0.2	0.3	1.0	1.5	0.4	0.3	1.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.1	43.5	46.9	50.6	43.7	44.0	49.3	4.6	4.0	52.4	5.2	4.7
LnGrp LOS	D	D	D	D	D	D	D	A	A	D	A	A
Approach Vol, veh/h		72			111			708			362	
Approach Delay, s/veh		46.1			49.4			7.0			6.5	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.3	79.1		15.6	6.9	82.5		15.6				
Change Period (Y+Rc), s	4.9	5.3		5.9	4.9	5.3		5.9				
Max Green Setting (Gmax), s	15.1	29.7		44.1	15.1	29.7		44.1				
Max Q Clear Time (g_c+I1), s	4.2	5.2		8.9	2.6	7.5		4.6				
Green Ext Time (p_c), s	0.0	4.3		0.8	0.0	7.9		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	12.9
HCM 6th LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	6	673	10	4	441
Future Volume (veh/h)	17	6	673	10	4	441
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	18	7	732	11	4	479
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	77	69	2849	43	15	3036
Arrive On Green	0.04	0.04	0.78	0.78	0.01	0.84
Sat Flow, veh/h	1810	1610	3735	55	1810	3705
Grp Volume(v), veh/h	18	7	363	380	4	479
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1890	1810	1805
Q Serve(g_s), s	0.8	0.3	4.4	4.4	0.2	1.9
Cycle Q Clear(g_c), s	0.8	0.3	4.4	4.4	0.2	1.9
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	77	69	1413	1479	15	3036
V/C Ratio(X)	0.23	0.10	0.26	0.26	0.26	0.16
Avail Cap(c_a), veh/h	588	523	1413	1479	362	3036
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.87	0.87	0.99	0.99
Uniform Delay (d), s/veh	37.0	36.8	2.4	2.4	39.4	1.2
Incr Delay (d2), s/veh	3.3	1.4	0.4	0.4	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.3	0.7	0.7	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	40.3	38.2	2.7	2.7	42.6	1.3
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	25		743			483
Approach Delay, s/veh	39.7		2.7			1.6
Approach LOS	D		A			A

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	72.6		7.4	4.7	67.9
Change Period (Y+Rc), s	5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s	44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s	3.9		2.8	2.2	6.4
Green Ext Time (p_c), s	5.1		0.1	0.0	6.1

Intersection Summary	
HCM 6th Ctrl Delay	3.0
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	242	0	550	0	149	15	0	434	23
Future Volume (veh/h)	0	0	0	242	0	550	0	149	15	0	434	23
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				299	0	679	0	184	0	0	536	0
Peak Hour Factor				0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1228	0	1092	0	1825		0	1825	
Arrive On Green				0.34	0.00	0.34	0.00	0.51	0.00	0.00	0.51	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				299	0	679	0	184	0	0	536	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				5.1	0.0	15.0	0.0	2.3	0.0	0.0	7.3	0.0
Cycle Q Clear(g_c), s				5.1	0.0	15.0	0.0	2.3	0.0	0.0	7.3	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1228	0	1092	0	1825		0	1825	
V/C Ratio(X)				0.24	0.00	0.62	0.00	0.10		0.00	0.29	
Avail Cap(c_a), veh/h				1516	0	1349	0	1825		0	1825	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.99	0.00
Uniform Delay (d), s/veh				20.2	0.0	23.5	0.0	11.0	0.0	0.0	12.2	0.0
Incr Delay (d2), s/veh				0.5	0.0	2.7	0.0	0.1	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.0	0.0	5.6	0.0	0.8	0.0	0.0	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.7	0.0	26.2	0.0	11.1	0.0	0.0	12.6	0.0
LnGrp LOS				C	A	C	A	B		A	B	
Approach Vol, veh/h					978			184	A		536	A
Approach Delay, s/veh					24.5			11.1			12.6	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	49.8		49.8		35.2			
Change Period (Y+Rc), s	6.8		6.8		6.4			
Max Green Setting (Gmax), s	36.2		36.2		35.6			
Max Q Clear Time (g_c+I1), s	4.3		9.3		17.0			
Green Ext Time (p_c), s	3.1		9.5		11.8			

Intersection Summary								
HCM 6th Ctrl Delay	19.3							
HCM 6th LOS	B							

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	0	20	0	0	0	0	143	266	0	360	316
Future Volume (veh/h)	21	0	20	0	0	0	0	143	266	0	360	316
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	23	0	22				0	155	0	0	391	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	124	0	110				0	1369		0	2602	
Arrive On Green	0.07	0.00	0.07				0.00	0.72	0.00	0.00	0.72	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	23	0	22				0	155	0	0	391	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	0.8	0.0	0.8				0.0	1.6	0.0	0.0	2.2	0.0
Cycle Q Clear(g_c), s	0.8	0.0	0.8				0.0	1.6	0.0	0.0	2.2	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	124	0	110				0	1369		0	2602	
V/C Ratio(X)	0.19	0.00	0.20				0.00	0.11		0.00	0.15	
Avail Cap(c_a), veh/h	646	0	575				0	1369		0	2602	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.97	0.00
Uniform Delay (d), s/veh	28.6	0.0	28.6				0.0	2.8	0.0	0.0	2.8	0.0
Incr Delay (d2), s/veh	3.3	0.0	4.0				0.0	0.2	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.4				0.0	0.3	0.0	0.0	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	0.0	32.6				0.0	2.9	0.0	0.0	3.0	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		45						155	A		391	A
Approach Delay, s/veh		32.2						2.9			3.0	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	53.7	11.3	53.7
Change Period (Y+Rc), s	6.9	6.8	6.9
Max Green Setting (Gmax), s	28.1	23.2	28.1
Max Q Clear Time (g_c+I1), s	3.6	2.8	4.2
Green Ext Time (p_c), s	2.2	0.3	6.4

Intersection Summary	
HCM 6th Ctrl Delay	5.2
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	243	10	63	205	34	14	43	61	40	52	15
Future Vol, veh/h	37	243	10	63	205	34	14	43	61	40	52	15
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	45	296	12	77	250	41	17	52	74	49	63	18
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	10.8	10.4	11	11.5
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	12%	100%	0%	0%	100%	0%	0%	37%
Vol Thru, %	36%	0%	100%	89%	0%	100%	67%	49%
Vol Right, %	52%	0%	0%	11%	0%	0%	33%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	118	37	162	91	63	137	102	107
LT Vol	14	37	0	0	63	0	0	40
Through Vol	43	0	162	81	0	137	68	52
RT Vol	61	0	0	10	0	0	34	15
Lane Flow Rate	144	45	198	111	77	167	125	130
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.249	0.081	0.325	0.18	0.137	0.273	0.197	0.24
Departure Headway (Hd)	6.218	6.429	5.921	5.843	6.413	5.905	5.669	6.621
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	577	556	607	613	559	607	631	542
Service Time	3.969	4.176	3.667	3.589	4.16	3.651	3.415	4.374
HCM Lane V/C Ratio	0.25	0.081	0.326	0.181	0.138	0.275	0.198	0.24
HCM Control Delay	11	9.7	11.5	9.9	10.2	10.9	9.8	11.5
HCM Lane LOS	B	A	B	A	B	B	A	B
HCM 95th-tile Q	1	0.3	1.4	0.7	0.5	1.1	0.7	0.9

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	25	13	4	37	23	31	85	3	11	74	13
Future Vol, veh/h	8	25	13	4	37	23	31	85	3	11	74	13
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	30	16	5	45	28	38	104	4	13	90	16
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	8.2	8.2	9.3	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	26%	100%	0%	100%	0%	13%	0%
Vol Thru, %	71%	0%	66%	0%	62%	87%	0%
Vol Right, %	3%	0%	34%	0%	38%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	119	8	38	4	60	85	13
LT Vol	31	8	0	4	0	11	0
Through Vol	85	0	25	0	37	74	0
RT Vol	3	0	13	0	23	0	13
Lane Flow Rate	145	10	46	5	73	104	16
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.202	0.016	0.064	0.008	0.101	0.145	0.019
Departure Headway (Hd)	5.017	5.755	5.01	5.733	4.96	5.033	4.266
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	717	623	715	625	723	713	840
Service Time	3.041	3.482	2.738	3.459	2.686	2.757	1.989
HCM Lane V/C Ratio	0.202	0.016	0.064	0.008	0.101	0.146	0.019
HCM Control Delay	9.3	8.6	8.1	8.5	8.2	8.6	7.1
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.8	0	0.2	0	0.3	0.5	0.1

Intersection	
Intersection Delay, s/veh	26.2
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	145	98	54	99	12	55	281	74	42	474	31
Future Vol, veh/h	25	145	98	54	99	12	55	281	74	42	474	31
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	30	175	118	65	119	14	66	339	89	51	571	37
Number of Lanes	1	2	0	1	1	1	1	1	1	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	16.1	15.4	28.9	32.3
HCM LOS	C	C	D	D

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	33%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	67%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	281	74	25	97	146	54	99	12	42	316
LT Vol	55	0	0	25	0	0	54	0	0	42	0
Through Vol	0	281	0	0	97	48	0	99	0	0	316
RT Vol	0	0	74	0	0	98	0	0	12	0	0
Lane Flow Rate	66	339	89	30	116	176	65	119	14	51	381
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.164	0.791	0.191	0.079	0.29	0.416	0.177	0.308	0.035	0.121	0.857
Departure Headway (Hd)	8.915	8.415	7.715	9.456	8.956	8.487	9.81	9.31	8.61	8.6	8.1
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	404	433	466	379	402	425	366	386	416	418	449
Service Time	6.637	6.137	5.437	7.207	6.707	6.239	7.567	7.067	6.367	6.318	5.818
HCM Lane V/C Ratio	0.163	0.783	0.191	0.079	0.289	0.414	0.178	0.308	0.034	0.122	0.849
HCM Control Delay	13.4	36.3	12.3	13	15.3	17.2	14.7	16.2	11.7	12.5	43.2
HCM Lane LOS	B	E	B	B	C	C	B	C	B	B	E
HCM 95th-tile Q	0.6	7	0.7	0.3	1.2	2	0.6	1.3	0.1	0.4	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	8	45	28	4	10	65	371	107	9	365	36
Future Volume (veh/h)	13	8	45	28	4	10	65	371	107	9	365	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	16	10	56	35	5	12	80	458	132	11	451	44
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	171	142	120	163	142	120	124	2711	1209	38	2539	1132
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.75	0.75	0.02	0.70	0.70
Sat Flow, veh/h	1418	1900	1610	1357	1900	1610	1810	3610	1610	1810	3610	1610
Grp Volume(v), veh/h	16	10	56	35	5	12	80	458	132	11	451	44
Grp Sat Flow(s),veh/h/ln	1418	1900	1610	1357	1900	1610	1810	1805	1610	1810	1805	1610
Q Serve(g_s), s	1.1	0.5	3.5	2.6	0.3	0.7	4.5	3.8	2.3	0.6	4.4	0.9
Cycle Q Clear(g_c), s	1.4	0.5	3.5	3.1	0.3	0.7	4.5	3.8	2.3	0.6	4.4	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	142	120	163	142	120	124	2711	1209	38	2539	1132
V/C Ratio(X)	0.09	0.07	0.47	0.21	0.04	0.10	0.64	0.17	0.11	0.29	0.18	0.04
Avail Cap(c_a), veh/h	661	798	676	632	798	676	260	2711	1209	260	2539	1132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	45.2	46.6	46.6	45.1	45.3	47.6	3.7	3.5	50.6	5.3	4.8
Incr Delay (d2), s/veh	0.6	0.5	6.5	1.5	0.2	0.8	2.0	0.1	0.2	1.6	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.3	1.6	0.9	0.1	0.3	2.0	1.0	0.6	0.3	1.4	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	45.7	53.1	48.2	45.3	46.1	49.6	3.9	3.7	52.2	5.4	4.8
LnGrp LOS	D	D	D	D	D	D	D	A	A	D	A	A
Approach Vol, veh/h		82			52			670			506	
Approach Delay, s/veh		50.8			47.4			9.3			6.4	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	79.1		13.7	7.1	84.2		13.7
Change Period (Y+Rc), s	4.9	5.3		5.9	4.9	5.3		5.9
Max Green Setting (Gmax), s	15.1	29.7		44.1	15.1	29.7		44.1
Max Q Clear Time (g_c+I1), s	6.5	6.4		5.1	2.6	5.8		5.5
Green Ext Time (p_c), s	0.0	6.0		0.3	0.0	6.9		0.6

Intersection Summary		
HCM 6th Ctrl Delay	12.3	
HCM 6th LOS	B	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	3	541	19	5	431
Future Volume (veh/h)	11	3	541	19	5	431
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	14	4	676	24	6	539
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	60	53	2803	99	23	3071
Arrive On Green	0.03	0.03	0.79	0.79	0.01	0.85
Sat Flow, veh/h	1810	1610	3651	126	1810	3705
Grp Volume(v), veh/h	14	4	343	357	6	539
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1877	1810	1805
Q Serve(g_s), s	0.6	0.2	4.0	4.0	0.3	2.1
Cycle Q Clear(g_c), s	0.6	0.2	4.0	4.0	0.3	2.1
Prop In Lane	1.00	1.00		0.07	1.00	
Lane Grp Cap(c), veh/h	60	53	1423	1480	23	3071
V/C Ratio(X)	0.23	0.08	0.24	0.24	0.27	0.18
Avail Cap(c_a), veh/h	588	523	1423	1480	362	3071
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.88	0.88	0.99	0.99
Uniform Delay (d), s/veh	37.7	37.5	2.2	2.2	39.1	1.0
Incr Delay (d2), s/veh	4.2	1.3	0.4	0.3	2.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.2	0.6	0.6	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.9	38.8	2.6	2.6	41.4	1.2
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	18		700			545
Approach Delay, s/veh	41.2		2.6			1.6
Approach LOS	D		A			A

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	73.4		6.6	5.0	68.4
Change Period (Y+Rc), s	5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s	44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s	4.1		2.6	2.3	6.0
Green Ext Time (p_c), s	5.9		0.0	0.0	5.7

Intersection Summary	
HCM 6th Ctrl Delay	2.7
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	193	0	437	0	111	11	0	428	33
Future Volume (veh/h)	0	0	0	193	0	437	0	111	11	0	428	33
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				268	0	607	0	154	0	0	594	0
Peak Hour Factor				0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1144	0	1018	0	1908		0	1908	
Arrive On Green				0.32	0.00	0.32	0.00	0.53	0.00	0.00	0.53	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				268	0	607	0	154	0	0	594	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				4.6	0.0	13.5	0.0	1.8	0.0	0.0	7.9	0.0
Cycle Q Clear(g_c), s				4.6	0.0	13.5	0.0	1.8	0.0	0.0	7.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1144	0	1018	0	1908		0	1908	
V/C Ratio(X)				0.23	0.00	0.60	0.00	0.08		0.00	0.31	
Avail Cap(c_a), veh/h				1516	0	1349	0	1908		0	1908	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.99	0.00
Uniform Delay (d), s/veh				21.5	0.0	24.5	0.0	9.9	0.0	0.0	11.3	0.0
Incr Delay (d2), s/veh				0.5	0.0	2.6	0.0	0.1	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.9	0.0	5.1	0.0	0.6	0.0	0.0	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				22.0	0.0	27.1	0.0	9.9	0.0	0.0	11.7	0.0
LnGrp LOS				C	A	C	A	A		A	B	
Approach Vol, veh/h					875			154	A		594	A
Approach Delay, s/veh					25.5			9.9			11.7	
Approach LOS					C			A			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	51.7		51.7		33.3			
Change Period (Y+Rc), s	6.8		6.8		6.4			
Max Green Setting (Gmax), s	36.2		36.2		35.6			
Max Q Clear Time (g_c+I1), s	3.8		9.9		15.5			
Green Ext Time (p_c), s	2.5		10.5		11.4			

Intersection Summary		
HCM 6th Ctrl Delay	19.0	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	0	11	0	0	0	0	92	246	0	309	311
Future Volume (veh/h)	30	0	11	0	0	0	0	92	246	0	309	311
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	33	0	12				0	100	0	0	336	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	124	0	110				0	1369		0	2602	
Arrive On Green	0.07	0.00	0.07				0.00	0.72	0.00	0.00	0.72	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	33	0	12				0	100	0	0	336	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	1.1	0.0	0.5				0.0	1.0	0.0	0.0	1.9	0.0
Cycle Q Clear(g_c), s	1.1	0.0	0.5				0.0	1.0	0.0	0.0	1.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	124	0	110				0	1369		0	2602	
V/C Ratio(X)	0.27	0.00	0.11				0.00	0.07		0.00	0.13	
Avail Cap(c_a), veh/h	646	0	575				0	1369		0	2602	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.96	0.00
Uniform Delay (d), s/veh	28.7	0.0	28.4				0.0	2.7	0.0	0.0	2.8	0.0
Incr Delay (d2), s/veh	5.2	0.0	2.0				0.0	0.1	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.2				0.0	0.2	0.0	0.0	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.9	0.0	30.4				0.0	2.8	0.0	0.0	2.9	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		45						100	A		336	A
Approach Delay, s/veh		33.0						2.8			2.9	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	53.7	11.3	53.7
Change Period (Y+Rc), s	6.9	6.8	6.9
Max Green Setting (Gmax), s	28.1	23.2	28.1
Max Q Clear Time (g_c+I1), s	3.0	3.1	3.9
Green Ext Time (p_c), s	1.3	0.3	5.4

Intersection Summary	
HCM 6th Ctrl Delay	5.7
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	218	26	65	190	16	7	30	43	27	34	16
Future Vol, veh/h	21	218	26	65	190	16	7	30	43	27	34	16
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	23	240	29	71	209	18	8	33	47	30	37	18
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	9.3	9.2	9.3	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	9%	100%	0%	0%	100%	0%	0%	35%
Vol Thru, %	38%	0%	100%	74%	0%	100%	80%	44%
Vol Right, %	54%	0%	0%	26%	0%	0%	20%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	21	145	99	65	127	79	77
LT Vol	7	21	0	0	65	0	0	27
Through Vol	30	0	145	73	0	127	63	34
RT Vol	43	0	0	26	0	0	16	16
Lane Flow Rate	88	23	160	108	71	139	87	85
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.137	0.037	0.235	0.154	0.115	0.204	0.125	0.14
Departure Headway (Hd)	5.594	5.806	5.302	5.116	5.792	5.287	5.145	5.953
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	635	613	672	695	615	674	691	597
Service Time	3.381	3.578	3.074	2.888	3.564	3.059	2.917	3.741
HCM Lane V/C Ratio	0.139	0.038	0.238	0.155	0.115	0.206	0.126	0.142
HCM Control Delay	9.3	8.8	9.7	8.8	9.3	9.4	8.7	9.7
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.5	0.1	0.9	0.5	0.4	0.8	0.4	0.5

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	36	32	5	12	15	11	52	2	10	83	10
Future Vol, veh/h	8	36	32	5	12	15	11	52	2	10	83	10
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	43	38	6	14	18	13	62	2	12	99	12
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	8	7.7	8.6	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	17%	100%	0%	100%	0%	11%	0%
Vol Thru, %	80%	0%	53%	0%	44%	89%	0%
Vol Right, %	3%	0%	47%	0%	56%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	8	68	5	27	93	10
LT Vol	11	8	0	5	0	10	0
Through Vol	52	0	36	0	12	83	0
RT Vol	2	0	32	0	15	0	10
Lane Flow Rate	77	10	81	6	32	111	12
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.107	0.015	0.106	0.009	0.042	0.152	0.014
Departure Headway (Hd)	4.971	5.543	4.71	5.592	4.699	4.933	4.177
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	723	648	763	642	763	730	859
Service Time	2.989	3.26	2.426	3.312	2.418	2.649	1.893
HCM Lane V/C Ratio	0.107	0.015	0.106	0.009	0.042	0.152	0.014
HCM Control Delay	8.6	8.3	8	8.4	7.6	8.5	7
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.4	0	0.4	0	0.1	0.5	0

Intersection	
Intersection Delay, s/veh	129
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	197	76	55	147	55	107	630	85	26	310	29
Future Vol, veh/h	25	197	76	55	147	55	107	630	85	26	310	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	28	224	86	63	167	63	122	716	97	30	352	33
Number of Lanes	1	2	0	1	1	1	1	1	1	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	18.3	17.9	251.5	21.5
HCM LOS	C	C	F	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	46%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	54%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	107	630	85	25	131	142	55	147	55	26	207
LT Vol	107	0	0	25	0	0	55	0	0	26	0
Through Vol	0	630	0	0	131	66	0	147	0	0	207
RT Vol	0	0	85	0	0	76	0	0	55	0	0
Lane Flow Rate	122	716	97	28	149	161	62	167	62	30	235
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.297	1.651	0.204	0.076	0.38	0.393	0.169	0.431	0.149	0.077	0.582
Departure Headway (Hd)	8.8	8.3	7.6	10.544	10.044	9.668	10.679	10.179	9.479	10.191	9.691
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	409	444	471	342	361	375	338	356	381	354	376
Service Time	6.556	6.056	5.356	8.244	7.744	7.368	8.379	7.879	7.179	7.891	7.391
HCM Lane V/C Ratio	0.298	1.613	0.206	0.082	0.413	0.429	0.183	0.469	0.163	0.085	0.625
HCM Control Delay	15.3	323.9	12.3	14.1	18.8	18.5	15.5	20.4	13.8	13.7	25
HCM Lane LOS	C	F	B	B	C	C	C	C	B	B	C
HCM 95th-tile Q	1.2	41.5	0.8	0.2	1.7	1.8	0.6	2.1	0.5	0.2	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	5	45	97	10	11	40	607	77	10	338	23
Future Volume (veh/h)	28	5	45	97	10	11	40	607	77	10	338	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	29	5	47	101	10	11	42	632	80	10	352	24
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	205	192	163	204	192	163	97	2621	1169	35	2496	1114
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.05	0.73	0.73	0.02	0.69	0.69
Sat Flow, veh/h	1413	1900	1610	1374	1900	1610	1810	3610	1610	1810	3610	1610
Grp Volume(v), veh/h	29	5	47	101	10	11	42	632	80	10	352	24
Grp Sat Flow(s),veh/h/ln	1413	1900	1610	1374	1900	1610	1810	1805	1610	1810	1805	1610
Q Serve(g_s), s	2.0	0.2	2.8	7.5	0.5	0.6	2.4	6.1	1.5	0.6	3.5	0.5
Cycle Q Clear(g_c), s	2.5	0.2	2.8	7.8	0.5	0.6	2.4	6.1	1.5	0.6	3.5	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	192	163	204	192	163	97	2621	1169	35	2496	1114
V/C Ratio(X)	0.14	0.03	0.29	0.49	0.05	0.07	0.43	0.24	0.07	0.29	0.14	0.02
Avail Cap(c_a), veh/h	655	798	676	642	798	676	260	2621	1169	260	2496	1114
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	42.5	43.7	46.0	42.6	42.7	48.1	4.8	4.1	50.8	5.5	5.1
Incr Delay (d2), s/veh	0.7	0.1	2.3	4.3	0.3	0.4	1.1	0.2	0.1	1.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.1	1.2	2.7	0.2	0.3	1.1	1.8	0.4	0.3	1.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.5	42.6	45.9	50.3	42.9	43.1	49.2	5.0	4.3	52.4	5.7	5.1
LnGrp LOS	D	D	D	D	D	D	D	A	A	D	A	A
Approach Vol, veh/h		81			122			754			386	
Approach Delay, s/veh		45.2			49.1			7.4			6.8	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.5	77.9		16.5	6.9	81.5		16.5
Change Period (Y+Rc), s	4.9	5.3		5.9	4.9	5.3		5.9
Max Green Setting (Gmax), s	15.1	29.7		44.1	15.1	29.7		44.1
Max Q Clear Time (g_c+I1), s	4.4	5.5		9.8	2.6	8.1		4.8
Green Ext Time (p_c), s	0.0	4.6		0.9	0.0	8.4		0.6

Intersection Summary		
HCM 6th Ctrl Delay	13.3	
HCM 6th LOS	B	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	32	8	716	13	4	474
Future Volume (veh/h)	32	8	716	13	4	474
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	35	9	778	14	4	515
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	113	100	2768	50	15	2965
Arrive On Green	0.06	0.06	0.76	0.76	0.01	0.82
Sat Flow, veh/h	1810	1610	3723	65	1810	3705
Grp Volume(v), veh/h	35	9	387	405	4	515
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1888	1810	1805
Q Serve(g_s), s	1.5	0.4	5.2	5.2	0.2	2.4
Cycle Q Clear(g_c), s	1.5	0.4	5.2	5.2	0.2	2.4
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	113	100	1377	1440	15	2965
V/C Ratio(X)	0.31	0.09	0.28	0.28	0.26	0.17
Avail Cap(c_a), veh/h	588	523	1377	1440	362	2965
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.87	0.87	0.98	0.98
Uniform Delay (d), s/veh	35.9	35.4	2.9	2.9	39.4	1.5
Incr Delay (d2), s/veh	3.3	0.8	0.4	0.4	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.4	1.0	1.0	0.1	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.1	36.2	3.3	3.3	42.6	1.6
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	44		792			519
Approach Delay, s/veh	38.5		3.3			1.9
Approach LOS	D		A			A

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	71.0		9.0	4.7	66.3
Change Period (Y+Rc), s	5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s	44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s	4.4		3.5	2.2	7.2
Green Ext Time (p_c), s	5.5		0.2	0.0	6.4

Intersection Summary	
HCM 6th Ctrl Delay	3.9
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	270	0	574	0	169	16	0	461	44
Future Volume (veh/h)	0	0	0	270	0	574	0	169	16	0	461	44
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				333	0	709	0	209	0	0	569	0
Peak Hour Factor				0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1265	0	1126	0	1787		0	1787	
Arrive On Green				0.35	0.00	0.35	0.00	0.50	0.00	0.00	0.50	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				333	0	709	0	209	0	0	569	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				5.6	0.0	15.6	0.0	2.6	0.0	0.0	8.0	0.0
Cycle Q Clear(g_c), s				5.6	0.0	15.6	0.0	2.6	0.0	0.0	8.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1265	0	1126	0	1787		0	1787	
V/C Ratio(X)				0.26	0.00	0.63	0.00	0.12		0.00	0.32	
Avail Cap(c_a), veh/h				1516	0	1349	0	1787		0	1787	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.99	0.00
Uniform Delay (d), s/veh				19.8	0.0	23.0	0.0	11.5	0.0	0.0	12.9	0.0
Incr Delay (d2), s/veh				0.5	0.0	2.7	0.0	0.1	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.3	0.0	5.8	0.0	1.0	0.0	0.0	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.3	0.0	25.7	0.0	11.6	0.0	0.0	13.3	0.0
LnGrp LOS				C	A	C	A	B		A	B	
Approach Vol, veh/h					1042			209	A		569	A
Approach Delay, s/veh					24.0			11.6			13.3	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	48.9		48.9		36.1			
Change Period (Y+Rc), s	6.8		6.8		6.4			
Max Green Setting (Gmax), s	36.2		36.2		35.6			
Max Q Clear Time (g_c+I1), s	4.6		10.0		17.6			
Green Ext Time (p_c), s	3.6		10.0		12.1			

Intersection Summary								
HCM 6th Ctrl Delay	19.2							
HCM 6th LOS	B							

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	0	21	0	0	0	0	152	286	0	392	335
Future Volume (veh/h)	33	0	21	0	0	0	0	152	286	0	392	335
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	36	0	23				0	165	0	0	426	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	146	0	130				0	1346		0	2558	
Arrive On Green	0.08	0.00	0.08				0.00	0.71	0.00	0.00	0.71	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	36	0	23				0	165	0	0	426	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	1.2	0.0	0.9				0.0	1.8	0.0	0.0	2.5	0.0
Cycle Q Clear(g_c), s	1.2	0.0	0.9				0.0	1.8	0.0	0.0	2.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	146	0	130				0	1346		0	2558	
V/C Ratio(X)	0.25	0.00	0.18				0.00	0.12		0.00	0.17	
Avail Cap(c_a), veh/h	646	0	575				0	1346		0	2558	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.96	0.00
Uniform Delay (d), s/veh	28.0	0.0	27.9				0.0	3.0	0.0	0.0	3.1	0.0
Incr Delay (d2), s/veh	4.0	0.0	3.0				0.0	0.2	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.4				0.0	0.4	0.0	0.0	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	0.0	30.8				0.0	3.2	0.0	0.0	3.3	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		59						165	A		426	A
Approach Delay, s/veh		31.6						3.2			3.3	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	53.0	12.0	53.0
Change Period (Y+Rc), s	6.9	6.8	6.9
Max Green Setting (Gmax), s	28.1	23.2	28.1
Max Q Clear Time (g_c+I1), s	3.8	3.2	4.5
Green Ext Time (p_c), s	2.3	0.5	6.9

Intersection Summary	
HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	11.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	271	11	68	231	35	23	53	83	42	55	16
Future Vol, veh/h	38	271	11	68	231	35	23	53	83	42	55	16
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	46	330	13	83	282	43	28	65	101	51	67	20
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	11.9	11.3	12.8	12.3
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	14%	100%	0%	0%	100%	0%	0%	37%
Vol Thru, %	33%	0%	100%	89%	0%	100%	69%	49%
Vol Right, %	52%	0%	0%	11%	0%	0%	31%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	159	38	181	101	68	154	112	113
LT Vol	23	38	0	0	68	0	0	42
Through Vol	53	0	181	90	0	154	77	55
RT Vol	83	0	0	11	0	0	35	16
Lane Flow Rate	194	46	220	124	83	188	137	138
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.35	0.087	0.383	0.212	0.156	0.326	0.229	0.267
Departure Headway (Hd)	6.496	6.774	6.264	6.186	6.757	6.246	6.023	6.986
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	551	526	571	577	529	573	593	511
Service Time	4.271	4.546	4.035	3.957	4.525	4.015	3.791	4.768
HCM Lane V/C Ratio	0.352	0.087	0.385	0.215	0.157	0.328	0.231	0.27
HCM Control Delay	12.8	10.2	12.9	10.6	10.8	12	10.6	12.3
HCM Lane LOS	B	B	B	B	B	B	B	B
HCM 95th-tile Q	1.6	0.3	1.8	0.8	0.5	1.4	0.9	1.1

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	27	15	5	38	24	39	123	7	11	81	14
Future Vol, veh/h	8	27	15	5	38	24	39	123	7	11	81	14
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	33	18	6	46	29	48	150	9	13	99	17
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	8.5	8.5	10.1	8.6
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	23%	100%	0%	100%	0%	12%	0%
Vol Thru, %	73%	0%	64%	0%	61%	88%	0%
Vol Right, %	4%	0%	36%	0%	39%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	169	8	42	5	62	92	14
LT Vol	39	8	0	5	0	11	0
Through Vol	123	0	27	0	38	81	0
RT Vol	7	0	15	0	24	0	14
Lane Flow Rate	206	10	51	6	76	112	17
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.289	0.016	0.074	0.01	0.108	0.16	0.021
Departure Headway (Hd)	5.047	5.949	5.193	5.925	5.147	5.118	4.355
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	713	601	688	604	695	700	821
Service Time	3.077	3.69	2.934	3.665	2.888	2.851	2.087
HCM Lane V/C Ratio	0.289	0.017	0.074	0.01	0.109	0.16	0.021
HCM Control Delay	10.1	8.8	8.4	8.7	8.5	8.8	7.2
HCM Lane LOS	B	A	A	A	A	A	A
HCM 95th-tile Q	1.2	0	0.2	0	0.4	0.6	0.1

Intersection	
Intersection Delay, s/veh	21.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	239	113	43	104	13	73	288	93	73	471	32
Future Vol, veh/h	31	239	113	43	104	13	73	288	93	73	471	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	33	252	119	45	109	14	77	303	98	77	496	34
Number of Lanes	1	2	0	1	1	1	1	1	1	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	17.2	14.9	23.1	23.9
HCM LOS	C	B	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	41%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	59%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	73	288	93	31	159	193	43	104	13	73	314
LT Vol	73	0	0	31	0	0	43	0	0	73	0
Through Vol	0	288	0	0	159	80	0	104	0	0	314
RT Vol	0	0	93	0	0	113	0	0	13	0	0
Lane Flow Rate	77	303	98	33	168	203	45	109	14	77	331
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.19	0.707	0.209	0.083	0.404	0.465	0.124	0.284	0.033	0.182	0.738
Departure Headway (Hd)	8.896	8.396	7.696	9.173	8.673	8.262	9.832	9.332	8.632	8.662	8.162
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	405	434	468	392	418	438	366	386	416	416	446
Service Time	6.611	6.111	5.411	6.89	6.39	5.979	7.563	7.063	6.363	6.362	5.862
HCM Lane V/C Ratio	0.19	0.698	0.209	0.084	0.402	0.463	0.123	0.282	0.034	0.185	0.742
HCM Control Delay	13.7	29	12.4	12.7	17.2	18	14	15.7	11.7	13.3	30.6
HCM Lane LOS	B	D	B	B	C	C	B	C	B	B	D
HCM 95th-tile Q	0.7	5.4	0.8	0.3	1.9	2.4	0.4	1.2	0.1	0.7	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	10	46	22	4	11	68	390	93	14	383	39
Future Volume (veh/h)	14	10	46	22	4	11	68	390	93	14	383	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	15	11	48	23	4	12	72	411	98	15	403	41
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	170	139	118	161	139	118	121	2694	1202	49	2550	1137
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.75	0.75	0.03	0.71	0.71
Sat Flow, veh/h	1419	1900	1610	1365	1900	1610	1810	3610	1610	1810	3610	1610
Grp Volume(v), veh/h	15	11	48	23	4	12	72	411	98	15	403	41
Grp Sat Flow(s),veh/h/ln	1419	1900	1610	1365	1900	1610	1810	1805	1610	1810	1805	1610
Q Serve(g_s), s	1.0	0.6	3.0	1.7	0.2	0.7	4.1	3.4	1.7	0.9	3.9	0.8
Cycle Q Clear(g_c), s	1.2	0.6	3.0	2.2	0.2	0.7	4.1	3.4	1.7	0.9	3.9	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	170	139	118	161	139	118	121	2694	1202	49	2550	1137
V/C Ratio(X)	0.09	0.08	0.41	0.14	0.03	0.10	0.60	0.15	0.08	0.31	0.16	0.04
Avail Cap(c_a), veh/h	662	798	676	635	798	676	260	2694	1202	260	2550	1137
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.8	45.3	46.5	46.4	45.2	45.4	47.6	3.8	3.6	50.1	5.1	4.6
Incr Delay (d2), s/veh	0.5	0.6	5.2	0.9	0.2	0.9	1.7	0.1	0.1	1.3	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.3	1.3	0.6	0.1	0.3	1.8	0.9	0.4	0.4	1.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	45.9	51.7	47.3	45.4	46.3	49.3	3.9	3.7	51.4	5.2	4.7
LnGrp LOS	D	D	D	D	D	D	D	A	A	D	A	A
Approach Vol, veh/h		74			39			581			459	
Approach Delay, s/veh		49.7			46.8			9.5			6.7	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.9	79.5		13.6	7.7	83.7		13.6
Change Period (Y+Rc), s	4.9	5.3		5.9	4.9	5.3		5.9
Max Green Setting (Gmax), s	15.1	29.7		44.1	15.1	29.7		44.1
Max Q Clear Time (g_c+I1), s	6.1	5.9		4.2	2.9	5.4		5.0
Green Ext Time (p_c), s	0.0	5.4		0.2	0.0	6.0		0.6

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	3	548	20	5	446
Future Volume (veh/h)	12	3	548	20	5	446
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	13	3	577	21	5	469
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	54	48	2818	102	19	3082
Arrive On Green	0.03	0.03	0.79	0.79	0.01	0.85
Sat Flow, veh/h	1810	1610	3648	129	1810	3705
Grp Volume(v), veh/h	13	3	293	305	5	469
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1877	1810	1805
Q Serve(g_s), s	0.6	0.1	3.2	3.2	0.2	1.7
Cycle Q Clear(g_c), s	0.6	0.1	3.2	3.2	0.2	1.7
Prop In Lane	1.00	1.00		0.07	1.00	
Lane Grp Cap(c), veh/h	54	48	1432	1489	19	3082
V/C Ratio(X)	0.24	0.06	0.20	0.20	0.26	0.15
Avail Cap(c_a), veh/h	588	523	1432	1489	362	3082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.92	0.92	0.99	0.99
Uniform Delay (d), s/veh	37.9	37.7	2.0	2.0	39.3	1.0
Incr Delay (d2), s/veh	4.8	1.1	0.3	0.3	2.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.5	0.5	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.7	38.9	2.3	2.3	41.9	1.1
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	16		598			474
Approach Delay, s/veh	42.0		2.3			1.5
Approach LOS	D		A			A

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	73.6		6.4	4.8	68.8
Change Period (Y+Rc), s	5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s	44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s	3.7		2.6	2.2	5.2
Green Ext Time (p_c), s	5.0		0.0	0.0	4.9

Intersection Summary	
HCM 6th Ctrl Delay	2.6
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	227	0	453	0	142	15	0	454	37
Future Volume (veh/h)	0	0	0	227	0	453	0	142	15	0	454	37
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				239	0	477	0	149	0	0	478	0
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				976	0	869	0	2075		0	2075	
Arrive On Green				0.27	0.00	0.27	0.00	0.57	0.00	0.00	0.57	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				239	0	477	0	149	0	0	478	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				4.4	0.0	10.8	0.0	1.6	0.0	0.0	5.5	0.0
Cycle Q Clear(g_c), s				4.4	0.0	10.8	0.0	1.6	0.0	0.0	5.5	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				976	0	869	0	2075		0	2075	
V/C Ratio(X)				0.24	0.00	0.55	0.00	0.07		0.00	0.23	
Avail Cap(c_a), veh/h				1516	0	1349	0	2075		0	2075	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				24.3	0.0	26.6	0.0	8.0	0.0	0.0	8.9	0.0
Incr Delay (d2), s/veh				0.6	0.0	2.5	0.0	0.1	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.8	0.0	4.1	0.0	0.5	0.0	0.0	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.9	0.0	29.1	0.0	8.1	0.0	0.0	9.1	0.0
LnGrp LOS				C	A	C	A	A		A	A	
Approach Vol, veh/h					716			149	A		478	A
Approach Delay, s/veh					27.7			8.1			9.1	
Approach LOS					C			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	55.7		55.7		29.3			
Change Period (Y+Rc), s	6.8		6.8		6.4			
Max Green Setting (Gmax), s	36.2		36.2		35.6			
Max Q Clear Time (g_c+I1), s	3.6		7.5		12.8			
Green Ext Time (p_c), s	2.5		8.6		10.1			

Intersection Summary		
HCM 6th Ctrl Delay	18.9	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	0	11	0	0	0	0	128	358	0	361	320
Future Volume (veh/h)	29	0	11	0	0	0	0	128	358	0	361	320
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	31	0	12				0	135	0	0	380	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	120	0	107				0	1373		0	2609	
Arrive On Green	0.07	0.00	0.07				0.00	0.72	0.00	0.00	0.72	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	31	0	12				0	135	0	0	380	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	1.1	0.0	0.5				0.0	1.4	0.0	0.0	2.1	0.0
Cycle Q Clear(g_c), s	1.1	0.0	0.5				0.0	1.4	0.0	0.0	2.1	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	120	0	107				0	1373		0	2609	
V/C Ratio(X)	0.26	0.00	0.11				0.00	0.10		0.00	0.15	
Avail Cap(c_a), veh/h	646	0	575				0	1373		0	2609	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.98	0.00
Uniform Delay (d), s/veh	28.8	0.0	28.5				0.0	2.7	0.0	0.0	2.8	0.0
Incr Delay (d2), s/veh	5.1	0.0	2.1				0.0	0.1	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.2				0.0	0.3	0.0	0.0	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.9	0.0	30.7				0.0	2.8	0.0	0.0	2.9	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		43						135	A		380	A
Approach Delay, s/veh		33.0						2.8			2.9	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	53.9	11.1	53.9
Change Period (Y+Rc), s	6.9	6.8	6.9
Max Green Setting (Gmax), s	28.1	23.2	28.1
Max Q Clear Time (g_c+I1), s	3.4	3.1	4.1
Green Ext Time (p_c), s	1.8	0.3	6.2

Intersection Summary	
HCM 6th Ctrl Delay	5.2
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	276	59	50	187	17	17	93	62	28	47	21
Future Vol, veh/h	53	276	59	50	187	17	17	93	62	28	47	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	56	291	62	53	197	18	18	98	65	29	49	22
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	10.5	10	11.6	10.7
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	10%	100%	0%	0%	100%	0%	0%	29%
Vol Thru, %	54%	0%	100%	61%	0%	100%	79%	49%
Vol Right, %	36%	0%	0%	39%	0%	0%	21%	22%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	172	53	184	151	50	125	79	96
LT Vol	17	53	0	0	50	0	0	28
Through Vol	93	0	184	92	0	125	62	47
RT Vol	62	0	0	59	0	0	17	21
Lane Flow Rate	181	56	194	159	53	131	84	101
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.308	0.098	0.312	0.244	0.095	0.218	0.135	0.182
Departure Headway (Hd)	6.128	6.307	5.8	5.522	6.479	5.971	5.818	6.474
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	587	568	620	650	553	601	615	554
Service Time	3.872	4.046	3.538	3.261	4.22	3.712	3.559	4.222
HCM Lane V/C Ratio	0.308	0.099	0.313	0.245	0.096	0.218	0.137	0.182
HCM Control Delay	11.6	9.7	11.2	10	9.9	10.4	9.5	10.7
HCM Lane LOS	B	A	B	A	A	B	A	B
HCM 95th-tile Q	1.3	0.3	1.3	1	0.3	0.8	0.5	0.7

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	45	35	5	11	19	7	127	2	18	115	11
Future Vol, veh/h	24	45	35	5	11	19	7	127	2	18	115	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	25	47	37	5	12	20	7	134	2	19	121	12
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	8.5	8	9.4	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	5%	100%	0%	100%	0%	14%	0%
Vol Thru, %	93%	0%	56%	0%	37%	86%	0%
Vol Right, %	1%	0%	44%	0%	63%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	136	24	80	5	30	133	11
LT Vol	7	24	0	5	0	18	0
Through Vol	127	0	45	0	11	115	0
RT Vol	2	0	35	0	19	0	11
Lane Flow Rate	143	25	84	5	32	140	12
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.201	0.041	0.116	0.009	0.043	0.197	0.014
Departure Headway (Hd)	5.055	5.79	4.978	5.874	4.923	5.07	4.299
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	710	619	720	609	726	708	832
Service Time	3.083	3.522	2.71	3.611	2.66	2.797	2.026
HCM Lane V/C Ratio	0.201	0.04	0.117	0.008	0.044	0.198	0.014
HCM Control Delay	9.4	8.8	8.4	8.7	7.9	9	7.1
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.7	0.1	0.4	0	0.1	0.7	0

Intersection	
Intersection Delay, s/veh	115.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	220	70	41	182	67	163	654	91	34	290	50
Future Vol, veh/h	37	220	70	41	182	67	163	654	91	34	290	50
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	39	232	74	43	192	71	172	688	96	36	305	53
Number of Lanes	1	2	0	1	1	1	1	1	1	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	18.2	19.5	220.3	19.9
HCM LOS	C	C	F	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	51%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	49%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	163	654	91	37	147	143	41	182	67	34	193
LT Vol	163	0	0	37	0	0	41	0	0	34	0
Through Vol	0	654	0	0	147	73	0	182	0	0	193
RT Vol	0	0	91	0	0	70	0	0	67	0	0
Lane Flow Rate	172	688	96	39	154	151	43	192	71	36	204
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.421	1.595	0.203	0.105	0.397	0.374	0.118	0.498	0.17	0.095	0.515
Departure Headway (Hd)	8.842	8.342	7.642	10.545	10.045	9.703	10.652	10.152	9.452	10.29	9.79
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	407	441	468	342	361	373	339	358	382	350	370
Service Time	6.603	6.103	5.403	8.245	7.745	7.403	8.352	7.852	7.152	7.99	7.49
HCM Lane V/C Ratio	0.423	1.56	0.205	0.114	0.427	0.405	0.127	0.536	0.186	0.103	0.551
HCM Control Delay	17.9	299.7	12.4	14.5	19.2	18.1	14.8	22.5	14.1	14.1	22.4
HCM Lane LOS	C	F	B	B	C	C	B	C	B	B	C
HCM 95th-tile Q	2	38.5	0.8	0.3	1.8	1.7	0.4	2.7	0.6	0.3	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	4	47	92	11	12	42	638	41	11	354	24
Future Volume (veh/h)	33	4	47	92	11	12	42	638	41	11	354	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	34	4	49	96	11	12	44	665	43	11	369	25
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	198	185	157	199	185	157	100	2630	1173	38	2507	1118
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.06	0.73	0.73	0.02	0.69	0.69
Sat Flow, veh/h	1410	1900	1610	1373	1900	1610	1810	3610	1610	1810	3610	1610
Grp Volume(v), veh/h	34	4	49	96	11	12	44	665	43	11	369	25
Grp Sat Flow(s),veh/h/ln	1410	1900	1610	1373	1900	1610	1810	1805	1610	1810	1805	1610
Q Serve(g_s), s	2.4	0.2	3.0	7.1	0.6	0.7	2.5	6.4	0.8	0.6	3.7	0.5
Cycle Q Clear(g_c), s	2.9	0.2	3.0	7.3	0.6	0.7	2.5	6.4	0.8	0.6	3.7	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	198	185	157	199	185	157	100	2630	1173	38	2507	1118
V/C Ratio(X)	0.17	0.02	0.31	0.48	0.06	0.08	0.44	0.25	0.04	0.29	0.15	0.02
Avail Cap(c_a), veh/h	654	798	676	642	798	676	260	2630	1173	260	2507	1118
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	42.9	44.1	46.2	43.0	43.1	48.0	4.7	4.0	50.6	5.5	5.0
Incr Delay (d2), s/veh	1.0	0.1	2.7	4.2	0.3	0.5	1.1	0.2	0.1	1.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.1	1.3	2.6	0.3	0.3	1.1	1.9	0.2	0.3	1.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.3	43.0	46.8	50.4	43.4	43.6	49.2	5.0	4.0	52.2	5.6	5.0
LnGrp LOS	D	D	D	D	D	D	D	A	A	D	A	A
Approach Vol, veh/h		87			119			752			405	
Approach Delay, s/veh		46.0			49.1			7.5			6.8	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.7	78.2		16.1	7.1	81.8		16.1
Change Period (Y+Rc), s	4.9	5.3		5.9	4.9	5.3		5.9
Max Green Setting (Gmax), s	15.1	29.7		44.1	15.1	29.7		44.1
Max Q Clear Time (g_c+I1), s	4.5	5.7		9.3	2.6	8.4		5.0
Green Ext Time (p_c), s	0.0	4.8		0.9	0.0	8.4		0.6

Intersection Summary		
HCM 6th Ctrl Delay	13.4	
HCM 6th LOS	B	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	34	9	712	14	4	488
Future Volume (veh/h)	34	9	712	14	4	488
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	36	9	749	15	4	514
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	114	102	2758	55	15	2962
Arrive On Green	0.06	0.06	0.76	0.76	0.01	0.82
Sat Flow, veh/h	1810	1610	3714	72	1810	3705
Grp Volume(v), veh/h	36	9	373	391	4	514
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1887	1810	1805
Q Serve(g_s), s	1.5	0.4	5.0	5.0	0.2	2.4
Cycle Q Clear(g_c), s	1.5	0.4	5.0	5.0	0.2	2.4
Prop In Lane	1.00	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	114	102	1375	1438	15	2962
V/C Ratio(X)	0.31	0.09	0.27	0.27	0.26	0.17
Avail Cap(c_a), veh/h	588	523	1375	1438	362	2962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.91	0.91	0.99	0.99
Uniform Delay (d), s/veh	35.8	35.3	2.9	2.9	39.4	1.5
Incr Delay (d2), s/veh	3.3	0.8	0.4	0.4	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.4	1.0	1.0	0.1	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.1	36.1	3.3	3.3	42.6	1.6
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	45		764			518
Approach Delay, s/veh	38.5		3.3			1.9
Approach LOS	D		A			A

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	70.9		9.1	4.7	66.3
Change Period (Y+Rc), s	5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s	44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s	4.4		3.5	2.2	7.0
Green Ext Time (p_c), s	5.5		0.2	0.0	6.2

Intersection Summary	
HCM 6th Ctrl Delay	4.0
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	372	0	588	0	213	18	0	489	47
Future Volume (veh/h)	0	0	0	372	0	588	0	213	18	0	489	47
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				392	0	619	0	224	0	0	515	0
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1204	0	1071	0	1849		0	1849	
Arrive On Green				0.33	0.00	0.33	0.00	0.51	0.00	0.00	0.51	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				392	0	619	0	224	0	0	515	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				6.9	0.0	13.5	0.0	2.7	0.0	0.0	6.9	0.0
Cycle Q Clear(g_c), s				6.9	0.0	13.5	0.0	2.7	0.0	0.0	6.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1204	0	1071	0	1849		0	1849	
V/C Ratio(X)				0.33	0.00	0.58	0.00	0.12		0.00	0.28	
Avail Cap(c_a), veh/h				1516	0	1349	0	1849		0	1849	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.99	0.00
Uniform Delay (d), s/veh				21.2	0.0	23.4	0.0	10.8	0.0	0.0	11.8	0.0
Incr Delay (d2), s/veh				0.7	0.0	2.3	0.0	0.1	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.8	0.0	5.0	0.0	1.0	0.0	0.0	2.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				22.0	0.0	25.7	0.0	10.9	0.0	0.0	12.2	0.0
LnGrp LOS				C	A	C	A	B		A	B	
Approach Vol, veh/h					1011			224	A		515	A
Approach Delay, s/veh					24.3			10.9			12.2	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	50.3		50.3		34.7			
Change Period (Y+Rc), s	6.8		6.8		6.4			
Max Green Setting (Gmax), s	36.2		36.2		35.6			
Max Q Clear Time (g_c+I1), s	4.7		8.9		15.5			
Green Ext Time (p_c), s	3.9		9.1		12.8			

Intersection Summary		
HCM 6th Ctrl Delay	19.0	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	0	22	0	0	0	0	198	296	0	517	344
Future Volume (veh/h)	33	0	22	0	0	0	0	198	296	0	517	344
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	35	0	23				0	208	0	0	544	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	145	0	129				0	1348		0	2561	
Arrive On Green	0.08	0.00	0.08				0.00	0.71	0.00	0.00	0.71	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	35	0	23				0	208	0	0	544	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	1.2	0.0	0.9				0.0	2.3	0.0	0.0	3.4	0.0
Cycle Q Clear(g_c), s	1.2	0.0	0.9				0.0	2.3	0.0	0.0	3.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	145	0	129				0	1348		0	2561	
V/C Ratio(X)	0.24	0.00	0.18				0.00	0.15		0.00	0.21	
Avail Cap(c_a), veh/h	646	0	575				0	1348		0	2561	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.96	0.00
Uniform Delay (d), s/veh	28.1	0.0	27.9				0.0	3.1	0.0	0.0	3.2	0.0
Incr Delay (d2), s/veh	3.9	0.0	3.0				0.0	0.2	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.4				0.0	0.5	0.0	0.0	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	0.0	30.9				0.0	3.3	0.0	0.0	3.4	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		58						208	A		544	A
Approach Delay, s/veh		31.6						3.3			3.4	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	53.0	12.0	53.0
Change Period (Y+Rc), s	6.9	6.8	6.9
Max Green Setting (Gmax), s	28.1	23.2	28.1
Max Q Clear Time (g_c+I1), s	4.3	3.2	5.4
Green Ext Time (p_c), s	3.0	0.5	8.8

Intersection Summary	
HCM 6th Ctrl Delay	5.4
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	281	28	48	233	37	35	55	82	44	107	37
Future Vol, veh/h	55	281	28	48	233	37	35	55	82	44	107	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	58	296	29	51	245	39	37	58	86	46	113	39
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	11.6	11.2	12.5	13.4
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	20%	100%	0%	0%	100%	0%	0%	23%
Vol Thru, %	32%	0%	100%	77%	0%	100%	68%	57%
Vol Right, %	48%	0%	0%	23%	0%	0%	32%	20%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	172	55	187	122	48	155	115	188
LT Vol	35	55	0	0	48	0	0	44
Through Vol	55	0	187	94	0	155	78	107
RT Vol	82	0	0	28	0	0	37	37
Lane Flow Rate	181	58	197	128	51	164	121	198
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.328	0.11	0.347	0.219	0.097	0.291	0.207	0.368
Departure Headway (Hd)	6.528	6.839	6.328	6.164	6.91	6.399	6.168	6.691
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	547	522	566	579	516	558	578	534
Service Time	4.309	4.615	4.103	3.939	4.689	4.177	3.946	4.47
HCM Lane V/C Ratio	0.331	0.111	0.348	0.221	0.099	0.294	0.209	0.371
HCM Control Delay	12.5	10.5	12.5	10.7	10.4	11.8	10.6	13.4
HCM Lane LOS	B	B	B	B	B	B	B	B
HCM 95th-tile Q	1.4	0.4	1.5	0.8	0.3	1.2	0.8	1.7

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	28	14	27	38	16	35	123	24	16	174	15
Future Vol, veh/h	8	28	14	27	38	16	35	123	24	16	174	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	8	29	15	28	40	17	37	129	25	17	183	16
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	8.6	8.8	10	9.6
HCM LOS	A	A	A	A

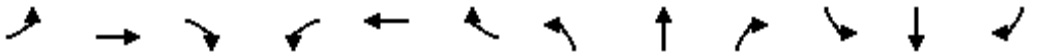
Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	19%	100%	0%	100%	0%	8%	0%
Vol Thru, %	68%	0%	67%	0%	70%	92%	0%
Vol Right, %	13%	0%	33%	0%	30%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	182	8	42	27	54	190	15
LT Vol	35	8	0	27	0	16	0
Through Vol	123	0	28	0	38	174	0
RT Vol	24	0	14	0	16	0	15
Lane Flow Rate	192	8	44	28	57	200	16
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.271	0.014	0.066	0.048	0.085	0.283	0.019
Departure Headway (Hd)	5.091	6.138	5.397	6.091	5.377	5.09	4.344
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	705	581	661	586	664	706	822
Service Time	3.13	3.894	3.153	3.843	3.129	2.827	2.081
HCM Lane V/C Ratio	0.272	0.014	0.067	0.048	0.086	0.283	0.019
HCM Control Delay	10	9	8.5	9.2	8.6	9.8	7.2
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	1.1	0	0.2	0.2	0.3	1.2	0.1

Intersection	
Intersection Delay, s/veh	23.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	239	120	56	104	13	74	295	96	73	496	32
Future Vol, veh/h	31	239	120	56	104	13	74	295	96	73	496	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	33	252	126	59	109	14	78	311	101	77	522	34
Number of Lanes	1	2	0	1	1	1	1	1	1	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	18.2	15.4	25.5	28.1
HCM LOS	C	C	D	D

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	40%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	60%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	74	295	96	31	159	200	56	104	13	73	331
LT Vol	74	0	0	31	0	0	56	0	0	73	0
Through Vol	0	295	0	0	159	80	0	104	0	0	331
RT Vol	0	0	96	0	0	120	0	0	13	0	0
Lane Flow Rate	78	311	101	33	168	210	59	109	14	77	348
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.197	0.742	0.222	0.085	0.414	0.495	0.165	0.29	0.034	0.188	0.803
Departure Headway (Hd)	9.104	8.604	7.904	9.394	8.894	8.474	10.052	9.552	8.852	8.807	8.307
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	395	422	455	382	406	427	357	377	405	408	435
Service Time	6.849	6.349	5.649	7.139	6.639	6.219	7.805	7.305	6.605	6.548	6.048
HCM Lane V/C Ratio	0.197	0.737	0.222	0.086	0.414	0.492	0.165	0.289	0.035	0.189	0.8
HCM Control Delay	14.1	32.4	12.9	13	17.8	19.3	14.8	16.2	11.9	13.6	37.3
HCM Lane LOS	B	D	B	B	C	C	B	C	B	B	E
HCM 95th-tile Q	0.7	6	0.8	0.3	2	2.7	0.6	1.2	0.1	0.7	7.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	11	46	29	4	11	68	390	121	14	383	39
Future Volume (veh/h)	14	11	46	29	4	11	68	390	121	14	383	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	15	12	48	31	4	12	72	411	127	15	403	41
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	171	141	119	162	141	119	121	2692	1201	49	2548	1136
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.75	0.75	0.03	0.71	0.71
Sat Flow, veh/h	1419	1900	1610	1364	1900	1610	1810	3610	1610	1810	3610	1610
Grp Volume(v), veh/h	15	12	48	31	4	12	72	411	127	15	403	41
Grp Sat Flow(s),veh/h/ln	1419	1900	1610	1364	1900	1610	1810	1805	1610	1810	1805	1610
Q Serve(g_s), s	1.0	0.6	3.0	2.3	0.2	0.7	4.1	3.4	2.3	0.9	3.9	0.8
Cycle Q Clear(g_c), s	1.2	0.6	3.0	2.9	0.2	0.7	4.1	3.4	2.3	0.9	3.9	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	141	119	162	141	119	121	2692	1201	49	2548	1136
V/C Ratio(X)	0.09	0.09	0.40	0.19	0.03	0.10	0.60	0.15	0.11	0.31	0.16	0.04
Avail Cap(c_a), veh/h	662	798	676	633	798	676	260	2692	1201	260	2548	1136
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	45.3	46.4	46.6	45.1	45.4	47.6	3.8	3.7	50.1	5.1	4.7
Incr Delay (d2), s/veh	0.5	0.6	5.1	1.3	0.2	0.9	1.7	0.1	0.2	1.3	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.3	1.3	0.8	0.1	0.3	1.8	0.9	0.6	0.4	1.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.2	45.9	51.5	48.0	45.3	46.2	49.3	4.0	3.9	51.4	5.2	4.7
LnGrp LOS	D	D	D	D	D	D	D	A	A	D	A	A
Approach Vol, veh/h		75			47			610			459	
Approach Delay, s/veh		49.5			47.3			9.3			6.7	
Approach LOS		D			D			A			A	

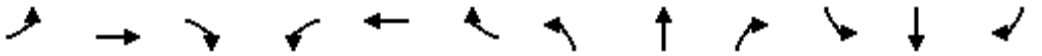
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.9	79.4		13.7	7.7	83.6		13.7				
Change Period (Y+Rc), s	4.9	5.3		5.9	4.9	5.3		5.9				
Max Green Setting (Gmax), s	15.1	29.7		44.1	15.1	29.7		44.1				
Max Q Clear Time (g_c+I1), s	6.1	5.9		4.9	2.9	5.4		5.0				
Green Ext Time (p_c), s	0.0	5.4		0.3	0.0	6.2		0.6				

Intersection Summary			
HCM 6th Ctrl Delay		12.3	
HCM 6th LOS		B	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	3	576	20	5	453
Future Volume (veh/h)	12	3	576	20	5	453
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	13	3	606	21	5	477
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	54	48	2824	98	19	3082
Arrive On Green	0.03	0.03	0.79	0.79	0.01	0.85
Sat Flow, veh/h	1810	1610	3655	123	1810	3705
Grp Volume(v), veh/h	13	3	307	320	5	477
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1878	1810	1805
Q Serve(g_s), s	0.6	0.1	3.4	3.4	0.2	1.8
Cycle Q Clear(g_c), s	0.6	0.1	3.4	3.4	0.2	1.8
Prop In Lane	1.00	1.00		0.07	1.00	
Lane Grp Cap(c), veh/h	54	48	1432	1490	19	3082
V/C Ratio(X)	0.24	0.06	0.21	0.21	0.26	0.15
Avail Cap(c_a), veh/h	588	523	1432	1490	362	3082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.91	0.91	0.99	0.99
Uniform Delay (d), s/veh	37.9	37.7	2.1	2.1	39.3	1.0
Incr Delay (d2), s/veh	4.8	1.1	0.3	0.3	2.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.5	0.5	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.7	38.9	2.4	2.4	41.9	1.1
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	16		627			482
Approach Delay, s/veh	42.0		2.4			1.5
Approach LOS	D		A			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		73.6		6.4	4.8	68.8
Change Period (Y+Rc), s		5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s		44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s		3.8		2.6	2.2	5.4
Green Ext Time (p_c), s		5.1		0.0	0.0	5.1

Intersection Summary	
HCM 6th Ctrl Delay	2.6
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	227	0	476	0	147	15	0	461	37
Future Volume (veh/h)	0	0	0	227	0	476	0	147	15	0	461	37
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				239	0	501	0	155	0	0	485	0
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1007	0	896	0	2045		0	2045	
Arrive On Green				0.28	0.00	0.28	0.00	0.57	0.00	0.00	0.57	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				239	0	501	0	155	0	0	485	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				4.3	0.0	11.3	0.0	1.7	0.0	0.0	5.7	0.0
Cycle Q Clear(g_c), s				4.3	0.0	11.3	0.0	1.7	0.0	0.0	5.7	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1007	0	896	0	2045		0	2045	
V/C Ratio(X)				0.24	0.00	0.56	0.00	0.08		0.00	0.24	
Avail Cap(c_a), veh/h				1516	0	1349	0	2045		0	2045	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				23.7	0.0	26.2	0.0	8.3	0.0	0.0	9.2	0.0
Incr Delay (d2), s/veh				0.6	0.0	2.5	0.0	0.1	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.8	0.0	4.3	0.0	0.6	0.0	0.0	2.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.3	0.0	28.7	0.0	8.4	0.0	0.0	9.5	0.0
LnGrp LOS				C	A	C	A	A		A	A	
Approach Vol, veh/h					740			155	A		485	A
Approach Delay, s/veh					27.3			8.4			9.5	
Approach LOS					C			A			A	

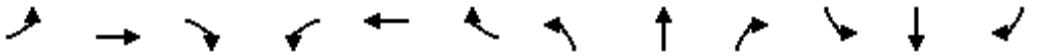
Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	54.9		54.9		30.1			
Change Period (Y+Rc), s	6.8		6.8		6.4			
Max Green Setting (Gmax), s	36.2		36.2		35.6			
Max Q Clear Time (g_c+I1), s	3.7		7.7		13.3			
Green Ext Time (p_c), s	2.6		8.7		10.4			

Intersection Summary		
HCM 6th Ctrl Delay	18.9	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	0	11	0	0	0	0	131	358	0	361	327
Future Volume (veh/h)	31	0	11	0	0	0	0	131	358	0	361	327
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	33	0	12				0	138	0	0	380	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	124	0	110				0	1369		0	2602	
Arrive On Green	0.07	0.00	0.07				0.00	0.72	0.00	0.00	0.72	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	33	0	12				0	138	0	0	380	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	1.1	0.0	0.5				0.0	1.4	0.0	0.0	2.1	0.0
Cycle Q Clear(g_c), s	1.1	0.0	0.5				0.0	1.4	0.0	0.0	2.1	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	124	0	110				0	1369		0	2602	
V/C Ratio(X)	0.27	0.00	0.11				0.00	0.10		0.00	0.15	
Avail Cap(c_a), veh/h	646	0	575				0	1369		0	2602	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.98	0.00
Uniform Delay (d), s/veh	28.7	0.0	28.4				0.0	2.7	0.0	0.0	2.8	0.0
Incr Delay (d2), s/veh	5.2	0.0	2.0				0.0	0.1	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.2				0.0	0.3	0.0	0.0	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.9	0.0	30.4				0.0	2.9	0.0	0.0	2.9	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		45						138	A		380	A
Approach Delay, s/veh		33.0						2.9			2.9	
Approach LOS		C						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		53.7		11.3		53.7						
Change Period (Y+Rc), s		6.9		6.8		6.9						
Max Green Setting (Gmax), s		28.1		23.2		28.1						
Max Q Clear Time (g_c+I1), s		3.4		3.1		4.1						
Green Ext Time (p_c), s		1.9		0.3		6.2						

Intersection Summary		
HCM 6th Ctrl Delay		5.3
HCM 6th LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	279	59	67	199	17	17	94	67	28	50	21
Future Vol, veh/h	53	279	59	67	199	17	17	94	67	28	50	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	56	294	62	71	209	18	18	99	71	29	53	22
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	10.7	10.2	11.9	10.9
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	10%	100%	0%	0%	100%	0%	0%	28%
Vol Thru, %	53%	0%	100%	61%	0%	100%	80%	51%
Vol Right, %	38%	0%	0%	39%	0%	0%	20%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	53	186	152	67	133	83	99
LT Vol	17	53	0	0	67	0	0	28
Through Vol	94	0	186	93	0	133	66	50
RT Vol	67	0	0	59	0	0	17	21
Lane Flow Rate	187	56	196	160	71	140	88	104
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.324	0.099	0.321	0.25	0.128	0.234	0.143	0.191
Departure Headway (Hd)	6.216	6.404	5.896	5.62	6.541	6.032	5.887	6.587
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	577	559	609	638	547	594	608	544
Service Time	3.965	4.149	3.64	3.364	4.289	3.78	3.635	4.342
HCM Lane V/C Ratio	0.324	0.1	0.322	0.251	0.13	0.236	0.145	0.191
HCM Control Delay	11.9	9.9	11.4	10.2	10.3	10.6	9.6	10.9
HCM Lane LOS	B	A	B	B	B	B	A	B
HCM 95th-tile Q	1.4	0.3	1.4	1	0.4	0.9	0.5	0.7

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	45	36	5	13	26	11	129	2	20	116	11
Future Vol, veh/h	24	45	36	5	13	26	11	129	2	20	116	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	25	47	38	5	14	27	12	136	2	21	122	12
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	8.5	8.1	9.5	9
HCM LOS	A	A	A	A

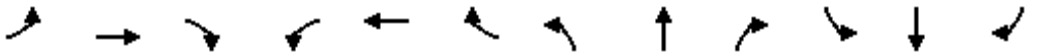
Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	8%	100%	0%	100%	0%	15%	0%
Vol Thru, %	91%	0%	56%	0%	33%	85%	0%
Vol Right, %	1%	0%	44%	0%	67%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	142	24	81	5	39	136	11
LT Vol	11	24	0	5	0	20	0
Through Vol	129	0	45	0	13	116	0
RT Vol	2	0	36	0	26	0	11
Lane Flow Rate	149	25	85	5	41	143	12
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.211	0.041	0.119	0.009	0.056	0.203	0.014
Departure Headway (Hd)	5.093	5.83	5.013	5.907	4.932	5.11	4.333
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	704	614	715	606	725	703	825
Service Time	3.125	3.563	2.746	3.645	2.67	2.841	2.064
HCM Lane V/C Ratio	0.212	0.041	0.119	0.008	0.057	0.203	0.015
HCM Control Delay	9.5	8.8	8.4	8.7	8	9.1	7.1
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.8	0.1	0.4	0	0.2	0.8	0

Intersection	
Intersection Delay, s/veh	123.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	220	79	57	182	67	165	661	95	34	324	50
Future Vol, veh/h	37	220	79	57	182	67	165	661	95	34	324	50
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	39	232	83	60	192	71	174	696	100	36	341	53
Number of Lanes	1	2	0	1	1	1	1	1	1	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	19.2	20.1	241.3	22.5
HCM LOS	C	C	F	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%	48%	0%	100%	0%	0%	100%
Vol Right, %	0%	0%	100%	0%	0%	52%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	165	661	95	37	147	152	57	182	67	34	216
LT Vol	165	0	0	37	0	0	57	0	0	34	0
Through Vol	0	661	0	0	147	73	0	182	0	0	216
RT Vol	0	0	95	0	0	79	0	0	67	0	0
Lane Flow Rate	174	696	100	39	154	160	60	192	71	36	227
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.439	1.662	0.219	0.108	0.407	0.407	0.168	0.51	0.174	0.097	0.586
Departure Headway (Hd)	9.098	8.598	7.898	10.867	10.367	10.004	10.952	10.452	9.752	10.543	10.043
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	394	424	453	332	349	362	329	347	370	342	362
Service Time	6.873	6.373	5.673	8.567	8.067	7.704	8.652	8.152	7.452	8.243	7.743
HCM Lane V/C Ratio	0.442	1.642	0.221	0.117	0.441	0.442	0.182	0.553	0.192	0.105	0.627
HCM Control Delay	18.9	329.7	12.9	14.9	20	19.4	15.9	23.5	14.5	14.4	26
HCM Lane LOS	C	F	B	B	C	C	C	C	B	B	D
HCM 95th-tile Q	2.2	40.7	0.8	0.4	1.9	1.9	0.6	2.8	0.6	0.3	3.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	5	47	101	11	12	42	638	79	11	354	24
Future Volume (veh/h)	33	5	47	101	11	12	42	638	79	11	354	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	34	5	49	105	11	12	44	665	82	11	369	25
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	209	199	169	209	199	169	100	2603	1161	38	2479	1106
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.06	0.72	0.72	0.02	0.69	0.69
Sat Flow, veh/h	1410	1900	1610	1371	1900	1610	1810	3610	1610	1810	3610	1610
Grp Volume(v), veh/h	34	5	49	105	11	12	44	665	82	11	369	25
Grp Sat Flow(s),veh/h/ln	1410	1900	1610	1371	1900	1610	1810	1805	1610	1810	1805	1610
Q Serve(g_s), s	2.3	0.2	3.0	7.8	0.5	0.7	2.5	6.6	1.6	0.6	3.7	0.5
Cycle Q Clear(g_c), s	2.9	0.2	3.0	8.1	0.5	0.7	2.5	6.6	1.6	0.6	3.7	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	209	199	169	209	199	169	100	2603	1161	38	2479	1106
V/C Ratio(X)	0.16	0.03	0.29	0.50	0.06	0.07	0.44	0.26	0.07	0.29	0.15	0.02
Avail Cap(c_a), veh/h	654	798	676	641	798	676	260	2603	1161	260	2479	1106
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.6	42.2	43.4	45.8	42.3	42.4	48.0	5.0	4.3	50.6	5.7	5.2
Incr Delay (d2), s/veh	0.9	0.1	2.2	4.3	0.3	0.4	1.1	0.2	0.1	1.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.1	1.3	2.8	0.3	0.3	1.1	2.0	0.4	0.3	1.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.5	42.3	45.6	50.2	42.6	42.8	49.2	5.2	4.4	52.2	5.9	5.3
LnGrp LOS	D	D	D	D	D	D	D	A	A	D	A	A
Approach Vol, veh/h		88			128			791			405	
Approach Delay, s/veh		45.0			48.8			7.6			7.1	
Approach LOS		D			D			A			A	

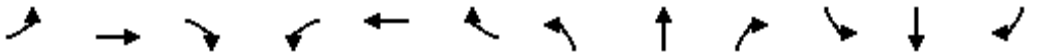
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.7	77.4		16.9	7.1	81.0		16.9				
Change Period (Y+Rc), s	4.9	5.3		5.9	4.9	5.3		5.9				
Max Green Setting (Gmax), s	15.1	29.7		44.1	15.1	29.7		44.1				
Max Q Clear Time (g_c+I1), s	4.5	5.7		10.1	2.6	8.6		5.0				
Green Ext Time (p_c), s	0.0	4.8		1.0	0.0	8.7		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			13.5									
HCM 6th LOS			B									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	34	9	750	14	4	497
Future Volume (veh/h)	34	9	750	14	4	497
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	36	9	789	15	4	523
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	114	102	2761	52	15	2962
Arrive On Green	0.06	0.06	0.76	0.76	0.01	0.82
Sat Flow, veh/h	1810	1610	3719	69	1810	3705
Grp Volume(v), veh/h	36	9	393	411	4	523
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1888	1810	1805
Q Serve(g_s), s	1.5	0.4	5.3	5.3	0.2	2.4
Cycle Q Clear(g_c), s	1.5	0.4	5.3	5.3	0.2	2.4
Prop In Lane	1.00	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	114	102	1375	1438	15	2962
V/C Ratio(X)	0.31	0.09	0.29	0.29	0.26	0.18
Avail Cap(c_a), veh/h	588	523	1375	1438	362	2962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.90	0.90	0.98	0.98
Uniform Delay (d), s/veh	35.8	35.3	2.9	2.9	39.4	1.5
Incr Delay (d2), s/veh	3.3	0.8	0.5	0.4	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.4	1.0	1.1	0.1	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.1	36.1	3.4	3.3	42.6	1.6
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	45		804			527
Approach Delay, s/veh	38.5		3.4			1.9
Approach LOS	D		A			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		70.9		9.1	4.7	66.3
Change Period (Y+Rc), s		5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s		44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s		4.4		3.5	2.2	7.3
Green Ext Time (p_c), s		5.6		0.2	0.0	6.5

Intersection Summary	
HCM 6th Ctrl Delay	4.0
HCM 6th LOS	A

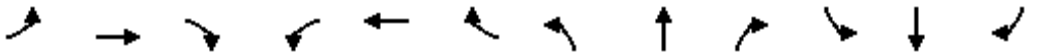


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	372	0	620	0	218	18	0	498	47
Future Volume (veh/h)	0	0	0	372	0	620	0	218	18	0	498	47
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				392	0	653	0	229	0	0	524	0
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1235	0	1099	0	1817		0	1817	
Arrive On Green				0.34	0.00	0.34	0.00	0.50	0.00	0.00	0.50	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				392	0	653	0	229	0	0	524	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				6.8	0.0	14.2	0.0	2.9	0.0	0.0	7.2	0.0
Cycle Q Clear(g_c), s				6.8	0.0	14.2	0.0	2.9	0.0	0.0	7.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1235	0	1099	0	1817		0	1817	
V/C Ratio(X)				0.32	0.00	0.59	0.00	0.13		0.00	0.29	
Avail Cap(c_a), veh/h				1516	0	1349	0	1817		0	1817	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.99	0.00
Uniform Delay (d), s/veh				20.7	0.0	23.1	0.0	11.2	0.0	0.0	12.3	0.0
Incr Delay (d2), s/veh				0.7	0.0	2.4	0.0	0.1	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.8	0.0	5.3	0.0	1.0	0.0	0.0	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				21.4	0.0	25.5	0.0	11.3	0.0	0.0	12.7	0.0
LnGrp LOS				C	A	C	A	B		A	B	
Approach Vol, veh/h					1045			229	A		524	A
Approach Delay, s/veh					23.9			11.3			12.7	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		6		8							
Phs Duration (G+Y+Rc), s	49.6		49.6		35.4							
Change Period (Y+Rc), s	6.8		6.8		6.4							
Max Green Setting (Gmax), s	36.2		36.2		35.6							
Max Q Clear Time (g_c+I1), s	4.9		9.2		16.2							
Green Ext Time (p_c), s	3.9		9.3		12.8							

Intersection Summary		
HCM 6th Ctrl Delay	19.0	
HCM 6th LOS	B	

Notes
User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	0	22	0	0	0	0	201	296	0	518	352
Future Volume (veh/h)	35	0	22	0	0	0	0	201	296	0	518	352
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	37	0	23				0	212	0	0	545	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	147	0	131				0	1345		0	2555	
Arrive On Green	0.08	0.00	0.08				0.00	0.71	0.00	0.00	0.71	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	37	0	23				0	212	0	0	545	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	1.2	0.0	0.9				0.0	2.4	0.0	0.0	3.4	0.0
Cycle Q Clear(g_c), s	1.2	0.0	0.9				0.0	2.4	0.0	0.0	3.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	147	0	131				0	1345		0	2555	
V/C Ratio(X)	0.25	0.00	0.18				0.00	0.16		0.00	0.21	
Avail Cap(c_a), veh/h	646	0	575				0	1345		0	2555	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.96	0.00
Uniform Delay (d), s/veh	28.0	0.0	27.8				0.0	3.1	0.0	0.0	3.3	0.0
Incr Delay (d2), s/veh	4.0	0.0	2.9				0.0	0.3	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.4				0.0	0.5	0.0	0.0	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	0.0	30.7				0.0	3.4	0.0	0.0	3.5	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		60						212	A		545	A
Approach Delay, s/veh		31.5						3.4			3.5	
Approach LOS		C						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		52.9		12.1		52.9						
Change Period (Y+Rc), s		6.9		6.8		6.9						
Max Green Setting (Gmax), s		28.1		23.2		28.1						
Max Q Clear Time (g_c+I1), s		4.4		3.2		5.4						
Green Ext Time (p_c), s		3.1		0.5		8.8						

Intersection Summary		
HCM 6th Ctrl Delay		5.5
HCM 6th LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	285	28	68	248	37	35	56	87	44	112	37
Future Vol, veh/h	55	285	28	68	248	37	35	56	87	44	112	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	58	300	29	72	261	39	37	59	92	46	118	39
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	11.9	11.5	13	13.9
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	20%	100%	0%	0%	100%	0%	0%	23%
Vol Thru, %	31%	0%	100%	77%	0%	100%	69%	58%
Vol Right, %	49%	0%	0%	23%	0%	0%	31%	19%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	55	190	123	68	165	120	193
LT Vol	35	55	0	0	68	0	0	44
Through Vol	56	0	190	95	0	165	83	112
RT Vol	87	0	0	28	0	0	37	37
Lane Flow Rate	187	58	200	129	72	174	126	203
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.346	0.112	0.359	0.226	0.139	0.313	0.219	0.385
Departure Headway (Hd)	6.653	6.972	6.46	6.297	6.996	6.484	6.262	6.828
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	536	511	554	566	509	550	569	524
Service Time	4.444	4.757	4.245	4.082	4.784	4.271	4.049	4.617
HCM Lane V/C Ratio	0.349	0.114	0.361	0.228	0.141	0.316	0.221	0.387
HCM Control Delay	13	10.6	12.9	10.9	10.9	12.2	10.8	13.9
HCM Lane LOS	B	B	B	B	B	B	B	B
HCM 95th-tile Q	1.5	0.4	1.6	0.9	0.5	1.3	0.8	1.8

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	28	16	27	40	25	41	125	24	18	175	15
Future Vol, veh/h	8	28	16	27	40	25	41	125	24	18	175	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	8	29	17	28	42	26	43	132	25	19	184	16
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

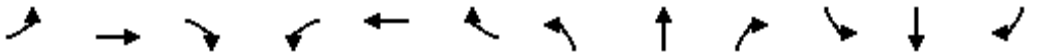
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	8.7	8.8	10.3	9.8
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	22%	100%	0%	100%	0%	9%	0%
Vol Thru, %	66%	0%	64%	0%	62%	91%	0%
Vol Right, %	13%	0%	36%	0%	38%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	8	44	27	65	193	15
LT Vol	41	8	0	27	0	18	0
Through Vol	125	0	28	0	40	175	0
RT Vol	24	0	16	0	25	0	15
Lane Flow Rate	200	8	46	28	68	203	16
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.286	0.014	0.07	0.048	0.102	0.29	0.019
Departure Headway (Hd)	5.142	6.189	5.427	6.132	5.355	5.142	4.392
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	698	576	657	582	666	697	812
Service Time	3.186	3.952	3.189	3.888	3.11	2.884	2.134
HCM Lane V/C Ratio	0.287	0.014	0.07	0.048	0.102	0.291	0.02
HCM Control Delay	10.3	9	8.6	9.2	8.7	10	7.2
HCM Lane LOS	B	A	A	A	A	A	A
HCM 95th-tile Q	1.2	0	0.2	0.2	0.3	1.2	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	3	581	19	5	441
Future Volume (veh/h)	11	3	581	19	5	441
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	14	4	726	24	6	551
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	60	53	2811	93	23	3071
Arrive On Green	0.03	0.03	0.79	0.79	0.01	0.85
Sat Flow, veh/h	1810	1610	3661	118	1810	3705
Grp Volume(v), veh/h	14	4	367	383	6	551
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1879	1810	1805
Q Serve(g_s), s	0.6	0.2	4.3	4.3	0.3	2.2
Cycle Q Clear(g_c), s	0.6	0.2	4.3	4.3	0.3	2.2
Prop In Lane	1.00	1.00		0.06	1.00	
Lane Grp Cap(c), veh/h	60	53	1423	1481	23	3071
V/C Ratio(X)	0.23	0.08	0.26	0.26	0.27	0.18
Avail Cap(c_a), veh/h	588	523	1423	1481	362	3071
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.86	0.86	1.00	1.00
Uniform Delay (d), s/veh	37.7	37.5	2.3	2.3	39.1	1.1
Incr Delay (d2), s/veh	4.2	1.3	0.4	0.4	2.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.2	0.7	0.7	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.9	38.8	2.6	2.6	41.4	1.2
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	18		750			557
Approach Delay, s/veh	41.2		2.6			1.6
Approach LOS	D		A			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		73.4		6.6	5.0	68.4
Change Period (Y+Rc), s		5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s		44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s		4.2		2.6	2.3	6.3
Green Ext Time (p_c), s		6.0		0.0	0.0	6.2

Intersection Summary	
HCM 6th Ctrl Delay	2.7
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	193	0	477	0	111	11	0	438	33
Future Volume (veh/h)	0	0	0	193	0	477	0	111	11	0	438	33
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				268	0	662	0	154	0	0	608	0
Peak Hour Factor				0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1201	0	1068	0	1852		0	1852	
Arrive On Green				0.33	0.00	0.33	0.00	0.51	0.00	0.00	0.51	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				268	0	662	0	154	0	0	608	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				4.5	0.0	14.7	0.0	1.8	0.0	0.0	8.4	0.0
Cycle Q Clear(g_c), s				4.5	0.0	14.7	0.0	1.8	0.0	0.0	8.4	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1201	0	1068	0	1852		0	1852	
V/C Ratio(X)				0.22	0.00	0.62	0.00	0.08		0.00	0.33	
Avail Cap(c_a), veh/h				1516	0	1349	0	1852		0	1852	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.99	0.00
Uniform Delay (d), s/veh				20.5	0.0	23.9	0.0	10.5	0.0	0.0	12.1	0.0
Incr Delay (d2), s/veh				0.4	0.0	2.7	0.0	0.1	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.8	0.0	5.5	0.0	0.7	0.0	0.0	3.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.9	0.0	26.6	0.0	10.6	0.0	0.0	12.6	0.0
LnGrp LOS				C	A	C	A	B		A	B	
Approach Vol, veh/h					930			154	A		608	A
Approach Delay, s/veh					25.0			10.6			12.6	
Approach LOS					C			B			B	

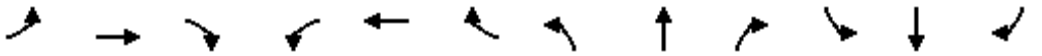
Timer - Assigned Phs	2		6		8							
Phs Duration (G+Y+Rc), s	50.4		50.4		34.6							
Change Period (Y+Rc), s	6.8		6.8		6.4							
Max Green Setting (Gmax), s	36.2		36.2		35.6							
Max Q Clear Time (g_c+I1), s	3.8		10.4		16.7							
Green Ext Time (p_c), s	2.5		10.6		11.5							

Intersection Summary		
HCM 6th Ctrl Delay	19.2	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	0	11	0	0	0	0	92	246	0	309	320
Future Volume (veh/h)	31	0	11	0	0	0	0	92	246	0	309	320
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	34	0	12				0	100	0	0	336	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	126	0	112				0	1368		0	2598	
Arrive On Green	0.07	0.00	0.07				0.00	0.72	0.00	0.00	0.72	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	34	0	12				0	100	0	0	336	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	1.2	0.0	0.5				0.0	1.0	0.0	0.0	1.9	0.0
Cycle Q Clear(g_c), s	1.2	0.0	0.5				0.0	1.0	0.0	0.0	1.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	126	0	112				0	1368		0	2598	
V/C Ratio(X)	0.27	0.00	0.11				0.00	0.07		0.00	0.13	
Avail Cap(c_a), veh/h	646	0	575				0	1368		0	2598	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.96	0.00
Uniform Delay (d), s/veh	28.7	0.0	28.4				0.0	2.7	0.0	0.0	2.8	0.0
Incr Delay (d2), s/veh	5.2	0.0	1.9				0.0	0.1	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.2				0.0	0.2	0.0	0.0	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.9	0.0	30.3				0.0	2.8	0.0	0.0	2.9	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		46						100	A		336	A
Approach Delay, s/veh		33.0						2.8			2.9	
Approach LOS		C						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		53.7		11.3		53.7						
Change Period (Y+Rc), s		6.9		6.8		6.9						
Max Green Setting (Gmax), s		28.1		23.2		28.1						
Max Q Clear Time (g_c+I1), s		3.0		3.2		3.9						
Green Ext Time (p_c), s		1.3		0.3		5.4						

Intersection Summary		
HCM 6th Ctrl Delay		5.8
HCM 6th LOS		A

Notes

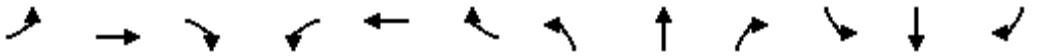
User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	32	8	766	13	4	486
Future Volume (veh/h)	32	8	766	13	4	486
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	35	9	833	14	4	528
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	113	100	2771	47	15	2965
Arrive On Green	0.06	0.06	0.76	0.76	0.01	0.82
Sat Flow, veh/h	1810	1610	3728	61	1810	3705
Grp Volume(v), veh/h	35	9	414	433	4	528
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1889	1810	1805
Q Serve(g_s), s	1.5	0.4	5.6	5.6	0.2	2.4
Cycle Q Clear(g_c), s	1.5	0.4	5.6	5.6	0.2	2.4
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	113	100	1377	1441	15	2965
V/C Ratio(X)	0.31	0.09	0.30	0.30	0.26	0.18
Avail Cap(c_a), veh/h	588	523	1377	1441	362	2965
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.85	0.85	1.00	1.00
Uniform Delay (d), s/veh	35.9	35.4	2.9	2.9	39.4	1.5
Incr Delay (d2), s/veh	3.3	0.8	0.5	0.5	3.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.4	1.1	1.1	0.1	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.1	36.2	3.4	3.4	42.7	1.6
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	44		847			532
Approach Delay, s/veh	38.5		3.4			1.9
Approach LOS	D		A			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		71.0		9.0	4.7	66.3
Change Period (Y+Rc), s		5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s		44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s		4.4		3.5	2.2	7.6
Green Ext Time (p_c), s		5.7		0.2	0.0	6.8

Intersection Summary	
HCM 6th Ctrl Delay	3.9
HCM 6th LOS	A

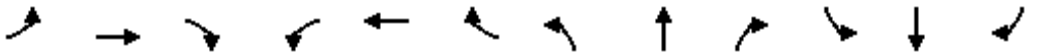


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	270	0	624	0	171	16	0	472	44
Future Volume (veh/h)	0	0	0	270	0	624	0	171	16	0	472	44
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				333	0	770	0	211	0	0	583	0
Peak Hour Factor				0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1315	0	1170	0	1738		0	1738	
Arrive On Green				0.36	0.00	0.36	0.00	0.48	0.00	0.00	0.48	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				333	0	770	0	211	0	0	583	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				5.5	0.0	17.0	0.0	2.7	0.0	0.0	8.5	0.0
Cycle Q Clear(g_c), s				5.5	0.0	17.0	0.0	2.7	0.0	0.0	8.5	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1315	0	1170	0	1738		0	1738	
V/C Ratio(X)				0.25	0.00	0.66	0.00	0.12		0.00	0.34	
Avail Cap(c_a), veh/h				1516	0	1349	0	1738		0	1738	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.99	0.00
Uniform Delay (d), s/veh				19.0	0.0	22.6	0.0	12.1	0.0	0.0	13.6	0.0
Incr Delay (d2), s/veh				0.5	0.0	2.9	0.0	0.1	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.2	0.0	6.3	0.0	1.0	0.0	0.0	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				19.4	0.0	25.5	0.0	12.3	0.0	0.0	14.1	0.0
LnGrp LOS				B	A	C	A	B		A	B	
Approach Vol, veh/h					1103			211	A		583	A
Approach Delay, s/veh					23.7			12.3			14.1	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		6		8							
Phs Duration (G+Y+Rc), s	47.7		47.7		37.3							
Change Period (Y+Rc), s	6.8		6.8		6.4							
Max Green Setting (Gmax), s	36.2		36.2		35.6							
Max Q Clear Time (g_c+I1), s	4.7		10.5		19.0							
Green Ext Time (p_c), s	3.6		10.1		11.9							

Intersection Summary		
HCM 6th Ctrl Delay	19.5	
HCM 6th LOS	B	

Notes
User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	0	21	0	0	0	0	152	286	0	391	347
Future Volume (veh/h)	34	0	21	0	0	0	0	152	286	0	391	347
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	37	0	23				0	165	0	0	425	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	147	0	131				0	1345		0	2555	
Arrive On Green	0.08	0.00	0.08				0.00	0.71	0.00	0.00	0.71	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	37	0	23				0	165	0	0	425	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	1.2	0.0	0.9				0.0	1.8	0.0	0.0	2.5	0.0
Cycle Q Clear(g_c), s	1.2	0.0	0.9				0.0	1.8	0.0	0.0	2.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	147	0	131				0	1345		0	2555	
V/C Ratio(X)	0.25	0.00	0.18				0.00	0.12		0.00	0.17	
Avail Cap(c_a), veh/h	646	0	575				0	1345		0	2555	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.96	0.00
Uniform Delay (d), s/veh	28.0	0.0	27.8				0.0	3.0	0.0	0.0	3.1	0.0
Incr Delay (d2), s/veh	4.0	0.0	2.9				0.0	0.2	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.4				0.0	0.4	0.0	0.0	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	0.0	30.7				0.0	3.2	0.0	0.0	3.3	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		60						165	A		425	A
Approach Delay, s/veh		31.5						3.2			3.3	
Approach LOS		C						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		52.9		12.1		52.9						
Change Period (Y+Rc), s		6.9		6.8		6.9						
Max Green Setting (Gmax), s		28.1		23.2		28.1						
Max Q Clear Time (g_c+I1), s		3.8		3.2		4.5						
Green Ext Time (p_c), s		2.3		0.5		6.9						

Intersection Summary	
HCM 6th Ctrl Delay	5.9
HCM 6th LOS	A

Notes

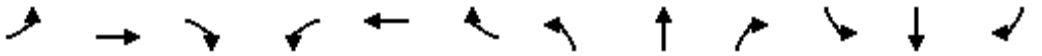
User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	3	616	20	5	463
Future Volume (veh/h)	12	3	616	20	5	463
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	13	3	648	21	5	487
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	54	48	2831	92	19	3082
Arrive On Green	0.03	0.03	0.79	0.79	0.01	0.85
Sat Flow, veh/h	1810	1610	3664	116	1810	3705
Grp Volume(v), veh/h	13	3	328	341	5	487
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1879	1810	1805
Q Serve(g_s), s	0.6	0.1	3.7	3.7	0.2	1.8
Cycle Q Clear(g_c), s	0.6	0.1	3.7	3.7	0.2	1.8
Prop In Lane	1.00	1.00		0.06	1.00	
Lane Grp Cap(c), veh/h	54	48	1432	1491	19	3082
V/C Ratio(X)	0.24	0.06	0.23	0.23	0.26	0.16
Avail Cap(c_a), veh/h	588	523	1432	1491	362	3082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.89	0.89	1.00	1.00
Uniform Delay (d), s/veh	37.9	37.7	2.1	2.1	39.3	1.0
Incr Delay (d2), s/veh	4.8	1.1	0.3	0.3	2.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.5	0.6	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.7	38.9	2.4	2.4	42.0	1.1
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	16		669			492
Approach Delay, s/veh	42.0		2.4			1.5
Approach LOS	D		A			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		73.6		6.4	4.8	68.8
Change Period (Y+Rc), s		5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s		44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s		3.8		2.6	2.2	5.7
Green Ext Time (p_c), s		5.2		0.0	0.0	5.5

Intersection Summary	
HCM 6th Ctrl Delay	2.6
HCM 6th LOS	A

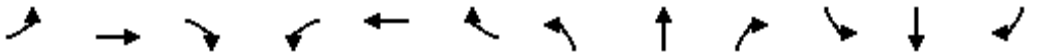


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	227	0	516	0	147	15	0	471	37
Future Volume (veh/h)	0	0	0	227	0	516	0	147	15	0	471	37
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				239	0	543	0	155	0	0	496	0
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1059	0	942	0	1993		0	1993	
Arrive On Green				0.29	0.00	0.29	0.00	0.55	0.00	0.00	0.55	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				239	0	543	0	155	0	0	496	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				4.3	0.0	12.2	0.0	1.7	0.0	0.0	6.1	0.0
Cycle Q Clear(g_c), s				4.3	0.0	12.2	0.0	1.7	0.0	0.0	6.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1059	0	942	0	1993		0	1993	
V/C Ratio(X)				0.23	0.00	0.58	0.00	0.08		0.00	0.25	
Avail Cap(c_a), veh/h				1516	0	1349	0	1993		0	1993	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.99	0.00
Uniform Delay (d), s/veh				22.8	0.0	25.6	0.0	8.9	0.0	0.0	9.9	0.0
Incr Delay (d2), s/veh				0.5	0.0	2.6	0.0	0.1	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.8	0.0	4.6	0.0	0.6	0.0	0.0	2.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				23.3	0.0	28.1	0.0	9.0	0.0	0.0	10.2	0.0
LnGrp LOS				C	A	C	A	A		A	B	
Approach Vol, veh/h					782			155	A		496	A
Approach Delay, s/veh					26.7			9.0			10.2	
Approach LOS					C			A			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	53.7		53.7		31.3			
Change Period (Y+Rc), s	6.8		6.8		6.4			
Max Green Setting (Gmax), s	36.2		36.2		35.6			
Max Q Clear Time (g_c+I1), s	3.7		8.1		14.2			
Green Ext Time (p_c), s	2.6		8.9		10.7			

Intersection Summary		
HCM 6th Ctrl Delay	19.0	
HCM 6th LOS	B	

Notes
User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	0	11	0	0	0	0	131	358	0	361	336
Future Volume (veh/h)	32	0	11	0	0	0	0	131	358	0	361	336
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	34	0	12				0	138	0	0	380	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	126	0	112				0	1368		0	2598	
Arrive On Green	0.07	0.00	0.07				0.00	0.72	0.00	0.00	0.72	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	34	0	12				0	138	0	0	380	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	1.2	0.0	0.5				0.0	1.4	0.0	0.0	2.1	0.0
Cycle Q Clear(g_c), s	1.2	0.0	0.5				0.0	1.4	0.0	0.0	2.1	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	126	0	112				0	1368		0	2598	
V/C Ratio(X)	0.27	0.00	0.11				0.00	0.10		0.00	0.15	
Avail Cap(c_a), veh/h	646	0	575				0	1368		0	2598	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.98	0.00
Uniform Delay (d), s/veh	28.7	0.0	28.4				0.0	2.8	0.0	0.0	2.9	0.0
Incr Delay (d2), s/veh	5.2	0.0	1.9				0.0	0.1	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.2				0.0	0.3	0.0	0.0	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.9	0.0	30.3				0.0	2.9	0.0	0.0	3.0	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		46						138	A		380	A
Approach Delay, s/veh		33.0						2.9			3.0	
Approach LOS		C						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		53.7		11.3		53.7						
Change Period (Y+Rc), s		6.9		6.8		6.9						
Max Green Setting (Gmax), s		28.1		23.2		28.1						
Max Q Clear Time (g_c+I1), s		3.4		3.2		4.1						
Green Ext Time (p_c), s		1.9		0.3		6.2						

Intersection Summary		
HCM 6th Ctrl Delay		5.4
HCM 6th LOS		A

Notes

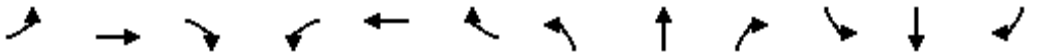
User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	34	9	800	14	4	509
Future Volume (veh/h)	34	9	800	14	4	509
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	36	9	842	15	4	536
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	114	102	2765	49	15	2962
Arrive On Green	0.06	0.06	0.76	0.76	0.01	0.82
Sat Flow, veh/h	1810	1610	3724	65	1810	3705
Grp Volume(v), veh/h	36	9	419	438	4	536
Grp Sat Flow(s),veh/h/ln	1810	1610	1805	1888	1810	1805
Q Serve(g_s), s	1.5	0.4	5.8	5.8	0.2	2.5
Cycle Q Clear(g_c), s	1.5	0.4	5.8	5.8	0.2	2.5
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	114	102	1375	1439	15	2962
V/C Ratio(X)	0.31	0.09	0.30	0.30	0.26	0.18
Avail Cap(c_a), veh/h	588	523	1375	1439	362	2962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.89	0.89	1.00	1.00
Uniform Delay (d), s/veh	35.8	35.3	2.9	2.9	39.4	1.5
Incr Delay (d2), s/veh	3.3	0.8	0.5	0.5	3.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.4	1.1	1.2	0.1	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.1	36.1	3.5	3.4	42.7	1.6
LnGrp LOS	D	D	A	A	D	A
Approach Vol, veh/h	45		857			540
Approach Delay, s/veh	38.5		3.4			2.0
Approach LOS	D		A			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		70.9		9.1	4.7	66.3
Change Period (Y+Rc), s		5.3		4.0	4.0	5.3
Max Green Setting (Gmax), s		44.7		26.0	16.0	24.7
Max Q Clear Time (g_c+I1), s		4.5		3.5	2.2	7.8
Green Ext Time (p_c), s		5.8		0.2	0.0	6.8

Intersection Summary	
HCM 6th Ctrl Delay	4.0
HCM 6th LOS	A

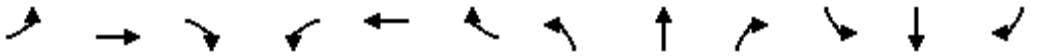


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	372	0	670	0	220	18	0	509	47
Future Volume (veh/h)	0	0	0	372	0	670	0	220	18	0	509	47
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1900	0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h				392	0	705	0	232	0	0	536	0
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				1280	0	1139	0	1773		0	1773	
Arrive On Green				0.35	0.00	0.35	0.00	0.49	0.00	0.00	0.49	0.00
Sat Flow, veh/h				3619	0	3220	0	3705	1610	0	3800	0
Grp Volume(v), veh/h				392	0	705	0	232	0	0	536	0
Grp Sat Flow(s),veh/h/ln				1810	0	1610	0	1805	1610	0	1805	0
Q Serve(g_s), s				6.7	0.0	15.4	0.0	3.0	0.0	0.0	7.5	0.0
Cycle Q Clear(g_c), s				6.7	0.0	15.4	0.0	3.0	0.0	0.0	7.5	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h				1280	0	1139	0	1773		0	1773	
V/C Ratio(X)				0.31	0.00	0.62	0.00	0.13		0.00	0.30	
Avail Cap(c_a), veh/h				1516	0	1349	0	1773		0	1773	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.99	0.00
Uniform Delay (d), s/veh				19.9	0.0	22.7	0.0	11.8	0.0	0.0	12.9	0.0
Incr Delay (d2), s/veh				0.6	0.0	2.5	0.0	0.2	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	0.0	5.7	0.0	1.1	0.0	0.0	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.5	0.0	25.3	0.0	11.9	0.0	0.0	13.4	0.0
LnGrp LOS				C	A	C	A	B		A	B	
Approach Vol, veh/h					1097			232	A		536	A
Approach Delay, s/veh					23.6			11.9			13.4	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		6		8							
Phs Duration (G+Y+Rc), s	48.5		48.5		36.5							
Change Period (Y+Rc), s	6.8		6.8		6.4							
Max Green Setting (Gmax), s	36.2		36.2		35.6							
Max Q Clear Time (g_c+I1), s	5.0		9.5		17.4							
Green Ext Time (p_c), s	4.0		9.4		12.7							

Intersection Summary		
HCM 6th Ctrl Delay	19.2	
HCM 6th LOS	B	

Notes
User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	0	22	0	0	0	0	201	296	0	517	364
Future Volume (veh/h)	36	0	22	0	0	0	0	201	296	0	517	364
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1900	1900	0	1900	1900
Adj Flow Rate, veh/h	38	0	23				0	212	0	0	544	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	149	0	132				0	1343		0	2553	
Arrive On Green	0.08	0.00	0.08				0.00	0.71	0.00	0.00	0.71	0.00
Sat Flow, veh/h	1810	0	1610				0	1900	3220	0	3705	1610
Grp Volume(v), veh/h	38	0	23				0	212	0	0	544	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1900	1610	0	1805	1610
Q Serve(g_s), s	1.3	0.0	0.9				0.0	2.4	0.0	0.0	3.4	0.0
Cycle Q Clear(g_c), s	1.3	0.0	0.9				0.0	2.4	0.0	0.0	3.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	149	0	132				0	1343		0	2553	
V/C Ratio(X)	0.26	0.00	0.17				0.00	0.16		0.00	0.21	
Avail Cap(c_a), veh/h	646	0	575				0	1343		0	2553	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	0.96	0.00
Uniform Delay (d), s/veh	28.0	0.0	27.8				0.0	3.1	0.0	0.0	3.3	0.0
Incr Delay (d2), s/veh	4.1	0.0	2.8				0.0	0.3	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.4				0.0	0.5	0.0	0.0	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.1	0.0	30.6				0.0	3.4	0.0	0.0	3.5	0.0
LnGrp LOS	C	A	C				A	A		A	A	
Approach Vol, veh/h		61						212	A		544	A
Approach Delay, s/veh		31.5						3.4			3.5	
Approach LOS		C						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		52.9		12.1		52.9						
Change Period (Y+Rc), s		6.9		6.8		6.9						
Max Green Setting (Gmax), s		28.1		23.2		28.1						
Max Q Clear Time (g_c+I1), s		4.4		3.3		5.4						
Green Ext Time (p_c), s		3.1		0.5		8.8						

Intersection Summary	
HCM 6th Ctrl Delay	5.5
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	127	94	52	78	11	50	268	70	39	449	28
Future Volume (veh/h)	24	127	94	52	78	11	50	268	70	39	449	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	29	153	113	63	94	13	60	323	84	47	541	34
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	54	235	163	85	252	214	83	1087	921	73	2046	912
Arrive On Green	0.03	0.12	0.12	0.05	0.13	0.13	0.05	0.57	0.57	0.04	0.57	0.57
Sat Flow, veh/h	1810	2039	1412	1810	1900	1610	1810	1900	1610	1810	3610	1610
Grp Volume(v), veh/h	29	134	132	63	94	13	60	323	84	47	541	34
Grp Sat Flow(s),veh/h/ln	1810	1805	1646	1810	1900	1610	1810	1900	1610	1810	1805	1610
Q Serve(g_s), s	1.3	5.7	6.2	2.7	3.6	0.6	2.6	7.0	1.9	2.0	6.1	0.7
Cycle Q Clear(g_c), s	1.3	5.7	6.2	2.7	3.6	0.6	2.6	7.0	1.9	2.0	6.1	0.7
Prop In Lane	1.00		0.86	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	208	190	85	252	214	83	1087	921	73	2046	912
V/C Ratio(X)	0.54	0.65	0.69	0.74	0.37	0.06	0.72	0.30	0.09	0.64	0.26	0.04
Avail Cap(c_a), veh/h	147	417	381	170	463	392	215	1087	921	215	2046	912
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.3	33.8	34.0	37.6	31.7	30.3	37.7	8.8	7.7	37.8	8.8	7.7
Incr Delay (d2), s/veh	8.2	3.3	4.5	11.8	0.9	0.1	11.1	0.7	0.2	9.0	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	2.6	2.6	1.5	1.7	0.2	1.4	2.8	0.6	1.1	2.2	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	37.2	38.6	49.4	32.6	30.5	48.7	9.5	7.9	46.8	9.2	7.7
LnGrp LOS	D	D	D	D	C	C	D	A	A	D	A	A
Approach Vol, veh/h		295			170			467			622	
Approach Delay, s/veh		38.7			38.6			14.3			11.9	
Approach LOS		D			D			B			B	

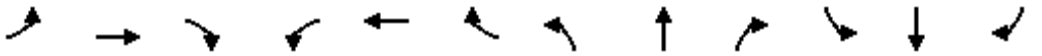
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	50.3	8.3	13.7	8.2	49.8	6.9	15.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.5	26.5	7.5	18.5	9.5	26.5	6.5	19.5
Max Q Clear Time (g_c+I1), s	4.0	9.0	4.7	8.2	4.6	8.1	3.3	5.6
Green Ext Time (p_c), s	0.0	2.0	0.0	1.1	0.0	3.6	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	20.6
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	174	72	52	126	53	99	596	80	25	293	26
Future Volume (veh/h)	24	174	72	52	126	53	99	596	80	25	293	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	27	198	82	59	143	60	112	677	91	28	333	30
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	51	294	118	83	255	216	145	1109	940	52	1922	857
Arrive On Green	0.03	0.12	0.12	0.05	0.13	0.13	0.08	0.58	0.58	0.03	0.53	0.53
Sat Flow, veh/h	1810	2517	1006	1810	1900	1610	1810	1900	1610	1810	3610	1610
Grp Volume(v), veh/h	27	140	140	59	143	60	112	677	91	28	333	30
Grp Sat Flow(s),veh/h/ln	1810	1805	1719	1810	1900	1610	1810	1900	1610	1810	1805	1610
Q Serve(g_s), s	1.2	5.9	6.3	2.6	5.6	2.7	4.9	18.4	2.0	1.2	3.8	0.7
Cycle Q Clear(g_c), s	1.2	5.9	6.3	2.6	5.6	2.7	4.9	18.4	2.0	1.2	3.8	0.7
Prop In Lane	1.00		0.59	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	51	211	201	83	255	216	145	1109	940	52	1922	857
V/C Ratio(X)	0.53	0.66	0.70	0.71	0.56	0.28	0.77	0.61	0.10	0.53	0.17	0.04
Avail Cap(c_a), veh/h	113	406	387	113	428	362	342	1109	940	113	1922	857
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.3	33.8	34.0	37.7	32.4	31.1	36.1	10.8	7.4	38.3	9.6	8.9
Incr Delay (d2), s/veh	8.2	3.6	4.3	12.4	1.9	0.7	8.3	2.5	0.2	8.2	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.7	2.8	1.4	2.7	1.1	2.4	7.5	0.7	0.7	1.4	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.6	37.4	38.3	50.1	34.4	31.8	44.3	13.3	7.6	46.5	9.8	9.0
LnGrp LOS	D	D	D	D	C	C	D	B	A	D	A	A
Approach Vol, veh/h		307			262			880			391	
Approach Delay, s/veh		38.6			37.3			16.6			12.4	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	51.2	8.2	13.8	10.9	47.1	6.8	15.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	34.0	5.0	18.0	15.1	23.9	5.0	18.0
Max Q Clear Time (g_c+I1), s	3.2	20.4	4.6	8.3	6.9	5.8	3.2	7.6
Green Ext Time (p_c), s	0.0	4.2	0.0	1.1	0.1	2.1	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	22.3
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	145	98	54	99	12	55	281	74	42	474	31
Future Volume (veh/h)	25	145	98	54	99	12	55	281	74	42	474	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	30	175	118	65	119	14	66	339	89	51	571	37
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	55	261	167	86	267	227	87	1067	904	77	2006	895
Arrive On Green	0.03	0.12	0.12	0.05	0.14	0.14	0.05	0.56	0.56	0.04	0.56	0.56
Sat Flow, veh/h	1810	2113	1349	1810	1900	1610	1810	1900	1610	1810	3610	1610
Grp Volume(v), veh/h	30	148	145	65	119	14	66	339	89	51	571	37
Grp Sat Flow(s),veh/h/ln	1810	1805	1657	1810	1900	1610	1810	1900	1610	1810	1805	1610
Q Serve(g_s), s	1.3	6.3	6.7	2.8	4.6	0.6	2.9	7.6	2.1	2.2	6.7	0.8
Cycle Q Clear(g_c), s	1.3	6.3	6.7	2.8	4.6	0.6	2.9	7.6	2.1	2.2	6.7	0.8
Prop In Lane	1.00		0.81	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	55	223	205	86	267	227	87	1067	904	77	2006	895
V/C Ratio(X)	0.55	0.66	0.71	0.75	0.44	0.06	0.76	0.32	0.10	0.67	0.28	0.04
Avail Cap(c_a), veh/h	147	417	383	170	463	392	215	1067	904	215	2006	895
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.2	33.5	33.7	37.6	31.5	29.8	37.6	9.4	8.1	37.7	9.4	8.1
Incr Delay (d2), s/veh	8.1	3.4	4.5	12.3	1.2	0.1	12.6	0.8	0.2	9.5	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	2.9	2.9	1.5	2.1	0.2	1.6	3.1	0.7	1.2	2.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	36.9	38.2	49.9	32.7	29.9	50.2	10.1	8.4	47.2	9.7	8.2
LnGrp LOS	D	D	D	D	C	C	D	B	A	D	A	A
Approach Vol, veh/h		323			198			494			659	
Approach Delay, s/veh		38.3			38.1			15.2			12.5	
Approach LOS		D			D			B			B	

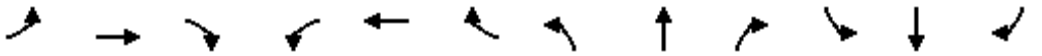
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	49.4	8.3	14.4	8.3	49.0	6.9	15.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.5	26.5	7.5	18.5	9.5	26.5	6.5	19.5
Max Q Clear Time (g_c+I1), s	4.2	9.6	4.8	8.7	4.9	8.7	3.3	6.6
Green Ext Time (p_c), s	0.0	2.1	0.0	1.2	0.0	3.8	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	21.3
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	197	76	55	147	55	107	630	85	26	310	29
Future Volume (veh/h)	25	197	76	55	147	55	107	630	85	26	310	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	28	224	86	62	167	62	122	716	97	30	352	33
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	52	324	121	85	273	231	157	1087	921	55	1862	830
Arrive On Green	0.03	0.13	0.13	0.05	0.14	0.14	0.09	0.57	0.57	0.03	0.52	0.52
Sat Flow, veh/h	1810	2574	959	1810	1900	1610	1810	1900	1610	1810	3610	1610
Grp Volume(v), veh/h	28	155	155	62	167	62	122	716	97	30	352	33
Grp Sat Flow(s),veh/h/ln	1810	1805	1727	1810	1900	1610	1810	1900	1610	1810	1805	1610
Q Serve(g_s), s	1.2	6.6	6.9	2.7	6.6	2.7	5.3	20.7	2.2	1.3	4.2	0.8
Cycle Q Clear(g_c), s	1.2	6.6	6.9	2.7	6.6	2.7	5.3	20.7	2.2	1.3	4.2	0.8
Prop In Lane	1.00		0.56	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	52	227	217	85	273	231	157	1087	921	55	1862	830
V/C Ratio(X)	0.53	0.68	0.71	0.73	0.61	0.27	0.78	0.66	0.11	0.55	0.19	0.04
Avail Cap(c_a), veh/h	113	406	389	113	428	362	342	1087	921	113	1862	830
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.3	33.4	33.6	37.6	32.2	30.5	35.8	11.8	7.8	38.2	10.4	9.6
Incr Delay (d2), s/veh	8.2	3.6	4.3	15.1	2.2	0.6	7.8	3.1	0.2	8.1	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.0	3.1	1.5	3.1	1.1	2.6	8.5	0.7	0.7	1.6	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.5	37.1	37.9	52.8	34.4	31.1	43.6	14.8	8.0	46.4	10.6	9.7
LnGrp LOS	D	D	D	D	C	C	D	B	A	D	B	A
Approach Vol, veh/h		338			291			935			415	
Approach Delay, s/veh		38.2			37.6			17.9			13.1	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	50.3	8.2	14.6	11.4	45.8	6.8	16.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	34.0	5.0	18.0	15.1	23.9	5.0	18.0
Max Q Clear Time (g_c+I1), s	3.3	22.7	4.7	8.9	7.3	6.2	3.2	8.6
Green Ext Time (p_c), s	0.0	4.1	0.0	1.2	0.2	2.2	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	23.3
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	239	120	56	104	13	74	295	96	73	496	32
Future Volume (veh/h)	31	239	120	56	104	13	74	295	96	73	496	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	33	252	126	59	109	14	78	311	101	77	522	34
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	59	349	169	83	306	259	101	1000	847	100	1897	846
Arrive On Green	0.03	0.15	0.15	0.05	0.16	0.16	0.06	0.53	0.53	0.06	0.53	0.53
Sat Flow, veh/h	1810	2357	1142	1810	1900	1610	1810	1900	1610	1810	3610	1610
Grp Volume(v), veh/h	33	191	187	59	109	14	78	311	101	77	522	34
Grp Sat Flow(s),veh/h/ln	1810	1805	1694	1810	1900	1610	1810	1900	1610	1810	1805	1610
Q Serve(g_s), s	1.4	8.1	8.5	2.6	4.1	0.6	3.4	7.4	2.5	3.4	6.4	0.8
Cycle Q Clear(g_c), s	1.4	8.1	8.5	2.6	4.1	0.6	3.4	7.4	2.5	3.4	6.4	0.8
Prop In Lane	1.00		0.67	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	59	267	251	83	306	259	101	1000	847	100	1897	846
V/C Ratio(X)	0.56	0.72	0.75	0.71	0.36	0.05	0.77	0.31	0.12	0.77	0.28	0.04
Avail Cap(c_a), veh/h	147	417	392	170	463	392	215	1000	847	215	1897	846
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	32.5	32.6	37.7	29.9	28.4	37.2	10.7	9.6	37.3	10.5	9.2
Incr Delay (d2), s/veh	8.1	3.6	4.4	10.8	0.7	0.1	11.5	0.8	0.3	11.6	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.7	3.7	1.4	1.9	0.2	1.8	3.1	0.9	1.8	2.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	36.1	37.0	48.5	30.6	28.5	48.7	11.6	9.9	48.9	10.9	9.3
LnGrp LOS	D	D	D	D	C	C	D	B	A	D	B	A
Approach Vol, veh/h		411			182			490			633	
Approach Delay, s/veh		37.3			36.2			17.1			15.4	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	46.6	8.2	16.3	9.0	46.5	7.1	17.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.5	26.5	7.5	18.5	9.5	26.5	6.5	19.5
Max Q Clear Time (g_c+I1), s	5.4	9.4	4.6	10.5	5.4	8.4	3.4	6.1
Green Ext Time (p_c), s	0.0	2.0	0.0	1.4	0.0	3.4	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	23.4
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	220	79	57	182	67	165	661	95	34	324	50
Future Volume (veh/h)	37	220	79	57	182	67	165	661	95	34	324	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	39	232	83	60	192	71	174	696	100	36	341	53
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	66	333	116	83	260	220	215	1078	914	62	1744	778
Arrive On Green	0.04	0.13	0.13	0.05	0.14	0.14	0.12	0.57	0.57	0.03	0.48	0.48
Sat Flow, veh/h	1810	2626	914	1810	1900	1610	1810	1900	1610	1810	3610	1610
Grp Volume(v), veh/h	39	157	158	60	192	71	174	696	100	36	341	53
Grp Sat Flow(s),veh/h/ln	1810	1805	1735	1810	1900	1610	1810	1900	1610	1810	1805	1610
Q Serve(g_s), s	1.7	6.7	7.0	2.6	7.8	3.2	7.5	20.0	2.3	1.6	4.3	1.4
Cycle Q Clear(g_c), s	1.7	6.7	7.0	2.6	7.8	3.2	7.5	20.0	2.3	1.6	4.3	1.4
Prop In Lane	1.00		0.53	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	66	229	220	83	260	220	215	1078	914	62	1744	778
V/C Ratio(X)	0.59	0.69	0.72	0.72	0.74	0.32	0.81	0.65	0.11	0.58	0.20	0.07
Avail Cap(c_a), veh/h	113	406	390	113	428	362	342	1078	914	113	1744	778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.0	33.4	33.5	37.7	33.2	31.2	34.4	11.8	8.0	38.1	11.8	11.0
Incr Delay (d2), s/veh	8.3	3.6	4.3	13.3	4.1	0.8	7.4	2.9	0.2	8.2	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	3.1	3.1	1.4	3.8	1.3	3.7	8.2	0.8	0.8	1.7	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	37.0	37.8	50.9	37.3	32.0	41.8	14.7	8.2	46.3	12.0	11.2
LnGrp LOS	D	D	D	D	D	C	D	B	A	D	B	B
Approach Vol, veh/h		354			323			970			430	
Approach Delay, s/veh		38.4			38.6			18.9			14.8	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	49.9	8.2	14.7	14.0	43.2	7.4	15.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	34.0	5.0	18.0	15.1	23.9	5.0	18.0
Max Q Clear Time (g_c+I1), s	3.6	22.0	4.6	9.0	9.5	6.3	3.7	9.8
Green Ext Time (p_c), s	0.0	4.1	0.0	1.2	0.2	2.2	0.0	0.8

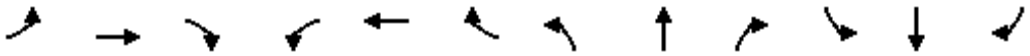
Intersection Summary	
HCM 6th Ctrl Delay	24.4
HCM 6th LOS	C

APPENDIX E:

QUEUING ANALYSIS WORKSHEETS

Intersection: 1: Marks Avenue & Belmont Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	R	L	T	TR
Maximum Queue (ft)	31	56	53	48	48	44	55	96	55	27	93	80
Average Queue (ft)	14	36	32	20	30	10	28	59	38	19	54	29
95th Queue (ft)	39	52	39	39	48	30	54	88	57	38	82	55
Link Distance (ft)		721		2483	2483			2528	2528		647	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	105		105			125	230			135		50
Storage Blk Time (%)											6	1
Queuing Penalty (veh)											17	3

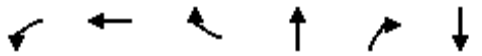


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	15	9	52	22	5	12	77	431	86	11	423	42
v/c Ratio	0.12	0.05	0.24	0.17	0.03	0.06	0.47	0.15	0.06	0.08	0.16	0.04
Control Delay	45.2	43.3	7.7	46.6	42.8	0.5	54.4	3.5	1.3	46.6	6.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.2	43.3	7.7	46.6	42.8	0.5	54.4	3.5	1.3	46.6	6.6	0.4
Queue Length 50th (ft)	9	6	0	14	3	0	50	25	0	7	49	0
Queue Length 95th (ft)	26	19	14	34	14	0	85	64	12	23	73	1
Internal Link Dist (ft)		651			2488			502			2547	
Turn Bay Length (ft)	55		55	215		210	240		215	245		215
Base Capacity (vph)	601	798	721	600	798	721	259	2943	1332	259	2622	1195
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.07	0.04	0.01	0.02	0.30	0.15	0.06	0.04	0.16	0.04

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	10	4	607	4	499
v/c Ratio	0.05	0.02	0.18	0.02	0.14
Control Delay	32.9	21.7	2.1	33.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	21.7	2.1	33.0	0.8
Queue Length 50th (ft)	5	0	0	2	0
Queue Length 95th (ft)	17	8	77	10	32
Internal Link Dist (ft)	203		557		502
Turn Bay Length (ft)	75			110	
Base Capacity (vph)	586	527	3330	361	3445
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.18	0.01	0.14

Intersection Summary



Lane Group	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	125	125	549	114	15	591
v/c Ratio	0.38	0.38	0.56	0.05	0.01	0.25
Control Delay	32.4	32.4	4.9	6.1	0.0	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	32.4	4.9	6.1	0.0	6.8
Queue Length 50th (ft)	62	62	0	10	0	60
Queue Length 95th (ft)	82	82	6	17	0	76
Internal Link Dist (ft)		1020		815		557
Turn Bay Length (ft)	340		205		475	
Base Capacity (vph)	718	718	1509	2362	1615	2346
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.17	0.36	0.05	0.01	0.25

Intersection Summary

Lane Group	EBL	EBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	11	12	211	121	316	316
v/c Ratio	0.04	0.02	0.08	0.08	0.10	0.20
Control Delay	23.7	0.1	1.8	0.1	2.9	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	0.1	1.8	0.1	2.9	0.3
Queue Length 50th (ft)	4	0	0	0	0	0
Queue Length 95th (ft)	16	0	17	0	37	0
Internal Link Dist (ft)		833	375		815	
Turn Bay Length (ft)				270		460
Base Capacity (vph)	644	849	2712	1470	3077	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.08	0.08	0.10	0.20

Intersection Summary

Intersection: 6: Hughes Avenue & Belmont Avenue

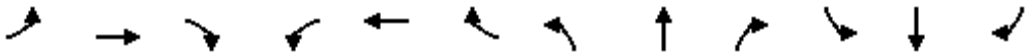
Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	54	56	55	31	54	32	55	54
Average Queue (ft)	15	33	38	17	34	26	32	27
95th Queue (ft)	43	44	55	42	47	44	54	47
Link Distance (ft)		2483	2483		704	704	2526	321
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	145			165				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 7: Hughes Avenue & Nielsen Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	TR	LTR	LT	R
Maximum Queue (ft)	26	45	31	75	54	30
Average Queue (ft)	7	20	15	32	32	7
95th Queue (ft)	26	35	39	56	54	27
Link Distance (ft)		2470	752	448	2526	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	205					100
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 1: Marks Avenue & Belmont Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	R	L	T	TR
Maximum Queue (ft)	31	77	156	133	66	44	344	435	165	48	458	241
Average Queue (ft)	19	48	38	32	36	22	53	237	39	24	63	46
95th Queue (ft)	43	79	76	79	57	41	159	349	89	49	190	137
Link Distance (ft)		721		2483	2483			2528	2528		647	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	105		105			125	230			135		50
Storage Blk Time (%)			3					13			16	10
Queuing Penalty (veh)			4					12			29	16

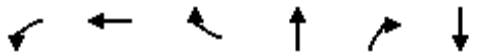


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	25	3	43	81	9	11	39	592	38	10	331	21
v/c Ratio	0.14	0.01	0.16	0.44	0.04	0.04	0.27	0.21	0.03	0.07	0.13	0.02
Control Delay	40.4	37.3	4.0	48.9	37.9	0.3	50.6	5.2	0.2	46.5	6.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	37.3	4.0	48.9	37.9	0.3	50.6	5.2	0.2	46.5	6.9	0.1
Queue Length 50th (ft)	15	2	0	51	5	0	25	47	0	6	42	0
Queue Length 95th (ft)	39	10	11	94	19	0	58	125	2	23	72	0
Internal Link Dist (ft)		651			2488			502			2547	
Turn Bay Length (ft)	55		55	215		210	240		215	245		215
Base Capacity (vph)	600	798	721	603	798	721	259	2810	1275	259	2623	1195
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.00	0.06	0.13	0.01	0.02	0.15	0.21	0.03	0.04	0.13	0.02

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	18	7	701	4	470
v/c Ratio	0.09	0.04	0.22	0.02	0.14
Control Delay	33.1	19.5	2.9	33.0	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	19.5	2.9	33.0	1.4
Queue Length 50th (ft)	8	0	0	2	0
Queue Length 95th (ft)	27	11	108	11	36
Internal Link Dist (ft)	661		557		502
Turn Bay Length (ft)	75			110	
Base Capacity (vph)	586	529	3161	361	3275
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.22	0.01	0.14

Intersection Summary



Lane Group	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	149	150	640	178	19	553
v/c Ratio	0.41	0.42	0.58	0.08	0.01	0.24
Control Delay	31.4	31.5	4.5	6.9	0.0	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.4	31.5	4.5	6.9	0.0	7.6
Queue Length 50th (ft)	73	73	0	16	0	57
Queue Length 95th (ft)	105	105	22	32	0	89
Internal Link Dist (ft)		1017		815		557
Turn Bay Length (ft)	340		205		475	
Base Capacity (vph)	718	718	1562	2290	1615	2275
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.21	0.41	0.08	0.01	0.24

Intersection Summary

Lane Group	EBL	EBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	21	22	297	144	390	335
v/c Ratio	0.08	0.04	0.11	0.10	0.13	0.21
Control Delay	23.7	0.1	1.9	0.1	3.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	0.1	1.9	0.1	3.0	0.3
Queue Length 50th (ft)	7	0	0	0	0	0
Queue Length 95th (ft)	24	0	25	0	47	0
Internal Link Dist (ft)		821	375		815	
Turn Bay Length (ft)				270		460
Base Capacity (vph)	644	794	2741	1470	3062	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.11	0.10	0.13	0.21

Intersection Summary

Intersection: 6: Hughes Avenue & Belmont Avenue

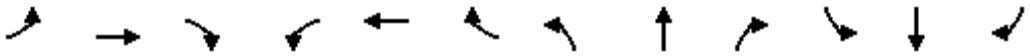
Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	31	77	58	70	55	55	56	31
Average Queue (ft)	24	34	39	30	33	34	35	31
95th Queue (ft)	45	51	57	55	44	47	60	31
Link Distance (ft)		2483	2483		704	704	2526	321
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	145			165				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 7: Hughes Avenue & Nielsen Avenue

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	26	22	31	31	56	55	31
Average Queue (ft)	2	12	4	26	32	35	7
95th Queue (ft)	14	29	21	43	54	55	27
Link Distance (ft)		2470		752	448	2526	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	205		205				100
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 1: Marks Avenue & Belmont Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	R	L	T	TR
Maximum Queue (ft)	31	55	53	48	48	21	55	103	53	27	109	44
Average Queue (ft)	24	39	31	20	23	5	27	63	32	19	64	27
95th Queue (ft)	45	57	51	40	46	20	47	96	50	38	99	47
Link Distance (ft)		721		2483	2483			2528	2528		647	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	105		105			125	230			135		50
Storage Blk Time (%)											12	0
Queuing Penalty (veh)											35	1

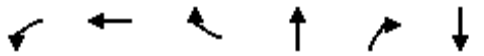


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	15	10	52	31	5	12	77	431	121	11	423	42
v/c Ratio	0.11	0.06	0.23	0.23	0.03	0.05	0.47	0.15	0.09	0.08	0.16	0.04
Control Delay	44.1	42.5	7.4	47.2	42.0	0.5	54.4	3.7	1.2	46.6	6.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	42.5	7.4	47.2	42.0	0.5	54.4	3.7	1.2	46.6	6.8	0.4
Queue Length 50th (ft)	9	6	0	20	3	0	50	26	0	7	50	0
Queue Length 95th (ft)	26	20	14	43	13	0	85	67	14	23	75	1
Internal Link Dist (ft)		651			2488			502			2547	
Turn Bay Length (ft)	55		55	215		210	240		215	245		215
Base Capacity (vph)	601	798	721	599	798	721	259	2923	1330	259	2602	1187
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.07	0.05	0.01	0.02	0.30	0.15	0.09	0.04	0.16	0.04

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	10	4	642	4	508
v/c Ratio	0.05	0.02	0.19	0.02	0.15
Control Delay	32.9	21.7	2.1	33.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	21.7	2.1	33.0	0.8
Queue Length 50th (ft)	5	0	0	2	0
Queue Length 95th (ft)	17	8	82	10	32
Internal Link Dist (ft)	203		557		502
Turn Bay Length (ft)	75			110	
Base Capacity (vph)	586	527	3330	361	3445
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.19	0.01	0.15

Intersection Summary



Lane Group	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	125	125	581	121	15	601
v/c Ratio	0.38	0.38	0.57	0.05	0.01	0.26
Control Delay	31.8	31.8	4.8	6.3	0.0	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.8	31.8	4.8	6.3	0.0	7.1
Queue Length 50th (ft)	62	62	0	11	0	61
Queue Length 95th (ft)	81	81	5	19	0	80
Internal Link Dist (ft)		1020		815		557
Turn Bay Length (ft)	340		205		475	
Base Capacity (vph)	718	718	1527	2346	1615	2331
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.17	0.38	0.05	0.01	0.26

Intersection Summary

Lane Group	EBL	EBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	13	12	214	121	316	324
v/c Ratio	0.05	0.02	0.08	0.08	0.10	0.20
Control Delay	23.7	0.1	1.8	0.1	2.9	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	0.1	1.8	0.1	2.9	0.3
Queue Length 50th (ft)	5	0	0	0	0	0
Queue Length 95th (ft)	18	0	17	0	37	0
Internal Link Dist (ft)		833	375		815	
Turn Bay Length (ft)				270		460
Base Capacity (vph)	644	849	2712	1470	3073	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.08	0.08	0.10	0.20

Intersection Summary

Intersection: 6: Hughes Avenue & Belmont Avenue

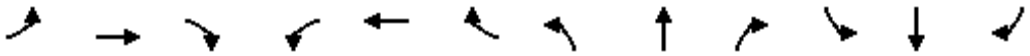
Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	31	52	53	55	55	32	74	56
Average Queue (ft)	14	33	32	29	32	22	34	31
95th Queue (ft)	38	42	40	50	40	44	57	52
Link Distance (ft)		2483	2483		704	704	2526	321
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	145			165				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 7: Hughes Avenue & Nielsen Avenue

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	25	46	31	31	55	55	30
Average Queue (ft)	5	22	1	16	33	33	8
95th Queue (ft)	21	37	12	41	44	52	29
Link Distance (ft)		2470		752	448	2526	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	205		205				100
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 1: Marks Avenue & Belmont Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	R	L	T	TR
Maximum Queue (ft)	52	121	116	68	61	43	344	533	56	26	239	193
Average Queue (ft)	21	50	37	22	33	17	114	281	34	19	58	39
95th Queue (ft)	46	85	69	51	53	34	333	484	56	38	130	107
Link Distance (ft)		721		2483	2483			2528	2528		647	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	105		105			125	230			135		50
Storage Blk Time (%)		0	1					29			11	7
Queuing Penalty (veh)		1	1					29			21	12

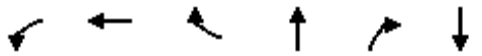


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	25	4	43	91	9	11	39	592	77	10	331	21
v/c Ratio	0.13	0.02	0.15	0.47	0.04	0.04	0.27	0.21	0.06	0.07	0.13	0.02
Control Delay	39.5	36.5	3.9	49.1	37.1	0.3	50.6	5.4	1.8	46.5	7.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	36.5	3.9	49.1	37.1	0.3	50.6	5.4	1.8	46.5	7.2	0.1
Queue Length 50th (ft)	15	2	0	57	5	0	25	50	0	6	43	0
Queue Length 95th (ft)	38	12	11	103	19	0	58	128	18	23	73	0
Internal Link Dist (ft)		651			2488			502			2547	
Turn Bay Length (ft)	55		55	215		210	240		215	245		215
Base Capacity (vph)	600	798	721	602	798	721	259	2789	1266	259	2602	1186
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.01	0.06	0.15	0.01	0.02	0.15	0.21	0.06	0.04	0.13	0.02

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	18	7	743	4	479
v/c Ratio	0.09	0.04	0.24	0.02	0.15
Control Delay	33.1	19.5	2.9	33.0	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	19.5	2.9	33.0	1.4
Queue Length 50th (ft)	8	0	0	2	0
Queue Length 95th (ft)	27	11	116	11	37
Internal Link Dist (ft)	661		557		502
Turn Bay Length (ft)	75			110	
Base Capacity (vph)	586	529	3161	361	3275
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.24	0.01	0.15

Intersection Summary



Lane Group	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	149	150	679	184	19	564
v/c Ratio	0.41	0.42	0.60	0.08	0.01	0.25
Control Delay	31.4	31.5	4.6	6.9	0.0	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.4	31.5	4.6	6.9	0.0	7.6
Queue Length 50th (ft)	73	73	0	17	0	59
Queue Length 95th (ft)	105	105	21	32	0	91
Internal Link Dist (ft)		1017		815		557
Turn Bay Length (ft)	340		205		475	
Base Capacity (vph)	718	718	1584	2290	1615	2278
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.21	0.43	0.08	0.01	0.25

Intersection Summary

Lane Group	EBL	EBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	23	22	300	144	391	343
v/c Ratio	0.08	0.04	0.12	0.10	0.14	0.21
Control Delay	23.7	0.1	2.5	0.1	4.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	0.1	2.5	0.1	4.0	0.3
Queue Length 50th (ft)	8	0	10	0	28	0
Queue Length 95th (ft)	25	0	25	0	47	0
Internal Link Dist (ft)		821	375		815	
Turn Bay Length (ft)				270		460
Base Capacity (vph)	644	793	2516	1470	2797	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.03	0.12	0.10	0.14	0.21

Intersection Summary

Intersection: 6: Hughes Avenue & Belmont Avenue

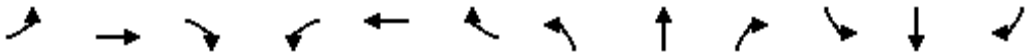
Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	54	54	56	31	54	53	77	78
Average Queue (ft)	21	35	34	29	36	31	38	36
95th Queue (ft)	47	54	53	40	51	44	60	63
Link Distance (ft)		2483	2483		704	704	2526	321
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	145			165				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 7: Hughes Avenue & Nielsen Avenue

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	25	44	28	52	54	56	31
Average Queue (ft)	4	15	1	27	33	36	13
95th Queue (ft)	20	34	11	46	44	53	37
Link Distance (ft)		2470		752	448	2526	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	205		205				100
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 1: Marks Avenue & Belmont Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	R	L	T	TR
Maximum Queue (ft)	31	100	73	71	45	45	54	122	56	26	152	63
Average Queue (ft)	13	46	39	25	26	7	33	73	34	24	64	35
95th Queue (ft)	37	77	60	52	46	27	56	114	49	36	107	58
Link Distance (ft)		721		2483	2483			2528	2528		647	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	105		105			125	230			135		50
Storage Blk Time (%)		0									14	1
Queuing Penalty (veh)		0									42	4

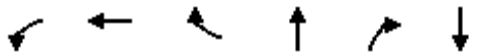


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	16	10	56	35	5	12	80	458	132	11	451	44
v/c Ratio	0.11	0.05	0.25	0.25	0.03	0.05	0.48	0.16	0.10	0.08	0.17	0.04
Control Delay	43.8	42.1	8.6	47.4	41.5	0.4	54.6	3.8	1.2	46.6	7.1	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	42.1	8.6	47.4	41.5	0.4	54.6	3.8	1.2	46.6	7.1	0.6
Queue Length 50th (ft)	10	6	0	22	3	0	52	29	0	7	55	0
Queue Length 95th (ft)	28	19	18	47	13	0	87	72	15	23	82	2
Internal Link Dist (ft)		651			2488			502			2547	
Turn Bay Length (ft)	55		55	215		210	240		215	245		215
Base Capacity (vph)	601	798	721	599	798	721	259	2913	1328	259	2588	1181
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.08	0.06	0.01	0.02	0.31	0.16	0.10	0.04	0.17	0.04

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	14	4	700	6	539
v/c Ratio	0.07	0.02	0.22	0.03	0.16
Control Delay	32.9	21.3	2.8	33.0	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	21.3	2.8	33.0	1.4
Queue Length 50th (ft)	6	0	0	3	0
Queue Length 95th (ft)	20	8	91	12	35
Internal Link Dist (ft)	203		557		502
Turn Bay Length (ft)	75			110	
Base Capacity (vph)	586	527	3156	361	3280
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.22	0.02	0.16

Intersection Summary



Lane Group	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	134	134	607	154	15	640
v/c Ratio	0.39	0.39	0.57	0.07	0.01	0.28
Control Delay	31.6	31.6	4.7	6.6	0.0	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	31.6	4.7	6.6	0.0	7.4
Queue Length 50th (ft)	66	66	0	14	0	66
Queue Length 95th (ft)	85	85	4	24	0	86
Internal Link Dist (ft)		1020		815		557
Turn Bay Length (ft)	340		205		475	
Base Capacity (vph)	718	718	1543	2322	1615	2300
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.19	0.39	0.07	0.01	0.28

Intersection Summary

Lane Group	EBL	EBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	33	12	234	133	336	338
v/c Ratio	0.11	0.02	0.09	0.09	0.12	0.21
Control Delay	23.8	0.1	2.3	0.1	4.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	0.1	2.3	0.1	4.2	0.3
Queue Length 50th (ft)	11	0	7	0	24	0
Queue Length 95th (ft)	32	0	20	0	42	0
Internal Link Dist (ft)		833	375		815	
Turn Bay Length (ft)				270		460
Base Capacity (vph)	644	833	2467	1470	2782	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.01	0.09	0.09	0.12	0.21

Intersection Summary

Intersection: 6: Hughes Avenue & Belmont Avenue

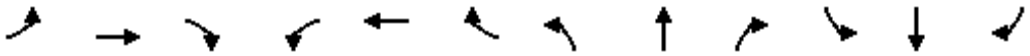
Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	31	54	56	56	55	55	55	31
Average Queue (ft)	19	31	36	30	33	29	33	27
95th Queue (ft)	44	31	52	50	44	50	53	42
Link Distance (ft)		2483	2483		704	704	2526	321
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	145			165				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 7: Hughes Avenue & Nielsen Avenue

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	26	45	31	31	52	55	31
Average Queue (ft)	6	25	4	22	27	34	5
95th Queue (ft)	23	42	22	44	50	53	23
Link Distance (ft)		2470		752	448	2526	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	205		205				100
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 1: Marks Avenue & Belmont Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	R	L	T	TR
Maximum Queue (ft)	31	78	52	47	63	45	345	883	512	27	96	88
Average Queue (ft)	15	51	34	25	38	25	224	485	148	21	59	40
95th Queue (ft)	40	80	48	47	60	45	468	923	450	38	85	75
Link Distance (ft)		721		2483	2483			2528	2528		647	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	105		105			125	230			135		50
Storage Blk Time (%)								59			12	1
Queuing Penalty (veh)								63			24	2

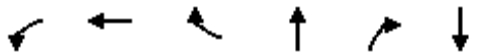


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	29	5	47	101	10	11	42	632	80	10	352	24
v/c Ratio	0.14	0.02	0.16	0.50	0.04	0.04	0.29	0.24	0.07	0.07	0.14	0.02
Control Delay	39.0	36.0	4.5	49.1	36.4	0.3	51.0	6.1	2.0	46.5	7.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	36.0	4.5	49.1	36.4	0.3	51.0	6.1	2.0	46.5	7.9	0.0
Queue Length 50th (ft)	17	3	0	63	6	0	27	56	0	6	47	0
Queue Length 95th (ft)	42	13	15	111	20	0	62	141	19	23	81	0
Internal Link Dist (ft)		651			2488			502			2547	
Turn Bay Length (ft)	55		55	215		210	240		215	245		215
Base Capacity (vph)	599	798	721	601	798	721	259	2624	1195	259	2434	1115
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.01	0.07	0.17	0.01	0.02	0.16	0.24	0.07	0.04	0.14	0.02

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	35	9	792	4	515
v/c Ratio	0.17	0.05	0.27	0.02	0.17
Control Delay	33.4	18.0	3.8	33.0	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.4	18.0	3.8	33.0	2.1
Queue Length 50th (ft)	16	0	45	2	26
Queue Length 95th (ft)	41	13	132	11	44
Internal Link Dist (ft)	661		557		502
Turn Bay Length (ft)	75			110	
Base Capacity (vph)	586	530	2972	361	3089
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.06	0.02	0.27	0.01	0.17

Intersection Summary



Lane Group	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	166	167	709	209	20	623
v/c Ratio	0.43	0.43	0.60	0.09	0.01	0.28
Control Delay	30.5	30.6	4.3	7.6	0.0	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	30.6	4.3	7.6	0.0	8.4
Queue Length 50th (ft)	80	81	0	21	0	71
Queue Length 95th (ft)	111	111	21	38	0	106
Internal Link Dist (ft)		1017		815		557
Turn Bay Length (ft)	340		205		475	
Base Capacity (vph)	718	718	1602	2234	1615	2211
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.23	0.44	0.09	0.01	0.28

Intersection Summary

Lane Group	EBL	EBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	36	23	321	155	426	364
v/c Ratio	0.12	0.04	0.13	0.11	0.15	0.23
Control Delay	23.7	0.1	2.6	0.1	4.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	0.1	2.6	0.1	4.3	0.3
Queue Length 50th (ft)	12	0	12	0	32	0
Queue Length 95th (ft)	34	0	28	0	53	0
Internal Link Dist (ft)		821	375		815	
Turn Bay Length (ft)				270		460
Base Capacity (vph)	644	771	2502	1470	2777	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.03	0.13	0.11	0.15	0.23

Intersection Summary

Intersection: 6: Hughes Avenue & Belmont Avenue

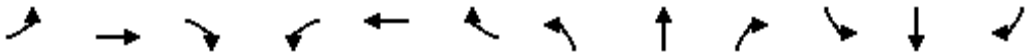
Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	55	55	56	75	56	55	56	58
Average Queue (ft)	20	35	37	30	36	39	47	36
95th Queue (ft)	50	55	54	60	51	57	65	52
Link Distance (ft)		2483	2483		704	704	2526	321
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	145			165				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 7: Hughes Avenue & Nielsen Avenue

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	26	41	31	54	77	31	31
Average Queue (ft)	8	19	1	27	37	28	11
95th Queue (ft)	28	33	12	47	57	43	34
Link Distance (ft)		2470		752	448	2526	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	205		205				100
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 1: Marks Avenue & Belmont Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	R	L	T	TR
Maximum Queue (ft)	31	141	160	46	69	21	75	184	93	66	137	110
Average Queue (ft)	21	63	49	19	32	5	37	81	36	29	69	42
95th Queue (ft)	44	107	100	44	56	20	62	141	60	47	109	77
Link Distance (ft)		721		2483	2483			2528	2528		647	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	105		105			125	230			135		50
Storage Blk Time (%)		2	0								19	3
Queuing Penalty (veh)		5	0								66	8

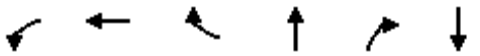


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	15	11	48	23	4	12	72	411	98	15	403	41
v/c Ratio	0.12	0.06	0.22	0.18	0.02	0.06	0.45	0.14	0.08	0.11	0.15	0.03
Control Delay	45.0	43.5	6.7	46.7	42.5	0.5	54.0	4.4	1.4	47.2	6.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	43.5	6.7	46.7	42.5	0.5	54.0	4.4	1.4	47.2	6.4	0.3
Queue Length 50th (ft)	9	7	0	15	3	0	47	24	0	10	46	0
Queue Length 95th (ft)	29	24	18	39	13	0	91	70	17	31	78	3
Internal Link Dist (ft)		651			2488			502			2547	
Turn Bay Length (ft)	55		55	215		210	240		215	245		215
Base Capacity (vph)	602	798	721	598	798	721	259	2852	1296	259	2627	1197
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.07	0.04	0.01	0.02	0.28	0.14	0.08	0.06	0.15	0.03

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	13	3	598	5	469
v/c Ratio	0.07	0.02	0.19	0.03	0.14
Control Delay	32.9	22.3	2.7	33.0	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	22.3	2.7	33.0	1.4
Queue Length 50th (ft)	6	0	0	2	0
Queue Length 95th (ft)	22	8	89	13	35
Internal Link Dist (ft)	203		557		502
Turn Bay Length (ft)	75			110	
Base Capacity (vph)	586	526	3158	361	3281
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.19	0.01	0.14

Intersection Summary



Lane Group	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	119	120	477	149	16	517
v/c Ratio	0.37	0.37	0.52	0.06	0.01	0.22
Control Delay	32.4	32.4	4.9	6.0	0.0	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	32.4	4.9	6.0	0.0	6.5
Queue Length 50th (ft)	58	58	0	13	0	50
Queue Length 95th (ft)	102	103	39	28	0	86
Internal Link Dist (ft)		1020		815		557
Turn Bay Length (ft)	340		205		475	
Base Capacity (vph)	718	718	1467	2371	1615	2349
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.17	0.33	0.06	0.01	0.22

Intersection Summary

Lane Group	EBL	EBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	31	12	324	188	380	337
v/c Ratio	0.11	0.02	0.12	0.13	0.12	0.21
Control Delay	23.7	0.1	1.8	0.2	3.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	0.1	1.8	0.2	3.2	0.3
Queue Length 50th (ft)	11	0	0	0	0	0
Queue Length 95th (ft)	31	0	25	0	47	0
Internal Link Dist (ft)		833	375		815	
Turn Bay Length (ft)				270		460
Base Capacity (vph)	644	801	2694	1470	3050	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.01	0.12	0.13	0.12	0.21

Intersection Summary

Intersection: 6: Hughes Avenue & Belmont Avenue

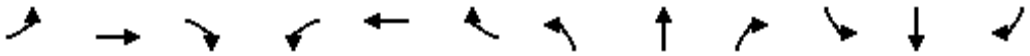
Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	54	55	78	54	55	51	122	56
Average Queue (ft)	28	35	48	28	39	30	51	35
95th Queue (ft)	50	50	71	47	57	43	84	56
Link Distance (ft)		2483	2483		704	704	2526	321
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	145			165				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 7: Hughes Avenue & Nielsen Avenue

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	49	44	31	31	96	55	31
Average Queue (ft)	24	22	4	20	36	44	15
95th Queue (ft)	45	33	19	43	60	63	39
Link Distance (ft)		2470		752	448	2526	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	205		205				100
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 1: Marks Avenue & Belmont Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	R	L	T	TR
Maximum Queue (ft)	31	95	55	48	111	44	345	907	520	27	71	46
Average Queue (ft)	30	79	40	28	59	30	286	622	214	21	51	30
95th Queue (ft)	32	104	59	56	118	48	479	1092	588	38	78	49
Link Distance (ft)		721		2483	2483			2528	2528		647	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	105		105			125	230			135		50
Storage Blk Time (%)		0			0			76			10	1
Queuing Penalty (veh)		1			0			124			24	2

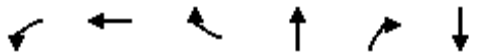


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	34	4	49	96	11	13	44	665	43	11	369	25
v/c Ratio	0.18	0.02	0.17	0.48	0.04	0.05	0.31	0.24	0.03	0.08	0.14	0.02
Control Delay	40.1	36.2	5.1	49.1	36.9	0.3	51.3	5.7	0.5	46.6	7.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	36.2	5.1	49.1	36.9	0.3	51.3	5.7	0.5	46.6	7.5	0.0
Queue Length 50th (ft)	20	2	0	60	7	0	29	58	0	7	48	0
Queue Length 95th (ft)	47	12	16	107	22	0	64	147	4	25	84	0
Internal Link Dist (ft)		651			2488			502			2547	
Turn Bay Length (ft)	55		55	215		210	240		215	245		215
Base Capacity (vph)	598	798	721	602	798	721	259	2777	1261	259	2586	1180
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.01	0.07	0.16	0.01	0.02	0.17	0.24	0.03	0.04	0.14	0.02

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	36	9	764	4	514
v/c Ratio	0.17	0.05	0.26	0.02	0.17
Control Delay	33.4	18.0	3.8	33.0	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.4	18.0	3.8	33.0	2.1
Queue Length 50th (ft)	17	0	43	2	26
Queue Length 95th (ft)	42	13	126	11	45
Internal Link Dist (ft)	661		557		502
Turn Bay Length (ft)	75			110	
Base Capacity (vph)	586	530	2970	361	3087
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.06	0.02	0.26	0.01	0.17

Intersection Summary



Lane Group	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	196	196	619	224	19	564
v/c Ratio	0.48	0.48	0.54	0.10	0.01	0.26
Control Delay	30.6	30.6	3.9	8.2	0.0	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	30.6	3.9	8.2	0.0	8.8
Queue Length 50th (ft)	94	94	0	24	0	65
Queue Length 95th (ft)	143	143	38	48	0	115
Internal Link Dist (ft)		1017		815		557
Turn Bay Length (ft)	340		205		475	
Base Capacity (vph)	718	718	1550	2185	1615	2162
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.27	0.40	0.10	0.01	0.26

Intersection Summary

Lane Group	EBL	EBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	35	23	358	162	544	362
v/c Ratio	0.12	0.05	0.14	0.11	0.20	0.22
Control Delay	23.8	0.2	2.8	0.1	4.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	0.2	2.8	0.1	4.4	0.3
Queue Length 50th (ft)	12	0	15	0	42	0
Queue Length 95th (ft)	33	0	32	0	68	0
Internal Link Dist (ft)		821	375		815	
Turn Bay Length (ft)				270		460
Base Capacity (vph)	644	711	2529	1470	2779	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.03	0.14	0.11	0.20	0.22

Intersection Summary

Intersection: 6: Hughes Avenue & Belmont Avenue

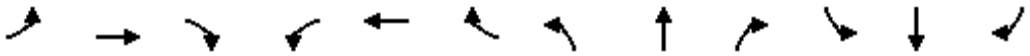
Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	53	78	85	31	55	54	73	56
Average Queue (ft)	26	35	43	26	37	35	45	41
95th Queue (ft)	47	50	73	43	54	49	66	60
Link Distance (ft)		2483	2483		704	704	2526	321
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	145			165				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 7: Hughes Avenue & Nielsen Avenue

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	26	22	31	53	56	56	31
Average Queue (ft)	5	13	19	26	46	46	11
95th Queue (ft)	20	30	43	51	64	64	35
Link Distance (ft)		2470		752	448	2526	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	205		205				100
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 1: Marks Avenue & Belmont Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	R	L	T	TR
Maximum Queue (ft)	31	118	74	65	64	22	71	122	55	51	180	148
Average Queue (ft)	22	69	42	26	34	6	33	80	35	30	94	67
95th Queue (ft)	44	110	65	50	58	21	63	123	51	54	158	136
Link Distance (ft)		721		2483	2483			2528	2528		647	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	105		105			125	230			135		50
Storage Blk Time (%)		1									40	4
Queuing Penalty (veh)		3									140	12

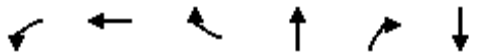


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	15	12	48	31	4	12	72	411	127	15	403	41
v/c Ratio	0.11	0.07	0.22	0.23	0.02	0.05	0.45	0.15	0.10	0.11	0.15	0.03
Control Delay	44.0	42.7	6.4	47.1	41.8	0.5	54.0	4.6	1.4	47.2	6.7	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	42.7	6.4	47.1	41.8	0.5	54.0	4.6	1.4	47.2	6.7	0.4
Queue Length 50th (ft)	9	7	0	20	2	0	47	25	0	10	47	0
Queue Length 95th (ft)	29	25	18	49	13	0	91	72	19	31	81	3
Internal Link Dist (ft)		651			2488			502			2547	
Turn Bay Length (ft)	55		55	215		210	240		215	245		215
Base Capacity (vph)	602	798	721	598	798	721	259	2833	1294	259	2608	1189
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.07	0.05	0.01	0.02	0.28	0.15	0.10	0.06	0.15	0.03

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	13	3	627	5	477
v/c Ratio	0.07	0.02	0.20	0.03	0.15
Control Delay	32.9	22.3	2.7	33.0	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	22.3	2.7	33.0	1.4
Queue Length 50th (ft)	6	0	0	2	0
Queue Length 95th (ft)	22	8	94	13	36
Internal Link Dist (ft)	203		557		502
Turn Bay Length (ft)	75			110	
Base Capacity (vph)	586	526	3158	361	3281
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.20	0.01	0.15

Intersection Summary



Lane Group	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	119	120	501	155	16	524
v/c Ratio	0.37	0.37	0.53	0.07	0.01	0.22
Control Delay	32.4	32.4	4.9	6.0	0.0	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	32.4	4.9	6.0	0.0	6.5
Queue Length 50th (ft)	58	58	0	13	0	51
Queue Length 95th (ft)	102	103	40	28	0	87
Internal Link Dist (ft)		1020		815		557
Turn Bay Length (ft)	340		205		475	
Base Capacity (vph)	718	718	1481	2371	1615	2349
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.17	0.34	0.07	0.01	0.22

Intersection Summary

Lane Group	EBL	EBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	33	12	327	188	380	344
v/c Ratio	0.11	0.02	0.13	0.13	0.14	0.21
Control Delay	23.8	0.1	2.2	0.2	4.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	0.1	2.2	0.2	4.2	0.3
Queue Length 50th (ft)	11	0	9	0	27	0
Queue Length 95th (ft)	32	0	25	0	47	0
Internal Link Dist (ft)		833	375		815	
Turn Bay Length (ft)				270		460
Base Capacity (vph)	644	801	2476	1470	2782	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.01	0.13	0.13	0.14	0.21

Intersection Summary

Intersection: 6: Hughes Avenue & Belmont Avenue

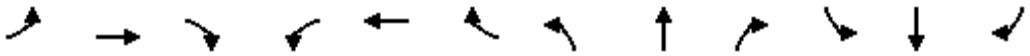
Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	50	55	76	53	56	55	91	56
Average Queue (ft)	26	40	42	27	37	32	52	36
95th Queue (ft)	47	58	63	49	53	47	80	58
Link Distance (ft)		2483	2483		704	704	2526	321
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	145			165				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 7: Hughes Avenue & Nielsen Avenue

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	26	47	31	53	56	55	30
Average Queue (ft)	11	28	10	28	44	39	5
95th Queue (ft)	32	51	33	49	63	56	24
Link Distance (ft)		2470		752	448	2526	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	205		205				100
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 1: Marks Avenue & Belmont Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	L	T	R	L	T	TR
Maximum Queue (ft)	51	98	50	48	90	46	345	1698	1136	87	112	20
Average Queue (ft)	25	59	29	34	51	22	204	1040	661	35	57	20
95th Queue (ft)	57	99	51	52	84	49	473	1738	1289	70	102	20
Link Distance (ft)		721		2483	2483			2528	2528		647	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	105		105			125	230			135		50
Storage Blk Time (%)		0						91			16	
Queuing Penalty (veh)		1						150			39	

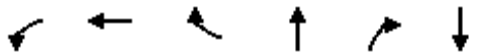


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	34	5	49	105	11	13	44	665	82	11	369	25
v/c Ratio	0.17	0.02	0.16	0.51	0.04	0.04	0.31	0.25	0.07	0.08	0.15	0.02
Control Delay	39.2	35.6	4.9	49.2	36.2	0.2	51.3	6.3	2.1	46.6	8.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	35.6	4.9	49.2	36.2	0.2	51.3	6.3	2.1	46.6	8.1	0.0
Queue Length 50th (ft)	20	3	0	66	6	0	29	60	0	7	50	0
Queue Length 95th (ft)	47	13	16	115	22	0	64	151	20	25	86	0
Internal Link Dist (ft)		651			2488			502			2547	
Turn Bay Length (ft)	55		55	215		210	240		215	245		215
Base Capacity (vph)	598	798	721	601	798	721	259	2614	1192	259	2424	1111
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.01	0.07	0.17	0.01	0.02	0.17	0.25	0.07	0.04	0.15	0.02

Intersection Summary

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	36	9	804	4	523
v/c Ratio	0.17	0.05	0.27	0.02	0.17
Control Delay	33.4	18.0	3.9	33.0	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.4	18.0	3.9	33.0	2.1
Queue Length 50th (ft)	17	0	46	2	27
Queue Length 95th (ft)	42	13	134	11	45
Internal Link Dist (ft)	661		557		502
Turn Bay Length (ft)	75			110	
Base Capacity (vph)	586	530	2970	361	3087
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.06	0.02	0.27	0.01	0.17

Intersection Summary



Lane Group	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	196	196	653	229	19	573
v/c Ratio	0.47	0.47	0.55	0.11	0.01	0.27
Control Delay	30.4	30.4	3.9	8.3	0.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	30.4	3.9	8.3	0.0	9.0
Queue Length 50th (ft)	94	94	0	24	0	67
Queue Length 95th (ft)	143	143	39	50	0	117
Internal Link Dist (ft)		1017		815		557
Turn Bay Length (ft)	340		205		475	
Base Capacity (vph)	718	718	1569	2178	1615	2155
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.27	0.42	0.11	0.01	0.27

Intersection Summary

Lane Group	EBL	EBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	37	23	359	165	545	371
v/c Ratio	0.13	0.05	0.14	0.11	0.20	0.23
Control Delay	23.7	0.2	2.8	0.2	4.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	0.2	2.8	0.2	4.4	0.3
Queue Length 50th (ft)	13	0	15	0	42	0
Queue Length 95th (ft)	34	0	33	0	69	0
Internal Link Dist (ft)		821	375		815	
Turn Bay Length (ft)				270		460
Base Capacity (vph)	644	711	2530	1470	2776	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.03	0.14	0.11	0.20	0.23

Intersection Summary

Intersection: 6: Hughes Avenue & Belmont Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	55	78	77	54	55	56	56	56
Average Queue (ft)	23	35	39	30	39	38	47	47
95th Queue (ft)	48	62	60	44	57	55	63	64
Link Distance (ft)		2483	2483		704	704	2526	321
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	145			165				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 7: Hughes Avenue & Nielsen Avenue

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	25	22	31	31	56	55	31
Average Queue (ft)	2	17	19	25	41	45	9
95th Queue (ft)	14	32	43	45	60	63	32
Link Distance (ft)		2470		752	448	2526	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	205		205				100
Storage Blk Time (%)							
Queuing Penalty (veh)							

APPENDIX F:

FREEWAY LEVELS OF SERVICE ANALYSIS WORKSHEET

HCS7 Basic Freeway Report

Project Information

Analyst		Date	9/8/2021
Agency	LSA	Analysis Year	2023 Near Term Approved and Pending
Jurisdiction	Caltrans	Time Period Analyzed	A.M. Peak Hour
Project Description		Unit	United States Customary
Segment Number	1	Segment Name	West of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	2530	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2082	Heavy Vehicle Adjustment Factor (f_{HV})	0.892
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1242
Total Trucks, %	12.10	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.52
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	17.0
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Marks Avenue Off-Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	165
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2082	42
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.10	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.892	1.000
Flow Rate (vi),pc/h	2483	45
Capacity (c), pc/h	4800	2100
Volume-to-Capacity Ratio (v/c)	0.52	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.302
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	65.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	82.7
Flow in Lanes 1 and 2 (v12), pc/h	2483	Ramp Junction Speed (S), mi/h	65.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.1

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	1560	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2040	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1219
Total Trucks, %	12.40	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.51
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	72.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	16.6
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	25.0
Segment Length (L) / Acceleration Length (LA),ft	1360	930
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2040	260
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.40	23.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.890	0.813
Flow Rate (vi),pc/h	2438	340
Capacity (c), pc/h	4800	1900
Volume-to-Capacity Ratio (v/c)	0.58	0.18

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.337
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	64.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	2438	Ramp Junction Speed (S), mi/h	64.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	2778	Average Density (D), pc/mi/ln	21.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	21.2

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2300	237
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	13.60	3.70
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.880	0.964
Flow Rate (vi),pc/h	2780	262
Capacity (c), pc/h	7200	2100
Volume-to-Capacity Ratio (v/c)	0.42	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	9999.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	55.000
Downstream Equilibrium Distance (LEQ), ft	9999.0	Flow Outer Lanes (vOA), pc/h/ln	0
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	75.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.0
Flow in Lanes 1 and 2 (v12), pc/h	0	Ramp Junction Speed (S), mi/h	74.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	0	Average Density (D), pc/mi/ln	13.4
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	13.4

HCS7 Basic Freeway Report

Project Information

Segment Number	6	Segment Name	East of Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	4335	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2537	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1011
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.42
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.7
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

Copyright © 2021 University of Florida. All Rights Reserved.

HCS7 Basic Freeway Report

Project Information

Analyst		Date	9/8/2021
Agency	LSA	Analysis Year	2023 Near Term Approved and Pending
Jurisdiction	Caltrans	Time Period Analyzed	A.M. Peak Hour
Project Description		Unit	United States Customary
Segment Number	1	Segment Name	East of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2300	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2258	Heavy Vehicle Adjustment Factor (f_{HV})	0.898
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	892
Total Trucks, %	11.40	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.37
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	12.1
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	East of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	185	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2258	Heavy Vehicle Adjustment Factor (f_{HV})	0.898
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	669
Total Trucks, %	11.40	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.28
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	9.1
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Diverge Report

Project Information

Segment Number	3	Segment Name	Marks Avenue Off-Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	2
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2258	616
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	11.40	8.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.898	0.919
Flow Rate (vi),pc/h	2675	713
Capacity (c), pc/h	9600	4200
Volume-to-Capacity Ratio (v/c)	0.28	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.362
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	726
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	63.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.260	Outer Lanes Freeway Speed (SO), mi/h	82.7
Flow in Lanes 1 and 2 (v12), pc/h	1223	Ramp Junction Speed (S), mi/h	72.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	9.2
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	1.3

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	10	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1642	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	654
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.27
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	8.9
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	1500	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1642	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	982
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.41
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.3
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Merge Report

Project Information

Segment Number	6	Segment Name	Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	25.0
Segment Length (L) / Acceleration Length (LA),ft	1120	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1642	11
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.30	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.890	1.000
Flow Rate (vi),pc/h	1963	12
Capacity (c), pc/h	4800	1900
Volume-to-Capacity Ratio (v/c)	0.41	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.309
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	65.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	1963	Ramp Junction Speed (S), mi/h	65.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	1975	Average Density (D), pc/mi/ln	15.2
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	15.9

HCS7 Freeway Merge Report

Project Information

Segment Number	7	Segment Name	Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	900
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1653	26
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.30	26.30
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.890	0.792
Flow Rate (vi),pc/h	1976	35
Capacity (c), pc/h	4800	2100
Volume-to-Capacity Ratio (v/c)	0.42	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.269
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	66.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	1976	Ramp Junction Speed (S), mi/h	66.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2011	Average Density (D), pc/mi/ln	15.1
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	15.6

HCS7 Basic Freeway Report

Project Information

Segment Number	8	Segment Name	West of Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	2060	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1679	Heavy Vehicle Adjustment Factor (f_{HV})	0.889
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1004
Total Trucks, %	12.50	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.42
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.6
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

Copyright © 2021 University of Florida. All Rights Reserved.

HCS7 Basic Freeway Report

Project Information

Analyst		Date	9/8/2021
Agency	LSA	Analysis Year	2023 Near Term Approved and Pending WP
Jurisdiction	Caltrans	Time Period Analyzed	P.M. Peak Hour
Project Description		Unit	United States Customary
Segment Number	1	Segment Name	West of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	2530	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1499	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	896
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.37
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	12.2
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Marks Avenue Off-Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	165
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1499	49
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.30	11.40
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.890	0.898
Flow Rate (vi),pc/h	1792	58
Capacity (c), pc/h	4800	2100
Volume-to-Capacity Ratio (v/c)	0.37	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.303
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	65.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	82.7
Flow in Lanes 1 and 2 (v12), pc/h	1792	Ramp Junction Speed (S), mi/h	65.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	13.7
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.2

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	1560	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1450	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	866
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.36
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	72.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	11.8
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	25.0
Segment Length (L) / Acceleration Length (LA),ft	1360	930
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1450	328
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.30	5.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.890	0.945
Flow Rate (vi),pc/h	1733	369
Capacity (c), pc/h	4800	1900
Volume-to-Capacity Ratio (v/c)	0.44	0.19

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.306
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	65.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	1733	Ramp Junction Speed (S), mi/h	65.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	2102	Average Density (D), pc/mi/ln	16.1
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	15.9

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1778	284
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	11.10	0.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.900	0.992
Flow Rate (vi),pc/h	2102	305
Capacity (c), pc/h	7200	2100
Volume-to-Capacity Ratio (v/c)	0.33	0.15

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	9999.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	55.000
Downstream Equilibrium Distance (LEQ), ft	9999.0	Flow Outer Lanes (vOA), pc/h/ln	0
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	75.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.0
Flow in Lanes 1 and 2 (v12), pc/h	0	Ramp Junction Speed (S), mi/h	74.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	0	Average Density (D), pc/mi/ln	10.6
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	10.6

HCS7 Basic Freeway Report

Project Information

Segment Number	6	Segment Name	East of Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	4335	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2062	Heavy Vehicle Adjustment Factor (f_{HV})	0.912
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	802
Total Trucks, %	9.70	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.33
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	10.9
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

Copyright © 2021 University of Florida. All Rights Reserved.

HCS7 Basic Freeway Report

Project Information

Analyst		Date	9/8/2021
Agency	LSA	Analysis Year	2023 Near Term Approved and Pending
Jurisdiction	Caltrans	Time Period Analyzed	P.M. Peak Hour
Project Description		Unit	United States Customary
Segment Number	1	Segment Name	East of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2300	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2761	Heavy Vehicle Adjustment Factor (f_{HV})	0.889
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1101
Total Trucks, %	12.50	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.46
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	15.0
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	East of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	185	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2761	Heavy Vehicle Adjustment Factor (f_{HV})	0.889
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	826
Total Trucks, %	12.50	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.34
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	11.2
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Diverge Report

Project Information

Segment Number	3	Segment Name	Marks Avenue Off-Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	2
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2761	793
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.50	12.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.889	0.887
Flow Rate (vi),pc/h	3304	951
Capacity (c), pc/h	9600	4200
Volume-to-Capacity Ratio (v/c)	0.34	0.23

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.384
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	871
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	62.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.260	Outer Lanes Freeway Speed (SO), mi/h	82.7
Flow in Lanes 1 and 2 (v12), pc/h	1563	Ramp Junction Speed (S), mi/h	71.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	11.5
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	4.2

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	10	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1968	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	784
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.33
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.1
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	10.7
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	1500	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1968	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1176
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.49
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	16.0
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Merge Report

Project Information

Segment Number	6	Segment Name	Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	25.0
Segment Length (L) / Acceleration Length (LA),ft	1120	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1968	16
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.30	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.890	1.000
Flow Rate (vi),pc/h	2352	17
Capacity (c), pc/h	4800	1900
Volume-to-Capacity Ratio (v/c)	0.49	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.323
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	64.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	2352	Ramp Junction Speed (S), mi/h	64.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	2369	Average Density (D), pc/mi/ln	18.3
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	19.0

HCS7 Freeway Merge Report

Project Information

Segment Number	7	Segment Name	Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	900
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1984	38
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.20	15.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.891	0.870
Flow Rate (vi),pc/h	2369	46
Capacity (c), pc/h	4800	2100
Volume-to-Capacity Ratio (v/c)	0.50	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.284
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	65.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	2369	Ramp Junction Speed (S), mi/h	65.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2415	Average Density (D), pc/mi/ln	18.3
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.7

HCS7 Basic Freeway Report

Project Information

Segment Number	8	Segment Name	West of Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	2060	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2022	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1208
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.50
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	16.5
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

Copyright © 2021 University of Florida. All Rights Reserved.

HCS7 Basic Freeway Report

Project Information

Analyst		Date	9/8/2021
Agency	LSA	Analysis Year	2040
Jurisdiction	Caltrans	Time Period Analyzed	A.M. Peak Hour
Project Description		Unit	United States Customary
Segment Number	1	Segment Name	West of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	2530	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2655	Heavy Vehicle Adjustment Factor (f_{HV})	0.891
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1585
Total Trucks, %	12.20	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.66
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	70.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.5
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Marks Avenue Off-Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	165
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2655	43
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.20	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.891	1.000
Flow Rate (vi),pc/h	3170	46
Capacity (c), pc/h	4800	2100
Volume-to-Capacity Ratio (v/c)	0.66	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.302
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	65.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	82.7
Flow in Lanes 1 and 2 (v12), pc/h	3170	Ramp Junction Speed (S), mi/h	65.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.3
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.0

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	1560	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2612	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1561
Total Trucks, %	12.40	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.65
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	70.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.1
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	25.0
Segment Length (L) / Acceleration Length (LA),ft	1360	930
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2612	273
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.40	23.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.890	0.813
Flow Rate (vi),pc/h	3122	357
Capacity (c), pc/h	4800	1900
Volume-to-Capacity Ratio (v/c)	0.72	0.19

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.401
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3122	Ramp Junction Speed (S), mi/h	62.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3479	Average Density (D), pc/mi/ln	28.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.7

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2885	345
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	13.40	3.70
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.882	0.964
Flow Rate (vi),pc/h	3480	381
Capacity (c), pc/h	7200	2100
Volume-to-Capacity Ratio (v/c)	0.54	0.18

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	9999.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	55.000
Downstream Equilibrium Distance (LEQ), ft	9999.0	Flow Outer Lanes (vOA), pc/h/ln	0
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	74.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.0
Flow in Lanes 1 and 2 (v12), pc/h	0	Ramp Junction Speed (S), mi/h	74.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	0	Average Density (D), pc/mi/ln	17.3
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	17.3

HCS7 Basic Freeway Report

Project Information

Segment Number	6	Segment Name	East of Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	4335	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3230	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1287
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.54
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	17.6
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

Copyright © 2021 University of Florida. All Rights Reserved.

HCS7 Basic Freeway Report

Project Information

Analyst		Date	9/8/2021
Agency	LSA	Analysis Year	2035 Cumulative WP
Jurisdiction	Caltrans	Time Period Analyzed	A.M. Peak Hour
Project Description		Unit	United States Customary
Segment Number	1	Segment Name	East of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2300	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2564	Heavy Vehicle Adjustment Factor (f_{HV})	0.898
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1012
Total Trucks, %	11.40	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.42
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.8
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	East of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	185	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2564	Heavy Vehicle Adjustment Factor (f_{HV})	0.898
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	759
Total Trucks, %	11.40	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.32
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	10.3
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Diverge Report

Project Information

Segment Number	3	Segment Name	Marks Avenue Off-Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	2
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2564	683
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	11.40	8.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.898	0.919
Flow Rate (vi),pc/h	3037	791
Capacity (c), pc/h	9600	4200
Volume-to-Capacity Ratio (v/c)	0.32	0.19

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.369
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	831
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	63.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.260	Outer Lanes Freeway Speed (SO), mi/h	82.7
Flow in Lanes 1 and 2 (v12), pc/h	1375	Ramp Junction Speed (S), mi/h	72.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	10.5
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	2.6

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	10	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1881	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	749
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.31
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	10.2
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	A
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	1500	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1881	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1124
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.47
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.5
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	15.3
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Merge Report

Project Information

Segment Number	6	Segment Name	Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	25.0
Segment Length (L) / Acceleration Length (LA),ft	1120	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1881	15
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.30	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.890	1.000
Flow Rate (vi),pc/h	2248	16
Capacity (c), pc/h	4800	1900
Volume-to-Capacity Ratio (v/c)	0.47	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.319
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	64.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	2248	Ramp Junction Speed (S), mi/h	64.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	2264	Average Density (D), pc/mi/ln	17.5
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.2

HCS7 Freeway Merge Report

Project Information

Segment Number	7	Segment Name	Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	900
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1896	29
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.20	26.30
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.891	0.792
Flow Rate (vi),pc/h	2264	39
Capacity (c), pc/h	4800	2100
Volume-to-Capacity Ratio (v/c)	0.48	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.279
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	66.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	2264	Ramp Junction Speed (S), mi/h	66.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	2303	Average Density (D), pc/mi/ln	17.4
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	17.8

HCS7 Basic Freeway Report

Project Information

Segment Number	8	Segment Name	West of Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	2060	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1925	Heavy Vehicle Adjustment Factor (f_{HV})	0.889
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1152
Total Trucks, %	12.50	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	15.7
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

Copyright © 2021 University of Florida. All Rights Reserved.

HCS7 Basic Freeway Report

Project Information

Analyst		Date	9/8/2021
Agency	LSA	Analysis Year	2035
Jurisdiction	Caltrans	Time Period Analyzed	P.M. Peak Hour
Project Description		Unit	United States Customary
Segment Number	1	Segment Name	West of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	2530	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1846	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1104
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.46
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	15.0
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	Marks Avenue Off-Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	165
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1846	52
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.20	11.40
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.891	0.898
Flow Rate (vi),pc/h	2204	62
Capacity (c), pc/h	4800	2100
Volume-to-Capacity Ratio (v/c)	0.46	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.304
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	65.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	82.7
Flow in Lanes 1 and 2 (v12), pc/h	2204	Ramp Junction Speed (S), mi/h	65.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	16.9
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	21.7

HCS7 Basic Freeway Report

Project Information

Segment Number	3	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	1560	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	1794	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1072
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.45
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	72.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	14.6
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Merge Report

Project Information

Segment Number	4	Segment Name	Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	25.0
Segment Length (L) / Acceleration Length (LA),ft	1360	930
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1794	344
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.30	5.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.890	0.945
Flow Rate (vi),pc/h	2144	387
Capacity (c), pc/h	4800	1900
Volume-to-Capacity Ratio (v/c)	0.53	0.20

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.324
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	64.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	2144	Ramp Junction Speed (S), mi/h	64.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	2531	Average Density (D), pc/mi/ln	19.6
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	19.3

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2138	294
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	11.30	0.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.898	0.992
Flow Rate (vi),pc/h	2533	315
Capacity (c), pc/h	7200	2100
Volume-to-Capacity Ratio (v/c)	0.40	0.15

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	9999.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	55.000
Downstream Equilibrium Distance (LEQ), ft	9999.0	Flow Outer Lanes (vOA), pc/h/ln	0
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	75.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.0
Flow in Lanes 1 and 2 (v12), pc/h	0	Ramp Junction Speed (S), mi/h	74.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	0	Average Density (D), pc/mi/ln	12.6
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	12.6

HCS7 Basic Freeway Report

Project Information

Segment Number	6	Segment Name	East of Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	4335	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2432	Heavy Vehicle Adjustment Factor (f_{HV})	0.909
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	949
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.40
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	12.9
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

Copyright © 2021 University of Florida. All Rights Reserved.

HCS7 Basic Freeway Report

Project Information

Analyst		Date	9/8/2021
Agency	LSA	Analysis Year	2035 Cumulative WP
Jurisdiction	Caltrans	Time Period Analyzed	P.M. Peak Hour
Project Description		Unit	United States Customary
Segment Number	1	Segment Name	East of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	2300	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3547	Heavy Vehicle Adjustment Factor (f_{HV})	0.889
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1415
Total Trucks, %	12.50	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.59
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	72.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	19.6
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Basic Freeway Report

Project Information

Segment Number	2	Segment Name	East of Marks Avenue
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	185	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3547	Heavy Vehicle Adjustment Factor (f_{HV})	0.889
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1061
Total Trucks, %	12.50	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.44
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	14.4
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Diverge Report

Project Information

Segment Number	3	Segment Name	Marks Avenue Off-Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	2
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Deceleration Length (LA),ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3547	924
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.50	12.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.889	0.887
Flow Rate (vi),pc/h	4245	1108
Capacity (c), pc/h	9600	4200
Volume-to-Capacity Ratio (v/c)	0.44	0.26

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.398
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1161
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	62.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.260	Outer Lanes Freeway Speed (SO), mi/h	82.1
Flow in Lanes 1 and 2 (v12), pc/h	1924	Ramp Junction Speed (S), mi/h	71.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	14.8
Level of Service (LOS)	A	Density in Ramp Influence Area (DR), pc/mi/ln	7.3

HCS7 Basic Freeway Report

Project Information

Segment Number	4	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	10	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2623	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1045
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.44
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	73.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	14.2
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Basic Freeway Report

Project Information

Segment Number	5	Segment Name	Marks Avenue Off-Ramp to Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	1500	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2623	Heavy Vehicle Adjustment Factor (f_{HV})	0.890
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1568
Total Trucks, %	12.30	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.65
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	70.7
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.2
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

HCS7 Freeway Merge Report

Project Information

Segment Number	6	Segment Name	Marks Avenue Loop-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	25.0
Segment Length (L) / Acceleration Length (LA),ft	1120	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2623	18
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.30	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.890	1.000
Flow Rate (vi),pc/h	3135	19
Capacity (c), pc/h	4800	1900
Volume-to-Capacity Ratio (v/c)	0.66	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.372
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	63.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3135	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3154	Average Density (D), pc/mi/ln	25.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.1

HCS7 Freeway Merge Report

Project Information

Segment Number	7	Segment Name	Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	45.0
Segment Length (L) / Acceleration Length (LA),ft	1500	900
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2641	41
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	12.30	15.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.890	0.870
Flow Rate (vi),pc/h	3157	50
Capacity (c), pc/h	4800	2100
Volume-to-Capacity Ratio (v/c)	0.67	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.336
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	64.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3157	Ramp Junction Speed (S), mi/h	64.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	3207	Average Density (D), pc/mi/ln	25.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.9

HCS7 Basic Freeway Report

Project Information

Segment Number	8	Segment Name	West of Marks Avenue Slip-On Ramp
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	2	Terrain Type	Level
Segment Length (L), ft	2060	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	75.4	Total Ramp Density (TRD), ramps/mi	0.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	73.6
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2682	Heavy Vehicle Adjustment Factor (f_{HV})	0.889
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	1604
Total Trucks, %	12.50	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.67
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	70.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.8
Total Ramp Density Adjustment	1.8	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	73.6		

Copyright © 2021 University of Florida. All Rights Reserved.

APPENDIX G:

VEHICLE MILES TRAVELED ANALYSIS WORKSHEET

LSA

Appendix G

VMT Calculation Worksheet

2740 W Nielsen Ave - VMT Analysis

Dt: 11/21/2021

2019	Project	Regional Threshold *
Total Employees (a)	4,920	
Internal-Internal (II) employee tour and sub-tour VMT (b)	63,890	
II VMT per employee (c=b/a)	13.0	
External-Internal (XI) VMT per employee (TAZ 1375) (d)	6.4	
Total (II+XI) VMT per employee (e=c+d)	19.4	
Adjustment for new base (City of Fresno) (f)	1.02	
VMT per employee (g=e*f)	**19.8**	**25.6**

**: Regional Threshold obtained from CEQA Guidelines for Vehicle Miles Traveled Thresholds for the City of Fresno , Adopted: June 25, 2020*

notes: Original/Parent TAZ for the project is 723. No development was included in the model for the TAZ 723 resulting in 0 XI VMT. TAZ 1375 was chosen as it has similar characters as project - high employment (303 emp), no residential uses.

APPENDIX H:

CRASH DATA

LSA

Table H-A - Non-Freeway Collision Summary

Collision Date	1/15/2019	12/19/2018
Collision Time	17:30	17:52
Primary Road	Hughes Avenue	SR-180 Westbound to Marks Avenue
Secondary Road	Nielsen Avenue	Marks Avenue
Distance from Intersection (ft)	1185	5
Severity of Collision	Fatal	Complaint of Pain
Fatality	1	0
Injury	0	1
Pedestrian Involvement	Yes	No
Bike Involvement	No	No
Motorcycle Involvement	No	No
Truck Involvement	No	No

Notes:

Data obtained from the Statewide Integrated Traffic Records System (SWITRS) for the time period of January 2018 to December 2020.

CALIFORNIA STATE HIGHWAYS
STATEWIDE TRAVEL AND CRASH RATES

LANE TYPE	2018 ROAD MILES	2018 TRAVEL (MVM)	2018 CRASHES TOTAL PER MVM	2018 CRASHES FATAL+ INJURY PER MVM	2018 VICTIMS FATALITIES PER 100 MVM	3-YR Rates (2016, 2017, 2018) CRASHES TOTAL PER MVM	3-YR Rates (2016, 2017, 2018) CRASHES FATAL + INJURY PER MVM	3-YR Rates (2016, 2017, 2018) VICTIMS FATALITIES PER 100 MVM
RURAL (INSIDE + OUTSIDE CITY)								
2 AND 3 LN	7,081.8	10,363.0	1.04	0.46	3.45	1.10	0.49	3.55
4+ UND	69.1	238.5	1.13	0.44	3.77	1.09	0.42	3.67
4+ DIV	321.9	1,757.0	0.81	0.29	1.42	0.88	0.32	1.47
SUBTOTAL	7,472.7	12,358.5	1.01	0.44	3.17	1.07	0.46	3.27
2 AND 3 LN EXP	712.5	1,671.2	0.72	0.29	2.09	0.75	0.32	2.32
4+ DIV EXP	568.9	3,774.2	0.61	0.22	1.17	0.64	0.23	1.27
NON FWY	8,754.2	17,804.0	0.90	0.38	2.65	0.95	0.40	2.76
FREEWAY	1,719.3	24,489.7	0.50	0.17	0.88	0.51	0.17	0.88
TOTAL	10,473.5	42,293.7	0.67	0.25	1.62	0.69	0.27	1.67
URBAN (INSIDE + OUTSIDE CITY)								
2 AND 3 LN	918.2	3,639.0	1.29	0.54	1.84	1.32	0.56	1.93
4+ UND	86.5	702.5	1.46	0.68	2.28	1.61	0.72	2.06
4+ DIV	591.2	6,958.4	1.24	0.62	1.55	1.32	0.64	1.50
SUBTOTAL	1,595.9	11,299.9	1.27	0.60	1.69	1.34	0.62	1.67
2 AND 3 LN EXP	101.4	403.0	0.86	0.32	1.24	0.90	0.36	1.34
4+ DIV EXP	185.1	2,452.0	0.84	0.32	0.94	0.86	0.34	1.05
NON FWY	1,882.4	14,154.9	1.18	0.54	1.55	1.24	0.56	1.55
FREEWAY	2,687.3	134,454.1	1.04	0.33	0.47	1.04	0.33	0.49
TOTAL	4,569.7	148,609.0	1.06	0.35	0.58	1.06	0.35	0.59
STATEWIDE								
2 AND 3 LN	8,000.0	14,002.0	1.11	0.48	3.04	1.16	0.51	3.13
4+ UND	155.5	941.0	1.37	0.62	2.66	1.48	0.65	2.47
4+ DIV	913.1	8,715.4	1.15	0.55	1.53	1.24	0.58	1.50
SUBTOTAL	9,068.7	23,658.4	1.13	0.51	2.46	1.20	0.54	2.50
2 AND 3 LN EXP	813.9	2,074.3	0.74	0.29	1.93	0.78	0.32	2.12
4+ DIV EXP	754.1	6,226.2	0.70	0.26	1.08	0.73	0.28	1.19
NON FWY	10,636.6	31,958.9	1.02	0.45	2.16	1.08	0.47	2.22
FREEWAY	4,406.6	158,943.8	0.96	0.30	0.54	0.96	0.31	0.55
TOTAL	15,043.2	190,902.7	0.97	0.33	0.81	0.98	0.33	0.83

Statewide Travel / Crash Summary

FOR 2018 PREPARED 10/08/2020

TRAVEL AND CRASH SUMMARY FOR FRE COUNTY

LANE TYPE	ROAD MILES	TRAVEL (MVM)	CRASHES TOTAL	CRASHES PDO	CRASHES INJURY	CRASHES FATAL	VICTIMS KILLED	VICTIMS INJURED
RURAL								
2 AND 3 LN	308.6	521.6	467	262	193	12	14	322
4+ UND	1.8	6.1	18	9	7	2	2	9
4+ DIV	9.2	84.2	93	56	34	3	3	68
SUBTOTAL	319.5	611.8	578	327	234	17	19	399
2 AND 3 LN EXP	8.0	37.8	38	24	14	0	0	24
4+ DIV EXP	9.3	21.4	11	7	4	0	0	4
NON FWY	336.9	671.1	627	358	252	17	19	427
FREEWAY	67.0	986.2	321	207	107	7	10	199
TOTAL	403.9	1,657.3	948	565	359	24	29	626
URBAN								
2 AND 3 LN	39.4	72.6	72	40	32	0	0	61
4+ UND	2.5	6.0	10	6	4	0	0	5
4+ DIV	4.1	14.6	27	16	11	0	0	20
SUBTOTAL	46.0	93.2	109	62	47	0	0	86
2 AND 3 LN EXP	0.2	0.4	0	0	0	0	0	0
4+ DIV EXP	0.0	0.0	0	0	0	0	0	0
NON FWY	46.3	93.5	109	62	47	0	0	86
FREEWAY	68.4	2,147.1	2,192	1,550	635	7	7	965
TOTAL	114.6	2,240.7	2,301	1,612	682	7	7	1,051
COUNTYWIDE								
2 AND 3 LN	348.0	594.2	539	302	225	12	14	383
4+ UND	4.3	12.1	28	15	11	2	2	14
4+ DIV	13.3	98.7	120	72	45	3	3	88
SUBTOTAL	365.6	705.0	687	389	281	17	19	485
2 AND 3 LN EXP	8.2	38.2	38	24	14	0	0	24
4+ DIV EXP	9.3	21.4	11	7	4	0	0	4
NON FWY	383.1	764.6	736	420	299	17	19	513
FREEWAY	135.4	3,133.4	2,513	1,757	742	14	17	1,164
TOTAL	518.6	3,898.0	3,249	2,177	1,041	31	36	1,677

10/6/2020

BASIC AVERAGE CRASH RATE TABLE FOR HIGHWAYS

RATE GROUP		BASE RATE	+ ADT FACTOR		PCT FAT	PCT INJ	PCT F+I	HIGHWAY TYPE	TERRAIN OR ADT	DESIGN SPEED	AREA	CRASH COSTS ($1,000) F+I	CRASH COSTS ($1,000) ALL
H	01	0.78	0.29900	/	2.5	40.2	42.7	CONVENTIONAL 2 LANES OR LESS	FLAT	<=55	RURAL	806.8	349.4
H	02	0.70	0.00000		3.2	38.9	42.1	CONVENTIONAL 2 LANES OR LESS	FLAT	>55	RURAL	1001.4	426.6
H	03	1.14	0.72800	/	2.6	44.3	46.9	CONVENTIONAL 2 LANES OR LESS	ROLL	<=55	RURAL	772.1	366.7
H	04	0.65	0.47100	/	3.5	41.5	45.0	CONVENTIONAL 2 LANES OR LESS	ROLL	>55	RURAL	1021.1	464.2
H	05	1.57	0.42100	/	2.6	47.0	49.6	CONVENTIONAL 2 LANES OR LESS	MTN	<=55	RURAL	738.5	370.6
H	06	0.91	0.47600	/	2.8	42.3	45.1	CONVENTIONAL 2 LANES OR LESS	MTN	>55	RURAL	846.2	386.3
H	07	1.60	0.00000		1.0	38.3	39.3	CONVENTIONAL 2 LANES OR LESS		<45	SUBURBAN	417.1	170.6
H	08	1.32	0.00000		1.7	44.3	46.0	CONVENTIONAL 2 LANES OR LESS		45-55	SUBURBAN	538.5	253.7
H	09	0.62	0.02100	*	1.7	39.4	41.1	CONVENTIONAL 2 LANES OR LESS		>55	SUBURBAN	585.0	246.9
H	10	1.20	0.00000		1.0	39.9	40.9	CONVENTIONAL 2 LANES OR LESS		<45	URBAN	409.2	173.1
H	11	0.82	0.00000		1.6	47.2	48.8	CONVENTIONAL 2 LANES OR LESS		>=45	URBAN	498.0	248.0
H	12	1.12	0.00000		2.9	39.4	42.3	CONVENTIONAL 3 LANES			RURAL	918.3	393.4
H	13	1.44	0.00000		1.4	37.9	39.3	CONVENTIONAL 3 LANES			SUBURBAN	524.5	212.8
H	14	1.17	0.00000		2.1	38.8	40.9	CONVENTIONAL 3 LANES			URBAN	695.7	290.3
H	15	0.61	0.00000		2.1	36.7	38.8	EXPRESSWAY 3 LANES OR LESS	FLAT		RURAL	757.5	299.2
H	16	0.68	0.00000		3.2	36.8	40.0	EXPRESSWAY 3 LANES OR LESS	ROLL		RURAL	1045.9	423.5
H	17	0.97	0.00000		2.6	40.3	42.9	EXPRESSWAY 3 LANES OR LESS	MTN		RURAL	829.7	360.9
H	18	0.64	0.00000		2.8	41.7	44.5	EXPRESSWAY 3 LANES OR LESS		<=55	SUBURBAN	812.5	367.7
H	19	0.86	0.00000		2.6	33.5	36.1	EXPRESSWAY 3 LANES OR LESS		>55	SUBURBAN	908.5	335.0
H	20	0.62	0.00000		3.0	48.8	51.8	EXPRESSWAY 3 LANES OR LESS			URBAN	765.7	401.3
H	21	1.05	0.00000		1.9	34.9	36.8	UNDIVIDED 4 LANES	FLAT		RURAL	729.7	274.0
H	22	0.73	0.00000		2.0	34.4	36.4	UNDIVIDED 4 LANES	ROLL/MTN		RURAL	766.6	284.5
H	23	0.93	0.00000		2.1	27.4	29.5	UNDIVIDED 4 LANES		<=55	SUBURBAN	899.7	273.2
H	24	1.23	0.00000		2.0	35.5	37.5	UNDIVIDED 4 LANES		>55	SUBURBAN	711.3	273.6
H	25	0.94	0.00000		0.7	38.2	38.9	UNDIVIDED 4 LANES		<45	URBAN	340.5	138.4
H	26	0.67	0.00000		1.0	38.9	39.9	UNDIVIDED 4 LANES		>=45	URBAN	415.7	171.7
H	27	0.91	0.00000		3.1	31.3	34.4	UNDIVIDED 5-6 LANES	FLAT		RURAL	1158.6	404.2
H	28	0.91	0.00000		3.1	31.3	34.4	UNDIVIDED 5-6 LANES	ROLL/MTN		RURAL	1158.6	404.2
H	29	0.41	0.00000		2.6	48.7	51.3	UNDIVIDED 5-6 LANES		<=55	SUBURBAN	683.4	355.9
H	30	0.41	0.00000		2.6	48.7	51.3	UNDIVIDED 5-6 LANES		>55	SUBURBAN	683.4	355.9
H	31	1.37	0.00000		1.0	33.3	34.3	UNDIVIDED 5-6 LANES		<45	URBAN	459.3	163.9
H	32	3.02	0.00000		0.4	27.0	27.4	UNDIVIDED 5-6 LANES		>=45	URBAN	304.3	90.4

10/6/2020

BASIC AVERAGE CRASH RATE TABLE FOR INTERSECTIONS

RATE GROUP		BASE RATE	+ ADT FACTOR	PCT FAT	PCT INJ	PCT F+ I	INTERSECTION TYPE*	CONTROL TYPE	AREA	CRASH COST ($1000) F+I	CRASH COST ($1000) ALL
I	01	0.130	0.00000	1.4	44.4	45.8	F, M and S	NO CONTROL	RURAL	494.9	231.3
I	02	0.250	0.00000	2.5	44.1	46.6	F, M and S	STOP & YIELD SIGNS (EXC 4WAY)	RURAL	752.2	355.1
I	03	0.490	0.00000	0.8	32.7	33.5	F, M and S	4 WAY STOP	RURAL	420.4	146.5
I	04	0.540	0.00000	1.0	37.0	38.0	F, M and S	SIGNALS	RURAL	447.5	175.4
I	05	0.460	0.00000	1.5	36.0	37.5	F, M and S	4 WAY FLASHERS	RURAL	600.0	230.4
I	06	0.160	0.00000	0.8	45.8	46.6	F, M and S	NO CONTROL	SUBURBAN	329.7	159.5
I	07	0.240	0.00000	1.7	41.2	42.9	F, M and S	STOP & YIELD SIGNS (EXC 4WAY)	SUBURBAN	566.7	249.4
I	08	0.430	0.00000	0.7	40.3	41.0	F, M and S	4 WAY STOP	SUBURBAN	328.7	141.3
I	09	0.420	0.00000	0.5	37.4	37.9	F, M and S	SIGNALS	SUBURBAN	287.8	115.9
I	10	0.340	0.00000	0.8	39.9	40.7	F, M and S	4 WAY FLASHERS	SUBURBAN	356.0	151.4
I	11	0.050	0.00000	2.6	44.9	47.5	F, M and S	NO CONTROL	URBAN	731.8	352.7
I	12	0.140	0.00000	1.1	46.2	47.3	F, M and S	STOP & YIELD SIGNS (EXC 4WAY)	URBAN	396.5	192.7
I	13	0.170	0.00000	0.4	26.8	27.2	F, M and S	4 WAY STOP	URBAN	305.4	90.1
I	14	0.240	0.00000	0.5	46.9	47.4	F, M and S	SIGNALS	URBAN	261.2	128.9
I	15	0.260	0.00000	1.5	41.4	42.9	F, M and S	4 WAY FLASHERS	URBAN	521.2	229.1
I	16	0.130	0.00000	1.4	41.0	42.4	T, Y and Z	NO CONTROL	RURAL	522.2	226.4
I	17	0.190	0.00000	1.7	39.8	41.5	T, Y and Z	STOP & YIELD SIGNS (EXC 4WAY)	RURAL	610.8	258.5
I	18	0.560	0.00000	2.0	35.7	37.7	T, Y and Z	4 WAY STOP	RURAL	745.5	286.4
I	19	0.450	0.00000	0.5	34.6	35.1	T, Y and Z	SIGNALS	RURAL	313.0	115.4
I	20	0.560	0.00000	2.0	35.7	37.7	T, Y and Z	4 WAY FLASHERS	RURAL	745.5	286.4
I	21	0.140	0.00000	0.6	39.1	39.7	T, Y and Z	NO CONTROL	SUBURBAN	308.1	128.9
I	22	0.170	0.00000	1.2	39.9	41.1	T, Y and Z	STOP & YIELD SIGNS (EXC 4WAY)	SUBURBAN	456.7	194.2
I	23	0.180	0.00000	1.7	25.5	27.2	T, Y and Z	4 WAY STOP	SUBURBAN	808.1	227.8
I	24	0.290	0.00000	0.5	37.7	38.2	T, Y and Z	SIGNALS	SUBURBAN	286.7	116.3
I	25	0.180	0.00000	2.9	25.5	28.4	T, Y and Z	4 WAY FLASHERS	SUBURBAN	1226.0	356.1
I	26	0.060	0.00000	1.9	41.7	43.6	T, Y and Z	NO CONTROL	URBAN	613.0	272.7
I	27	0.090	0.00000	1.2	46.9	48.1	T, Y and Z	STOP & YIELD SIGNS (EXC 4WAY)	URBAN	414.5	204.4
I	28	0.070	0.00000	1.1	38.6	39.7	T, Y and Z	4 WAY STOP	URBAN	443.9	182.1
I	29	0.200	0.00000	0.5	46.8	47.3	T, Y and Z	SIGNALS	URBAN	261.4	128.8
I	30	0.070	0.00000	2.6	38.6	41.2	T, Y and Z	4 WAY FLASHERS	URBAN	821.0	343.9
I	31	0.740	0.00000	0.8	19.1	19.9	R	YIELD ON ALL APPROACHES	ALL*	585.5	125.0

RESPONSE TO COMMENTS DOCUMENT

2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

FRESNO, CALIFORNIA

LSA

September 2023

This page intentionally left blank

RESPONSE TO COMMENTS DOCUMENT

2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

FRESNO, CALIFORNIA

Submitted to:

City of Fresno
Planning and Development Department
2600 Fresno Street
Fresno, California 93721

Prepared by:

LSA
2565 Alluvial Avenue, Suite 172
Clovis, California 93611
(559) 490-1210

Project No. SNN2102

LSA

September 2023

This page intentionally left blank

TABLE OF CONTENTS

LIST OF ABBREVIATIONS AND ACRONYMS iii

1.0 INTRODUCTION 1-1

1.1 Purpose of the Response to Comments Document 1-1
1.2 Environmental Review Process 1-1
1.3 Document Organization 1-2

2.0 LIST OF COMMENTERS 2-1

2.1 Organization of Comment Letters and Responses 2-1
2.2 List of Agencies Commenting on the Recirculated Draft EIR 2-1

3.0 COMMENTS AND RESPONSES 3-1

4.0 RECIRCULATED DRAFT EIR TEXT REVISIONS 4-1

4.1 Section 4.2, Air Quality 4-1
4.2 Section 4.8, Hydrology and Water Quality 4-1
4.3 Section 4.11, Utilities and Service Systems 4-2
4.4 Appendix K, Water Supply Assessment 4-3

TABLE

Table 2.A: List of Comments Received 2-1
Table 3.A: Project Operation Emissions with Additional Stationary-Source Emissions (Tons per Year) 3-64

APPENDIX

A: COMMENT LETTER B3 ATTACHMENTS

This page intentionally left blank

LIST OF ACRONYMS AND ABBREVIATIONS

AAQA	ambient air quality analysis
AB	Assembly Bill
ABM	Activity-Based Model
AIA	Air Impact Assessment
ALUC	Airport Land Use Commission
ALUCP	Airport Land Use Compatibility Plan
CalEEMod	California Emission Estimator Model
CalEnviroScreen	California Communities Environmental Health Screening Tool
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
CalRecycle	California Department of Resources Recycling and Recovery
CARB	California Air Resources Board
CBECC	California Building Energy Code Compliance Software
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERP	Community Emission Reduction Program
CEUS	California Commercial End Use Survey
CFR	Code of Federal Regulations
CH_4	methane
City	City of Fresno
CNEL	Community Noise Equivalent Level

CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
dBA	A-weighted decibels
DPM	diesel particulate matter
EIR	Environmental Impact Report
EO	Executive Order
ESA	Environmental Site Assessment
eTRIP	Employer Trip Reduction Implementation Plan
EV	electric vehicle
FAR	floor area ratio
FFD	Fresno Fire Department
FID	Fresno Irrigation District
FMFCD	Fresno Metropolitan Flood Control District
Fresno COG	Fresno Council of Governments
FTA	Federal Transit Administration
FTA Manual	Federal Transit Administration Noise and Vibration Impact Assessment Manual
g/bhp-hr	grams per brake horsepower-hour
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
GHG	greenhouse gas
HCM	Highway Capacity Manual
HHD	heavy-duty
HRA	health risk assessment

HREC	Historical Recognized Environmental Condition
ISR	Indirect Source Review
ITE	Institute of Transportation Engineers
lbs/MWhr	pounds per megawatt-hour
L_{dn}	day-night average level
L_{eq}	equivalent continuous noise level
LGO	Local Government Operations Protocol
LOS	level(s) of service
MEI	maximally exposed individual
mph	miles per hour
N_2O	nitrous oxide
NOA	Notice of Agreement
NOP	Notice of Preparation
NO_X	nitrogen oxides
OEHHA	Office of Environmental Health Hazard Assessment
OPR	Office of Planning and Research
OSH Act	Occupational Safety and Health Act
PCE	passenger car equivalent
PG&E	Pacific Gas and Electric
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
PRC	Public Resources Code
RASS	Residential Appliance Saturation Survey
REC	Recognized Environmental Condition

Recirculated Draft EIR	Recirculated Draft Environmental Impact Report
ROG	reactive organic gas
RTC	Response to Comments
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SALEM	SALEM Engineering Group, Inc.
SB	Senate Bill
SBA	Small Business Assistance
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMP	Soil Management Plan
SO_X	sulfur oxides
TAC	toxic air contaminant
TIS	Traffic Impact Study
TPH	total petroleum hydrocarbons
TSMI	Traffic Signal Mitigation Impact
USC	United States Code
USEPA	United States Environmental Protection Agency
VERA	Voluntary Emission Reduction Agreement
VMT	vehicle miles traveled
WRCOG	Western Riverside Council of Governments

1.0 INTRODUCTION

1.1 PURPOSE OF THE RESPONSE TO COMMENTS DOCUMENT

This document has been prepared to respond to comments received on the Recirculated Draft Environmental Impact Report (Recirculated Draft EIR) prepared for the proposed 2740 West Nielsen Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map Application No. P21 05930) (herein referred to as the proposed project) for the City of Fresno (City). The Recirculated Draft EIR identifies the likely environmental consequences associated with development of the proposed project and recommends mitigation measures to reduce potentially significant impacts. This Response to Comments (RTC) Document provides responses to comments on the Recirculated Draft EIR and makes revisions to the Recirculated Draft EIR, as necessary, resulting from those comments or to clarify material in the Recirculated Draft EIR. This document, together with the Recirculated Draft EIR, constitutes the Final EIR for the proposed project.

1.2 ENVIRONMENTAL REVIEW PROCESS

According to the California Environmental Quality Act (CEQA), lead agencies are required to consult with public agencies having jurisdiction over a proposed project and to provide the general public with an opportunity to comment on the Recirculated Draft EIR.

On September 9, 2022, the City circulated a Notice of Preparation (NOP) notifying responsible agencies and interested parties that an EIR would be prepared for the proposed project and indicated the environmental topics anticipated to be addressed in the EIR. The NOP was sent to the State Clearinghouse, responsible agencies, interested parties, and organizations likely to be interested in the potential impacts of the proposed project. A scoping session was held virtually on September 22, 2022, to solicit feedback regarding the scope and content of the EIR. Comments received by the City on the NOP were considered during preparation of the Draft EIR.

The Draft EIR was made available for public review on February 24, 2023, and was distributed to local and State responsible and trustee agencies. The Draft EIR and an announcement of its availability were posted electronically on the City's website at: https://www.fresno.gov/darm/planning-development/plans-projects-under-review. The Notice of Availability (NOA) for the Draft EIR was submitted to the State Clearinghouse, provided to all individuals and organizations who made a written request for notice, and filed with the Fresno County Clerk. In addition, the City issued a Recirculated EIR on April 4, 2023, that included Chapters 6.0 and 7.0, which were previously omitted from the Draft EIR. No other changes were made to the Draft EIR.

The CEQA-mandated 45-day public comment period ended on May 19, 2023. The City accepted and responded to all comments received between February 24, 2023, and May 19, 2023. Copies of all written comments received during the comment period are included in Chapter 3.0, Comments and Responses, of this document.

1.3 DOCUMENT ORGANIZATION

This RTC Document consists of the following chapters:

- **Chapter 1.0: Introduction.** This chapter discusses the purpose and organization of this RTC Document and the Final EIR, and summarizes the environmental review process for the project.

- **Chapter 2.0: List of Commenters.** This chapter contains a list of agencies and individuals who submitted written comments during the public review period and comments made at the public hearing on the Recirculated Draft EIR.

- **Chapter 3.0: Comments and Responses.** This chapter contains reproductions of all comment letters received on the Recirculated Draft EIR. A written response for each CEQA-related comment received during the public review period is provided. Each response is keyed to the corresponding comment.

- **Chapter 4.0: Recirculated Draft EIR Text Revisions.** Corrections to the Recirculated Draft EIR that are necessary in light of the comments received and responses provided, or necessary to amplify or clarify material in the Recirculated Draft EIR, are contained in this chapter. Double underlined text represents language that has been added to the Recirculated Draft EIR; text with strikeout has been deleted from the Recirculated Draft EIR.

2.0 LIST OF COMMENTERS

This chapter presents a list of comment letters received during the public review period and describes the organization of the letters and comments provided in Chapter 3.0, Comments and Responses, of this document.

2.1 ORGANIZATION OF COMMENT LETTERS AND RESPONSES

Chapter 3.0 includes a reproduction of each comment letter received on the Recirculated Draft EIR. The written comments are grouped by the affiliation of the commenter, as follows: local agencies (A) and organizations and interested parties (B).

The comment letters are numbered consecutively following the A and B designations and follow the format below:

Local Agencies	A#-#
Organizations and Interested Parties	B#-#

The letters are numbered, and comments within each letter are numbered consecutively after the hyphen. For example, Letter A1 represents the first local agency letter, and Comment A1-1 represents the first enumerated comment within that letter.

2.2 LIST OF AGENCIES COMMENTING ON THE RECIRCULATED DRAFT EIR

Table 2.A provides a list of the State agencies, local agencies, and organizations and interested parties that commented on the Recirculated Draft EIR prior to the close of the public comment period. The comments received have been organized by date received and in a manner that facilitates finding a particular comment or set of comments. Each comment letter received is indexed with a number below.

Table 2.A: List of Comments Received

Local Agencies		
A1	Fresno Metropolitan Flood Control District, Gary Chapman	March 20, 2023
A2	Fresno County Airport Land Use Commission, staff	April 10, 2023
A3	Fresno Irrigation District, Laurence Kimura	May 17, 2023
A4	San Joaquin Valley Air Pollution Control District, Mark Montelongo	May 18, 2023
A5	City of Fresno Department of Public Utilities, Dejan Pavic	December 14, 2022, and March 29, 2023
Organizations and Interested Parties		
B1	Blum, Collins & Ho LLP, Gary Ho	May 15, 2023
B2	Advocates for the Environment, Dean Wallraf	May 17, 2023
B3	Adams Broadwell Joseph & Cardozo, Kevin Carmichael	May 19, 2023

This page intentionally left blank

3.0 COMMENTS AND RESPONSES

Written responses to each comment letter received on the Recirculated Draft EIR are provided in this chapter. All letters received during the public review period on the Recirculated Draft EIR are provided in their entirety. Each letter is immediately followed by responses keyed to the specific comments. The letters are grouped by the affiliation of the commenting entity as follows: local agencies (A) and organizations and interested parties (B).

Please note that to the extent text within individual letters has not been numbered, it indicates that the text does not raise substantive environmental issues or relate to the adequacy of the information or analysis within the Recirculated Draft EIR; therefore, no comment is enumerated, nor is a response required per CEQA Guidelines Sections 15088 and 15132. In addition, when general support or opposition is given for the project, that comment is noted but no further analysis is provided in the response, as the commenter is not questioning the adequacy of the information or analysis within the Recirculated Draft EIR. However, comments related to the merits of the proposed project will be considered by decision-makers taking action on the project.

Where comments on the Recirculated Draft EIR concern issues requiring technical expertise, the responses to comments, like the analysis in the Recirculated Draft EIR, rely on the knowledge and professional analysis of qualified experts.

Where revisions to the Recirculated Draft EIR text are called for, the page is set forth followed by the appropriate revision. Added text is indicated with double underlined text, and deleted text is shown in ~~strikeout~~. Text revisions to the Recirculated Draft EIR are summarized in Chapter 4.0 of this RTC Document.

Comment Letter A1

Fresno Metropolitan Flood Control District

Capturing Stormwater since 1956

File 170.251
210.412 "2021-02699"
310. "AS", "ZZ"
550.30

March 20, 2023

Mr. Steven Martinez, Planner
City of Fresno, Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721

Dear Mr. Martinez,

Fresno Metropolitan Flood Control District Comments for
Notice of Availability of a Draft Environmental Impact Report
2740 West Nielsen Avenue Office/Warehouse Project
Drainage Areas "AS" and "ZZ"

The District has reviewed the subject Notice of Availability (NOA) and finds that the District comments provided in the Notice of Requirements for DPA 2021-02699 dated November 17, 2021 are still applicable to this NOA. A copy of the Notice of Requirements for DPA 2021-02699 has been attached for your reference. **A1-1**

In addition, the District has the following comment:

- In Section 4.11 Utilities and Service Systems, Section 4.11.1.5 states that the project site is in FMFCD Drainage Area "AS". The project site is actually in two FMFCD Drainage Areas "AS" and "ZZ". The District requests that the NOA be revised to state the FMFCD Drainage Areas correctly. **A1-2**

The District will need to review and approve the final improvement plans for all development (i.e. grading, street improvement and storm drain) within the proposed project to insure consistency with the approved Storm Drainage Master Plan. **A1-3**

5469 E. Olive Avenue • Fresno, CA 93727 • (559) 456-3292 • FAX (559) 456-3194
www.fresnofloodcontrol.org

Comment Letter A1 Cont.

The drainage fee included on the attached Notice of Requirements was calculated in November of 2021. The District's drainage fee schedule was revised on March 8, 2023 and due to this revision, the current drainage fee for the proposed site is $700,335. **A1-4**

Thank you for the opportunity to comment. Please keep our office informed on the development of this project. If you should have any questions or comments, please contact the District at (559) 456-3292. **A1-5**

Sincerely,

Gary Chapman

Gary Chapman
Engineering Technician III

GC/lrl/jt

Attachment

Comment Letter A1 Attach.

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
NOTICE OF REQUIREMENTS

File No. 210.412

PUBLIC AGENCY

STEVEN MARTINEZ
DEVELOPMENT SERVICES/PLANNING
CITY OF FRESNO
2600 FRESNO STREET, THIRD FLOOR
FRESNO, CA 93721

DEVELOPER

DANIEL ZOLDAK, LARS ANDERSEN & ASSOCIATES
4694 W. JACQUELYN AVE.
FRESNO, CA 93722

PROJECT NO: **2021-02699**
ADDRESS: **2740 W. NIELSEN AVE.**
APN: **458-020-72, 458-020-71**

SENT: **November 17, 2021**

Drainage Area(s)	Preliminary Fee(s)	Development Review Service Charge(s)	Fee(s)	
AS	$360,882.00	NOR Review	$1,675.00	To be paid prior to release of District comments to Public Agency and Developer.
ZZ	$191,951.00	Grading Plan Review	$8,519.00	Amount to be submitted with first grading plan submittal.
	Total Drainage Fee: $552,833.00		**Total Service Charge: $10,194.00**	

The proposed development will generate storm runoff which produces potentially significant environmental impacts and which must be properly discharged and mitigated pursuant to the California Environmental Quality Act and the National Environmental Policy Act. The District in cooperation with the City and County has developed and adopted the Storm Drainage and Flood Control Master Plan. Compliance with and implementation of this Master Plan by this development project will satisfy the drainage related CEQA/NEPA impact of the project mitigation requirements.

Pursuant to the District's Development Review Fee Policy, the subject project shall pay review fees for issuance of this Notice of Requirements (NOR) and any plan submittals requiring the District's reviews. The NOR fee shall be paid to the District by Developer before the Notice of Requirement will be submitted to the City. The Grading Plan fee shall be paid upon first submittal. The Storm Drain Plan fee shall be paid prior to return/pick up of first submittal.

The proposed development shall pay drainage fees pursuant to the Drainage Fee Ordinance prior to issuance of a building permit at the rates in effect at the time of such issuance. The fee indicated above is valid through 2/28/22 based on the site plan submitted to the District on 10/28/21 Contact FMFCD for a revised fee in cases where changes are made in the proposed site plan which materially alter the proposed impervious area.

Considerations which may affect the fee obligation(s) or the timing or form of fee payment:

a.) Fees related to undeveloped or phased portions of the project may be deferrable.

b.) Fees may be calculated based on the actual percentage of runoff if different than that typical for the zone district under which the development is being undertaken and if permanent provisions are made to assure that the site remains in that configuration.

c.) Master Plan storm drainage facilities may be constructed, or required to be constructed in lieu of paying fees.

d.) The actual cost incurred in constructing Master Plan drainage system facilities is credited against the drainage fee obligation.

e.) When the actual costs incurred in constructing Master Plan facilities exceeds the drainage fee obligation, reimbursement will be made for the excess costs from future fees collected by the District from other development.

f.) Any request for a drainage fee refund requires the entitlement cancellation and a written request addressed to the General Manager of the District within 60 days from payment of the fee. A non refundable $300 Administration fee or 5% of the refund whichever is less will be retained without fee credit.

FR DPA No. 2021-02699

Comment Letter A1 Attach.

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
NOTICE OF REQUIREMENTS

Approval of this development shall be conditioned upon compliance with these District Requirements.

1.
___ **a.** Drainage from the site shall

__X__ **b.** Grading and drainage patterns shall be as identified on Exhibit No. 1

___ **c.** The grading and drainage patterns shown on the site plan conform to the adopted Storm Drainage and Flood Control Master Plan.

2. The proposed development shall construct and/or dedicate Storm Drainage and Private On-Site facilities located within the development or necessitated by any off-site improvements required by the approving agency:

__X__ Developer shall construct facilities as shown on Exhibit No. 1 as PRIVATE ON-SITE SYSTEM TO BE CONSTRUCTED BY DEVELOPER.

___ None required.

3. The following final improvement plans and information shall be submitted to the District for review prior to final development approval:

__X__ Grading Plan

___ Street Plan

___ Storm Drain Plan

___ Water & Sewer Plan

___ Final Map

___ Drainage Report (to be submitted with tentative map)

___ Other

___ None Required

4. Availability of drainage facilities:

___ **a.** Permanent drainage service is available provided the developer can verify to the satisfaction of the City that runoff can be safely conveyed to the Master Plan inlet(s).

___ **b.** The construction of facilities required by Paragraph No. 2 hereof will provide permanent drainage service.

___ **c.** Permanent drainage service will not be available. The District recommends temporary facilities until permanent service is available.

__X__ **d.** See Exhibit No. 2.

5. The proposed development:

___ Appears to be located within a 100 year flood prone area as designated on the latest Flood Insurance Rate Maps available to the District, necessitating appropriate floodplain management action. (See attached Floodplain Policy.)

__X__ Does not appear to be located within a flood prone area.

6. ___ The subject site contains a portion of a canal or pipeline that is used to manage recharge, storm water, and/or flood flows. The existing capacity must be preserved as part of site development. Additionally, site development may not interfere with the ability to operate and maintain the canal or pipeline.

FR DPA No. 2021-02699

Comment Letter A1 Attach.

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
NOTICE OF REQUIREMENTS

7. The Federal Clean Water Act and the State General Permits for Storm Water Discharges Associated with Construction and Industrial Activities (State General Permits) require developers of construction projects disturbing one or more acres, and discharges associated with industrial activity not otherwise exempt from National Pollutant Discharge Elimination System (NPDES) permitting, to implement controls to reduce pollutants, prohibit the discharge of waters other than storm water to the municipal storm drain system, and meet water quality standards. These requirements apply both to pollutants generated during construction, and to those which may be generated by operations at the development after construction.

a. State General Permit for Storm Water Discharges Associated with Construction Activities, effective July 1, 2010, as amended. A State General Construction Permit is required for all clearing, grading, and disturbances to the ground that result in soil disturbance of at least one acre (or less than one acre) if part of a larger common plan of development or sale). Permittees are required to: submit a Notice of Intent and Permit Registration Documents to be covered and must pay a permit fee to the State Water Resources Control Board (State Board), develop and implement a storm water pollution prevention plan, eliminate non-storm water discharges, conduct routine site inspections, train employees in permit compliance, and complete an annual certification of compliance.

b. State General Permit for Storm Water Discharges Associated with Industrial Activities, April, 2014 (available at the District Office). A State General Industrial Permit is required for specific types of industries described in the NPDES regulations or by Standard Industrial Classification (SIC) code. The following categories of industries are generally required to secure an industrial permit: manufacturing; trucking; recycling; and waste and hazardous waste management. Specific exemptions exist for manufacturing activities which occur entirely indoors. Permittees are required to: submit a Notice of Intent to be covered and must pay a permit fee to the State Water Resources Control Board, develop and implement a storm water pollution prevention plan, eliminate non-storm water discharges, conduct routine site inspections, train employees in permit compliance, sample storm water runoff and test it for pollutant indicators, and annually submit a report to the State Board.

c. The proposed development is encouraged to select and implement storm water quality controls recommended in the Fresno-Clovis Storm Water Quality Management Construction and Post-Construction Guidelines (available at the District Office) to meet the requirements of the State General Permits, eliminate the potential for non-storm water to enter the municipal storm drain system, and where possible minimize contact with materials which may contaminate storm water runoff.

8. A requirement of the District may be appealed by filing a written notice of appeal with the Secretary of the District within ten days of the date of this Notice of Requirements.

9. The District reserves the right to modify, reduce or add to these requirements, or revise fees, as necessary to accommodate changes made in the proposed development by the developer or requirements made by other agencies.

10. **X** See Exhibit No. 2 for additional comments, recommendations and requirements.

Brent Sunamoto
Digitally signed by Brent Sunamoto Date: 11/17/2021 1:58:18 PM
District Engineer, RCE

Gary W. Chapman
Digitally signed by Gary W. Chapman Date: 11/16/2021 4:56:30 PM
Engineering Tech III

FR DPA No. 2021-02699

Comment Letter
A1
Attach.

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
NOTICE OF REQUIREMENTS

CC:

DI NIELSEN MARKS LLC

4790 N. CORNELIA

FRESNO, CA 93722

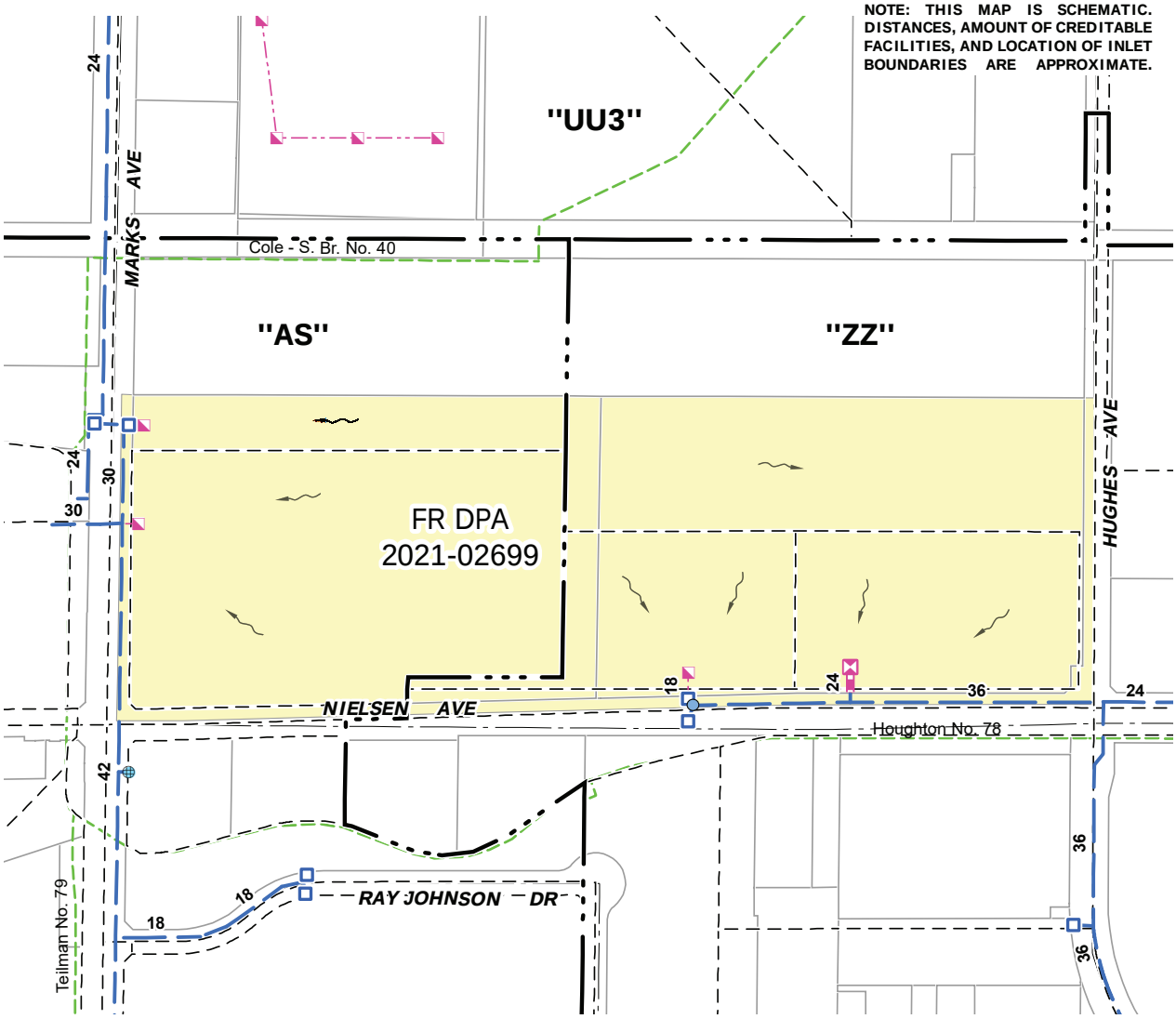
JAKE KURTH, SCANNELL PROPERTIES

294 GROVE LANE EAST, SUITE 140

WAYZATA, MN 55391

FR DPA No. 2021-02699

Comment Letter
A1
Attach.



LEGEND

- Private On-Site System To Be Constructed By Developer
- Existing Private Facilities
- Existing Master Plan Facilities
- Existing Temporary Inlet
- Inlet Boundary
- Drainage Area Boundary
- Existing FID Facilities
- Direction Of Drainage

1 " = 400 '

FR DPA 2021-02699

DRAINAGE AREAS "AS" & "ZZ"

EXHIBIT NO. 1

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

Prepared by: keithr
Date: 11/16/2021
Path: K:\Autocad\DWGS\0EXHIBIT\CITYDPA\2021-02699.mxd

Comment Letter
A1
Attach.

OTHER REQUIREMENTS

EXHIBIT NO. 2

DPA 2021-02699 is located in two drainage areas, Drainage Area "AS" and Drainage Area "ZZ". Development of the site shall maintain the Master Plan area to each drainage area as shown on Exhibit No. 1.

The minimum finish floor elevation of the development shall be one foot higher than the controlling flood safety overflow point. The controlling flood safety overflow point for the portion of the project located in Drainage Area "ZZ" is the bridge on Hughes Avenue over the Houghton Canal. The controlling flood safety overflow point for the portion of the project located in Drainage Area "AS" is the breakover to the Houghton Canal on the west side of Marks Avenue between Nielsen Avenue and the Union Pacific Railroad. The elevations at the mentioned breakover locations will need to be provided on the grading plans for review and verification of proposed building finish floor elevations for the development.

The construction of the "Private On-Site System" shown on Exhibit No. 1 will provide permanent drainage service to the portion of the project located in Drainage Area "ZZ". Permanent drainage service will not be available for the portion of the project located in Drainage Area "AS". The District recommends temporary facilities until permanent service is available.

In an effort to improve storm runoff quality, outdoor storage areas shall be constructed and maintained such that material that may generate contaminants will be prevented from contact with rainfall and runoff and thereby prevent the conveyance of contaminants in runoff into the storm drain system.

The District encourages, but does not require that roof drains from non-residential development be constructed such that they are directed onto and through a landscaped grassy swale area to filter out pollutants from roof runoff.

Runoff from areas where industrial activities, product, or merchandise come into contact with and may contaminate storm water must be treated before discharging it off-site or into a storm drain. Roofs covering such areas are recommended. Cleaning of such areas by sweeping instead of washing is to be required unless such wash water can be directed to the sanitary sewer system. Storm drains receiving untreated runoff from such areas shall not be connected to the District's system. Loading docks, depressed areas, and areas servicing or fueling vehicles are specifically subject to these requirements. The District's policy governing said industrial site NPDES program requirements is available on the District's website at: www.fresnofloodcontrol.org or contact the District's Environmental Department for further information regarding these policies related to industrial site requirements.

LETTER A1
Fresno Metropolitan Flood Control District
Gary Chapman, Engineering Technician III
March 20, 2023

Response A1-1: This introductory comment is noted. Comments provided in this letter are further responded to below.

Response A1-2: This comment states Section 4.11.1.5 states that the project site is in Fresno Metropolitan Flood Control District (FMFCD) Drainage Area "AS." The project site is actually in two FMFCD Drainage Areas, "AS" and "ZZ." The District requests that the NOA be revised to state the FMFCD Drainage Areas correctly. Therefore, in response to this comment, and as shown in Chapter 4.0 of this RTC Document, text on page 4.11-5 has been revised as follows:

> The FMFCD drainage area for stormwater from the project site is ~~b~~Basin Drainage Areas "AS" and "ZZ"~~, located southwest from the site~~.

This comment does not address the adequacy or completeness of the Recirculated Draft EIR; does not raise environmental issues; and does not request the incorporation of additional information relevant to environmental issues. As such, additional analysis is not required.

Response A1-3: This comment states that the FMFCD will need to review and approve the final improvement plans for all development (i.e., grading, street improvement and storm drain) within the proposed project to ensure consistency with the approved Storm Drainage Master Plan. This comment is noted but does not pertain to the Recirculated Draft EIR.

Response A1-4: This comment states that the FMFCD's drainage fee schedule was revised on March 8, 2023, and the current drainage fee for the proposed site is $700,335. This comment is noted but does not pertain to the analysis or conclusions of the Recirculated Draft EIR; therefore, no further analysis is required.

Response A1-5: This comment provides a closing to the comment letter and does not question the adequacy of the analysis included in the Recirculated Draft EIR. No further response is required.

Comment Letter A2

April 10, 2023

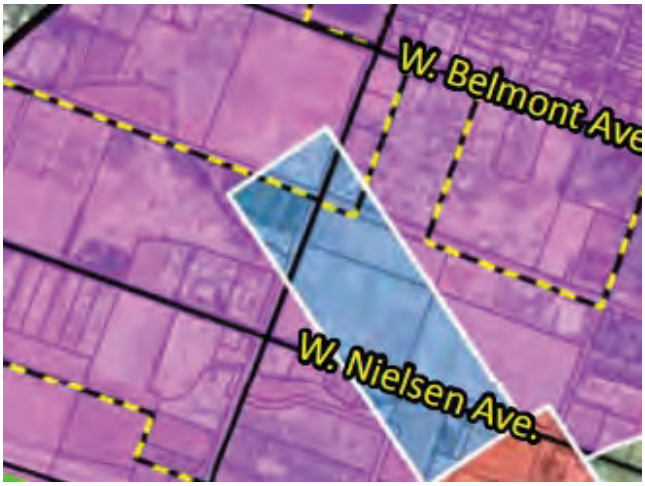
Fresno County Airport Land Use Commission staff review of Scannell Properties Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map No. P21-05930)

Recirculated Draft Environmental Impact Report (EIR) review and response to the following:

Property location: 2740 West Nielsen Avenue, Fresno CA

- Does not sit within airport noise contours.
- The majority of the property sits within Safety Zone 4, Outer Approach/Departure Zone, and a portion (purple) in Safety Zone 6, Traffic Pattern Zone of Fresno Chandler Executive Airport. It also sits within the Vulnerable Occupants Review Area (VORA). Vulnerable occupants include children, the elderly, and people with disabilities.

A2-1



Threshold 4.7.5 on page 2-14 of the EIR states the following project would be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport and would not result in a safety hazard for people residing or working in the project area. However, ALUC staff would like to draw attention to the following aspects:

A2-2

1. With 385 carpool spaces dedicated for standard vehicles, and 11 spaces dedicated for accessible standard vehicles, it is likely the parcel inhabitants would exceed the maximum non-residential intensity of both zones 4 and 6.

A2-3

2. Section 4.1.1.6, Light Sources and Glare on page 4.1-3 addresses accommodations for the urbanized, adjacent, residential areas. Mitigation Measures AES-1-5 should also take into account requirements for assuring glare However, potential Hazards to Flight include physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Therefore, steps should be taken to hood all sources of outdoor lighting within Airport Safety Zones 4 and 6.

A2-4

3. Threshold 4.9.3 on page 2-16 of the EIR document states that for a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, the proposed project would

A2-5

Comment Letter A2 Cont.

not expose people residing or working in the project area to excessive noise levels. More importantly, this project does not sit within the airport noise contours of Fresno-Chandler Downtown Airport and is therefore not a noise concern for the ALUC. A2-5 cont.

4. Figure 3-5, 2740 West Nielson Office/Warehouse Project Site Plan does not address the 10-20% open land requirement of the airport safety zones. A2-6

Fresno County ALUCP Safety Zone 4, Outer Approach/Departure Zone Safety requirements:

- 1 d.u. per 2 acres
- 150 persons per acre - usage intensity calculations shall include the maximum number of people (e.g., employees, customers/visitors, etc.) who may be on the parcels or site at a single point in time, whether indoors or outside.
- 20% Open Land. Open land requirements are intended to be applied with respect to an entire zone. This is typically accomplished as part of a community general plan or a specific plan but may also apply to large (10 acres or more) development projects.

Prohibited uses:

- Children's schools, day care centers
- libraries, hospitals, nursing homes
- hazardous uses (e.g., aboveground bulk fuel storage or gas stations)
- Bldgs. with >3 aboveground habitable floors
- Highly noise-sensitive outdoor non-residential uses
- Hazards to flight - include physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations

Other Development conditions:

- Airport disclosure notice required
- Airspace review required for objects >70 feet tall. This height criterion is for general guidance. Shorter objects normally will not be airspace obstructions unless situated at a ground elevation well above that of the airport (See examples 1, 2, & 3 on Exhibit 3A). Taller objects may be acceptable if determined not to be obstructions. Developers proposing structures that could penetrate 14 CFR Part 77 surfaces must file Form 7460 with the FAA to determine if 7460 review is required, consult FAA's Notice Criteria Tool: https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm

Fresno County ALUCP Safety Zone 6, Traffic Pattern Zone Safety requirements:

- No Limit on dwelling units per acres
- Maximum Non-residential Intensity: 300 persons per acre - usage intensity calculations shall include the maximum number of people (e.g., employees, customers/visitors, etc.) who may be on the parcels or site at a single point in time, whether indoors or outside
- Required Open Land. 10% Open land requirements are intended to be applied with respect to an entire zone. This is typically accomplished as part of a community general plan or a specific plan, but may also apply to large (10 acres or more) development projects.

Prohibited Uses:

- Hazards to flight - include physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations
- Outdoor stadiums and similar uses with very high intensity uses

Comment Letter
A2
Attach.

Other Development Conditions:

- Airport disclosure notice required
- Airspace review required for objects >100 feet tall. This height criterion is for general guidance. Shorter objects normally will not be airspace obstructions unless situated at a ground elevation well above that of the airport (See examples 1, 2, & 3 on Exhibit 3A). Taller objects may be acceptable if determined not to be obstructions. Developers proposing structures that could penetrate 14 CFR Part 77 surfaces must file Form 7460 with the FAA to determine if 7460 review is required, consult FAA's Notice Criteria Tool: https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm
- New structures are prohibited on existing terrain that penetrates 14 CFR Part 77 surfaces
- New structures require additional airspace analysis required within the 50-foot terrain penetration buffer
- Proposed uses whose primary purpose is to serve vulnerable occupants within 3,000 feet from the side of the runway and 5,000 feet from the end of the runway shall require ALUC review. In addition to the prohibited uses listed within Table 3A of the ALUCP, any use whose primary purpose is to serve vulnerable occupants in the area described above is strongly discouraged.

LETTER A2
Fresno County Airport Land Use Commission
Staff Review
April 10, 2023

Response A2-1: This comment is introductory. It states that the project site does not sit within airport noise contours and that the majority of the property sits within Safety Zone 4, Outer Approach/Departure Zone, with a portion in Safety Zone 6, Traffic Pattern Zone of Fresno Chandler Executive Airport. This comment is noted but does not pertain to the analysis or conclusions of the Recirculated Draft EIR; therefore, no further analysis is required.

Response A2-2: This comment is noted. Staff comments provided in this letter are further responded to below.

Response A2-3: This comment states that with 385 carpool spaces dedicated for standard vehicles, and 11 spaces dedicated for accessible standard vehicles, it is likely that the parcel inhabitants would exceed the maximum non-residential intensity of both zones 4 and 6.

As discussed in Section 3.3.1, Access, Circulation, and Parking of the Recirculated Draft EIR, a total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The proposed project would not provide 385 carpool spaces.

In addition, based on the Fresno County Airport Land Use Compatibility Plan (ALUCP) safety requirements, in zone 4, the maximum non-residential intensity is 150 persons per acre and in zone 6, the maximum non-residential intensity is 300 persons per acre. As identified in Chapter 3.0, Project Description, of the Recirculated Draft EIR, the project site is 48.03 acres. Therefore, the maximum non-residential intensity would be between 7,204 and 14,409 persons. As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. At this time, the specific number of employees is not yet known. However, the Traffic Impact Study (TIS) (Appendix M of the Recirculated Draft EIR) assumed that the proposed project would have approximately 4,920 employees, which was calculated based on a building-square-footage-to-employee conversion factor in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. As such, it is not expected that the proposed project would generate 7,204 or more employees. Therefore, the proposed project would not exceed the maximum non-residential intensity of zones 4 and 6.

Response A2-4: This comment states that Section 4.1.1.6, Light Sources and Glare, on page 4.1-3 addresses accommodations for the urbanized, adjacent, and residential areas. This comment also states that Mitigation Measures AES-1 through AES-5 should also take into account requirements for ensuring minimization of glare. In addition, this comment states that potential hazards to flight include physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Therefore, steps should be taken to hood all sources of outdoor lighting within Airport Safety Zones 4 and 6.

As discussed on pages 4.1-7 and 4.1-8 of the Recirculated Draft EIR, implementation of the proposed project would result in an increase of nighttime lighting levels over current levels in the project area, associated with parking lot lights and security-related lighting in the project site. Compliance with California Building Code (Title 24, California Code of Regulations [CCR]) standards would minimize the proposed project's light and glare impacts. Additionally, all exterior lighting at the project site would be pointed downward toward the project site to minimize lighting levels at nearby uses. In addition, the proposed project would be required to comply with Article 25, Performance Standards, of the Zoning Ordinance, which includes standards related to lighting and glare. Further, Mitigation Measures AES-1 through AES-3 would ensure that the proposed project's lighting systems do not create a substantial new source of light by requiring shielding mechanisms to direct light away from nearby uses. As a result, any new sources of light resulting from the proposed project would not be substantial in the context of existing lighting sources. Implementation of Mitigation Measure AES-4 would ensure that the proposed project's lighting systems do not create a substantial new source of light by imposing a cap on the intensity of lighting systems based on the average intensity of the surrounding streets.

Additionally, while the project does not propose use of highly reflective glass elements or building materials, Mitigation Measure AES-5 requires materials used on building façades to be non-reflective. Therefore, any new source of glare would not be substantial.

With implementation of Mitigation Measures AES-1 through AES-5, lighting systems would include shields to direct light downward and materials uses on building facades shall be non-reflective. As such, with the implementation of these measures, all outdoor lighting would be shielded consistent with requirements for airplane safety and minimization of hazards to flight.

Response A2-5: This comment states that Threshold 4.9.3 of the Recirculated Draft EIR states that for a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport, the proposed project would not expose people residing or working in the project area to excessive noise levels. More importantly, this project does not sit within the airport noise contours of

Fresno-Chandler Downtown Airport and is therefore not a noise concern for the Airport Land Use Commission (ALUC). This comment is noted.

Response A2-6: This comment states that Figure 3-5, Site Plan, of the Recirculated Draft EIR does not address the 10–20 percent open land requirement of the airport safety zones. As discussed in Section 3.3.2, Open Space and Landscaping, of the Recirculated Draft EIR, consistent with City requirements, landscaping would be provided throughout the project site. The project would also include a vegetative plan that includes the planting of trees and other landscaping materials throughout the perimeter of the project site that would be consistent with the 10–20 percent open land requirement of the airport safety zones.

Comment Letter A3

FRESNO IRRIGATION DISTRICT EST. 1920

2907 S. Maple Avenue
Fresno, California 93725-2208
Telephone: (559) 233-7161
Fax: (559) 233-8227

CONVEYANCE. COMMITMENT. CUSTOMER SERVICE.

May 17, 2023

Steven Martinez, Planner
Development and Resource Management Department
City of Fresno
2600 Fresno Street, Room 3065
Fresno, CA 93721

RE: Notice of Availability of a Recirculated Draft Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project

Dear Mr. Martinez:

The Fresno Irrigation District (FID) has reviewed the Notice of Preparation of a Program Environmental Impact Report, an Update to the Master Environmental Impact Report for the City of Fresno General Plan (Project), APNs: 458-020-71, 72. We appreciate the opportunity to review and comment on the subject documents for the proposed project. FID's comments are as follows: **A3-1**

1. FID previously reviewed and commented on the subject property on September 28, 2022, as Notice of Preparation of a Program Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project, on November 22, 2021, as Planning Application No. P21-02699, and on March 3, 2022, as Tentative Parcel Map Application No. P21-05930. Those comments and conditions still apply copies have been attached for your reference. **A3-2**

Thank you for making available to us the Notice of Availability of a Recirculated Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project for our review and allowing us the opportunity to provide comments. We appreciate the opportunity to review and comment on the subject documents for this project. If you have any questions, please feel free to contact me Jeremy Landrith at (559) 233-7161 extension 7407 or jlandrith@fresnoirrigation.com. **A3-3**

Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachments

G:\Agencies\FresnoCity\EIR\2740 W. Nielsen Avenue\NOA - DEIR 2740 W Nielsen - FID Comments.doc

BOARD OF DIRECTORS President RYAN JACOBSEN Vice-President JERRY PRIETO, JR. CHRISTOPHER WOOLF
GEORGE PORTER GREGORY BEBERIAN General Manager BILL STRETCH

Comment Letter
A3
Attach.

Comment Letter
A3
Attach.

NOTICE OF AVAILABILITY OF A RECIRCULATED DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE 2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

Date: April 4, 2023

To: State Clearinghouse, Responsible Agencies, Interested Parties and Organizations

Subject: Notice of Availability of a Recirculated Draft Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project in Fresno, CA

Lead Agency:
City of Fresno
Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8277
Planning@fresno.gov

Contact:
Steven Martinez
Planner
City of Fresno – Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8047
Steven.Martinez@fresno.gov

Comment Period: April 4, 2023 to May 19, 2023

Notice is hereby given that the City of Fresno (City) is the Lead Agency on the below-described 2740 West Nielsen Avenue Office/Warehouse Project (proposed project) and has completed a Recirculated Draft Environmental Impact Report (EIR), pursuant to the California Environmental Quality Act (CEQA).

Project Title: 2740 West Nielsen Avenue Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map Application No. P21-05930) (State Clearinghouse No. 2022050265)

Project Location: The proposed project is located on approximately 48.03 acres at 2740 West Nielsen Avenue: Northeast of intersection of North Marks Avenue and West Nielsen Avenue in Fresno, California (Assessor's Parcel Numbers [APNs]: 458-020-71 and 458-020-72). The project site is bounded to the north by vacant, undeveloped land, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue.

Project Description: The proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of

approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors.

A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining 188 spaces would be dedicated for trailers and would be located along the eastern and western edges of the project site and would be located behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.

Recirculated Draft EIR: A Draft EIR was previously circulated from February 24, 2023 with an end date of April 10, 2023. As per State CEQA Guidelines Section 15088.5, a lead agency is required to recirculate an EIR when significant new information is added to the EIR, or when recirculation occurs after giving public notice of the availability of the Draft EIR for public review and before certification of the EIR. The Recirculated Draft EIR includes Chapter 6.0, CEQA-Required Assessment Conclusions, and Chapter 7.0, Report Preparation. In compliance with the California Public Resources Code (PRC) Section 21092.1 and State CEQA Guidelines Section 15088.5, the City has prepared this Recirculated Draft EIR to include Chapters 6.0 and 7.0 that were previously omitted from the Draft EIR.

Anticipated Significant Environmental Effects: The Draft EIR (February 2023) identifies potential significant effects in the following areas:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Hazards and Hazardous Materials
- Noise
- Tribal Cultural Resources

Mitigation measures identified in the Draft EIR would reduce potentially significant effects to less-than-significant levels in all areas. The project site is not contaminated and is not identified as cleanup site as defined by Government Code Section 65962.5.

Public Review Period: The City is circulating the Recirculated Draft EIR for public review and comment for a period of 45 days (April 4, 2023 to May 19, 2023), which is consistent with Section 15105(a) of the State CEQA Guidelines. As described further in Section 15088.5(f) of the State CEQA Guidelines, recirculating an EIR can result in the lead agency receiving more than one set of comments from reviewers. The lead agency may identify the set of comments to which it will respond by: (1) requiring reviewers to submit new comments when an EIR is substantially revised and the entire document is recirculated; or (2) requesting that reviewers limit their comments to only the revised chapter or portions of the Recirculated EIR. In no case shall the lead agency fail to respond to pertinent comments on significant environmental issues.

In this case, the revised portions of the Draft EIR include Chapter 6.0, CEQA-Required Assessment Conclusions, and Chapter 7.0, Report Preparation, and the City will accept and respond to all comments on all chapters received between February 24, 2023 through May 19, 2023.

All documents related to this project are available for public review during normal business hours (Monday - Friday, 8:00 A.M. – 5:00 P.M.) by appointment only, at the Planning and Development Department at 2600 Fresno Street, Room 3043, Fresno, CA 93721. Electronic copies may also be requested for review. In addition, some references used in the Draft EIR are physical copies and/or copyright protected and are only available in person at the Planning and Development Department. Please contact Steven Martinez via e-mail or by phone to request electronic copies or to schedule an appointment to view documents. Documents related to this project can also be accessed on the City's website at: https://www.fresno.gov/darm/planning-development/plans-projects-under-review.

Written comments concerning the Draft EIR are due by 5:00 P.M. on May 19, 2023 and should be submitted to Steven Martinez (contact information provided above).

Comment Letter
A3
Attach.

2907 S. Maple Avenue
Fresno, California 93725-2208
Telephone: (559) 233-7161
Fax: (559) 233-8227

CONVEYANCE. COMMITMENT. CUSTOMER SERVICE.

September 28, 2022

Steven Martinez, Planner
Development and Resource Management Department
City of Fresno
2600 Fresno Street, Room 3065
Fresno, CA 93721

RE: Notice of Preparation of a Program Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project

Dear Mr. Martinez:

The Fresno Irrigation District (FID) has reviewed the Notice of Preparation of a Program Environmental Impact Report, an Update to the Master Environmental Impact Report for the City of Fresno General Plan (Project), APNs: 458-020-71, 72. We appreciate the opportunity to review and comment on the subject documents for the proposed project. FID's comments are as follows:

1. FID previously reviewed and commented on the subject property on November 22, 2021, as Planning Application No. P21-02699 and on March 3, 2022, as Tentative Parcel Map Application No. P21-05930. Those comments and conditions still apply copies have been attached for your reference.

Thank you for making available to us the Notice of Preparation of a Program Environmental Impact Report for our review and allowing us the opportunity to provide comments. We appreciate the opportunity to review and comment on the subject documents for this project. If you have any questions, please feel free to contact me Chris Lundeen at (559) 233-7161 extension 7410 or clundeen@fresnoirrigation.com.

Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachments

BOARD OF DIRECTORS President RYAN JACOBSEN Vice-President JERRY PRIETO, JR. CHRISTOPHER WOOLF
GEORGE PORTER GREGORY BEBERIAN General Manager BILL STRETCH

Comment Letter
A3
Attach.

2907 S. Maple Avenue
Fresno, California 93725-2208
Telephone: (559) 233-7161
Fax: (559) 233-8227

CONVEYANCE. COMMITMENT. CUSTOMER SERVICE.

November 22, 2021

Erik Young
Department and Resource Management
City of Fresno
2600 Fresno Street, Third Floor
Fresno, CA 93721

RE: Planning Application No. P21-02699
N/E Marks and Nielsen avenues

Dear Mr. Young:

The Fresno Irrigation District (FID) has reviewed the Planning Application No. P21-02699 for which the applicant proposes the construction of four (4) Industrial Warehouse Buildings, APN's: 458-020-71 and 72. FID has the following comments:

1. FID does not own, operate, or maintain any facilities located on the subject property, as shown on the attached FID exhibit map.

2. For informational purposes, FID's active Houghton No. 78 runs westerly along the north side of Nielsen Avenue, crosses Nielsen Avenue approximately 2,470 feet east of the subject property, continues west along the south side of Nielsen Avenue, crosses Hughes Avenue approximately 1,280 feet east of the subject property, crossing Marks Avenue approximately 300 feet south of the subject property, crossing Nielsen Avenue approximately 190 feet west of subject property and continues northwest along the west side of Marks Avenue as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Nielsen Avenue, Hughes Avenue, Marks Avenue, or in the vicinity of this facility, FID requires it review and approve all plans.

3. For informational purposes, FID's active Cole – S. Br. No. 40 runs southwesterly, crosses Marks Avenue approximately 300 feet north of the subject property and continues south along the west side of Marks Avenue, as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Marks Avenue or in the vicinity of this facility, FID requires it review and approve all plans.

BOARD OF DIRECTORS President RYAN JACOBSEN Vice-President JERRY PRIETO, JR. CHRISTOPHER WOOLF
GEORGE PORTER GREGORY BEBERIAN General Manager BILL STRETCH

Comment Letter
A3
Attach.

4. For informational purposes, FID's active Teilman No. 79 runs southerly along the west side of Marks Avenue and crosses Whitesbridge Avenue approximately 2,560 feet south of the subject property, as shown on the attached FID exhibit map.

Thank you for submitting this for our review. We appreciate the opportunity to review and comment on the subject documents for the proposed project. If you have any questions, please feel free to contact Jeremy Landrith at (559) 233-7161 extension 7407 or jlandrith@fresnoirrigation.com.

Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachment

Comment Letter
A3
Attach.

Jeremy Landrith

From: do_not_reply@fresno.gov
Sent: Friday, November 12, 2021 4:00 AM
To: Engineering Review
Cc: Steven.Martinez@fresno.gov
Subject: Review Due Soon - P21-02699

A Review Task assigned to you and associated to Planning Application P21-02699 is due soon.
Please complete your review and update your response. You can view details of the record online.

Comment:
Address: 2740 W NIELSEN AVE, FRESNO, CA 93706
Description: Development Permit Application No. P21-02699 was filed by Dan Zoldak of Lars Anderson & Associates, on behalf of Scannell Properties, and pertains to the 22.24 acres identified by APN 458-020-71 located at 2740 W. Nielsen Ave. and the 26.15 acres identified by APN 458-020-72. The applicant proposes to construct a Class A Industrial Warehouse and Business Park consisting of (4) buildings. Building 1 - 468,760 sq. ft., Building 2 - 248,820 sq. ft., Building 3 - 96,250 sq. ft., and Building 4 - 93,950 sq. ft. The parcels are zoned IH. Related Application: DRC P20-04688.

Due 11/17

Comment Letter A3 Attach.

FRESNO I Civic Platform FID ()

A notice was added to this record on 2021-05-14.
Condition: Severity: Notice
Total conditions: 1 (Notice: 1)

View notice

Menu Help

()

File Date: 05/14/2021

Application Status: On Hold

Application Type: Development Permit

P21-02699

Application Detail: Detail

()

Description of Work: Development Permit Application No. P21-02699 was filed by Dan Zoldak of Lars Anderson & A 020-72. The applicant proposes to construct a Class A Industrial Warehouse and Business Pa Application: DRC P20-04688.

Application Name: Scannell Warehouse & Distribution Park

Address: 2740 W NIELSEN AVE, FRESNO, CA 93706

Owner Name: DI NIELSEN MARKS LLC

Owner Address: 4790 N CORNELIA, FRESNO, CA 93722

Parcel No: 45802071

Contact Info: Name	Organization Name	Contact Type	Status
Daniel J Zoldak	Lars Andersen &...	Applicant	Active
Jake Kurth	Scannell Proper...	Developer	Active

Licensed Professionals Info: Primary	License Number	License Type	Name

Workflow Status: Task	Assigned To	Status	Status D
Application	Erik Young	Accept	10/26/20
Pre-review- TIS	Jill Gormley	Application ...	05/25/20
Pre-review- Traffic	Louise Gilio	Application ...	05/25/20
Plan Distribution		Assign Revie...	10/28/20
Public Utilities Commi...			
County PW and Planning	County Planning		
Caltrans			
Traffic Planning	Louise Gilio	Add'l Info R...	11/10/20
Public Works Engineering	Hilary Kimber	Reviewed wit...	11/05/20
DPU Water Division	Robert Diaz	Review Complete	11/15/20
DPU Planning and Engin...	Kevin Gray		
DPU Solid Waste Manage...	Kevin Gray		
Fire Review	Scott T Recchio	Revisions Re...	11/15/20
Police Review		No Comment	10/28/20
Fresno County Environm...	Public Health	Reviewed wit...	11/16/20
Building and Safety Se...	Christian Mendez		
Airports	Airports	Review Complete	11/15/20
Fresno Area Express	FAX		
Irrigation District	FID		

Comment Letter
A3
Attach.

2907 S. Maple Avenue
Fresno, California 93725-2208
Telephone: (559) 233-7161
Fax: (559) 233-8227

CONVEYANCE. COMMITMENT. CUSTOMER SERVICE.

March 3, 2022

Juan Lara
Department and Resource Management
City of Fresno
2600 Fresno Street, Third Floor
Fresno, CA 93721

RE: Tentative Parcel Map Application No. P21-05930
N/E Nielsen and Marks avenues

Dear Mr. Lara:

The Fresno Irrigation District (FID) has reviewed the Tentative Parcel Map No. 2022-01, Planning Application P22-00102 for which the applicant proposes to subdivide a residential property into two lots, APN: 443-214-10. FID has the following comments:

1. FID previously reviewed and commented on the subject property on December 16, 2020, as Development Review Committee Application P20-04688 and on November 22, 2021, as Development Permit Application No. P21-02699. Those comments and conditions still apply and a copy has been attached for your review.

Thank you for submitting this for our review. We appreciate the opportunity to review and comment on the subject documents for the proposed project. If you have any questions, please feel free to contact Jeremy Landrith at (559) 233-7161 extension 7407 or jlandrith@fresnoirrigation.com.

Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachment

G:\Agencies\FresnoCity\Parcel Map\P21-05930\P21-05930 FID Comment.doc

BOARD OF DIRECTORS President RYAN JACOBSEN Vice-President JERRY PRIETO, JR. CHRISTOPHER WOOLF
GEORGE PORTER GREGORY BEBERIAN General Manager BILL STRETCH

Comment Letter

A3

Attach.

Comment Letter
A3
Attach.

Jeremy Landrith

From:	do_not_reply@fresno.gov
Sent:	Thursday, February 10, 2022 1:10 PM
To:	Engineering Review
Subject:	Planning Application P21-05930 - Task Assigned
Follow Up Flag:	Follow up
Flag Status:	Flagged

A task associated with Planning Application P21-05930 has been assigned for your review. You can review details online.

Application Description: Tentative Parcel Map No. P21-05930 was filed by Dan Zoldak of Lars Anderson & Associates, on behalf of Scannell Properties, and pertains to the 22.24 acres identified by APN 458-020-71 located at 2740 W. Nielsen Ave. and the 26.15 acres identified by APN 458-020-72. The applicant proposes to split the existing two parcels into four parcels. The parcels are zoned IH. Related Applications: DRC P20-04688 Development Permit P21-02699
Task Information: Irrigation District

Due 3/4

Comment Letter A3 Attach.

Accela Civic Platform > FRESNO

P21-05930	STATUS	LOCATION	CONTACT	WORKFLOW
Scannell TMAP Tentative Parce...	> In Review 03/01/2022 ...	> 2740 NIELS... FRESNO, CA...	> Daniel Zoldak	> 44 total Task ● 9 complete..

P21-05930 - Scannell TMAP

A notice was added to this record on 2021-11-00.
Condition: Severity: Notice
Total conditions: 1 (Notice: 1)

View notice

Menu Help

File Date: 11/08/2021

Application Status: In Review

Application Type: Tentative Map Parcel

Application Detail: Detail

Description of Work: Tentative Parcel Map No. P21-05930 was filed by Dan Zoldak of Lars Anderson & Associates, on behalf of Scannell Properties identified by APN 458-020-71 located at 2740 W. Nielsen Ave. and the 26.15 acres identified by APN 458-020-72. The applica parcels into four parcels. The parcels are zoned IH. Related Applications: DRC P20-04688 Development Permit P21-02699

Application Name: Scannell TMAP

Address: 2740 W NIELSEN AVE, FRESNO, CA 93706

Owner Name: DI NIELSEN MARKS LLC

Owner Address: 4790 N CORNELIA, FRESNO, CA 93722

Parcel No: 45802071

Contact Info:

Name	Organization Name	Contact Type	Status
Daniel J Zoldak	Lars Andersen &...	Applicant	Active
Daniel J Zoldak	Lars Andersen &...	Subdivider	Active
Paul Starn	Scannell Proper...	Business Owner	Active

Licensed Professionals Info:

Primary	License Number	License Type	Name	Business Name	Business License #

Workflow Status:

Task	Assigned To	Status	Status Date	Action By
Application		Accept	02/10/2022	Steven Martinez
Plan Distribution		Assign Revie...	02/10/2022	Steven Martinez
Public Utilities				

VESTING TENTATIVE PARCEL MAP NO. 2021-09

LEGAL DESCRIPTION:

The Land referred to herein below is situated in the City of Fresno, County of Fresno, State of California, and is described as follows:

PARCEL 1:

PARCEL C AS SHOWN ON LOT LINE ADJUSTMENT NO. 2013-06, AS EVIDENCED BY DOCUMENT RECORDED JUNE 11, 2013 AS INSTRUMENT NO. 2013-0082690 OF OFFICIAL RECORDS OF FRESNO COUNTY, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THAT PORTION OF VOLUNTARY PARCEL MERGER NO. 2013-03, AS DOCUMENT NO. 2013-0082689, OF OFFICIAL RECORDS OF FRESNO COUNTY, DESCRIBED AS FOLLOWS:

THAT PORTION OF LOTS 20 TO 29, INCLUSIVE, OF WEST FRESNO, IN THE CITY OF FRESNO, COUNTY OF FRESNO, STATE OF CALIFORNIA, ACCORDING TO THE MAP THEREOF RECORDED IN VOLUME 2 OF PLATS, PAGE 50, LYING SOUTH OF A LINE THAT IS PARALLEL WITH AND 358.71 FEET SOUTH OF THE SOUTH LINE OF THAT CERTAIN STRIP OF LAND 100 FEET WIDE GRANTED TO THE SOUTHERN PACIFIC RAILROAD COMPANY BY DEED DATED MAY 13, 1982 RECORDED IN BOOK 145, PAGE 399 OF DEEDS, AND WEST OF A LINE THAT IS PARALLEL WITH AND 1169.00 FEET EAST OF THE WEST LINE OF SAID LOTS 24 AND 25.

EXCEPTING THEREFROM THAT PORTION THEREOF GRANTED TO FRESNO IRRIGATION DISTRICT BY AGREEMENT DATED OCTOBER 1, 1945 RECORDED FEBRUARY 14, 1947 IN BOOK 2494 PAGE 185 OF OFFICIAL RECORDS.

PARCEL 2:

PARCEL D AS SHOWN ON LOT LINE ADJUSTMENT NO. 2013-06, AS EVIDENCED BY DOCUMENT RECORDED JUNE 11, 2013 AS INSTRUMENT NO. 2013-0082690 OF OFFICIAL RECORDS OF FRESNO COUNTY, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THAT PORTION OF VOLUNTARY PARCEL MERGER NO. 2013-03, AS DOCUMENT NO. 2013-0082689 OF OFFICIAL RECORDS OF FRESNO COUNTY, AND LOTS 17 TO 19 OF WEST FRESNO, IN THE CITY OF FRESNO, COUNTY OF FRESNO, STATE OF CALIFORNIA, ACCORDING TO THE MAP THEREOF RECORDED IN VOLUME 2 OF PLATS, PAGE 50, FRESNO COUNTY RECORDS, DESCRIBED AS FOLLOWS:

THAT PORTION OF LOTS 17 TO 32, INCLUSIVE, OF SAID WEST FRESNO LYING SOUTH OF A LINE THAT IS PARALLEL WITH AND 358.71 FEET SOUTH OF THE SOUTH LINE OF THAT CERTAIN STRIP OF LAND 100 FEET WIDE GRANTED TO THE SOUTHERN PACIFIC RAILROAD COMPANY BY DEED DATED MAY 13, 1982 RECORDED IN BOOK 145, PAGE 399 OF DEEDS, AND EAST OF A LINE THAT IS PARALLEL WITH AND 1169.00 FEET EAST OF THE WEST LINE OF SAID LOTS 24 AND 25.

For conveyancing purposes only: APN 458-020-71 (Affects Parcel 1) 458-020-72 (Affects Parcel 2)

FLOOD ZONE INFORMATION:

This property lies in Zone "X" as shown on Federal Emergency Management Agency (FEMA) City of Fresno and Incorporated Areas, California, Map No. 06019C2135H Map Revised: February 18, 2009.

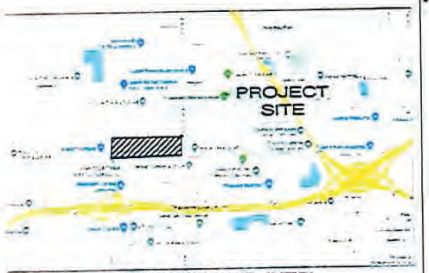
Flood Zone "X" is described as "Area with Minimal Flood Risk" and further described as "0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile."

APPLICANT/SUBDIVIDER:

Scannell Properties
294 Grove Lane East, Suite 140
Wayzata, MN 55391
(612) 280-4088

OWNER:

DI Nielsen Marks LLC
4790 N Cornelia Ave.
Fresno, CA 93706



LOCATION MAP (NTS)

VICINITY MAP
NOT TO SCALE

LEGEND

NOTES:

1. There are no buildings on the property.
2. The property consists of 2 Assessor's parcel numbers. 458-020-71 & 458-020-72
3. The property abuts the following public right of ways: North Hughes Avenue, West Nielsen Avenue and North Marks Avenue
4. There is access to the property from West Nielsen Avenue and North Hughes Avenue.
5. There are 0 parking spaces on the property.

LARS ANDERSEN & ASSOCIATES, INC.
CIVIL ENGINEERS - LAND SURVEYORS - PLANNERS
4004 WEST JACQUELYN AVENUE FRESNO CALIFORNIA 93722
TEL: 559 276-2790 FAX: 559 276-0850 WWW.LARSANDERSEN.COM

Comment Letter A3 Attach.

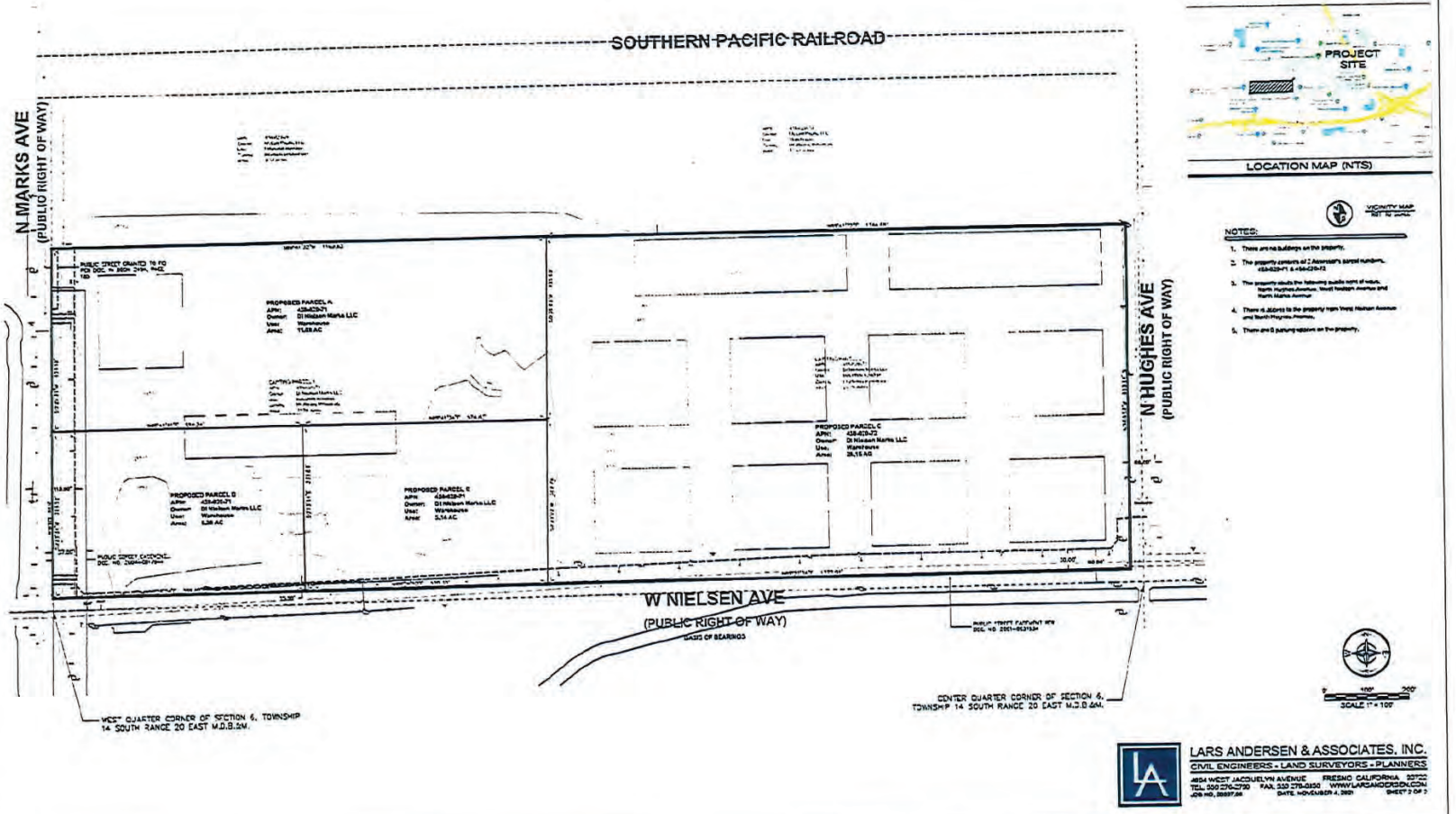
Comment Letter

A3

Attach.

VESTING TENTATIVE PARCEL MAP NO. 2021-__

VESTING TENTATIVE PARCEL MAP NO. 2021-09



LOCATION MAP (NTS)

NOTES:

1. There are no buildings on the property.
2. The property consists of 2 Assessor's parcel numbers, 439-020-01 & 439-020-02.
3. The property abuts the following public right of ways, North Hughes Avenue, West Nielsen Avenue and North Marks Avenue.
4. There is access to the property from West Nielsen Avenue and North Hughes Avenue.
5. There are 0 pursuing options on the property.

LARS ANDERSEN & ASSOCIATES, INC.
CIVIL ENGINEERS - LAND SURVEYORS - PLANNERS
4604 WEST JACQUELYN AVENUE FRESNO CALIFORNIA 93722
TEL. 559.276.2790 FAX. 559.276.2830 WWW.LARSANDERSEN.COM

Comment Letter A3 Attach.

Comment Letter
A3
Attach.

2907 S. Maple Avenue
Fresno, California 93725-2208
Telephone: (559) 233-7161
Fax: (559) 233-8227

CONVEYANCE. COMMITMENT. CUSTOMER SERVICE.

November 22, 2021

Erik Young
Department and Resource Management
City of Fresno
2600 Fresno Street, Third Floor
Fresno, CA 93721

RE: Planning Application No. P21-02699
N/E Marks and Nielsen avenues

Dear Mr. Young:

The Fresno Irrigation District (FID) has reviewed the Planning Application No. P21-02699 for which the applicant proposes the construction of four (4) Industrial Warehouse Buildings, APN's: 458-020-71 and 72. FID has the following comments:

1. FID does not own, operate, or maintain any facilities located on the subject property, as shown on the attached FID exhibit map.

2. For informational purposes, FID's active Houghton No. 78 runs westerly along the north side of Nielsen Avenue, crosses Nielsen Avenue approximately 2,470 feet east of the subject property, continues west along the south side of Nielsen Avenue, crosses Hughes Avenue approximately 1,280 feet east of the subject property, crossing Marks Avenue approximately 300 feet south of the subject property, crossing Nielsen Avenue approximately 190 feet west of subject property and continues northwest along the west side of Marks Avenue as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Nielsen Avenue, Hughes Avenue, Marks Avenue, or in the vicinity of this facility, FID requires it review and approve all plans.

3. For informational purposes, FID's active Cole – S. Br. No. 40 runs southwesterly, crosses Marks Avenue approximately 300 feet north of the subject property and continues south along the west side of Marks Avenue, as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Marks Avenue or in the vicinity of this facility, FID requires it review and approve all plans.

BOARD OF DIRECTORS President RYAN JACOBSEN Vice-President JERRY PRIETO, JR. CHRISTOPHER WOOLF
GEORGE PORTER GREGORY BEBERIAN General Manager BILL STRETCH

Comment Letter
A3
Attach.

4. For informational purposes, FID's active Teilman No. 79 runs southerly along the west side of Marks Avenue and crosses Whitesbridge Avenue approximately 2,560 feet south of the subject property, as shown on the attached FID exhibit map.

Thank you for submitting this for our review. We appreciate the opportunity to review and comment on the subject documents for the proposed project. If you have any questions, please feel free to contact Jeremy Landrith at (559) 233-7161 extension 7407 or jlandrith@fresnoirrigation.com.

Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachment

Comment Letter
A3
Attach.

Jeremy Landrith

From: do_not_reply@fresno.gov
Sent: Friday, November 12, 2021 4:00 AM
To: Engineering Review
Cc: Steven.Martinez@fresno.gov
Subject: Review Due Soon - P21-02699

A Review Task assigned to you and associated to Planning Application P21-02699 is due soon.
Please complete your review and update your response. You can view details of the record online.

Comment:
Address: 2740 W NIELSEN AVE, FRESNO, CA 93706
Description: Development Permit Application No. P21-02699 was filed by Dan Zoldak of Lars Anderson & Associates, on behalf of Scannell Properties, and pertains to the 22.24 acres identified by APN 458-020-71 located at 2740 W. Nielsen Ave. and the 26.15 acres identified by APN 458-020-72. The applicant proposes to construct a Class A Industrial Warehouse and Business Park consisting of (4) buildings. Building 1 - 468,760 sq. ft., Building 2 - 248,820 sq. ft., Building 3 - 96,250 sq. ft., and Building 4 - 93,950 sq. ft. The parcels are zoned IH. Related Application: DRC P20-04688.

Due 11/17

Comment Letter A3 Attach.

FRESNO I Civic Platform FID ()

A notice was added to this record on 2021-05-14.
Condition: Severity: Notice
Total conditions: 1 (Notice: 1)

View notice

Menu Help

() File Date: 05/14/2021

Application Status: On Hold

Application Type: Development Permit

P21-02699 Application Detail: Detail

() Description of Work: Development Permit Application No. P21-02699 was filed by Dan Zoldak of Lars Anderson & A 020-72. The applicant proposes to construct a Class A Industrial Warehouse and Business Par Application: DRC P20-04688.

Application Name: Scannell Warehouse & Distribution Park

Address: 2740 W NIELSEN AVE, FRESNO, CA 93706

Owner Name: DI NIELSEN MARKS LLC

Owner Address: 4790 N CORNELIA, FRESNO, CA 93722

Parcel No: 45802071

Contact Info: Name	Organization Name	Contact Type	Status
Daniel J Zoldak	Lars Andersen &...	Applicant	Active
Jake Kurth	Scannell Proper...	Developer	Active

Licensed Professionals Info: Primary	License Number	License Type	Name

Workflow Status: Task	Assigned To	Status	Status Di
Application	Erik Young	Accept	10/26/20
Pre-review- TIS	Jill Gormley	Application ...	05/25/20
Pre-review- Traffic	Louise Gillo	Application ...	05/25/20
Plan Distribution		Assign Revie...	10/28/20
Public Utilities Commi...			
County PW and Planning	County Planning		
Caltrans			
Traffic Planning	Louise Gillo	Add'l Info R...	11/10/20
Public Works Engineering	Hilary Kimber	Reviewed wit...	11/05/20
DPU Water Division	Robert Diaz	Review Complete	11/16/20
DPU Planning and Engin...	Kevin Gray		
DPU Solid Waste Manage...	Kevin Gray		
Fire Review	Scott T Recchio	Revisions Re...	11/15/20
Police Review		No Comment	10/28/20
Fresno County Environm...	Public Health	Reviewed wit...	11/16/20
Building and Safety Se...	Christian Mendez		
Airports	Airports	Review Complete	11/15/20
Fresno Area Express	FAX		
Irrigation District	FID		

Comment Letter
A3
Attach.

2907 S. MAPLE AVENUE
FRESNO, CALIFORNIA 93725-2208
TELEPHONE: (559) 233-7161
FAX: (559) 233-8227

A Century of Commitment, Conveyance & Customer Service

December 16, 2020

Mindi Mariboho
Department and Resource Management
City of Fresno
2600 Fresno Street, Third Floor
Fresno, CA 93721

RE: Planning Application No. P20-04688
N/E Marks and Nielsen avenues

Dear Ms. Mariboho:

The Fresno Irrigation District (FID) has reviewed the Planning Application No. P20-04688 for which the applicant proposes the construction of three (3) office/warehouse buildings, APN: 458-020-71. FID has the following comments:

1. FID does not own, operate, or maintain any facilities located on the subject property, as shown on the attached FID exhibit map.

2. For informational purposes, FID's active Houghton No. 78 runs westerly along the north side of Nielsen Avenue, crosses Nielsen Avenue approximately 2,470 feet east of the subject property, continues west along the south side of Nielsen Avenue, crossing Hughes Avenue approximately 1,280 feet east of the subject property, crossing Marks Avenue approximately 300 feet south of the subject property, crossing Nielsen Avenue approximately 190 feet west of subject property and continues northwest along the west side of Marks Avenue as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Nielsen Avenue, Hughes Avenue, Marks Avenue, or in the vicinity of this facility, FID requires it review and approve all plans.

3. For informational purposes, FID's active Cole – S. Br. No. 40 runs southwesterly, crosses Marks Avenue approximately 380 feet north of the subject property and continues south along the west side of Marks Avenue, as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Marks Avenue or in the vicinity of this facility, FID requires it review and approve all plans.

BOARD OF DIRECTORS President RYAN JACOBSEN, Vice-President JERRY PRIETO, JR.
CHRISTOPHER WOOLF, GEORGE PORTER, GREGORY BEBERIAN, General Manager BILL STRETCH

Comment Letter
A3
Attach.

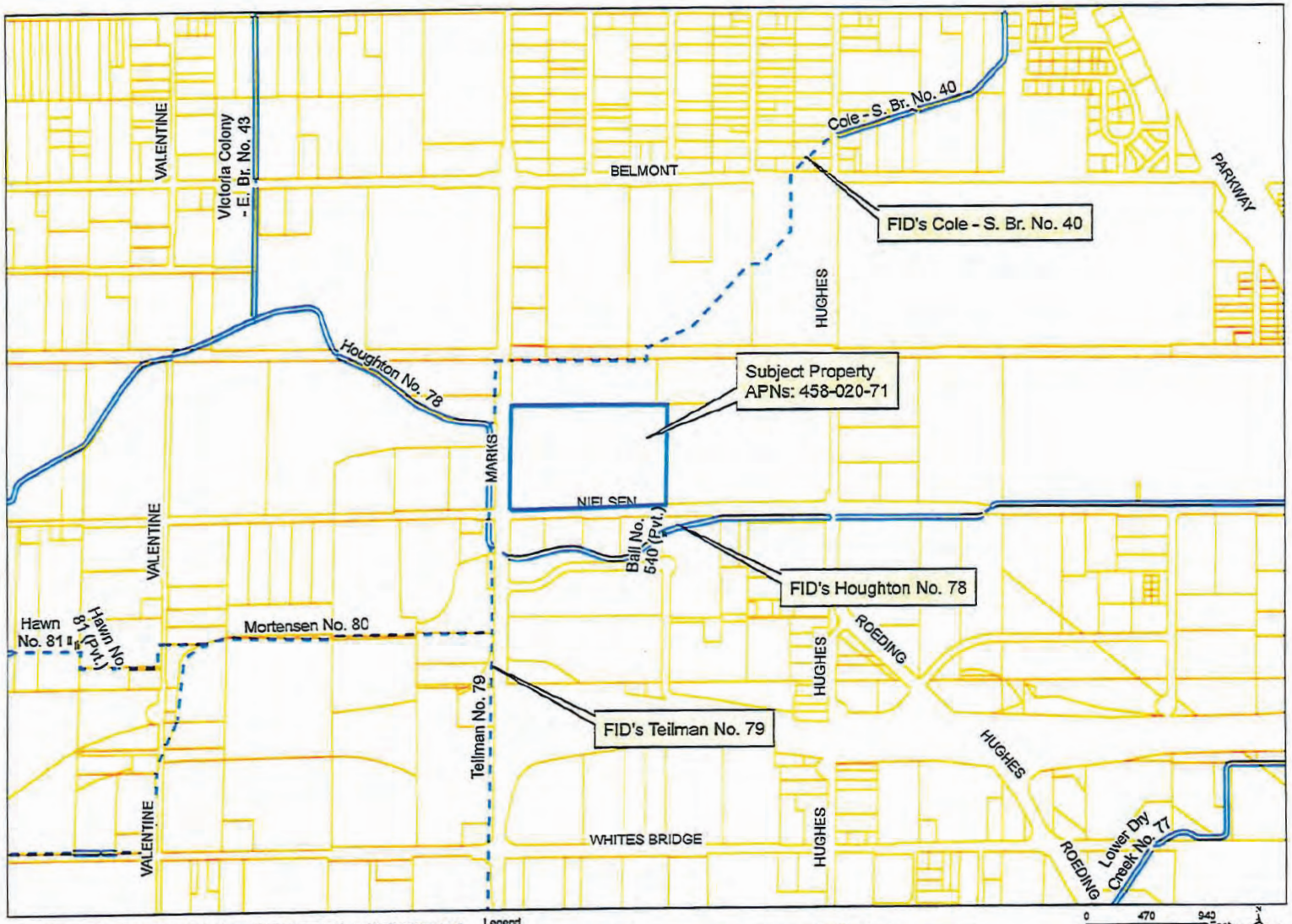
4. For informational purposes, FID's active Teilman No. 79 runs southerly along the west side of Marks Avenue and crosses Whitesbridge Avenue approximately 2,560 feet south of the subject property, as shown on the attached FID exhibit map.

Thank you for submitting this for our review. We appreciate the opportunity to review and comment on the subject documents for the proposed project. If you have any questions, please feel free to contact Chris Lundeen at (559) 233-7161 extension 7410 or clundeen@fresnoirrigation.com.

Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachment



Comment Letter A3 Attach.

Comment Letter
A3
Attach.

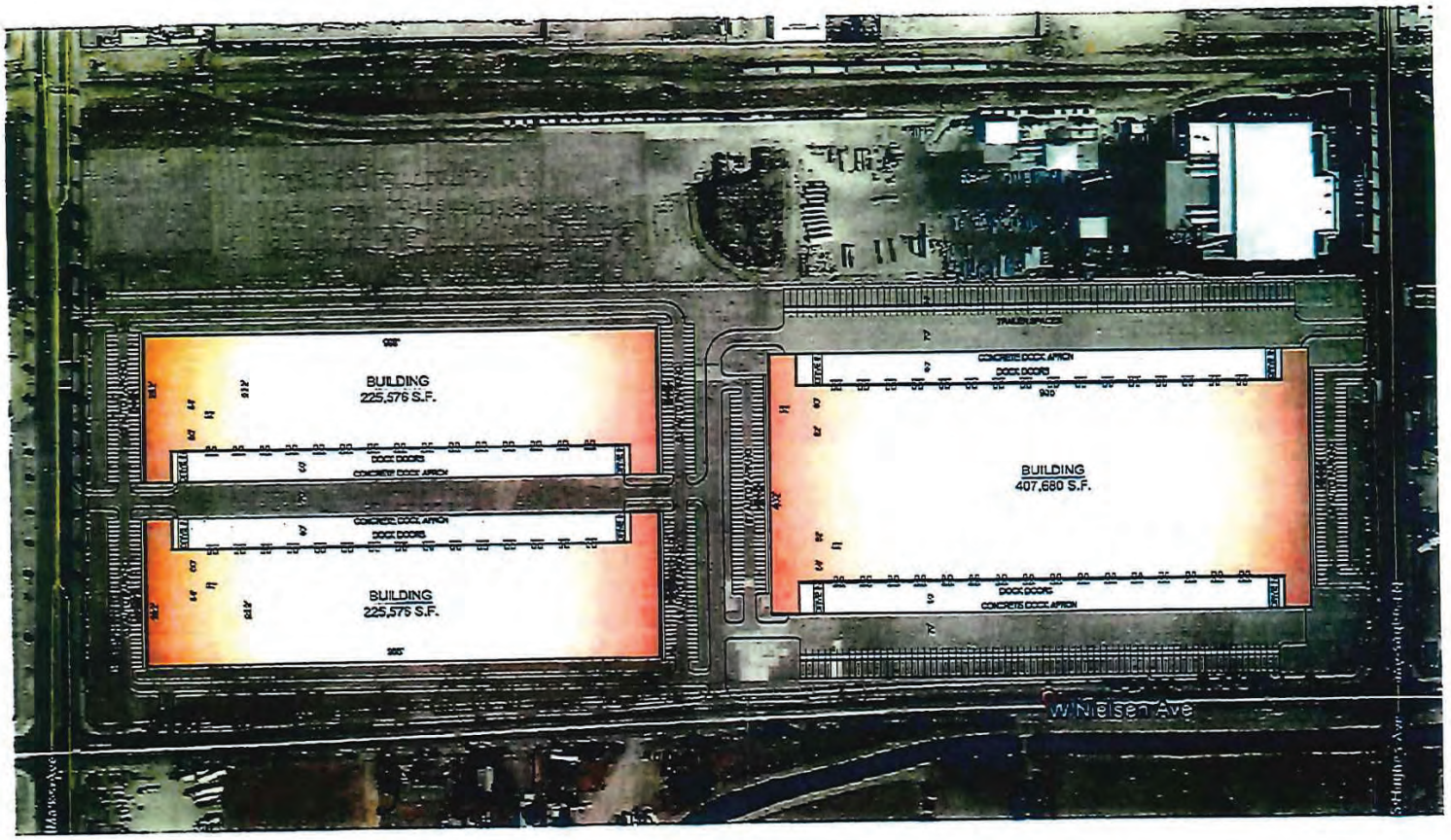
Chris Lundeen

From: do_not_reply@fresno.gov
Sent: Friday, December 11, 2020 4:42 PM
To: Engineering Review
Subject: Planning Application P20-04688 - Task Assigned

A task associated with Planning Application P20-04688 has been assigned for your review. You can review details online.

Application Description: Proposed Office/Warehouse Buildings, the first building will have approximately 407,680 SF building and buildings 2 and 3 will be 225,576 SF each.
Task Information: Irrigation District

Rec 12/28



PROPOSED:
PROJECT SITE
OCTOBER 16, 2020

Office / Warehouse
FRESNO, CA

SCANNELL
PROPERTIES

Comment
Letter
A3
Attach.

Comment Letter
A3
Attach.

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE 2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

Date: September 9, 2022

To: State Clearinghouse, Responsible Agencies, Interested Parties and Organizations

Subject: Notice of Preparation of an Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project in Fresno, CA

Lead Agency:
City of Fresno
Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8277
Planning@fresno.gov

Contact:
Steven Martinez
Planner
City of Fresno – Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8047
Steven.Martinez@fresno.go

Comment Period: September 9, 2022 to October 10, 2022

Si necesita información en Español, comuníquese con Juan Lara al teléfono (559) 621-8075 o por correo electrónico a Juan.Lara@fresno.gov.

Notice is Hereby Given: The City of Fresno (City) is the Lead Agency on the below-described 2740 West Nielsen Avenue Office/Warehouse Project (proposed project) and has prepared a Notice of Preparation (NOP) of an Environmental Impact Report (EIR), pursuant to the California Environmental Quality Act (CEQA). The NOP is intended to solicit the views of the public, interested parties, and/or agencies as to the scope and content of the environmental information which is relevant to you or your agency's statutory responsibilities in connection with the proposed project. Specifically, the City is requesting that commenters identify environmental topics (and/or special studies) that they believe need to be explored in the forthcoming EIR, and to identify other relevant environmental issues related to the scope and content of the forthcoming EIR.

Project Title: 2740 West Nielsen Avenue Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map No. P21-05930) (State Clearinghouse No. 2022050265)

Project Location: The proposed project is located on approximately 48.03 acres at 2740 West Nielsen Avenue: Northeast of intersection of North Marks Avenue and West Nielsen Avenue in

Fresno, California (Assessor's Parcel Numbers [APNs]: 458-020-71 and 458-020-72). The project site is bounded to the north by vacant, undeveloped land, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue. The attached Figure 1 shows the regional and local context of the project location.

Project Description: The proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. Figure 2 shows the project site plan.

A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining 188 spaces would be dedicated for trailers and would be located along the eastern and western edges of the project site and would be located behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.

Areas of Potential Environmental Effects: The EIR will evaluate the potential environmental impacts related to the proposed project, after having first established the environmental setting, or baseline, for the environmental analysis. The significance of potential impacts, cumulative impacts, and appropriate mitigation measures associated with the proposed project will be thoroughly discussed in the EIR. The EIR will be comprehensive and will evaluate each of the environmental issue topics required by CEQA. The individual environmental topics include:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems

In addition, in accordance with Section 15126.6 of the CEQA Guidelines, the EIR will assess a range of reasonable alternatives to the project. The range of alternatives to be addressed will include alternatives that are specifically required by CEQA (e.g., the No Project Alternative), as well as other alternatives (intended to reduce or eliminate potentially significant impacts) as identified through the coordinated consultation and planning process.

Document Availability and Public Review Timeline: Due to the time limits mandated by State law, your response to the NOP must be sent no later than 30 days after publication of this notice. The review period for the NOP will be from September 9, 2022, to October 10, 2022. All documents related to this project are available for public review during normal business

Comment Letter A3 Attach.

hours (Monday - Friday, 8:00 A.M. – 5:00 P.M.) by appointment only, at the Planning and Development Department at 2600 Fresno Street, Room 3043, Fresno, CA 93721. Electronic copies may also be requested for review. Please contact Steven Martinez via e-mail or by phone to request electronic copies or to schedule an appointment to view documents. Documents related to this project can also be accessed on the City's website at: https://www.fresno.gov/darm/planning-development/plans-projects-under-review/.

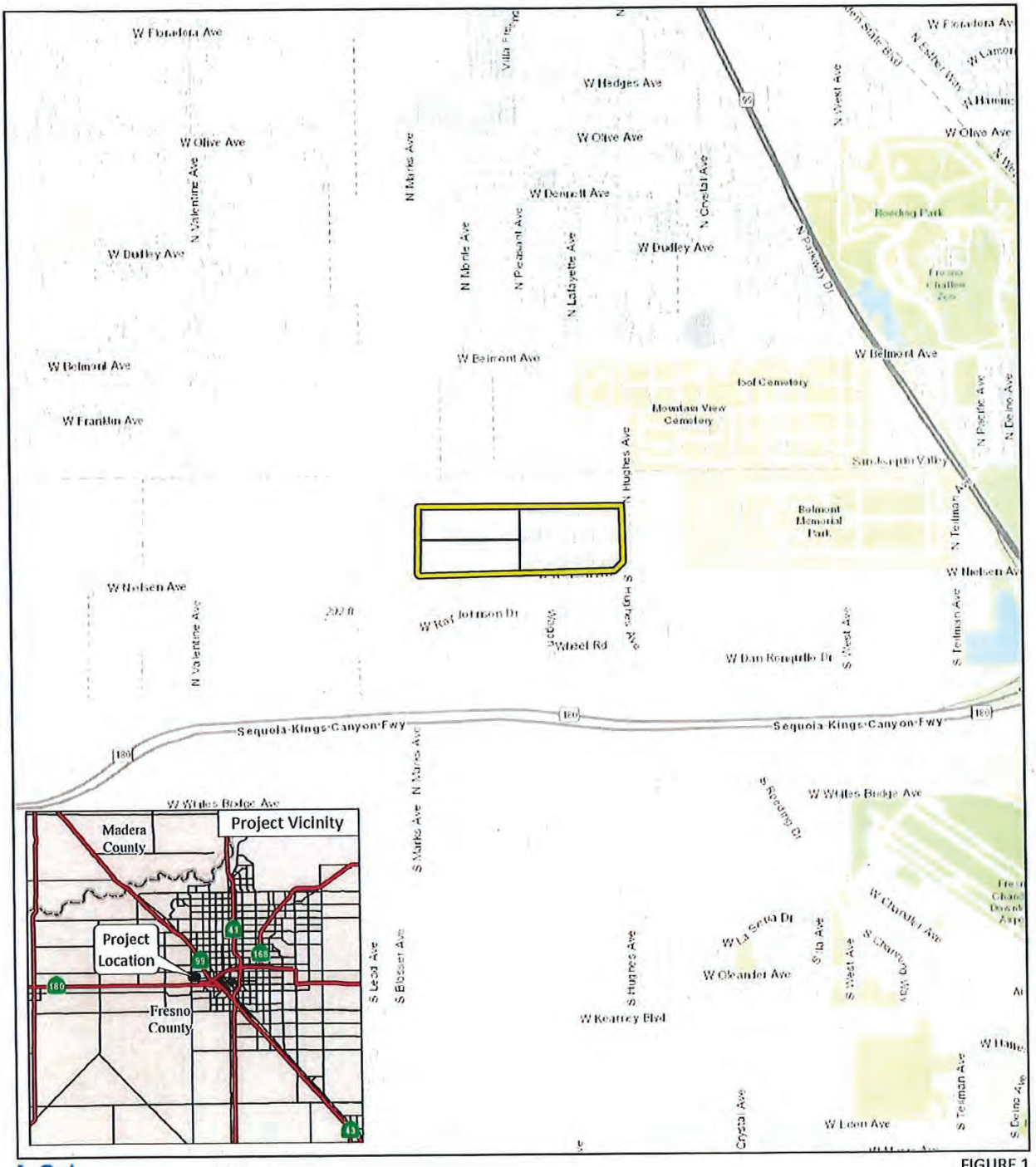
Public Scoping Meeting: The CEQA process encourages comments and questions from the public throughout the planning process. Pursuant to Section 15083 of the CEQA Guidelines, a Public Scoping Meeting will be held to solicit public comments on the scope and content of the EIR. A public scoping meeting for this project will be conducted virtually at 6:00 PM on Thursday, September 22, 2022. The webinar information is provided below:

Via Zoom online meeting at: https://bit.ly/2740WestNielsen
Or by Phone at: +1 669 444 9171 US
Webinar ID: 868 6600 9238
Passcode: 154493

Submitting Comments: Comments and suggestions as to the appropriate scope of analysis of the EIR are encouraged from all interested parties. If you wish to provide comments or ask questions about the EIR, you may do so by written letter sent via post mail to the address below or via written email to PublicCommentsPlanning@fresno.gov (CC Steven.Martinez@fresno.gov). Comments must include the commenter's full name, address, phone number, and/or email so you may be contacted for clarification, if necessary. Please submit comments to Steven Martinez no later than 5:00 PM on October 10, 2022.

Steven Martinez
Planner
City of Fresno – Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721
(559) 621-8047
Steven.Martinez@fresno.gov

Comment Letter A3 Attach.



LSA

LEGEND

Project Location

Proposed Parcels

0 1000 2000

FEET

SOURCE: Esri Topographic Map (2021)

I:\SNN2102\GIS\MXD\Project_Location.mxd (6/7/2021)

FIGURE 1

2740 West Nielsen Avenue Office/Warehouse Project

Regional Project Location

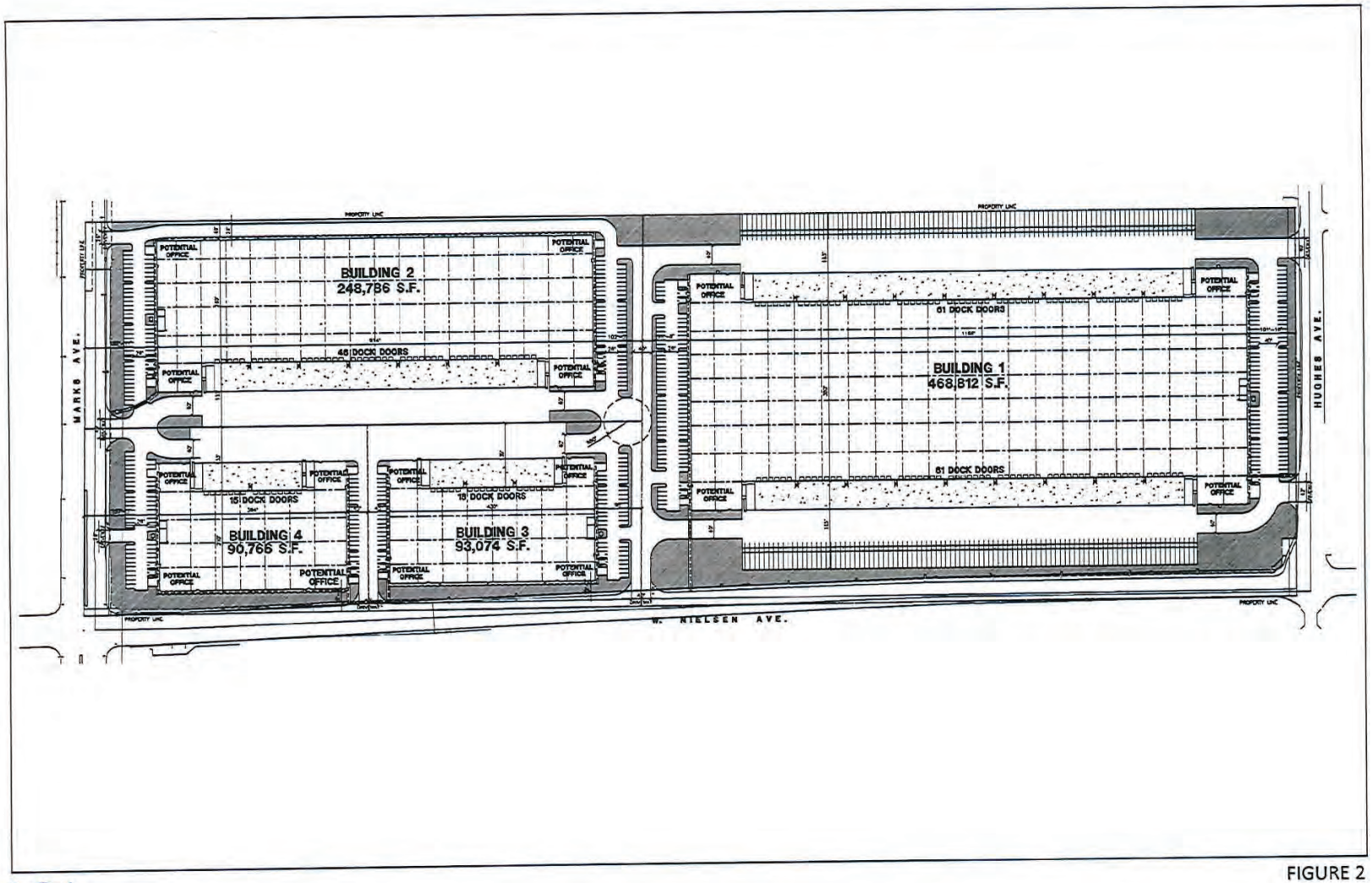


FIGURE 2

LSA

0 120 240
FEET

N

2740 West Nielsen Office/Warehouse Project
Site Plan

SOURCE: HPA Architecture, Inc., 2021

FreP:\SNN2102 2740 W. Nielsen\PRODUCTS\Graphics\Figure 3.ai (10/5/2021)

Comment Letter A3 Attach.

LETTER A3
Fresno Irrigation District

Laurence Kimura, P.E., Chief Engineer
May 17, 2023

Response A3-1: This comment provides an introduction to the comment letter and does not address the adequacy or completeness of the Recirculated Draft EIR; does not raise environmental issues; and does not request the incorporation of additional information relevant to environmental issues. Such comments do not require a response, pursuant to Section 15088(a) of the State CEQA Guidelines. No further response is necessary.

Response A3-2: This comment states that the Fresno Irrigation District (FID) previously reviewed and commented on the proposed project. Previous comments state that should the project include any street and/or utility improvements along Nielsen Avenue, Hughes Avenue, Marks Avenue, or in the vicinity, FID would require its review and FID would approve all plans. This comment is noted but does not pertain to the analysis or conclusions of the Recirculated Draft EIR; therefore, no further analysis is required.

Response A3-3: This comment provides a closing to the comment letter and does not question the adequacy of the analysis included in the Recirculated Draft EIR. No further response is required.

Comment Letter A4

San Joaquin Valley AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

May 18, 2023

Steven Martinez
City of Fresno
Planning and Development Department
2600 Fresno Street, Room 3043
Fresno, CA 93721

Project: Notice of Availability of Recirculated Draft Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project

District CEQA Reference No: 20230341

Dear Mr. Martinez:

The San Joaquin Valley Air Pollution Control District (District) has reviewed the Draft Environmental Impact Report (DEIR) from the City of Fresno (City) for the above mentioned project. Per the DEIR, the project consists of four office/warehouse buildings totaling approximately 901,438 square feet and 201 loading dock doors (Project). The Project is located at 2740 West Nielsen Avenue in Fresno, CA. **A4-1**

The District offers the following comments regarding the Project:

1) Assembly Bill 617

Assembly Bill 617 requires CARB and air districts to develop and implement Community Emission Reduction Programs (CERPs) in an effort to reduce air pollution exposure in impacted disadvantage communities. The Project lies near one of the impacted communities in the State selected by the California Air Resources Board (CARB) under the Assembly Bill (AB) 617 (2017, Garcia) and has the potential to expose sensitive receptors to increased air pollution within the nearby impacted community. The South Central Fresno CERP was adopted by the District's Governing Board in September of 2019 and identifies a wide range of measures designed to reduce air pollution exposure. Therefore, in an effort to reduce air pollution exposure to the impacted disadvantaged community, the District recommends the City incorporate mitigation measures outlined in the South Central Fresno CERP for the Project. For more information regarding the CERP approved for South Central Fresno, please visit the District's website at: http://community.valleyair.org/selected-communities/south-central-fresno **A4-2**

Samir Sheikh
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: (661) 392-5500 FAX: (661) 392-5585

www.valleyair.org www.healthyairliving.com

Printed on recycled paper.

2) Project Emissions

Based on the DEIR, specifically the Technical Appendices Volume I: Appendix C, the California Emissions Estimator Model (CalEEMod) air quality modeling results, includes a 7.3 mile trip length for quantifying Project operational air quality emissions from Heavy Heavy-Duty (HHD) Truck travel. This value represents the default CalEEMod trip length. This Project consists of warehouse development and is expected to generate increased HHD truck trips that have the ability travel further distances (e.g. trip length) for distribution. As a result, the Project related emissions resulting from the CalEEMod analysis may be underestimated. The trip length included in the DEIR is not consistent with trip length values we have seen for similar warehouse development projects and the DEIR lacks sufficient analysis to justify the use of the default value. The District recommends the DEIR be revised to include a project specific trip length value and associated analysis to justify the value. The DEIR and supporting CalEEMod air quality modeling results should be revised to reflect an appropriate trip length distance that is supported by project-specific factors.

A4-3

3) Recommended Feasible Mitigation for Operational Air Quality Impacts

3a) Voluntary Emission Reduction Agreement

Based on the above, criteria pollutant emissions may result in emissions exceeding the District's significance thresholds, potentially resulting in a significant impact on air quality. When a project is expected to have a significant impact, the District recommends the DEIR also include a discussion on the feasibility of implementing a Voluntary Emission Reduction Agreement (VERA) for this Project.

A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of emissions increases through a process that develops, funds, and implements emission reduction projects, with the District serving a role of administrator of the emissions reduction projects and verifier of the successful mitigation effort. To implement a VERA, the project proponent and the District enter into a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds for the District's incentives programs. The funds are disbursed by the District in the form of grants for projects that achieve emission reductions. Thus, project-related impacts on air quality can be mitigated. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors.
In implementing a VERA, the District verifies the actual emission reductions that have been achieved as a result of completed grant contracts, monitors the emission reduction projects, and ensures the enforceability of achieved

A4-4

reductions. After the project is mitigated, the District certifies to the Lead Agency that the mitigation is completed, providing the Lead Agency with an enforceable mitigation measure demonstrating that project-related emissions have been mitigated. To assist the Lead Agency and project proponent in ensuring that the environmental document is compliant with CEQA, the District recommends the environmental document includes an assessment of the feasibility of implementing a VERA.

A4-4 cont.

3b) Industrial/Warehouse Emission Reduction Strategies

The District recommends the City consider the feasibility of incorporating emission reduction strategies that can reduce potential harmful health impacts, such as those listed below:

- Locate loading docks a minimum of 300 feet away from the property line of sensitive receptor unless dock is exclusively used for electric trucks
- Incorporate signage and “pavement markings” to clearly identify on-site circulation patterns to minimize unnecessary on-site vehicle travel
- Locate truck entries on streets of a higher commercial classification
- Ensure all building roofs are solar-ready
- Ensure all portions of roof tops that are not covered with solar panels are constructed to have light colored roofing material with a solar reflective index of greater than 78
- Ensure rooftop solar panels are installed and operated to supply 100% of the power needed to operate all non-refrigerated portions of the development project
- Ensure power sources at loading docks for all refrigerated trucks have “plugin” capacity, which will eliminate prolonged idling while loading and unloading goods
- Incorporate bicycle racks and electric bike plug-ins
- Require the use of low volatile organic compounds (VOC) architectural and industrial maintenance coatings
- Designate an area during construction to charge electric powered construction vehicles and equipment, if temporary power is available
- Prohibit the use of non-emergency diesel-powered generators during construction
- Inform the project proponent of the incentive programs (e.g., Carl Moyer Program and Voucher Incentive Program) offered to reduce air emissions from the Project

A4-5

4) Health Risk Screening/Assessment

Based on the DEIR, specifically the Technical Appendices Appendix D: Health Risk Assessment (HRA), the truck travel particulate matter emission factors for 5-15 MPH and 5-55 MPH for 2-4 axle trucks and 5+ axle trucks are presented. However, the methodology and calculations for developing these emission factors is not shown or referenced. The District recommends the DEIR include the methodology and calculations used for developing the truck travel emissions factors in the HRA.

Also, the HRA did not consider air toxic emissions from potential warehouse equipment (e.g. forklifts, yard trucks, emergency backup generators, etc.) from operational activities. Should the Project include such equipment, the HRA should be revised to evaluate air toxic emissions and health impacts from these equipment types. Additionally, should the Project air quality emissions analysis be revised to reflect an updated trip length, the HRA should be revised for consistency.

A4-6

5) Ambient Air Quality Analysis

An Ambient Air Quality Analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of State or National Ambient Air Quality Standards. The District recommends an AAQA be performed for the Project if emissions exceed 100 pounds per day of any pollutant, especially if the Project related air quality emissions analysis is revised to reflect an updated trip length.

An acceptable analysis would include emissions from both project-specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis.

Specific information for assessing significance, including screening tools and modeling guidance, is available online at the District's website: www.valleyair.org/ceqa.

A4-7

6) Truck Routing

The Project consists of warehouse development and is expected to generated increased HHD truck trips. As a result, truck routing involves the assessment of which roads HHD trucks take to and from their destination, and the emissions impact that the HHD trucks may have on nearby sensitive receptors single family residential units located south of the Project.

The District recommends the City evaluate HHD truck routing patterns for the Project, with the aim of limiting exposure of residential communities and sensitive receptors to emissions. This evaluation would consider the current truck routes, the quantity and type of each truck (e.g., Medium Heavy-Duty, HHD, etc.), the

A4-8

destination and origin of each trip, traffic volume correlation with the time of day or the day of the week, overall Vehicle Miles Traveled (VMT), and associated exhaust emissions. The truck routing evaluation would also identify alternative truck routes and their impacts on VMT and air quality.

A4-8 cont.

7) Cleanest Available Heavy-Duty Trucks

The San Joaquin Valley will not be able to attain stringent health-based federal air quality standards without significant reductions in emissions from HHD trucks, the single largest source of NOx emissions in the San Joaquin Valley. The District's CARB-approved 2018 PM2.5 Plan includes significant new reductions from HHD trucks, including emissions reductions by 2023 through the implementation of CARB's Statewide Truck and Bus Regulation, which requires truck fleets operating in California to meet the 2010 standard of 0.2 g-NOx/bhp-hr by 2023. Additionally, to meet federal air quality attainment standards, the District's Plan relies on a significant and immediate transition of HHD fleets to zero or near-zero emissions technologies, including the near-zero truck standard of 0.02 g/bhp-hr NOx established by CARB.

A4-9

Per the DEIR, the Project is expected to generate increased HHD truck trips. The District recommends that the following measures be considered by the City to reduce Project-related operational emissions:

- *Recommended Measure*: Fleets associated with operational activities utilize the cleanest available HHD trucks, including zero and near-zero (0.02 g/bhp-hr NOx) technologies.

- *Recommended Measure*: All on-site service equipment (cargo handling, yard hostlers, forklifts, pallet jacks, etc.) utilize zero-emissions technologies.

8) Reduce Idling of Heavy-Duty Trucks

The goal of this strategy is to limit the potential for localized PM2.5 and toxic air contaminant impacts associated with the idling of Heavy-Duty trucks. The diesel exhaust from idling has the potential to impose significant adverse health and environmental impacts.

A4-10

The Project is expected to generate increased HHD truck trips, and as such, truck idling will be limited to 5 minutes in accordance with the states inti-idling regulation per the DEIR. However, the District recommends the City consider the feasibility of implementing a more stringent 3-minute idling restriction and requiring appropriate signage and enforcement of idling restrictions.

9) Electric On-Site Off-Road and On-Road Equipment

The Project consists of warehouse development and may have the potential to result in increased use of off-road equipment (e.g., forklifts) and on-road equipment (e.g., mobile yard trucks with the ability to move materials). The District recommends that the DEIR include requirements for project proponents to utilize electric or zero emission off-road and on-road equipment.

A4-11

10) Vegetative Barriers and Urban Greening

There are single family residential units located south and south east of the Project. The District suggests the City consider the feasibility of incorporating vegetative barriers and urban greening as a measure to further reduce air pollution exposure on sensitive receptors (e.g., residential units).

While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, vegetative barriers have been shown to be an additional measure to potentially reduce a population's exposure to air pollution through the interception of airborne particles and the update of gaseous pollutants. Examples of vegetative barriers include, but are not limited to the following: trees, bushes, shrubs, or a mix of these. Generally, a higher and thicker vegetative barrier with full coverage will result in greater reductions in downwind pollutant concentrations. In the same manner, urban greening is also a way to help improve air quality and public health in addition to enhancing the overall beautification of a community with drought tolerant, low-maintenance greenery.

A4-12

11) On-Site Solar Deployment

It is the policy of the State of California that renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers by December 31, 2045. While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, the production of solar energy is contributing to improving air quality and public health. The District suggests that the City consider incorporating solar power systems as an emission reduction strategy for the Project.

A4-13

12) Electric Vehicle Chargers

To support and accelerate the installation of electric vehicle charging equipment and development of required infrastructure, the District offers incentives to public agencies, businesses, and property owners of multi-unit dwellings to install electric charging infrastructure (Level 2 and 3 chargers). The purpose of the District's Charge Up! Incentive program is to promote clean air alternative-fuel technologies and the use of low or zero-emission vehicles. The District recommends that the City and project proponents install electric vehicle chargers at project sites, and at strategic locations.

A4-14

Please visit www.valleyair.org/grants/chargeup.htm for more information.

A4-14 cont.

13) District Rules and Regulations

The District issues permits for many types of air pollution sources, and regulates some activities that do not require permits. A project subject to District rules and regulations would reduce its impacts on air quality through compliance with the District's regulatory framework. In general, a regulation is a collection of individual rules, each of which deals with a specific topic. As an example, Regulation II (Permits) includes District Rule 2010 (Permits Required), Rule 2201 (New and Modified Stationary Source Review), Rule 2520 (Federally Mandated Operating Permits), and several other rules pertaining to District permitting requirements and processes.

A4-15

The list of rules below is neither exhaustive nor exclusive. Current District rules can be found online at: www.valleyair.org/rules/1ruleslist.htm. To identify other District rules or regulations that apply to future projects, or to obtain information about District permit requirements, the project proponents are strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (559) 230-5888.

13a) District Rules 2010 and 2201 - Air Quality Permitting for Stationary Sources

Stationary Source emissions include any building, structure, facility, or installation which emits or may emit any affected pollutant directly or as a fugitive emission. District Rule 2010 (Permits Required) requires operators of emission sources to obtain an Authority to Construct (ATC) and Permit to Operate (PTO) from the District. District Rule 2201 (New and Modified Stationary Source Review) requires that new and modified stationary sources of emissions mitigate their emissions using Best Available Control Technology (BACT).

A4-16

This Project may involve equipment that is subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and may require District permits. Prior to construction, the Project proponent should submit to the District an application for an ATC. For further information or assistance, the project proponent may contact the District's SBA Office at (559) 230-5888.

13b) District Rule 9510 - Indirect Source Review (ISR)

The Project is subject to District Rule 9510 because it will receives a project-level discretionary approval from a public agency and will equal or exceed 25,000 square feet of light industrial space.

A4-17

The purpose of District Rule 9510 is to reduce the growth in both NOx and PM emissions associated with development and transportation projects from mobile and area sources; specifically, the emissions associated with the construction and subsequent operation of development projects. The ISR Rule requires developers to mitigate their NOx and PM emissions by incorporating clean air design elements into their projects. Should the proposed development project clean air design elements be insufficient to meet the required emission reductions, developers must pay a fee that ultimately funds incentive projects to achieve off-site emissions reductions. For this Project, the District has received and approved an AIA application (ISR project #20220195).

A4-17 cont.

13c) District Rule 9410 (Employer Based Trip Reduction)

The Project may be subject to District Rule 9410 (Employer Based Trip Reduction) if the project would result in employment of 100 or more "eligible" employees. District Rule 9410 requires employers with 100 or more "eligible" employees at a worksite to establish an Employer Trip Reduction Implementation Plan (eTRIP) that encourages employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes. Under an eTRIP plan, employers have the flexibility to select the options that work best for their worksites and their employees.

Information about District Rule 9410 can be found online at: www.valleyair.org/tripreduction.htm.

For additional information, you can contact the District by phone at 559-230-6000 or by e-mail at etrip@valleyair.org

A4-18

13d) District Rule 4601 (Architectural Coatings)

The Project may be subject to District Rule 4601 since it may utilize architectural coatings. Architectural coatings are paints, varnishes, sealers, or stains that are applied to structures, portable buildings, pavements or curbs. The purpose of this rule is to limit VOC emissions from architectural coatings. In addition, this rule specifies architectural coatings storage, cleanup and labeling requirements. Additional information on how to comply with District Rule 4601 requirements can be found online at: http://www.valleyair.org/rules/currntrules/r4601.pdf

A4-19

13e) District Regulation VIII (Fugitive PM10 Prohibitions)

The project proponent may be required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities as described in Regulation VIII, specifically Rule 8021 – *Construction, Demolition, Excavation, Extraction, and*

A4-20

Comment Letter A4 Cont.

Other Earthmoving Activities.

Should the project result in at least 1-acre in size, the project proponent shall provide written notification to the District at least 48 hours prior to the project proponents intent to commence any earthmoving activities pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). Also, should the project result in the disturbance of 5-acres or more, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials, the project proponent shall submit to the District a Dust Control Plan pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). For additional information regarding the written notification or Dust Control Plan requirements, please contact District Compliance staff at (559) 230-5950. **A4-20 cont.**

The application for both the Construction Notification and Dust Control Plan can be found online at:
https://www.valleyair.org/busind/comply/PM10/forms/DCP-Form.docx

Information about District Regulation VIII can be found online at:
http://www.valleyair.org/busind/comply/pm10/compliance_pm10.htm

13f) Other District Rules and Regulations

The Project may also be subject to the following District rules: Rule 4102 (Nuisance) and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations). **A4-21**

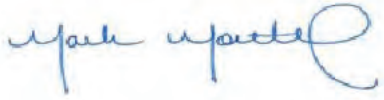
14) District Comment Letter

The District recommends that a copy of the District's comments be provided to the Project proponent. **A4-22**

If you have any questions or require further information, please contact Harout Sagherian by e-mail at Harout.Sagherian@valleyair.org or by phone at (559) 230-5860.

Sincerely,

Brian Clements
Director of Permit Services



Mark Montelongo
Program Manager

LETTER A4
San Joaquin Valley Air Pollution Control District
Mark Montelongo
Program Manager
May 18, 2023

Response A4-1: This comment provides an introduction to the comment letter and does not address the adequacy or completeness of the Recirculated Draft EIR; does not raise environmental issues; and does not request the incorporation of additional information relevant to environmental issues. Such comments do not require a response, pursuant to Section 15088(a) of the State CEQA Guidelines. No further response is necessary.

Response A4-2: This comment encourages the City to incorporate mitigation measures outlined in the South Central Fresno Community Emission Reduction Programs (CERP). As discussed on page 4.2-22 of the Recirculated Draft EIR, South Central Fresno and the City of Shafter are the first Valley communities selected by the California Air Resources Board (CARB) for investment of additional resources under Assembly Bill (AB) 617. The Valley Air District has established a steering committee for each of these communities comprising community residents, businesses, community advocates, and government representatives to assist in the development and implementation of community air monitoring and emission reduction programs. Fresno's CERP was adopted by the CARB and is now in the implementation phase.

As discussed on pages 4.2-31 through 4.2-37 of the Recirculated Draft EIR, a health risk assessment (HRA) was prepared for the proposed project to evaluate the potential impact on sensitive receptors from construction and operation of the proposed project. The HRA evaluates the potential health risk to people living and working near the proposed project associated with the exhaust of diesel-powered trucks and equipment. This analysis was performed in a manner consistent with the goals of the CERP to reduce emissions of pollutants that have been shown to have adverse impacts on public health, including fine particulate matter and toxic air contaminants (TACs) in impacted disadvantaged communities. As shown in Table 4.2.J of the Recirculated Draft EIR, and based on the results of the construction HRA, construction of the proposed project with implementation of Mitigation Measure AIR-2, which requires the use of Tier 4 construction equipment, would not exceed San Joaquin Valley Air Pollution Control District (SJVAPCD) thresholds and would not expose nearby sensitive receptors to substantial pollutant concentrations. This impact would be less than significant.

In addition, as shown in Table 4.2.K, health risk levels from project operation to the nearest sensitive receptors would also be below SJVAPCD thresholds. Further, as described on pages 4.2-36 and 4.2-37 of the Recirculated Draft EIR, the California Communities Environmental Health Screening Tool

(CalEnviroScreen) identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution. Pollution Burden scores for each census tract are derived from the average percentiles of the seven exposure indicators (ozone and particulate matter of 2.5 microns or less [$PM_{2.5}$] concentrations, diesel particulate matter [DPM] emissions, drinking water contaminants, pesticide use, toxic releases from facilities, and traffic density) and the five Environmental Effects indicators (cleanup sites, impaired water bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities). According to the CalEnviroScreen 4.0 Map,[1] the project site has a pollution burden percentile of 97. Surrounding areas have pollution burdens ranging from 56 to 100.0. In addition, as identified on pages 4.2-36 and 4.2-37 of the Recirculated Draft EIR, according to the Senate Bill (SB) 535 Disadvantaged Communities Map,[2] the project area is designated as an SB 535 disadvantaged community. Based on the CalEnviroScreen results, the project area is already at an elevated risk level. Therefore, although the maximum cancer risk for the maximally exposed individual (MEI) would be 6.154 in one million, which is less than the SJVAPCD's project risk criteria of 20 in one million. Any additional risk increase is cumulatively potentially significant. Therefore, to reduce the cumulative health risk, through implementation of Mitigation Measure AIR-3 identified in the Recirculated Draft EIR, the project applicant shall ensure that the proposed project would provide the infrastructure for AC and/or DC chargers for electric heavy-duty trucks, which would further reduce TAC emissions. The infrastructure provided shall accommodate a minimum of one future charger per 50,000 square feet. With implementation of Mitigation Measure AIR-3, cumulative health risk impacts would be less than significant related to the exposure of sensitive receptors to substantial pollutant concentrations during project operation. Therefore, Mitigation Measures AIR-2 and AIR-3 reduce the exposure of sensitive receptors to potential health risk impacts, and implementation of these measures is consistent with the goals of the CERP to reduce air exposure in impacted disadvantaged communities and consistent with CERP measures related to Heavy Duty Mobile Sources and Emissions Exposure and Land Use.

Response A4-3: This comment states that the California Emissions Estimator Model (CalEEMod) air quality modeling includes a 7.3-mile trip length, which could be underestimated for a warehouse project.

As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be

1 Office of Environmental Health Hazard Assessment (OEHHA). 2021. *CalEnviroScreen 4.0.* Website: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40 (accessed May 2021).

2 OEHHA. 2022. *SB 535 Disadvantaged Communities using CalEnviroScreen 4.0 results.* Website: https://experience.arcgis.com/experience/1c21c53da8de48f1b946f3402fbae55c/page/SB-535-Disadvantaged-Communities/.pdf (accessed October 2022).

configured for heavy industrial uses by tenants that have not been identified. As such, at this time, specific truck trip lengths are not yet known. As described further in Response B3-14, truck trips were not included in the VMT analysis, consistent with CEQA Guidelines Section 15064.3, subdivision (a), which states, "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project."

Further, as described in the SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI),[1] when quantifying project emissions, the latest approved models by the SJVAPCD should always be used for air quality analysis. As identified in the GAMAQI, the latest approved model available is CalEEMod. Therefore, consistent with SJVAPCD guidance, CalEEMod was used to evaluate project emissions. As described in the CalEEMod User Guide, CalEEMod utilizes widely accepted methodologies for estimating emissions combined with default data that can be used when site-specific information is not available.[2, 3] Sources of these methodologies and default data include but are not limited to the United States Environmental Protection Agency (USEPA) AP-42 emission factors, CARB vehicle emission models, and studies commissioned by California agencies such as the California Energy Commission (CEC) and the California Department of Resources Recycling and Recovery (CalRecycle). In addition, some local air districts provided customized values for their default data and existing regulation methodologies for use for projects located in their jurisdictions. When no customized information was provided, and no regional differences were defined for local air districts, statewide default values were utilized.

A majority of CalEEMod's default data associated with locations and land use are derived from surveys of existing land uses. For any project that substantially deviates from the types and features included in the surveys, site-specific data that are supported by substantial evidence should be used, if available. The model provides several opportunities for the user to change the defaults in the model; however, users are required to provide justification for all changes made to the default settings (e.g., reference more appropriate data sources), and no such data are available. The CalEEMod User Guide states that trip lengths are based on location and urbanization selected on the project characteristics screen and were supplied by the air districts or use a default average by the State, which is reported in Appendix D, Table 4.2 of

1 San Joaquin Air Pollution Control District. 2015. *Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI)*. March 19. Website: http://www.valleyair.org/transportation/GAMAQI.pdf (accessed May 2023).

2 California Air Pollution Control Officers Association. 2021. *California Emissions Estimator Model User's Guide.* May. Website: http://www.aqmd.gov/docs/default-source/caleemod/user-guide-2021/01_user-39-s-guide2020-4-0.pdf?sfvrsn=6 (accessed May 2023).

3 Detailed information regarding CalEEMod default assumptions can be found in the User's Guide: http://www.aqmd.gov/caleemod/user's-guide.

the CalEEMod User Guide. Appendix D, Table 4.2, of the CalEEMod User Guide shows that projects in urban areas within the SJVAPCD, such as the proposed project, would have a 7.3-mile trip length for commercial-nonwork trips and a 9.5-mile trip length for commercial-work trips. The trip lengths provided in Appendix D, Table 4.2, of the CalEEMod User Guide are based on trip length data provided by the SJVAPCD. Based on CalEEMod defaults and consistent with Appendix D, Table 4.2, of the CalEEMod User Guide, the CalEEMod modeling prepared for the proposed project assumes a 7.3-mile trip length for commercial-nonwork trips (41 percent of the project trips) and a 9.5-mile trip length for commercial-work trips (59 percent of the project trips). As such, since a project-specific truck trip length is not yet known, the use of CalEEMod defaults is appropriate for projects in the SJVAPCD and the city of Fresno and is consistent with standard practice.

Response A4-4: This comment recommends that an assessment be performed of the feasibility of implementing a Voluntary Emission Reduction Agreement (VERA). The VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of emissions increases through a process that develops, funds, and implements emission reduction projects. The SJVAPCD is the administrator of the emissions reduction projects and verifier of the successful mitigation effort. As demonstrated on pages 4.2-26 through 4.2-31 of the Recirculated Draft EIR, construction and operational emissions associated with the proposed project would not exceed the SJVAPCD's significance criteria. The proposed project would be required to implement Mitigation Measure AIR-1, which includes SJVAPCD Regulation VIII measures for reducing fugitive dust emissions. However, since the proposed project would not generate emissions that would exceed SJVACPD thresholds, a VERA would not be required to reduce emissions to a less than significant level.

Response A4-5: This comment recommends the inclusion of several industrial/warehouse emission reduction strategies in the Recirculated Draft EIR. As noted on page 4.2-30 of the Recirculated Draft EIR, operational impacts associated with implementation of the proposed project would not exceed the SJVAPCD's significance criteria and would result in a less than significant impact; the commenter has not presented evidence to the contrary. Therefore, the Recirculated Draft EIR properly determined that the proposed project would not result in any significant impacts related to operational air quality. As such, identification and analysis of mitigation measures or the emission reduction strategies suggested in the comment would not be required to reduce emissions to a less than significant level.

Response A4-6: This comment requests that the Recirculated Draft EIR include the methodology and calculations for developing truck travel emission factors in the HRA. This comment further states that the HRA did not consider air toxic

emissions from potential warehouse equipment (e.g., forklifts, yard trucks, emergency backup generators) from operational activities.

The commenter is referred to pages 4.2-34 and 4.2-35 and Appendix D of the Recirculated Draft EIR for a discussion of the methodology and calculations for truck travel emission factors used in the HRA. As described in the Recirculated Draft EIR, the idling emissions of trucks operating on the project site were modeled in accordance with standard protocols as point sources within the area sources representing the planned loading docks. EMFAC2021 was used to determine the emissions factors of idling and operating diesel trucks to determine the total emissions of DPM. While it is expected that the truck emissions rate will continue to decrease over time, an HRA only allows for a single emission rate to represent the entire 70-year exposure period. Emissions factors for the year 2022 were used as a conservative estimate of emissions, although the project is not expected to be fully operational until 2025. Therefore, the commenter is incorrect that the methodology and calculations for developing truck travel emission factors in the HRA were not included in the Revised Draft EIR.

As discussed on pages 4.2-34 and 4.2-35 of the Recirculated Draft EIR, the proposed project would generate a total of 1,920 daily trips, with up to 342 truck trips per day. The trucks would access the site by North Hughes Avenue, West Nielsen Avenue, and North Marks Avenue. As identified in the Project Description, Building 1 would provide 122 loading dock doors; Building 2 would provide 46 loading dock doors; Building 3 would provide 18 loading dock doors; and Building 4 would provide 15 loading dock doors. As such, the proposed project would have a total of 201 loading dock doors. As the project would contain multiple loading docks, off-site queuing of trucks is not anticipated. While the TAC emissions from gasoline-powered vehicles have a small health effect compared to DPM, the HRA includes both gasoline- and diesel-powered vehicle emissions to represent reasonable worst-case conditions. For the diesel exhaust emissions, it is sufficient to only consider the DPM (particulate matter less than 10 microns in diameter [PM_{10}] and $PM_{2.5}$) portions of the exhaust; all the TACs for the gasoline exhaust emissions are contained in the reactive organic gas (ROG) emissions. Using speciation data from CARB, the emission rates of the TAC components are derived from the total ROG emissions.

Further, as discussed on pages 4.2-34 and 4.2-35, project trucks would operate in two modes: stationary idling and moving on and off the site. The emissions from trucks while idling result in a much higher concentration of TACs at nearby sensitive receptors compared to the emissions from moving trucks. This is due to the dispersion of emissions that occurs with distance and with travel of the vehicle. For this HRA, the truck travel emissions were modeled as a series of volume sources along the on-site driveway, along

North Marks Avenue going north and south of the site driveway, and along West Nielsen Avenue going east and west of the site driveway, consistent with standard methodology. LSA assumed vehicles traveling on site would maneuver slowly, averaging approximately 5-15 miles per hour (mph), and that vehicles traveling on roadways would average 5–55 mph.

As discussed on page 3-13 of the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The use of equipment (e.g., forklifts, yard trucks, and emergency backup generators) would be dependent on specific tenants and is not being proposed as part of the project.

However, to be conservative, a supplemental analysis to evaluate potential emissions associated with on-site equipment (forklifts), emergency backup generators, and diesel fire pumps was conducted using CalEEMod. This supplemental analysis conservatively assumed that 40 diesel-powered forklifts would be used for 8 hours per day and that four diesel-powered 500-horsepower (HP) emergency backup generators and four diesel-powered 500 HP diesel fire pumps would be used for up to 50 hours per year. The results of the supplemental analysis, shown in Table A, below, indicate that the use of equipment, emergency backup generators, and diesel fire pumps would not exceed the significance criteria for annual ROG, nitrogen oxides (NO_X), carbon monoxide (CO), sulfur oxides (SO_X), PM_{10}, or $PM_{2.5}$ emissions. Because emissions would still be below the SJVAPCD's thresholds, operational emissions would still be considered less than significant.

Table A: Project Operation Emissions with Additional Stationary-Source Emissions (Tons per Year)

	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area-Source Emissions	4.2	<0.1	<0.1	0.0	<0.1	<0.1
Energy-Source Emissions	0.1	0.8	0.7	<0.1	0.1	0.1
Mobile-Source Emissions	0.5	3.1	5.7	<0.1	2.2	0.6
Off-Road-Source Emissions	0.5	4.3	5.9	<0.1	0.2	0.2
Stationary-Source Emissions	0.2	0.5	0.4	<0.1	<0.1	<0.1
Total Project Operation Emissions	**5.4**	**8.6**	**12.7**	**<0.1**	**2.5**	**0.9**
SJVAPCD Significance Threshold	**10.0**	**10.0**	**100.0**	**27.0**	**15.0**	**15.0**
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA (August 2023).
Note: Some values may not appear to add up correctly due to rounding.
CO = carbon monoxide
NO_X = nitrous oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gases
SJVAPCD = San Joaquin Valley Air Pollution Control District
SO_X = sulfur oxide

In addition, the SJVAPCD's GAMAQI states that TAC emissions are considered significant if an HRA shows an increased risk of greater than 20 in 1 million. The California Office of Environmental Health Hazard Assessment (OEHHA) *Air Toxic Hot Spots Program Risk Assessment Guidelines*[1] has determined that long-term exposure to diesel exhaust particulates poses the highest cancer risk of any TAC it has evaluated. In addition, CARB has also identified DPM emitted by off-road, diesel-fueled engines as a TAC.[2] As such, the TAC of concern would be DPM associated with the use of diesel engines during project construction. For risk assessment procedures, the OEHHA specifies that the surrogate for whole diesel exhaust is DPM. HRA analyses typically use PM_{10} emissions to represent DPM emissions, consistent with OEHHA guidance. As shown above, PM_{10} emissions, which are a surrogate for TAC emissions during construction, would result in pollutant emissions below the recommended thresholds, indicating that a significant health risk would also not occur.

However, it is important to note that the use of equipment, emergency backup generators, and diesel fire pumps would be dependent on specific tenants and is not being proposed as part of the project. Also, any equipment would be subject to permitting requirements and other regulations identified by CARB under Title 17, California Code of Regulations, Section 93155 (the Airborne Toxic Control Measure for Stationary Compression Ignition Engines), which sets strict emission standards for engines and limits on run times to reduce DPM and criteria pollutant emissions.

Response A4-7: The commenter is recommending an ambient air quality analysis (AAQA) using a dispersion model for projects that exceed 100 pounds per day of any pollutant. As shown in Table 4.2.H of the Recirculated Draft EIR, the proposed project would generate approximately 4.8 tons per year of ROG, 3.9 tons per year of NO_X, 6.4 tons per year of CO, less than 0.1 ton per year of SO_X, 2.3 tons per year of PM_{10}, and 0.7 ton per year of $PM_{2.5}$ emissions. When converted to pounds per day, the proposed project would generate approximately 26.3 pounds per day of ROG, 21.4 pounds per day of NO_X, 35.1 pounds per day of CO, 0.5 pound per day of SO_X, 12.6 pounds per day of PM_{10}, and 3.8 pounds per day of $PM_{2.5}$. As such, the proposed project's operational emissions would be well below 100 pounds per day for any pollutant. Therefore, an AAQA evaluation would not be required.

1 California Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. March. Website: https://oehhaca.gov/air/air-toxics-hot-spots (accessed August 2023).

2 California Air Resources Board (CARB). 2022. *Proposed Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation.* November 17. Website: https://ww2.arb.ca.gov/sites/default/files/barcu/board/res/2022/res22-19.pdf (accessed April 2023).

Response A4-8: This comment recommends an evaluation of heavy-duty (HHD) truck routing patterns for the project, with the aim of limiting exposure of residential communities and sensitive receptors to emissions. As discussed on page 4.2-35 of the Recirculated Draft EIR, truck travel emissions were modeled as a series of volume sources along the on-site driveway, along North Marks Avenue going north and south of the site driveway, and along West Nielsen Avenue going east and west of the site driveway. LSA assumed vehicles traveling on site would maneuver slowly, averaging approximately 5–15 mph, and that vehicles traveling on roadways would average 5–55 mph, consistent with standard methodology. As shown in Table 4.2-K of the Recirculated Draft EIR, operational health risks for the MEI would not exceed the SJVAPCD's thresholds. Further, as described in Response A4-2, although the maximum cancer risk for the MEI would be less than the project risk criteria of 20 in one million, to reduce the cumulative health risk, with implementation of Mitigation Measure AIR-3, the project applicant will ensure that the proposed project would provide the infrastructure for AC and/or DC chargers for electric heavy-duty trucks, which would further reduce TAC emissions. The infrastructure provided shall accommodate a minimum of one future charger per 50,000 square feet. With implementation of Mitigation Measure AIR-3, cumulative health risk impacts would be less than significant related to the exposure of sensitive receptors to substantial pollutant concentrations during project operation. In addition, as discussed on page 3-1 of the Recirculated Draft EIR, the project site is in close proximity to State Route 180 (SR-180), which is located approximately 0.3 mile south of the project site. In addition, there is a planned closure of the Belmont Avenue/State Route 99 (SR-90) on- and off-ramps. As such, it is expected that trucks would primarily access the project area using the Marks Avenue/SR-180 instead of traveling through residential communities. Therefore, further evaluation of truck routes is not necessary.

Response A4-9: This comment recommends the following measures to reduce project-related operational emissions: fleets associated with operational activities utilize the cleanest available HHD trucks, including zero and near-zero (0.02 grams per brake horsepower-hour [g/bhp-hr] NO_X) technologies; and all on-site service equipment (cargo handling, yard hostlers, forklifts, pallet jacks, etc.) utilize zero-emissions technologies.

As identified in Table 4.2-H of the Recirculated Draft EIR, the proposed project would not exceed the SJVAPCD's significance criteria for annual ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$ emissions. As such, operation of the proposed project would result in a less than significant impact related to a cumulatively considerable net increase of any criteria pollutant for which the proposed project region is in non-attainment under an applicable federal or State ambient air quality standard. Additionally, any future tenants that have HHD fleets would be required by law to meet the CARB's Statewide Truck and Bus

regulations, as well as the Advanced Clean Truck and forthcoming Advanced Clean Fleets regulations.

As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. Therefore, the use of such equipment would be dependent on specific tenants and is not being proposed as part of the project. However, as discussed in Response A4-6, to be conservative, a supplemental analysis to evaluate potential emissions associated with equipment, emergency backup generators, and diesel fire pumps was conducted using CalEEMod. This supplemental analysis conservatively assumed that 40 diesel-powered forklifts would be used for 8 hours per day and that four diesel-powered 500 HP emergency backup generators and four diesel-powered 500 HP diesel fire pumps would be used for up to 50 hours per year. The results of the supplemental analysis, shown in Table A, above, indicate that the use of equipment, emergency backup generators, and diesel fire pumps would not exceed the significance criteria for annual ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$ emissions. Because emissions would still be below the SJVAPCD's thresholds for this very conservative scenario, operational emissions would still be considered less than significant. However, it is important to note that the use of equipment, emergency backup generators, and diesel fire pumps would be dependent on specific tenants and is not being proposed as part of the project.

Response A4-10: This comment recommends the City consider the feasibility of implementing a more stringent 3-minute idling restriction and requiring appropriate signage and enforcement of idling restrictions.

As discussed on page 4.2-35 of the Recirculated Draft EIR, the idling emissions of trucks operating on the project site were modeled as point sources within the area sources representing the planned loading docks. EMFAC2021 was used to determine the emissions factors of idling and operating diesel trucks to determine the total emissions of DPM. As demonstrated in Table 4.2.K of the Recirculated Draft EIR, operational health risks for the MEI would not exceed the SJVAPCD's thresholds. Further, as described in Response A4-2, although the maximum cancer risk for the MEI would be less than the project risk criteria of 20 in one million, to reduce the cumulative health risk, with the implementation of Mitigation Measure AIR-3, the project applicant shall ensure that the proposed project would provide the infrastructure for AC and/or DC chargers for electric heavy-duty trucks, which would further reduce $PM_{2.5}$ and TAC emissions. The infrastructure provided will be required to accommodate a minimum of one future charger per 50,000 square feet. With implementation of Mitigation Measure AIR-3, cumulative health risk impacts would be less than significant related to the exposure of sensitive

receptors to substantial pollutant concentrations during project operation. Therefore, further mitigation, such as more stringent idling restrictions, would not be necessary.

Response A4-11: This comment recommends that the Recirculated Draft EIR include requirements for project proponents to utilize electric or zero-emission off-road and on-road equipment.

As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. Therefore, the use of such equipment would be dependent on specific tenants and is not being proposed as part of the project.

The results shown in Table 4.2.H of the Recirculated Draft EIR indicate the proposed project's operational emissions would not exceed the significance criteria for annual ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$ emissions. Therefore, operation of the proposed project would result in a less than significant impact related to a cumulatively considerable net increase of any criteria pollutant for which the proposed project region is in non-attainment under an applicable federal or State ambient air quality standard. As such, identification and analysis of mitigation measures is not required. In addition, as demonstrated in Response A4-6, a supplemental analysis to evaluate potential emissions associated with equipment, emergency backup generators, and diesel fire pumps was conducted using CalEEMod. The results of the supplemental analysis, shown in Table A, above, indicate that the use of equipment, emergency backup generators, and diesel fire pumps would not exceed the significance criteria for annual ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$ emissions. Because emissions would still be below the SJVAPCD's thresholds, operational emissions would still be considered less than significant. However, it is important to note that the use of equipment, emergency backup generators, and diesel fire pumps would be dependent on specific tenants and is not being proposed as part of the project.

In addition, as discussed above in Response A4-2, although the maximum cancer risk for the MEI would be less than the project risk criteria of 20 in one million to reduce the cumulative health risk, with the implementation of Mitigation Measure AIR-3, the project applicant shall ensure that the proposed project would provide the infrastructure for AC and/or DC chargers for electric heavy-duty trucks, which would further reduce TAC emissions. The infrastructure provided shall accommodate a minimum of one future charger per 50,000 square feet. With implementation of Mitigation Measure AIR-3, cumulative health risk impacts would be less than significant related to the exposure of sensitive receptors to substantial pollutant concentrations during project operation.

Response A4-12: This comment states that the City consider the feasibility of incorporating vegetative barriers and urban greening as a measure to further reduce air pollution exposure on sensitive receptors (e.g., residential units). As identified in Chapter 3.0, Project Description, of the Recirculated Draft EIR, consistent with City requirements, landscaping would be provided throughout the project site. The project would also include a vegetative plan that includes the planting of trees and other landscaping materials throughout the perimeter of the project site. In addition, as shown in Table 4.2.H of the Recirculated Draft EIR, the proposed project would not exceed the emission thresholds established by the SJVAPCD; therefore, additional mitigation is not required.

Response A4-13: This comment recommends that the City consider incorporating solar power systems as an emission reduction strategy for the project. As discussed in Chapter 3.0, Project Description, of the Recirculated Draft EIR, the proposed project would comply with the latest California Green Building Standards Code (CALGreen) building measures and 2022 Title 24 Building Energy Efficiency Standards (Title 24 Standards). The proposed project would also include cool roof materials. In addition, as described on pages 4.5-9 and 4.5-10 of the Recirculated Draft EIR, Pacific Gas and Electric (PG&E) is the private utility that would supply the proposed project's electricity and natural gas services. In 2021, a total of 50 percent of PG&E's delivered electricity came from renewable sources, including solar, wind, geothermal, small hydroelectric, and various forms of bioenergy.[1] PG&E reached California's 2020 renewable energy goal in 2017 and is positioned to meet the State's 60 percent by 2030 renewable energy mandate set forth in SB 100. In addition, PG&E plans to continue to provide reliable service to its customers and upgrade its distribution systems as necessary to meet future demand. As shown in Table 4.2.H, the proposed project would not exceed the emission thresholds established by the SJVAPCD. In addition, as demonstrated in Section 4.6, Energy, the proposed project would not result in inefficient, wasteful, and unnecessary consumption of energy and would not result in a significant energy impact. Therefore, additional mitigation, such as a solar power system emission reduction strategy, is not required.

Response A4-14: This comment recommends that the City and project proponents install electric vehicle chargers at project sites and at strategic locations. As discussed in Response A4-2, above, with the implementation of Mitigation Measure AIR-3, the project applicant shall ensure that the proposed project would provide the infrastructure for AC and/or DC chargers for electric HHD trucks, which would further reduce TAC emissions. The infrastructure provided shall accommodate a minimum of one future charger per 50,000

[1] Pacific Gas and Electric (PG&E). 2022. Exploring Clean Energy Solutions. https://www.pge.com/en_US/about-pge/environment/what-we-are-doing/clean-energy-solutions/clean-energy-solutions.page?WT.mc_id=Vanity_cleanenergy (accessed October 2022).

square feet. In addition, identified in the Project Description, the proposed project would comply with the latest CALGreen building measures and 2022 Title 24 Standards. The 2022 CALGreen code includes mandatory measures for non-residential projects, which apply to all new non-residential buildings, which include requirements for electric vehicle (EV) capable spaces in accordance with Table 5.105.5.3.1 of CALGreen.[1]

Response A4-15: This comment provides information on SJVAPCD rules and regulations and states that current District rules can be found online at: www.valleyair.org/rules/1ruleslist.htm. To identify other SJVAPCD rules or regulations that apply to future projects, or to obtain information about District permit requirements, the project proponents are strongly encouraged to contact the Small Business Assistance (SBA) Office at (559) 230-5888. This comment is noted. The proposed project would comply with all applicable SJVAPCD rules and regulations.

Response A4-16: This comment provides information on SJVAPCD applicable air quality permitting rules and regulations. The information provided in this comment is noted. The project does not propose any stationary sources of emissions.

Response A4-17: This comment states that the project is subject to SJVAPCD Rule 9510 (Indirect Source Review [ISR]) and that the District has received and approved an Air Impact Assessment (AIA) application (ISR project #20220195). The information provided in this comment is noted.

Response A4-18: This comment states that the project may be subject to SJVAPCD Rule 9410 (Employer Based Trip Reduction) if the project would result in employment of 100 or more "eligible" employees. SJVAPCD Rule 9410 requires employers with 100 or more "eligible" employees at a worksite to establish an Employer Trip Reduction Implementation Plan (eTRIP) that encourages employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes. This comment is noted. The proposed project would comply with all required SJVAPCD rules and regulations. In addition, as identified in Appendix H, Greenhouse Gas Reduction Plan Update Checklist, of the Recirculated Draft EIR, the project would have over 100 employees and would be required to comply with SJVAPCD Rule 9410.

Response A4-19: This comment states that the project may be subject to SJVAPCD Rule 4601 (Architectural Coatings) since it may utilize architectural coatings. This

[1] International Code Council. 2023. *2022 California Green Building Standards Code, Title 24, Part 11 (CALGreen) – 5.106.5.3Electric vehicle (EV) charging.* Website: https://codes.iccsafe.org/s/CAGBC2022P1/chapter-5-nonresidential-mandatory-measures/CAGBC2022P1-Ch05-SubCh5.1-Sec5.106.5.3 (accessed May 2023).

comment is noted. The proposed project would comply with all required SJVAPCD rules and regulations.

Response A4-20: This comment states that the project may be required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities, as described in Regulation VIII, specifically Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). This comment is noted. The proposed project would comply with all applicable SJVAPCD rules and regulations. In addition, as indicated in Section 4.2 Air Quality, the proposed project would be required to be consistent with SJVAPCD Regulation VIII.

Response A4-21: This comment states that the project may be subject to the following SJVAPCD rules: Rule 4102 (Nuisance) and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations). This comment is noted. The proposed project would comply with all required SJVAPCD rules and regulations.

Response A4-22: This comment provides a closing to the comment letter and does not question the adequacy of the analysis included in the Recirculated Draft EIR. No further response is required.

Comment Letter A5

City of FRESNO

DEPARTMENT OF PUBLIC UTILITIES

MEMORANDUM

DATE: December 14, 2022

TO: STEVEN MARTINEZ, Planner
Planning and Development Department

FROM: DEJAN PAVIC, PE, Projects Administrator
Department of Public Utilities – Utilities Planning & Engineering

SUBJECT: **DPU COMMENTS ON THE WATER SUPPLY ASSESSMENT (WSA) AND CHAPTERS 4.8 AND 4.11 OF ADMINISTRATIVE DRAFT ENVIRONMENTAL IMPACT REPORT (Admin Draft EIR) FOR SCANNELL OFFICE/WAREHOUSE PROJECT (2740 West Nielsen Avenue)**

In reference to the Water Supply Assessment ("WSA") and Chapters 4.8 and 4.11 of the Administrative Draft Environmental Impact Report ("Admin Draft EIR") for the proposed Scannell Office/Warehouse Project (at 2740 West Nielsen Avenue) ("Project") we offer the following comments: A5-1

Water Supply Assessment

1. General comment:

   The proposed Project-specific water demand is first mentioned on Page 43 (in the title), then discussed on Pages 45, 46, and 49: we recommend providing a 'summary statement' somewhere close to the beginning of the document. A5-2

2. WSA pg. 5, third paragraph:

   Various editions/additions related to the existing and proposed water and sewer mains (see the attached hand-marked PDF of pg. 5). A5-3

3. WSA pg. 6, first paragraph:

   Clarification on the data extracted from the 2020 UWMP (see the attached hand-marked PDF of pg. 6). A5-4

4. WSA pg. 18, bottom of third paragraph:

   References to the 29.0 percent cap and 'revised' City/FID agreement (see the attached hand-marked PDF of pg. 18). A5-5

5. WSA pg. 45, last two paragraphs:

   Please provide Project-specific water demand estimates (see the attached hand-marked PDF of pg. 45). A5-6

6. WSA pg. 46, bottom of paragraph:

   The statement of adequacy to be confirmed once the Project-specific water demand estimates are provided (see pg. 45 comment above) (see the attached hand-marked PDF of pg. 46). **A5-7**

7. WSA pg. 49, bottom of paragraph:

   The statement of adequacy to be confirmed once the Project-specific water demand estimates are provided (see pgs. 45 and 46 comments above) (see the attached hand-marked PDF of pg. 49). **A5-8**

Admin Draft EIR Chapter 4.8

1. Ch 4.8 pg. 4.8-1, first paragraph:

   Clarification on the data extracted from the 2020 UWMP; to 'match' WSA pg. 6 comment (see the attached hand-marked PDF of pg. 4.8-1). **A5-9**

2. Ch 4.8 pg. 4.8-14, third full paragraph:

   The statement of adequacy to be confirmed once the Project-specific water demand estimates are provided in WSA (see WSA pg. 45 comment above) (see the attached hand-marked PDF of pg. 4.8-14). **A5-10**

3. Ch 4.8 pg. 4.8-17, last full paragraph:

   Please provide Project-specific water demand estimates to 'match' WSA pg. 45 comments (see the attached hand-marked PDF of pg. 4.8-17). **A5-11**

4. Ch 4.8 pg. 4.8-18, first full paragraph:

   The statement of adequacy to be confirmed once the Project-specific water demand estimates are provided in WSA (see WSA pg. 45 comment above) (see the attached hand-marked PDF of pg. 4.8-18). **A5-12**

Admin Draft EIR Chapter 4.11

1. Ch 4.11 pg. 4.11-1, first paragraph:

   Clarification on the data extracted from the 2020 UWMP; to 'match' WSA pg. 6 comment (see the attached hand-marked PDF of pg. 4.11-1). **A5-13**

2. Ch 4.11 pg. 4.11-14, first and third full paragraphs:

   Various editions/additions related to the existing and proposed water and sewer mains; to 'match' WSA pg. 5 (see the attached hand-marked PDF of pg. 4.11-14). **A5-14**

Comment Letter
A5
Cont.

3. Ch 4.11 pg. 4.11-18, first paragraph:

   Please provide Project-specific water demand estimates to 'match' WSA pg. 45 comments (see the attached hand-marked PDF of pg. 4.11-18). **A5-15**

4. Ch 4.11 pg. 4.11-19, first full paragraph:

   The statement of adequacy to be confirmed once the Project-specific water demand estimates are provided in WSA (see WSA pg. 45 comment above) (see the attached hand-marked PDF of pg. 4.11-19). **A5-16**

5. Ch 4.11 pgs. 4.11-20 and 21, last paragraph beginning on pg. 4.11-20 and continuing on pg. 4.11-21:

   The statement of adequacy to be confirmed once the Project-specific water demand estimates are provided in WSA (see WSA pg. 45 comment above) (see the attached hand-marked PDF of pgs. 4.11-20 and 21). **A5-17**

Comment Letter
A5
Attach. #1

As shown in Figure 3, vehicular access to the site would be provided by North Hughes Avenue, West Nielsen Avenue, and North Marks Avenue.

A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining 188 spaces would be dedicated for trailers, would be located along the eastern and western edges of the project site, and would be behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.

Consistent with City requirements, drought-tolerant landscaping would be provided throughout the project site.

The project site is located in an urban area and is currently served by existing utilities, including: water, sanitary sewer, storm drainage, electricity, and natural gas infrastructure. Water service to the project site would be provided by the City. New water within the project site would connect to the existing 14-inch main located on North Marks Avenue and the 16-inch main on North Hughes Avenue. The project would also include an on-site 12-inch main. The City would provide wastewater collection and treatment for the proposed project, and maintains an existing 12- to 18-inch line located in West Nielsen Avenue. The proposed project includes the installation of a new on-site 8-inch wastewater line that would connect to the City's existing line. The proposed project would include construction of a new curb and gutter along North Marks Avenue, West Nielsen Avenue, and North Hughes Avenue that would connect to the existing Fresno Metropolitan Flood Control District (FMFCD) stormwater system.

Electricity and natural gas services to the site are provided by Pacific Gas and Electric Company (PG&E). Existing underground utility connections and gas mains provide electricity and gas to the project site. New underground electrical lines would be installed.

Construction of the proposed project is anticipated to occur in two phases over a total 24-month period. The first phase would include the construction of Buildings 2, 3, and 4 and would occur for 12 months. The second phase would include the construction of Building 1 and would occur for 12 months. The proposed project would comply with City standards, including the City's current building code, landscape standards, and lighting standards. In addition, the proposed project would be graded similar to other developments throughout Fresno.

WATER SUPPLY RIGHTS AND ENTITLEMENTS

The City of Fresno relies on groundwater from the North Kings Subbasin; surface water from the Central Valley Project (CVP), through a contract with the United States Bureau of Reclamation (USBR); Kings River water, through a contract with Fresno Irrigation District (FID); and recycled water to meet current and future water demands. The following pages are extracted directly from the 2020 UWMP (Pages 6-1 through 6-32) in satisfaction of Water Code sections 10910(A)(1) and 10910(D)(2). This information is applicable to the entire City of Fresno municipal water service area, including the project site.

GROUNDWATER

The City overlies the Kings Subbasin, which is part of the greater San Joaquin Valley Groundwater Basin. The City is one of many water purveyors that use groundwater from the Kings Subbasin.

The City has a network of over 270 municipal wells and currently operates approximately 202 municipal supply wells within the Kings Subbasin. Until late 2004, the City relied solely on groundwater to meet the water demands. The City's desire is to continue to use groundwater within a larger conjunctive use program that maximizes its existing water rights and surface water supply sources.

Basin Description

The Department of Water Resources (DWR) has partitioned the State into 10 major hydrologic regions (also referred to as "basins") and then further divided each basin into subbasins. The City is located in the Kings Subbasin (DWR Groundwater Subbasin Number 5-22.08) and lies within the larger San Joaquin Valley Groundwater Basin in the Central Valley of California. The Kings Subbasin covers approximately 1,530 square miles.

Basin Location

The San Joaquin Valley Groundwater Basin is bounded to the north by the Sacramento-San Joaquin Delta and Sacramento Valley, to the east by the Sierra Nevada, to the south by the San Emigdio and Tehachapi mountains, and to the west by the Coast Ranges. The Kings Subbasin, located within the southern half of the San Joaquin Valley Groundwater Basin, is bounded to the north by the San Joaquin River, to the east by the alluvium-granite rock interface of the Sierra Nevada foothills, to the south by the southern fork of the Kings River, and to the west by the Delta-Mendota and Westside Subbasins. The Kings Subbasin is split into seven Groundwater Sustainability Agency (GSA) management areas, with Fresno located in the North Kings GSA. Figure 6-1 of the 2020 UWMP illustrates the location of Fresno within the Kings Subbasin.

Comment Letter
A5
Attach. #1

restoration flows, unreleased recirculation flows, and uncontrolled season flows. The complexities of each water type are beyond the scope of this report but are mentioned here to reflect the other water acquisition opportunities afforded to the City through this contract. The San Joaquin River water supply has excellent water quality as it originates from snowmelt from the high Sierras and has not been detrimentally impacted.

Fresno Irrigation District Supply

FID is one of 28 agencies that receives an entitlement of water from the Kings River through the Kings River Water Association. Water entitlements for Kings River Water Association contract members are determined based on a methodology that was initially developed in 1917–1919 to establish entitlements for early claimed rights holders. The methodology was based on historic mean daily natural flow conditions at Piedra, which is approximately 3 miles downstream from the then yet to be built Pine Flat Dam and "at the heart of Kings River uses, regulation, and stream control and storage."

On December 20, 2016, the Revised, Amended, and Restated Cooperative Agreement was executed between FID and the City for Water Utilization and Conveyance (2016 FID Agreement). The 2016 FID Agreement replaces the 1976 Cooperative Agreement and ends in 2035. The agreement identifies the City's contracted percentage of FID's Kings River water based on the City's water service area located within the FID service area as a percentage of the FID land area. FID land area varies slightly every year because it is dependent on the acreage receiving water deliveries for that year rather than the total acreage within FID (roughly 200,000 acres). As the City incorporates new land area into its service area, the percentage of FID supply increases. However, the 2016 FID Agreement sets the maximum percentage as 29.0 percent, although the City's service area is anticipated to expand and encompass more than 29.0 percent of FID's service area between 2025 and 2030. In 2020, the City's percentage of overall FID Kings River deliveries was 25.79 percent. The FID Agreement identifies that the 29.0 percent maximum was based on moderate growth in Growth Area 1 of the City's SOI (shown in Exhibit C in the 2016 Agreement). As such, the supply projections in this plan limit the City's FID supply with the 29.0 percent cap, but if the agreement were revised in the future the City's FID allocation percentage could grow beyond 29.0 percent as the water service area expands.

amended

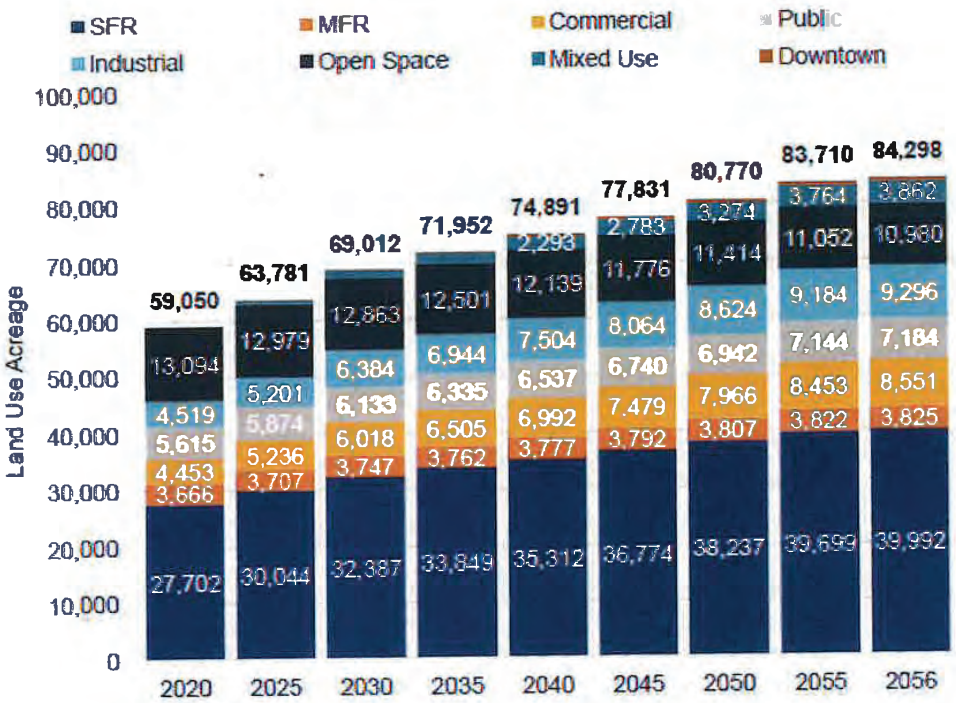
?

not relevant to this project (delete or revise as shown)

The City has historically not used all of its available allocation in any given year, although it pays a flat rate for its total allocation regardless of use. Water unused by the City is reallocated by FID to its other customers.

The City's potential supply from FID was summarized using actual Kings River deliveries for CYs 1964–2019, then categorized by the same WY types used for the USBR Friant supply. The range and average FID deliveries by WY type are shown in Table C. The average of all 56 CY delivery totals of FID Kings River deliveries is 452,541 AF, which equates to an average potential City supply of 131,237 AF, assuming the maximum 29.0 percent City supply

Comment Letter
A5
Attach. #1



Source: 2020 Urban Water Management Plan, Figure 4-3 (City of Fresno 2021).

Figure 7: Existing and Projected Land Use

Assumptions

Project-specific water demand was calculated using the methodology from the 2020 UWMP, as described above, based on the following assumptions:

- Figure 7 above (Figure 4-3 of the 2020 UWMP) indicates there will be 5,201 acres of industrial uses in Fresno in 2025.
- Table M above (Table 4-6 of the 2020 UWMP) indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.

Therefore, it is assumed that industrial land uses, such as the proposed project, will demand approximately 1.42 AFY per acre in 2025.

For planning purposes. Provide project-specific water demand

Proposed Project Water Demand

The total project site is 48.03 acres. Therefore, based on the assumptions identified above, the proposed project is estimated to demand approximately 68.2 AFY.

APPLICABILITY OF THE URBAN WATER MANAGEMENT PLAN

The proposed project site is included in the land use area covered by the City's 2020 UWMP. Figure 8 shows the location of the project site in relation to the water service area boundaries covered by the 2020 UWMP. In addition, Figure 9 shows the proposed project's designation of Heavy Industrial. As shown in Table 4-3 of the 2020 UWMP, land use acreages and water demand in the 2020 UWMP were based on the City's General Plan land use designations for 2020 and buildout in 2056. As such, as shown in Figure 9, the acreage associated with the proposed project was assumed Industrial in the 2020 UWMP; therefore, it is assumed that demand for water was accounted for in the 2020 UWMP. There is no evidence, in consideration of the calculated project water demand, that such demand exceeds that estimated in the 2020 UWMP. The adequacy of the water supply for the project is thus consistent with the basis of the analysis of the City's water supply in the adopted 2020 UWMP.

to be confirmed once project-specific water demand is addressed

ASSESSMENT FINDINGS

to be confirmed & (see pages 45 and 46)

It is concluded that the City of Fresno's water system has sufficient capacity to supply the proposed 2740 West Nielsen Avenue Office/Warehouse Project and other projected demands within the City's service area through the year 2045. Therefore, it is recommended that the City of Fresno Water Division approve this assessment and forward the report to the City of Fresno Planning Department for inclusion in the CEQA documentation for the proposed project.

Comment Letter
A5
Attach. #2

note: info from 2020 UWMP (on 14 WSA pg. 6

4.8 HYDROLOGY AND WATER QUALITY

This section evaluates the potential environmental effects related to hydrology and water quality associated with the proposed project. This section also addresses local, State, and federal regulations as they pertain to project impacts on hydrology and water quality. A Water Supply Assessment (WSA)[1] was prepared for the proposed project (Appendix K). The WSA contains information from the City of Fresno 2020 Urban Water Management Plan (UWMP).[2]

4.8.1 Environmental Setting

The following discussion outlines the hydrological conditions of the City of Fresno.

4.8.1.1 Precipitation

Precipitation in the City of Fresno occurs mostly as rain during the months of November through April. Climate data collected from 1948 to 2016 shows that annual rainfall averaged 10.89 inches, but is variable. Recorded annual rainfall has ranged from a low of 3.01 inches in 2013 to a high of 21.61 inches in 1983.[3]

4.8.1.2 Hydrologic Setting

The City of Fresno is located in the Kings Subbasin and lies within the larger San Joaquin Valley Groundwater Basin in the Central Valley of California. The Kings Subbasin covers approximately 1,530 square miles. The San Joaquin Valley Groundwater Basin is bounded to the north by the Sacramento-San Joaquin Delta and Sacramento Valley, to the east by the Sierra Nevada, to the south by the San Emigdio and Tehachapi mountains, and to the west by the Coast Ranges. The Kings Subbasin, located within the southern half of the San Joaquin Valley Groundwater Basin, is bounded to the north by the San Joaquin River, to the east by the alluvium-granite rock interface of the Sierra Nevada foothills, to the south by the southern fork of the Kings River, and to the west by the Delta-Mendota and Westside subbasins. The Kings Subbasin is split into seven Groundwater Sustainability Agency (GSA) management areas, with Fresno located in the North Kings GSA.

4.8.1.3 Groundwater

The City of Fresno is underlain by the Kings River Subbasin, which, along with six other subbasins, comprises the San Joaquin Valley Groundwater Basin. In turn, the San Joaquin Basin is located within the Tulare Lake Hydrologic Region. The Tulare Lake Hydrologic Region spans approximately 10.9 million acres (17,000 square miles) and includes most of Fresno County. The Region encompasses the southern one-third of the Central Valley Regional Water Quality Control Board (RWQCB) jurisdiction.

1 LSA. 2022. *SB 610 Water Supply Assessment, 2740 West Nielsen Avenue Office/Warehouse Project, Fresno, California*. July.
2 Fresno, City of. 2021. *City of Fresno 2020 Urban Water Management Plan*. June.
3 Western Regional Climate Center. Period of Record Monthly Climate Summary, Fresno Yosemite Intl AP, California (043257). Average Total Precipitation (inches). Website: wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3257 (accessed October 2022).

use changes and development project proposals on water supply facilities by assigning fixed demand allocations to each parcel by land use as currently zoned or proposed to be rezoned.

The City relies on groundwater and surface water supplies to meet water demands. In 2006, Fresno updated its Metropolitan Water Resources Management Plan designed to ensure the Fresno metro area has a reliable water supply through 2050. The plan implements a conjunctive use program, combining groundwater, treated surface water, artificial recharge, and an enhanced water conservation program.

General Plan policies require the City to maintain a comprehensive conservation program to help reduce per capita water usage, and includes conservation programs such as landscaping standards for drought tolerance, irrigation control devices, leak detection and retrofits, water audits, public education and implementing U.S. Bureau of Reclamation Best Management Practices for water conservation to maintain surface water entitlements.

to be confirmed once WSA finalized

As described in the WSA prepared for the proposed project[5], the City has concluded that the City of Fresno's water system has sufficient capacity to supply the proposed 2740 West Nielsen Avenue Office/Warehouse Project and other projected demands within the City's service area through the year 2045. Additionally, implementation of the Fresno General Plan policies, the Kings Basin Integrated Regional Water Management Plan (IRWMP)[6], the City of Fresno UWMP, the Fresno-Area Regional Groundwater Management Plan[7], and the City of Fresno Metropolitan Water Resource Management Plan would address the continued provision of an adequate, reliable, and sustainable water supply for the proposed project. As such, the impact would be less than significant and no mitigation is required.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.8.3 **Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:**

Result in Substantial Erosion or Siltation On- or Off-Site? Erosion is a natural process in which soil is moved from place to place by wind or from flowing water. The effects of erosion within the project area can be accelerated by ground-disturbing activities associated with development. Siltation is the settling of sediment to the bed of a stream or lake which increases the turbidity of water. Turbid water can have harmful effects to aquatic life by clogging fish gills, reducing spawning habitat, and suppress aquatic vegetation growth.

5 LSA. 2022. SB 610 Water Supply Assessment, 2740 West Nielsen Avenue Office/Warehouse Project, Fresno, California. July.

6 Kings Basin Water Authority. 2018. Kings Basin Integrated Regional Water Management Plan. Website: https://www.kingsbasinauthority.org/governance/governing-documents/irwmp/ (accessed September 6, 2022).

7 Fresno Area Regional Groundwater Management Plan. 2006. December. Website: http://www.fresnofloodcontrol.org/wp-content/uploads/2019/10/Fresno-Area-Regional-GWMP-Final.pdf (accessed September 6, 2022).

Comment Letter
A5
Attach. #2

Threshold 4.8.5 **Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

The City is located within the Kings Subbasin, which is part of the larger San Joaquin Valley Groundwater Basin. The planning documents regarding water resources for the City include Kings IRWMP , the City of Fresno UWMP, the Fresno-Area Regional Groundwater Management Plan , and the City of Fresno Metropolitan Water Resource Management Plan. As noted above, the proposed project would be required to adhere to NPDES drainage control requirements during construction and operation as well as to FMFCD drainage control requirements. As a result, the proposed project would not include any other waste discharges that could conflict with the IRWMP.

In addition, as discussed in the WSA prepared for the proposed project, the potable demand projections in the 2020 UWMP for normal water use utilize land use-based projections. Under this methodology, existing land use and demand was accounted separately from future land use and demand. This allows different demand factors to be applied to current land use areas and future land use areas. Future land use areas represent future customers and developments that are expected to be more water-efficient than existing land uses and buildings due to the California Plumbing Code (CPC) and use of higher-efficiency appliances and landscapes.

The existing and future land use acreage was sourced from the City's Geographic Information System (GIS) database and the City's General Plan. The existing land use shapefile and associated acreage for each land use classification were used to represent 2020 land use data. Areas not served by the City were excluded from the existing land use shapefile. The future land use shapefile corresponds with the planned land use at buildout as described in the City's General Plan representing the year 2056. Although the City does not have any plans to serve areas currently served by others within the City limits, all areas within the City's SOI were assumed to be served by the City by buildout for conservative planning purposes.

The land use acreage between 2020 and 2056 was estimated in 5-year increments based on areas planned to be developed by 2030 from the City's Planning Department, and by linearly interpolating the remainder of the change in acreage for each land use category between 2030 and 2056. Project-specific water demand was calculated using the methodology from the 2020 UWMP, as described above, based on the following assumptions:

- The 2020 UWMP indicates there will be 5,201 acres of industrial uses in Fresno in 2025; and
- The 2020 UWMP indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.

Therefore, it is assumed that industrial land uses, such as the proposed project, will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres. Therefore, based on the assumptions identified above, the proposed project is estimated to demand approximately 68.2 AFY.

SEE WSA pg. 45

The project site is included in the land use area covered by the City's 2020 UWMP and is designated as Heavy Industrial in the City's General Plan. Land use acreages and water demand in the 2020

UWMP were based on the City's General Plan land use designations for 2020 and buildout in 2056. As such, the acreage associated with the proposed project was assumed Industrial in the 2020 UWMP; therefore, it is assumed that demand for water was accounted for in the 2020 UWMP. There is no evidence, in consideration of the calculated project water demand, that such demand exceeds that estimated in the 2020 UWMP. The adequacy of the water supply for the project is thus consistent with the basis of the analysis of the City's water supply in the adopted 2020 UWMP.

The City has concluded that the City of Fresno's water system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045. Therefore, the proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan and impacts would be less than significant. No mitigation is required.

to be confirmed once WSA finalized

Level of Significance Without Mitigation: Less Than Significant Impact.

4.8.3.3 Cumulative Impacts

Buildout of the proposed project, along with construction and operation of other projects in the vicinity of the project site, would increase the amount of paved impervious surfaces within the City. This increase in impervious surfaces would increase stormwater runoff rates and volumes over those that occur from undeveloped land. This increase in runoff would have the potential to increase the amount of polluted runoff; however, all development projects within the Fresno-Clovis area would be required to comply with the MS4 Permit that requires the implementation of water quality and watershed protection measures. Compliance with the MS4 Permit would reduce potential impacts from cumulative projects to less than cumulatively significant. Since the development under the proposed project would also need to comply with the MS4 Permit, the Construction General Permit, a SWPPP, and specific policies of the General Plan identified above, the project's contribution to potential cumulative impacts would not be cumulatively considerable, and the project would result in a less than significant cumulative impact to stormwater.

The Kings Subbasin is in overdraft condition due to pumping for agricultural and urban uses. Growth in the subbasin will increase demands for groundwater pumping, potentially resulting in continued drawdown of water levels leading to localized cones of depression, changes in groundwater flow direction, concentration of contaminants, and land subsidence. This is a regional problem that is being addressed through several means including the formation of GSA's and the development of GSPs. The proposed project would implement applicable Fresno General Plan policies, the IRWMP, the City of Fresno 2020 UWMP, the Fresno-Area Regional Groundwater Management Plan, and the City of Fresno Metropolitan Water Resource Management Plan, which contain strategies to ensure adequate, reliable, and sustainable water supply for the City of Fresno. Additionally, as described above and in the WSA prepared for the proposed project, the City's water system has sufficient capacity to service the proposed project, as well as meet other projected demands in the City's service area. Therefore, the project's contribution to potential cumulative impacts to the Kings Subbasin would not be cumulatively considerable and the project would result in a less than significant cumulative impact to groundwater management in the Kings Subbasin.

Level of Significance Without Mitigation: Less Than Significant Impact.

NOTE: MR Draft 2020 UWMP (as in WSA) pg. 6

4.11 UTILITIES AND SERVICE SYSTEMS

This section addresses potential impacts to utilities and service systems including water supply, wastewater, stormwater, and solid waste resulting from implementation of the proposed project. The analysis in this section related to water supply is based on findings of the Water Supply Assessment[1] prepared for the proposed project (Appendix K). The Water Supply Assessment (WSA) was prepared pursuant to the requirements of Senate Bill (SB) 610, which requires public water agencies, parties, or purveyors that may supply water to certain proposed development projects to prepare a WSA for use in environmental documentation for such projects, pursuant to CEQA. The WSA contains information from the City of Fresno 2020 Urban Water Management Plan (UWMP).[2]

4.11.1 Environmental Setting

The following outlines the utilities and service systems in the Fresno area and in the vicinity of the project site.

4.11.1.1 Water Purveyor and System

The City's water system consists of about 1,860 miles of distribution and transmission mains, 260 municipal groundwater wells, three surface water treatment facilities (SWTFs) with current rated capacities ranging from 4 to 54 MGD, five water storage facilities with pump stations, including one at each of the SWTFs plus two in the distribution system, and three booster pump facilities. As of the close of the 2020 calendar year, the City has over 139,500 residential, commercial, industrial, and institutional water service connections and produced nearly 122,000 AF of water.

In addition to the City's water system, there are four independent water systems located within the City limits, including Bakman Water Company, Pinedale County Water District, California State University Fresno, and Park Van Ness Mutual Water Company. These independent water systems have their own water supplies, and do not receive water from the City, with the exception of a portion of the Pinedale County Water District east of Highway 41 and south of Herndon Avenue.

The City has emergency interties with the City of Clovis and California State University, Fresno, that provides additional water supply flexibility.

4.11.1.2 Water Demand

The City's 2020 UWMP estimated future water demands based on land use demand factors using 2018 metered consumption data. These demand factors were applied to the 2020 land use acreage by category to develop the demand projection beginning in 2020. Demand factors for land uses that grow over time and represent new developments were assigned a lower demand factor than the demand factors for existing development. Additionally, demand factors were assumed to slowly reduce over time due to passive conservation, which includes the replacement of older water fixtures and appliances with more efficient types. Table 4.11.A shows the projected annual water use by land use type for 2025, 2030, 2035, 2040, and 2045.

1 LSA. 2022. *SB 610 Water Supply Assessment, 2740 West Nielsen Avenue Office/Warehouse Project, Fresno, California*. July.

2 Fresno, City of. 2021. *City of Fresno 2020 Urban Water Management Plan*. June.

would not require the construction of new or expanded water conveyance, treatment, or collection facilities with respect to construction activities. Therefore, the impacts on water facilities during construction would be less than significant, and no mitigation is required.

modify per WSA comments

Once operational, water service to the project site would be provided by the City. New water within the project site would connect to the existing 14-inch main located on North Marks Avenue and the 16-inch main on North Hughes Avenue. The project would also include an on-site 12-inch main. Extension of the water infrastructure from the adjacent streets into the project site would be a routine part of the construction process analyzed in this EIR and would not have a material environmental impact. The water facility improvements would be limited to the project site and connection points to the adjacent, existing facilities. In addition, as described further in Threshold 4.11.2 below, the City has concluded that the City of Fresno's water system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045. Therefore, the proposed project would not require or result in the construction of new water facilities, or the expansion of existing facilities, which could cause a significant environmental impact, and the impact would be less than significant. No mitigation is required.

Wastewater. No significant increase in wastewater flows is anticipated as a result of construction activities on the project site. Sanitary services during construction would be provided by portable toilet facilities, which transport waste off-site for treatment and disposal. Therefore, during construction, potential impacts to wastewater treatment and wastewater conveyance infrastructure would be less than significant, and no mitigation would be required.

modify per WSA comments

Once operational, the City would provide wastewater collection and treatment for the proposed project, and maintains an existing 12- to 18-inch line located in West Nielsen Avenue. The proposed project includes the installation of a new on-site 8-inch wastewater line that would connect to the City's existing line. Any sewer improvements associated with the proposed project would be designed and constructed to City standards. In addition, the City of Fresno Department of Public Utilities has determined that adequate sanitary sewer and wastewater services would be available to serve the proposed project subject to the payment of any applicable connection charges and/or fees and extension of services in a manner that is compliant with the Department of Public Utilities standards, specifications, and policies. ***[City – this statement was included in the Public Review Draft IS/MND, can you provide a citation?]*** As such, the proposed project would result in less than significant impacts related to the construction or expansion of wastewater treatment facilities. Therefore, the proposed project would not require or result in the construction of new wastewater treatment or collection facilities, or the expansion of existing facilities, which could cause a significant environmental impact, and the impact would be less than significant. No mitigation is required.

refer to WSA

Stormwater and Drainage Facilities. During construction activities, soil would be exposed and disturbed, drainage patterns would be temporarily altered during grading and other construction activities, and there would be an increased potential for soil erosion and siltation compared to existing conditions. Additionally, during a storm event, soil erosion and siltation could occur at an accelerated rate. As discussed in Section 4.8, Hydrology and Water Quality, the proposed project would be required to comply with applicable permits and preparation of a SWPPP to identify construction BMPs to be implemented as part of the proposed project to reduce impacts to water

Therefore, it is assumed that industrial land uses, such as the proposed project, will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres. Therefore, based on the assumptions identified above, the proposed project is estimated to demand approximately 68.2 AFY.

see WSA pg. 45

The project site is included in the land use area covered by the City's 2020 UWMP and is designated as Heavy Industrial in the City's General Plan. Land use acreages and water demand in the 2020 UWMP were based on the City's General Plan land use designations for 2020 and buildout in 2056. As such, the acreage associated with the proposed project was assumed Industrial in the 2020 UWMP; therefore, it is assumed that demand for water was accounted for in the 2020 UWMP. There is no evidence, in consideration of the calculated project water demand, that such demand exceeds that estimated in the 2020 UWMP. The adequacy of the water supply for the project is thus consistent with the basis of the analysis of the City's water supply in the adopted 2020 UWMP.

The City has concluded that the City of Fresno's water system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045. As such, the proposed project would not necessitate new or expanded water entitlements, and the City would be able to accommodate the increased demand for potable water.

The WSA also discusses projected supplies and demands for a normal year, single dry year, and 5-year consecutive drought in the City. The City is projected to have greater than 100,000 AF of available supply after meeting demands in normal years. During single dry years, the City's surface water supplies and groundwater recharge of raw surface water are reduced, but all projected potable demands would be met. During a 5-year drought, the City is projected to meet all demands with existing supplies, although non-potable water used for groundwater recharge is reduced in years 3 and 4 of a 5-year drought.

The City currently balances its surface water supplies and groundwater based on minimum production for operation of the City's water treatment facilities and minimum groundwater pumping to manage and control contamination plumes and prevent their spread. The minimum operation conditions typically occur in the low-demand winter months, and the City can increase surface water production during peak-demand months when surface water is available. In normal and wet years, the City intends to rely on more surface water supply and recharge raw surface water to replenish the groundwater basin and build storage for dry years. In dry years, when surface water is less available, the City will ramp up well production to meet demands. The City is expected to continue this supply management strategy in the future.

Additionally, the City's Water Shortage Contingency Plan (WSCP) is used to provide guidance to the City's governing body and staff and the public by identifying response actions to allow for efficient management of any water shortage with predictability and accountability. Preparation provides the tools to maintain reliable supplies and reduce the impacts of supply interruptions due to extended drought and catastrophic supply interruptions. The WSCP, applicable to the entire City of Fresno municipal water service area, is fully applicable to the project and protective of the adequacy of the project's water supply.

to be confirmed once WSA finalized

As a result, the project would result in a less-than-significant impact related to water supply and there would be sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years. No mitigation is required.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.11.3 **Would the project result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

Wastewater collection and treatment services in Fresno are provided by the City of Fresno Department of Public Utilities. The City's wastewater collection system consists of about 1,630 miles of pipes ranging in size from 4 inches in diameter to 84 inches in diameter. This collection system also utilizes 15 lift stations throughout Fresno, ranging in pumping capacity from 0.25 million gallons per day (mgd) to 2.2 mgd. The City is served by two wastewater treatment plants: Fresno-Clovis Regional Wastewater Reclamation Facility and North Fresno Wastewater Reclamation Facility.

The Department of Public Utilities has determined that adequate sanitary sewer and wastewater services would be available to serve the proposed project subject to the payment of any applicable connection charges and/or fees and extension of services in a manner that is compliant with the Department of Public Utilities standards, specifications, and policies. As such, the City's wastewater provider would be able to provide service to the proposed project, and impacts would be less than significant. No mitigation is required.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.11.4 **Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?**

Garbage disposed in the City of Fresno is taken to the Cedar Avenue Recycling and Transfer Station. Once trash has been off-loaded at the transfer station, it is sorted, and non-recyclable solid waste is loaded onto large trucks and taken to the American Avenue Landfill located approximately 6 miles southwest of Kerman.

The American Avenue Landfill (i.e., American Avenue Disposal Site 10-AA-0009) has a maximum permitted capacity of 32,700,000 cubic yards and a remaining capacity of 29,358,535 cubic yards, with an estimated closure date of August 31, 2031. The maximum permitted throughput is 2,200 tons per day.[16]

[16] Ibid.

Other landfills within the County of Fresno include the Clovis Landfill (City of Clovis Landfill 10-AA-0004) with a maximum remaining permitted capacity of 7,740,000 cubic yards, a maximum permitted throughput of 2,000 tons per day, and an estimated closure date of 2047.[17]

Based on the California Emissions Estimator Model (CalEEMod, Appendix C), operation of the proposed project would generate approximately 847 tons of solid waste per year or approximately 2 tons of solid waste per day. Given the available capacity at the landfills, the additional solid waste generated by the proposed project is not anticipated to cause the facility to exceed its daily permitted capacity. As such, the project would be served by a landfill with sufficient capacity to accommodate the project's waste disposal needs. The proposed project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals and impacts would be less than significant. No mitigation is required.

Level of Significance Without Mitigation: Less Than Significant Impact.

Threshold 4.11.5 Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The proposed project would be required to comply with the CALGreen Code, the Fresno County C&D Debris Recycling Program, which is intended to assist the County in achieving AB 939 solid waste reduction goals, and other applicable federal, State and local solid waste statutes and/or regulations related to solid waste. In addition, as described above, the proposed project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. Therefore, the proposed project would have a less-than-significant impact related to solid waste. No mitigation is required.

Level of Significance Without Mitigation: Less Than Significant Impact.

4.11.3.3 Cumulative Impacts

As defined in the *State CEQA Guidelines*, cumulative impacts are the incremental effects of an individual project when viewed in connection with the effects of past, current, and probable future projects within the cumulative impact area for utilities and service systems. The project site consists of a vacant urban lot located in a primarily urban area with existing services provided by utility providers in the vicinity. The cumulative area for utilities is listed below for each individual utility provider.

Water Supply. As discussed above and in Section 4.8, Hydrology and Water Quality, water supply is a regional issue. The Kings Subbasin is in overdraft condition due to pumping for agricultural and urban uses. Growth in the subbasin will increase demands for groundwater pumping, potentially resulting in continued drawdown of water levels leading to localized cones of depression, changes in groundwater flow direction, concentration of contaminants, and land subsidence. However, the WSA prepared for the proposed project identified that projected water supplies available for the City would be adequate to accommodate future development in the City of Fresno, including

to be confirmed once WSA finalized

[17] Ibid.

development of the proposed project, for normal, single-year dry, and multiple-year dry conditions. Additionally, implementation of water supply management strategies and the City's WSCP would secure the efficient management of water supplies in the City during regular and dry years. Therefore, the City would have sufficient water supplies available to serve the proposed project and probably future projects. Therefore, the proposed project and the related projects would not have a cumulatively significant impact on water supply or facilities.

Wastewater. Public utility districts and other municipalities exist near or adjacent to the planning area and include the City of Clovis, the Pinedale Public Utility District, Pinedale County Water District, and Malaga Utility District. The City of Fresno Department of Public Utilities has determined that adequate sanitary sewer and water services would be available to serve the proposed project subject to the payment of any applicable connection charges and/or fees and extension of services in a manner that is compliant with the Department of Public Utilities standards, specifications, and policies. Other past, current, and probable future projects within the cumulative impact area would also be subject to Department of Public Utilities standards, specifications, and policies. For these reasons, the proposed project and related projects would not result in a cumulatively significant impact to wastewater generation.

Solid Waste. The geographic area for the cumulative analysis of solid waste infrastructure is the City of Fresno. Development associated with the proposed project would contribute to an increased demand for landfill capacity for solid waste. As stated previously, the American Avenue Landfill (i.e., American Avenue Disposal Site 10-AA-0009) has a maximum permitted capacity of 32,700,000 cubic yards and a remaining capacity of 29,358,535 cubic yards, with an estimated closure date of August 31, 2031. The maximum permitted throughput is 2,200 tons per day. In addition, the Clovis Landfill with a maximum remaining permitted capacity of 7,740,000 cubic yards, a maximum permitted throughput of 2,000 tons per day, and an estimated closure date of 2047. As discussed above, given the available capacity at the landfills, the additional solid waste generated by the proposed project is not anticipated to cause the facility to exceed its daily permitted capacity. Furthermore, based on their current daily maximum permitted disposal capacities and current average daily tonnage, there is currently sufficient permitted capacity provide adequate future capacity for the City's solid waste needs.

In addition, all development projects would be required to comply with federal, State, and local statutes and regulations related to solid waste. Pursuant to the California Integrated Waste Management Act of 1989 (AB 939), every city and county in the State is required to divert 50 percent of solid waste generated in its jurisdiction away from landfills. Implementation of source reduction measures, such as recycling, would serve to divert solid waste away from landfills. Cumulative development would be required to comply with existing statutes and regulations, and therefore, cumulative impacts related to compliance with solid waste regulations would be less than significant. Therefore, the proposed project's contribution to solid waste impacts would not be cumulatively considerable, and no mitigation is required.

Electricity and Natural Gas. Development of cumulative projects within the PG&E service area which encompasses 70,000 square miles would result in a substantial increase in electricity and natural gas demand as well as an increase in the consumption of fuel for vehicles. Although the proposed project would result in a net increase in demand for electricity, implementation of the

Comment Letter

A5

Attach. #4

From:	Dejan Pavic
To:	Steven Martinez
Cc:	Juan Lara; Israel Trejo; Jesus Gonzalez Jr; Brock Buche
Subject:	RE: Scannell Warehouse EIR - Water & Utility Comments
Date:	Wednesday, December 14, 2022 4:43:00 PM
Attachments:	Scannell Office-Warehouse Project (2740 West Nielsen Avenue-WSA and Admin Draft EIR-DPU Comments-2022-12-14.pdf Scannell Warehouse-2740 W Nielsen Ave-WSA-DPU comments-12_14_2022.pdf Scannell Warehouse-2740 W Nielsen Ave-Admin Draft EIR Ch 4.8-DPU comments-12_14_2022.pdf Scannell Warehouse-2740 W Nielsen Ave-Admin Draft EIR Ch 4.11-DPU comments-12_14_2022.pdf
Importance:	High

Steven,

Attached is a Memorandum with our comments on the Water Supply Assessment (WSA) **and** Chapters 4.8 and 4. 11 of the Admin Draft EIR (Admin Draft EIR) for the referenced project, along with PDFs of relevant pages of the WSA and Admin Draft EIR.

Please let me know if you need any additional information on this matter at this time.

Thank you,

Dejan

From: Steven Martinez <Steven.Martinez@fresno.gov>
Sent: Tuesday, November 29, 2022 9:38 AM
To: Dejan Pavic <Dejan.Pavic@fresno.gov>; Brock Buche <Brock.Buche@fresno.gov>
Cc: Juan Lara <Juan.Lara@fresno.gov>
Subject: RE: Scannell Warehouse EIR - Water & Utility Comments

Hello Dejan and Brock, I hope you two are doing well.

Will you need additional time for review of Chapters 4.8 (Hydrology and Water Quality), 4.11 (Utilities and Service Systems), and the Water Supply Assessment of the Scannell Draft EIR? We can grant a small extension of time if needed. Please let me know.

If there are any questions, feel free to reach out to me.

Thank you.
Steven Martinez - Planner
City of Fresno
Planning and Development Department
559 - 621 - 8047
Steven.Martinez@fresno.gov

From: Steven Martinez

Comment Letter

A5

Attach. #4

Sent: Monday, November 7, 2022 12:55 PM
To: Dejan Pavic <Dejan.Pavic@fresno.gov>; Brock Buche <Brock.Buche@fresno.gov>
Cc: Juan Lara <Juan.Lara@fresno.gov>
Subject: Scannell Warehouse EIR - Water & Utility Comments

Hello Dejan and Brock, I hope you two are doing well.

The Planning Department is respectfully requesting your review of Chapters 4.8 (Hydrology and Water Quality) & 4.11 (Utilities and Service Systems) of the Scannell Office / Warehouse Draft Environmental Impact Report. The Word version of the section has been attached to this email. We hope the chapter is acceptable as is, however, comments and corrections are welcomed.

At this time, we would like your review complete by end of business on Thursday, December 1st; additional time may be granted if needed.

If there are any questions, feel free to reach out to me.

Thank you.
Steven Martinez - Planner
City of Fresno
Planning and Development Department
559 - 621 - 8047
Steven.Martinez@fresno.gov

Comment Letter

A5

Attach. #5

From:	Dejan Pavic
To:	Steven Martinez
Cc:	Kevin Gray; Robert Diaz; Brock Buche
Subject:	RE: Notice of Availability - DEIR 2740 West Nielsen Avenue Office/Warehouse Project
Date:	Wednesday, March 29, 2023 4:19:37 PM
Attachments:	RE Scannell Warehouse EIR - Water Utility Comments .msg
Importance:	High

Hi Steven,

It appears that **MOST (if ANY)** of our comments sent to you on December 14, 2022 (attached to this email) were **NOT INCORPORATED** into the DEIR.

As you probably recall, the majority of our comments were on the WSA (Water Supply Assessment; which is Appendix K to the DEIR), and then several comments on Chapters 4.8 and 4.11 were by reference to the comments on WSA. It doesn't appear that any of the comments made into the WSA, and consequently into those two chapters.

Thank you,

Dejan

From: Steven Martinez <Steven.Martinez@fresno.gov>
Sent: Monday, February 27, 2023 10:46 AM
To: Robert Diaz <Robert.Diaz@fresno.gov>
Cc: Dejan Pavic <Dejan.Pavic@fresno.gov>
Subject: RE: Notice of Availability - DEIR 2740 West Nielsen Avenue Office/Warehouse Project

Thank you Robert.

Dejan, the EIR should cover your previous comments, please confirm if you have the chance.

Thank you.
Steven Martinez - Planner
City of Fresno
Planning and Development Department
559 - 621 - 8047
Steven.Martinez@fresno.gov

From: Robert Diaz <Robert.Diaz@fresno.gov>
Sent: Monday, February 27, 2023 10:45 AM
To: Steven Martinez <Steven.Martinez@fresno.gov>
Cc: Dejan Pavic <Dejan.Pavic@fresno.gov>
Subject: RE: Notice of Availability - DEIR 2740 West Nielsen Avenue Office/Warehouse Project

Comment Letter

A5

Attach. #5

Steven,

I am forwarding this on to Dejan. He has previously provided comments to EIR submittals.

Robert A. Diaz
Supervising Engineering Technician
Department of Public Utilities – Utilities Planning & Engineering
Office: (559) 621-1623
Cell: (559) 981-7462

From: Steven Martinez <Steven.Martinez@fresno.gov>
Sent: Friday, February 24, 2023 3:18 PM
To: Steven Martinez <Steven.Martinez@fresno.gov>
Subject: Notice of Availability - DEIR 2740 West Nielsen Avenue Office/Warehouse Project

Hello, I hope you are doing well.

Please see attached the Notice of Availability of a Draft Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project. Please let me know if you have any questions.

Thank you.
Steven Martinez - Planner
City of Fresno
Planning and Development Department
559 - 621 - 8047
Steven.Martinez@fresno.gov

LETTER A5
City of Fresno Department of Public Utilities
Dejan Pavic, PE
Projects Administrator
December 14, 2022, and March 29, 2023

Response A5-1: This comment letter and email was internally received by the City Planning and Development Department in December 2022 in response to the Administrative Draft EIR. The City did not previously address these internal comments in the document; therefore, responses are provided herein.

This comment provides an introduction to the comment letter and does not address the adequacy or completeness of the Recirculated Draft EIR; does not raise environmental issues; and does not request the incorporation of additional information relevant to environmental issues. Such comments do not require a response, pursuant to Section 15088(a) of the State CEQA Guidelines. No further response is necessary.

Response A5-2: This comment recommends providing a summary statement in the beginning of the Water Supply Assessment (Appendix K of the Recirculated Draft EIR). Therefore, in response to this comment, and as shown in Chapter 4.0 of this RTC Document, text on page 1 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR has been revised as follows:

EXECUTIVE SUMMARY

The proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. As such, the project-specific water usage is not yet known. Project-specific water demand was calculated based on the Water Study Demand Manual[1], which estimates that industrial uses demand approximately 0.9 acre-feet per year (AFY) per acre. The proposed project site is 48.03 acres; therefore, the proposed project is estimated to demand approximately 43.23 AFY.

The project water demand evaluated in this WSA will be compared to the water service planned for future industrial uses in the City using the City's adopted 2020 UWMP methodologies, which was calculated on the basis of the following assumptions:

- Figure 4-3 of the 2020 UWMP indicates there will be 5,201 acres of industrial uses in Fresno in 2025.

[1] Sacramento, City of. 2018. *Water Study Demand Manual*. January.

- Table 4-6 of the 2020 UWMP indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.

Therefore, is the 2020 UWMP assumed that industrial land uses will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres; therefore, based on the assumptions for water demand associated with industrial land uses identified above, the 2020 UWMP estimated approximately 68.2 AFY for the project site.

As identified above, the proposed project is estimated to demand approximately 43.23 AFY. As such, the proposed project's water demand is below the 68.2 AFY planned for the project site in the 2020 UWMP.

Since land use acreages and water demand in the 2020 UWMP were based on the City's General Plan land use designations for 2020 and buildout in 2056 and since the acreage associated with the proposed project was assumed Industrial in the 2020 UWMP, this WSA assumes that demand for water was accounted for in the 2020 UWMP. There is no evidence, in consideration of the calculated project water demand, that such demand exceeds that estimated in the 2020 UWMP. The adequacy of the water supply for the project is thus consistent with the basis of the analysis of the City's water supply in the adopted 2020 UWMP.

As such, this WSA concluded that the City of Fresno's water system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045.

This comment does not address the adequacy or completeness of the Recirculated Draft EIR; does not raise environmental issues; and does not request the incorporation of additional information relevant to environmental issues. As such, additional analysis is not required.

Response A5-3: This comment suggests various edits and additions related to the existing and proposed water and sewer mains to page 5 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR. Therefore, in response to this comment, and as shown in Chapter 4.0 of this RTC Document, text on page 5 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR has been revised as follows:

> The project site is located in an urban area and is currently served by existing utilities, including: water, sanitary sewer, storm drainage, electricity, and natural gas infrastructure. Water service to the project site would be provided by the City. New water within the

> project site would connect to the existing 14-inch main located on North Marks Avenue, ~~and~~ the 16-inch main on North Hughes Avenue, and the 14-inch main on West Nielsen Avenue. The project would also include an on-site private 12-inch water main. The City would provide wastewater collection and treatment for the proposed project, and maintains an existing 12- to 18-inch line located ~~in~~on West Nielsen Avenue, a 36-inch main on North Marks Avenue, and an 8-inch main on North Hughes Avenue. The proposed project includes the installation of a new on-site private 8-inch wastewater line that would connect to the City's existing lines. The proposed project would include construction of a new curb and gutter along North Marks Avenue, West Nielsen Avenue, and North Hughes Avenue that would connect to the existing Fresno Metropolitan Flood Control District (FMFCD) stormwater system.

This comment does not address the adequacy or completeness of the Recirculated Draft EIR; does not raise environmental issues; and does not request the incorporation of additional information relevant to environmental issues. As such, additional analysis is not required.

Response A5-4: This comment requests clarification of the data extracted from the 2020 Urban Water Management Plan (UWMP) on page 6 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR. Therefore, in response to this comment, and as shown in Chapter 4.0 of this RTC Document, text on page 6 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR has been revised as follows:

> The City of Fresno relies on groundwater from the North Kings Subbasin; surface water from the Central Valley Project (CVP), through a contract with the United States Bureau of Reclamation (USBR); Kings River water, through a contract with Fresno Irrigation District (FID); and recycled water to meet current and future water demands. The information provided on the following pages ~~are~~is extracted directly from the 2020 UWMP (Pages 6-1 through 6-32) in satisfaction of Water Code sections 10910(A)(1) and 10910(D)(2). This information is applicable to the entire City of Fresno municipal water service area, including the project site.

This comment does not address the adequacy or completeness of the Recirculated Draft EIR; does not raise environmental issues; and does not request the incorporation of additional information relevant to environmental issues. As such, additional analysis is not required.

Response A5-5: This comment requests removal of the references to the 29.0 percent cap and "revised" City/FID agreement on page 18 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR: Therefore, in response to this

comment, and as shown in Chapter 4.0 of this RTC Document, text on page 18 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR has been revised as follows:

> As such, the supply projections in this plan limit the City's FID supply with the 29.0 percent cap~~, but if the agreement were revised in the future the City's FID allocation percentage could grow beyond 29.0 percent as the water service area expands~~.

This comment does not address the adequacy or completeness of the Recirculated Draft EIR; does not raise environmental issues; and does not request the incorporation of additional information relevant to environmental issues. As such, additional analysis is not required.

Response A5-6: This comment requests project-specific water demand estimates. As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. As such, at this time, project-specific water demand is not yet known. However, in response to this comment, and as shown in Chapter 4.0 of this RTC Document, text on page 45 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR has been revised as follows:

> **Assumptions**
>
> ~~Project-specific~~ The City's projected future water demand was calculated using the methodology from the 2020 UWMP, as described above, based on the following assumptions:
>
> - Figure 4-3 of the 2020 UWMP indicates there will be 5,201 acres of industrial uses in Fresno in 2025.
> - Table 4-6 of the 2020 UWMP indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.
>
> Therefore, ~~it is~~the 2020 UWMP assumed that industrial land uses~~, such as the proposed project,~~ will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres; therefore, based on the assumptions for water demand associated with industrial land uses identified above, the 2020 UWMP estimated approximately 68.2 AFY for the project site.
>
> **Proposed Project Water Demand**
>
> ~~The total project site is 48.03 acres. Therefore, based on the assumptions identified above, the proposed project is estimated to~~

~~demand approximately 68.2 AFY.~~The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. In addition, at this time, the specific number of employees is not yet known. As such, the proposed project's water demand was calculated based on the Water Study Demand Manual[1], which estimates that industrial uses demand approximately 0.9 AFY per acre. The proposed project site is 48.03 acres; therefore, the proposed project is estimated to demand approximately 43.23 AFY. As such, the proposed project's water demand is below the 68.2 AFY planned for the project site in the 2020 UWMP.

This comment does not address the adequacy or completeness of the Recirculated Draft EIR; does not raise environmental issues; and does not request the incorporation of additional information relevant to environmental issues. As such, additional analysis is not required.

Response A5-7: This comment states that the statement of adequacy will be confirmed once the project-specific water demand estimates are provided. As discussed in Response A5-6, tenants have not been identified for the proposed project; as such, project-specific water demand is not yet known. Therefore, project-specific water demand was calculated based on United States Energy Information Administration Water Consumption data, which estimates that warehouse uses demand approximately 3.4 gallons per day per 1,000 square foot. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet; therefore, the proposed project is estimated to demand approximately 3,064.8 gallons per day or approximately 3.4 AFY.

Furthermore, as discussed on page 46 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR, the proposed project site is included in the land use area covered by the City's 2020 UWMP. Land use acreages and water demand in the 2020 UWMP were based on the City's General Plan land use designations for 2020 and buildout in 2056. As such, the acreage associated with the proposed project was assumed Industrial in the 2020 UWMP; therefore, it is assumed that demand for water was accounted for in the 2020 UWMP. There is no evidence, in consideration of the calculated project water demand, that such demand exceeds that estimated in the 2020 UWMP. The adequacy of the water supply for the project is thus consistent with the basis of the analysis of the City's water supply in the adopted 2020 UWMP. Therefore, no further analysis is required.

[1] Sacramento, City of. 2018. *Water Study Demand Manual*. January.

Response A5-8: This comment states that the statement of adequacy will be confirmed once the project-specific water demand estimates are provided. Refer to Response A5-7, above.

Response A5-9: This comment requests the environmental setting in Section 4.8, Hydrology and Water Quality, of the Recirculated Draft EIR to match Appendix K, Water Supply Assessment. Section 4.8.1, Environmental Setting, of the Recirculated Draft EIR outlines the hydrological conditions of the City of Fresno, including precipitation, hydrologic setting, groundwater, surface water, stormwater draining, and inundation hazards. The information provided in Appendix K, Water Supply Assessment, of the Recirculated Draft EIR includes more detailed information taken directly from the 2020 UWMP and provides additional information beyond what is necessary for inclusion in Section 4.8, Hydrology and Water Quality. This comment is noted but does not pertain to the analysis or conclusions of the Recirculated Draft EIR; therefore, no further analysis is required.

Response A5-10: This comment states that the statement of adequacy will be confirmed once the project-specific water demand estimates are provided. Refer to Response A5-7, above.

Response A5-11: This comment requests that the project-specific water demand estimates match Appendix K, Water Supply Assessment, of the Recirculated Draft EIR. As discussed in Response A5-7, above, tenants have not been identified for the proposed project; as such, project-specific water demand is not yet known. Therefore, project-specific water demand was calculated based on the Water Study Demand Manual, which estimates that industrial uses demand approximately 0.9 AFY per acre. The proposed project site is 48.03 acres; therefore, the proposed project is estimated to demand approximately 43.23 AFY. In response to this comment, and as shown in Chapter 4.0 of this RTC Document, text on page 4.8-13 of the Recirculated Draft EIR has been revised as follows:

> ~~Project-specific~~The City's projected future water demand was calculated using the methodology from the 2020 UWMP, as described above, based on the following assumptions:
>
> - Figure 4-3 of the 2020 UWMP indicates there will be 5,201 acres of industrial uses in Fresno in 2025.
>
> - Table 4-6 of the 2020 UWMP indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.
>
> Therefore, ~~it is~~the 2020 UWMP assumed that industrial land uses~~, such as the proposed project,~~ will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres~~.~~; t~~T~~herefore,

based on the assumptions for water demand associated with industrial land uses identified above, the ~~proposed project is~~ 2020 UWMP estimated ~~to demand~~ approximately 68.2 AFY for the project site.

The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. In addition, at this time, the specific number of employees is not yet known. As such, the proposed project's water demand was calculated based on the Water Study Demand Manual[1], which estimates that industrial uses demand approximately 0.9 AFY per acre. The proposed project site is 48.03 acres; therefore, the proposed project is estimated to demand approximately 43.23 AFY. As such, the proposed project's water demand is below the 68.2 AFY planned for the project site in the 2020 UWMP.

Response A5-12: This comment states that the statement of adequacy will be confirmed once the project-specific water demand estimates are provided. Refer to Response A5-7, above.

Response A5-13: This comment requests the environmental setting in Section 4.11, Utilities and Service Systems, of the Recirculated Draft EIR to match Appendix K, Water Supply Assessment. Section 4.11.1, Environmental Setting, of the Recirculated Draft EIR, provides a citation to refer to Appendix K and outlines the utilities and service systems in the Fresno area and in the vicinity of the project site, including the water purveyor and system, water demand, water supply, wastewater, stormwater, solid waste, and electric power, natural gas, and telecommunications. In addition, page 4.11-1 of the Recirculated Draft EIR states that the Water Supply Assessment contains information from the City's 2020 UWMP. The information provided in Appendix K, Water Supply Assessment, of the Recirculated Draft EIR includes more detailed information taken directly from the 2020 UWMP and provides additional information beyond what is necessary for inclusion in Section 4.11, Utilities and Service Systems. This comment is noted but does not pertain to the analysis or conclusions of the Recirculated Draft EIR; therefore, no further analysis is required.

Response A5-14: This comment suggests various edits and additions related to the existing and proposed water and sewer mains to page 4.11-14 of the Recirculated Draft EIR. Therefore, in response to this comment, and as shown in Chapter 4.0 of this RTC Document, text on page 4.11-14 of the Recirculated Draft EIR has been revised as follows:

[1] Sacramento, City of. 2018. *Water Study Demand Manual*. January.

> Once operational, water service to the project site would be provided by the City. New water within the project site would connect to the existing 14-inch main located on North Marks Avenue, ~~and~~ the 16-inch main on North Hughes Avenue, and the 14-inch main on West Nielsen Avenue. The project would also include an on-site private 12-inch water main. Extension of the water infrastructure from the adjacent streets into the project site would be a routine part of the construction process analyzed in this EIR and would not have a material environmental impact. The water facility improvements would be limited to the project site and connection points to the adjacent, existing facilities. In addition, as described further in Threshold 4.11.2 below, the City has concluded that the City of Fresno's water system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045. Therefore, the proposed project would not require or result in the construction of new water facilities, or the expansion of existing facilities, which could cause a significant environmental impact, and the impact would be less than significant.

In addition, in response to this comment, and as shown in Chapter 4.0 of this RTC Document, text on page 4.11-14 of the Recirculated Draft EIR has been revised as follows:

> Once operational, the City would provide wastewater collection and treatment for the proposed project, and maintains an existing 12- to 18-inch line located ~~in~~on West Nielsen Avenue, a 36-inch main on North Marks Avenue, and an 8-inch main on North Hughes Avenue. The proposed project includes the installation of a new on-site private 8-inch wastewater line that would connect to the City's existing line. Any sewer improvements associated with the proposed project would be designed and constructed to City standards. In addition, the City of Fresno Department of Public Utilities has determined that adequate sanitary sewer and wastewater services would be available to serve the proposed project subject to the payment of any applicable connection charges and/or fees and extension of services in a manner that is compliant with the Department of Public Utilities standards, specifications, and policies. In addition, as described further in Threshold 4.11.2 below, the City has concluded that the City of Fresno's wastewater system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045. As such, the proposed project would result in less than significant impacts related to the construction or expansion of wastewater treatment facilities. Therefore, the proposed project would not require or result in the construction of new wastewater

treatment or collection facilities, or the expansion of existing facilities, which could cause a significant environmental impact. Therefore, the impact would be less than significant.

This comment does not address the adequacy or completeness of the Recirculated Draft EIR; does not raise environmental issues; and does not request the incorporation of additional information relevant to environmental issues. As such, additional analysis is not required.

Response A5-15: This comment requests that the project-specific water demand estimates match Appendix K, Water Supply Assessment, of the Recirculated Draft EIR. As discussed in Response A5-7, above, tenants have not been identified for the proposed project; as such, project-specific water demand is not yet known. Therefore, project-specific water demand was calculated based on the Water Study Demand Manual, which estimates that industrial uses demand approximately 0.9 AFY per acre. The proposed project site is 48.03 acres; therefore, the proposed project is estimated to demand approximately 43.23 AFY. In response to this comment, and as shown in Chapter 4.0 of this RTC Document, text on page 4.11-18 of the Recirculated Draft EIR has been revised as follows:

> ~~Project-specific~~The City's projected future water demand was calculated using the methodology from the 2020 UWMP, as described above, based on the following assumptions:
>
> - Figure 4-3 of the 2020 UWMP indicates there will be 5,201 acres of industrial uses in Fresno in 2025.
>
> - Table 4-6 of the 2020 UWMP indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.
>
> Therefore, ~~it is~~the 2020 UWMP assumed that industrial land uses~~, such as the proposed project,~~ will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres~~.~~; t~~T~~herefore, based on the assumptions for water demand associated with industrial land uses identified above, the ~~proposed project is~~ 2020 UWMP estimated ~~to demand~~ approximately 68.2 AFY for the project site.
>
> The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. In addition, at this time, the specific number of employees is not yet known. As such, the proposed project's water demand was calculated based on the Water

Study Demand Manual[1], which estimates that industrial uses demand approximately 0.9 acre-feet per year (AFY) per acre. The proposed project site is 48.03 acres; therefore, the proposed project is estimated to demand approximately 43.23 AFY. As such, the proposed project's water demand is below the 68.2 AFY planned for the project site in the 2020 UWMP.

Response A5-16: This comment states that the statement of adequacy will be confirmed once the project-specific water demand estimates are provided. Refer to Response A5-7, above.

Response A5-17: This comment states that the statement of adequacy will be confirmed once the project-specific water demand estimates are provided. Refer to Response A5-7, above.

[1] Sacramento, City of. 2018. *Water Study Demand Manual*. January.

Comment Letter B1

BLUM, COLLINS & HO LLP
ATTORNEYS AT LAW
AON CENTER
707 WILSHIRE BOULEVARD
SUITE 4880
LOS ANGELES, CALIFORNIA 90017 (213) 572-0400

May 15, 2023

Steven Martinez
Planner
City of Fresno
2600 Fresno Street, Room 3043
Fresno, California, 93721

VIA EMAIL TO:
Steven.Martinez@fresno.gov

Subject: Comments on 2740 West Nielsen Avenue Warehouse EIR (SCH NO. 2022050265)

Dear Mr. Martinez,

Thank you for the opportunity to comment on the Environmental Impact Report (EIR) for the proposed P21-02699 2740 West Nielsen Ave. Warehouse Project. Please accept and consider these comments on behalf of Golden State Environmental Justice Alliance (GSEJA). Also, Golden State Environmental Justice Alliance formally requests to be added to the public interest list regarding any subsequent environmental documents, public notices, public hearings, and notices of determination for this project. Send all communications to Golden State Environmental Justice Alliance P.O. Box 79222 Corona, CA 92877. **B1-1**

1.0 Summary

The project proposes to construct and operate four industrial fulfillment center buildings totaling 901,438 square feet (sf) on an approximately 48 acre vacant site. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and include 122 loading dock doors; Building 2 would be 248,786 square feet and include 46 loading dock doors; Building 3 would be 93,074 square feet and include 18 loading dock doors; and Building 4 would be 90,766 square feet and include 15 loading dock doors. The project site provides a total of 594 on-site parking spaces, including 407 passenger car parking spaces and 188 truck/trailer parking spaces. **B1-2**

3.0 Project Description

The Project Description states that "The proposed project would not require any soil import or export." There is no mechanism for public verification of this conclusion, such as a grading plan, included in the EIR. A revised EIR must be prepared to include a grading plan to determine the **B1-3**

quantity of soils/materials to be imported/exported from the site. These grading truck hauling trips must be included for all sections of environmental analysis, including but not limited to the Air Quality, Energy, Greenhouse Gas Emissions, and Transportation analysis.

The EIR does not include a detailed site plan, floor plan, grading plan, or elevations for the proposed project. The basic components of a Planning Application include a site plan, floor plan, grading plan, elevations, and written narrative. The figure provided in Figure 3-5: Site Plan has been edited for public review to remove any and all site-specific information. Providing a detailed site plan for public review in the EIR is vital as it provides information such as the earthwork quantity notes, parking requirements, site coverage, floor area ratio, etc. The site plan provided is not useful for public review and do not satisfy CEQA's requirements for meaningful disclosure. The elevations would provide information regarding building height that is utilized for Aesthetics analysis and compliance with the Fresno County ALUCP. The EIR has excluded these required application items from public review, which does not comply with CEQA's requirements for adequate informational documents and meaningful disclosure (CEQA § 15121 and 21003(b)). Incorporation by reference (CEQA § 15150 (f)) is not appropriate as these documents contribute directly to analysis of the problem at hand. The EIR must be revised to include all of these application items in their unedited and complete form, and recirculated for public review.

B1-3 cont.

4.2 Air Quality, 4.5 Energy, and 4.6 Greenhouse Gas Emissions

The EIR does not include for analysis relevant environmental justice issues in reviewing potential impacts, including cumulative impacts from the proposed project. This is especially significant as the surrounding community is highly burdened by pollution. According to CalEnviroScreen 4.0[1], CalEPA s screening tool that ranks each census tract in the state for pollution and socioeconomic vulnerability, the proposed project s census tract (6019000700) ranks in the 100th percentile, indicating that it is among the most polluted census tracts in the state. The surrounding community, including residences adjacent to the south and adjacent SB 535 Census Tracts 6019002000 (north), 6019000200 (east), 6019000800 (south), and 6019001900 (west) bears the impact of multiple sources of pollution and is more polluted than average on several pollution indicators measured by CalEnviroScreen. For example, the project census tract ranks in the 82nd percentile for ozone burden, the 96th percentile for particulate matter (PM) 2.5 burden, and the 57th percentile for diesel particulate matter burden. All of these environmental factors are attributed to heavy trucks and industrial activity in the area. Ozone can cause lung irritation, inflammation, and worsening of existing chronic health conditions, even at low levels of exposure[2]. The very small particles of

B1-4

[1] CalEnviroScreen 4.0 https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40
[2] OEHHA Ozone https://oehha.ca.gov/calenviroscreen/indicator/air-quality-ozone

diesel PM can reach deep into the lung, where they can contribute to a range of health problems. These include irritation to the eyes, throat and nose, heart and lung disease, and lung cancer[3]. **B1-4 cont.**

The census tract ranks in the 94th percentile for hazardous waste impacts. Hazardous waste generators and facilities contribute to the contamination of air, water and soil near waste generators and facilities can harm the environment as well as people[4]. The census tract also bears more impacts from cleanup sites than 77% of the state. Chemicals in the buildings, soil, or water at cleanup sites can move into nearby communities through the air or movement of water[5].

The census tract also ranks in the 84th percentile for contaminated drinking water and 45th percentile for groundwater threats. Poor communities and people in rural areas are exposed to contaminants in their drinking water more often than people in other parts of the state[6]. People who live near contaminated groundwater may be exposed to chemicals moving from the soil into the air inside their homes[7]. **B1-5**

The census tract also ranks in the 78th percentile for solid waste facility impacts, which can expose people to hazardous chemicals, release toxic gases into the air (even after these facilites are closed), and chemicals can leach into soil around the facility and pose a health risk to nearby populations[8].

Further, the census tract is a diverse community including 66% Hispanic, 19% African-American, and 8% Asian-American residents, whom are especially vulnerable to the impacts of pollution. The community has a high rate of low educational attainment, meaning 91% of the census tract over age 25 has not attained a high school diploma. The community also has a high rate of poverty, meaning 95% of the households in the census tract have a total income before taxes that is less than the poverty level. Income can affect health when people cannot afford healthy living and working conditions, nutritious food and necessary medical care[9]. Poor communities are often located in areas with high levels of pollution[10]. Poverty can cause stress that weakens the immune system and causes people to become ill from pollution[11]. Living in **B1-6**

[3] OEHHA Diesel Particulate Matter https://oehha.ca.gov/calenviroscreen/indicator/diesel-particulate-matter
[4] OEHHA Hazardous Waste Generators and Facilities https://oehha.ca.gov/calenviroscreen/indicator/hazardous-waste-generators-and-facilities
[5] OEHHA Cleanup Sites https://oehha.ca.gov/calenviroscreen/indicator/cleanup-sites
[6] OEHHA Contaminated Drinking Water https://oehha.ca.gov/calenviroscreen/drinking-water
[7] OEHHA Groundwater Threats https://oehha.ca.gov/calenviroscreen/indicator/groundwater-threats
[8] OEHHA Solid Waste Facilities https://oehha.ca.gov/calenviroscreen/indicator/solid-waste-sites-and-facilities
[9] OEHHA Poverty https://oehha.ca.gov/calenviroscreen/indicator/poverty
[10] Ibid.
[11] Ibid.

poverty is also an indication that residents may lack health insurance or access to medical care. Medical care is vital for this census tract as it ranks in the 95th percentile for incidence of cardiovascular disease and 98th percentile for incidence of asthma. The community also has a high rate of linguistic isolation, meaning 79% of the census tract speaks little to no English and faces further challenges and inequities due to this.

Additionally, the project census tract (6019000700) and census tracts adjacent to the project site (6019002000 (north), 6019000200 (east), 6019000800 (south), and 6019001900 (west)) are identified as SB 535 Disadvantaged Communities[12]. This indicates that cumulative impacts of development and environmental impacts in the area are disproportionately impacting these communities. The negative environmental, health, and quality of life impacts resulting form a saturation of the warehousing and logistics industry in the City have become distinctly inequitable. The severity of significant and unavoidable impacts particularly on these Disadvantaged Communities must be included for analysis as part of a revised EIR. Each section of the EIR must include the specific analysis of each environmental impact on the Disadvantaged Communities, including cumulative analysis and irreversible environmental effects.

B1-6 cont.

California s Building Energy Code Compliance Software (CBECC) is the State's only approved energy compliance modeling software for non-residential buildings in compliance with Title 24[13]. CalEEMod is not listed as an approved software. The CalEEMod modeling does not comply with the 2022 Building Energy Efficiency Standards and under-reports the project s significant Energy impacts and fuel consumption to the public and decision makers. Since the EIR did not accurately or adequately model the energy impacts in compliance with Title 24, a finding of significance must be made. A revised EIR with modeling using the approved software (CBECC) must be circulated for public review in order to adequately analyze the project s significant environmental impacts. This is vital as the EIR utilizes CalEEMod as a source in its methodology and analysis, which is clearly not the approved software.

B1-7

4.7 Hazards and Hazardous Materials

The proposed Project site is within Chandler Executive Airport Traffic Pattern Zone (TPZ) and Outer Approach/Departure Zone (OADZ). The Fresno County Airport Land Use Compatibility Plan Update was adopted by the ALUC on December 3, 2018 and amended December 2021[14]. The

B1-8

[12] OEHHA SB 535 Census Tracts https://oehha.ca.gov/calenviroscreen/sb535
[13] California Energy Commission 2022 Energy Code Compliance Software https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-1
[14] Fresno County Airport Land Use Commission https://www.fresnocog.org/project/airport-land-use-commission-fresno-county/

EIR states that "The City of Fresno Development Code Priority of Plans section mentioned above (Section 15-104-B.4) clearly establishes the adopted Fresno County Airport Land Use Compatibility Plan as the plan that takes precedence over all of the City s other land use plans within the Airport Influence Areas defined in the Plan" to conclude that there will be less than significant impacts. The California Airport Land Use Planning Handbook[15] states that Airport Land Use Commission review is required "when a local jurisdiction has neither revised its local plan(s) to be consistent with the ALUCP (PUC Section 21676.5(a))." The City's General Plan was adopted on December 18, 2014 and has not been updated to be consistent with the Fresno County Airport Land Use Compatibility Plan Updates of December 3, 2018 and amended December 2021. The City's Development Code is not equivalent to the General Plan review and analysis necessary to determine consistency with the new ALUCP. ALUC review of the revised General Plan would be required to ensure consistency with the ALUCP. Therefore, ALUC review of the proposed project is required pursuant to PUC Section 21676.5(a) and the EIR must be revised to include this information for analysis and include a finding of significance because the review has not occurred.

B1-8 cont.

Further, the EIR is inadequate as it states "the project contemplates densities below those required in TPZs and OADZs and the project would include over 20 percent open land," but does not provide any meaningful evidence to support this claim. The EIR does not include a calculation for compliance with the maximum intensity of 300 persons per acre (TPZ area) or 150 persons per acre (OADZ area). A revised EIR must be prepared with a calculation of the project's maximum intensity of people per acre in order to accurately and adequately analyze the potentially significant impacts.

4.10 Transportation

As noted above, the EIR does not demonstrate compliance with the following Transportation related General Plan policies:

1. MT-1-n Peak Hour Vehicle LOS. Maintain a peak-hour vehicle LOS standard of D or better for all roadway areas outside of identified Activity Center and Bus Rapid Transit Corridor districts, unless the City Traffic Engineer determines that mitigation to maintain this LOS would be infeasible and/or conflict with the achievement of other General Plan policies.

2. MT-2-i Transportation Impact Studies. Require a Transportation Impact Study (currently named Traffic Impact Study) to assess the impacts of new development projects on existing

B1-9

[15] California Airport Land Use Planning Handbook https://dot.ca.gov/-/media/dot-media/programs/aeronautics/documents/californiaairportlanduseplanninghandbook-a11y.pdf

and planned streets for projects meeting one or more of the following criteria, unless it is determined by the City Traffic Engineer that the project site and surrounding area already has appropriate multi-modal infrastructure improvements.

A) Transportation impact criteria are tiered based on a project s location within the City s Sphere of Influence. This is to assist with areas being incentivized for development. The four zones, as defined on Figure MT-4, are listed below. The following criteria apply:

A) Traffic Impact Zone II (TIZ-II): TIZ-II generally represents areas of the City currently built up and wanting to encourage infill development. Maintain a peak hour LOS standard of E or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 200 or more peak hour new vehicle trips.

B1-9 cont.

Although LOS analysis is not required to determine Transportation impacts, it is fully required to determine compliance with the General Plan. This contributes Land Use and Planning impacts. As noted above, the EIR and Transportation Appendix concludes the project will result in LOS F during the PM peak hour at Intersection 1 - Marks Avenue/Belmont Avenue in cumulative year 2035. The EIR is not adequate as an informational document because it has not analyzed compliance with these policies. The EIR must be revised with this information for analysis in order to provide an adequate and accurate environmental document.

Further, the EIR has underreported the quantity of VMT generated by project operations. The operational nature of industrial/warehouse uses involves high rates of truck/trailer/delivery van VMT due to traveling from large import hubs to regional distribution centers to smaller industrial parks and then to their final delivery destinations. Once employees arrive at work at the proposed fulfillment center, they will conduct their jobs by driving delivery vans across the region as part of the daily operations as a fulfillment center, which will drastically increase project-generated VMT. The project's truck/trailer and delivery van activity is unable to utilize public transit or active transportation and it is misleading to the public and decision makers to exclude this activity from VMT analysis. The project's actual VMT generated during operations is not consistent with the significance threshold and legislative intent of SB 743 to reduce greenhouse gas emissions by reducing VMT. A revised EIR must be prepared to reflect a quantified VMT analysis that includes all truck/trailer and delivery van activity in order to provide an adequate and accurate environmental analysis.

B1-10

The EIR has not adequately analyzed the project's potential to substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses; or the project's potential to result in inadequate emergency access. The EIR has not provided any exhibits depicting the available truck/trailer turning radius at the project driveways or the

B1-11

Comment Letter B1 Cont.

intersections of Hughes Ave./Nielsen Ave. or Marks Ave./Nielsen Ave. to determine if there is enough space available to accommodate heavy truck maneuvering. Figure 3-5 Site Plan does not depict an analysis of adequate on-site heavy truck maneuvering, either. The exhibit does not depict two or more trucks attempting to turn corners around the site, park, etc across the site at any point. There are also no exhibits depicting emergency vehicle access. Deferring this environmental analysis required by CEQA to the construction permitting phase is improper mitigation and does not comply with CEQA's requirement for meaningful disclosure and adequate informational documents. A revised EIR must be prepared for the proposed project with this analysis in order to provide an adequate and accurate environmental analysis.

B1-11 cont.

5.0 Alternatives

The EIR is required to evaluate a reasonable range of alternatives to the proposed project which will avoid or substantially lessen any of the significant effects of the project (CEQA § 15126.6.) The two alternatives chosen for analysis include the CEQA required "No Project" alternative and only one other alternative - Reduced Project Alternative. The EIR does not evaluate a reasonable range of alternatives as only one alternative beyond the required No Project alternative is analyzed. The EIR must be revised to include analysis of a reasonable range of alternatives and foster informed decision making (CEQA § 15126.6). This could include alternatives such as development of the site with a mixed-use project that provides affordable housing and local-serving commercial uses that may reduce VMT, GHG emissions, and improve Air Quality.

B1-12

6.0 CEQA Required Assessment Conclusions

Effects Found Not to be Significant

Land Use and Planning

The EIR/Initial Study does not provide a consistency analysis with all applicable Fresno General Plan goals and policies. A revised EIR must be prepared with this analysis, including the following policies:

B1-13

1. MT-1-n Peak Hour Vehicle LOS. Maintain a peak-hour vehicle LOS standard of D or better for all roadway areas outside of identified Activity Center and Bus Rapid Transit Corridor districts, unless the City Traffic Engineer determines that mitigation to maintain this LOS would be infeasible and/or conflict with the achievement of other General Plan policies.

2. MT-2-i Transportation Impact Studies. Require a Transportation Impact Study (currently named Traffic Impact Study) to assess the impacts of new development projects on existing and planned streets for projects meeting one or more of the following criteria, unless it is

determined by the City Traffic Engineer that the project site and surrounding area already has appropriate multi-modal infrastructure improvements.

B) Transportation impact criteria are tiered based on a project s location within the City s Sphere of Influence. This is to assist with areas being incentivized for development. The four zones, as defined on Figure MT-4, are listed below. The following criteria apply:

A) Traffic Impact Zone II (TIZ-II): TIZ-II generally represents areas of the City currently built up and wanting to encourage infill development. Maintain a peak hour LOS standard of E or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 200 or more peak hour new vehicle trips.

B1-13 cont.

Although LOS analysis is not required to determine Transportation impacts, it is fully required to determine compliance with the General Plan. This contributes Land Use and Planning impacts. As noted above, the EIR and Transportation Appendix concludes the project will result in LOS F during the PM peak hour at Intersection 1 - Marks Avenue/Belmont Avenue in cumulative year 2035. The EIR is not adequate as an informational document because it has not analyzed compliance with these policies. The EIR must be revised with this information for analysis in order to provide an adequate and accurate environmental document.

Also, the EIR does not provide a detailed site plan, floor plan, grading plan, or elevations for public review to determine conformance with the City's development standards and requirements, including the maximum permitted floor area ratio. An EIR must be prepared with these application items in order to provide an adequate and accurate environmental analysis, including consistency with the City's development standards and requirements.

B1-14

Additionally, the EIR/Initial Study has not provided any consistency analysis with Fresno COG's 2022 RTP/SCS. Due to errors in modeling and modeling without supporting evidence as noted in this comment letter, the proposed project has signifiant potential for inconsistency with Goal 2: Vibrant communities that are accessible by sustainable transportation options, Policy 4: Encourage alternatives to single-occupancy vehicles that reduce vehicle miles traveled (VMT) and greenhouse gas emissions, and Policy 6: Encourage sustainable development that focuses growth near activity centers and mobility options that achieve greater location efficiency. The project site is also identified as an Environmental Justice area[16] in the Fresno Council of Governments 2022 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)[17]. A revised EIR

B1-15

[16] Environmental Justice Chapter of 2022 Fresno COG RTP/SCS
https://www.planfresno.com/planfresno/uploads/2022/06/Chapter-7-Environmental-Justice-Final-Draft.pdf
[17] 2022 Fresno COG RTP/SCS https://www.fresnocog.org/project/regional-transportation-plan-rtp/

Comment Letter B1 Cont.

must be prepared to include revised Air Quality/HRA, Energy, GHG, and VMT modeling in order to accurately analyze potential consistency or inconsistency with the 2022 RTP/SCS document. B1-15 cont.

Population and Housing

The EIR/Initial Study utilizes uncertain language and does not provide any meaningful analysis or supporting evidence to substantiate the conclusion that there will be no significant impacts to population and housing. The EIR/Initial Study does not provide a calculation of jobs created by the project during construction or operations. It also does not provide information regarding the location of qualified workers to fill the construction and operational jobs.

In order to comply with CEQA s requirements for meaningful disclosure, the EIR must be revised to provide an accurate estimate of employees generated by construction and operations of the project. It must also provide demographic and geographic information on the location of qualified workers to fill these positions. Additionally, an estimate of the number of workers relocating to the City as a result of the project should be provided utilizing existing housing vacancy rates in the City and the projected City unemployment rate at the time of project year opening. Department of Finance population estimates should also be used to determine whether the project in addition to all projects in the pipeline/under construction will exceed Fresno COG RTP/SCS projections and City projections for employment and residents within the City. A revised EIR must also include information and analysis regarding the number of construction jobs generated by the project and their potential to relocate to the City. A revised EIR must also provide a cumulative analysis of projects approved since 2020 and projects "in the pipeline" to provide an adequate and accurate analysis to determine if the project will exceed Fresno COG's employment and population growth forecasts, and all projects approved since 2014 and projects in the pipeline" to provide an adequate and accurate analysis to determine if the project will exceed the City's General Plan employment and population growth forecasts. B1-16

Notably, the VMT Analysis within the Transportation Appendix states that the project will have 4,920 employees. However, the methodology that resulted in the calculation of 4,920 operational employees is not included for review by the public. A revised EIR must be prepared to include this information for review and analysis in order to comply with CEQA's requirements for meaningful disclosure.

Conclusion

For the foregoing reasons, GSEJA believes the EIR is flawed and a revised EIR must be prepared for the proposed project and circulated for public review. Golden State Environmental Justice Alliance requests to be added to the public interest list regarding any subsequent environmental documents, public notices, public hearings, and notices of determination for this project. Send all B1-17

Comment Letter B1 Cont.

communications to Golden State Environmental Justice Alliance P.O. Box 79222 Corona, CA 92877.

B1-17 cont.

Sincerely,

Gary Ho
Blum, Collins & Ho LLP

LETTER B1
Blum, Collins & Ho LLP
Gary Ho
May 15, 2023

Response B1-1: This introductory comment is noted. More specific comments provided in this letter are further responded to below.

Response B1-2: This comment provides a brief project description and does not contain any substantive comments or questions about the environmental analysis or conclusions contained in the Recirculated Draft EIR. Therefore, no further response is necessary.

Response B1-3: This comment states that that the Recirculated Draft EIR's Project Description does not include a detailed site plan, floor plan, grading plan, or elevations for the proposed project. Further, this comment asserts that the figure provided in Figure 3-5: Site Plan has been edited for public review to remove any and all site-specific information. Further, the comment asserts that the elevations would provide information regarding building height that is utilized for aesthetics analysis and compliance with the Fresno County ALUCP.

Section 15124 of the CEQA Guidelines states that the description of the project shall contain the following information but should not supply extensive detail beyond that needed for evaluation and review of the environmental impact:

(a) The precise location and boundaries of the proposed project shown on a detailed map, preferably topographic. The location of the project shall also appear on a regional map.

(b) A statement of the objectives sought by the proposed project. A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project and may discuss the project benefits.

(c) A general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals, if any, and supporting public service facilities.

(d) A statement briefly describing the intended uses of the EIR, including: a list of the agencies that are expected to use the EIR in their decision making; a list of permits and other approvals required to implement the project; and a list of related environmental review and consultation

> requirements of federal, State, or local laws, regulations, or policies. To the fullest extent possible, the lead agency should integrate CEQA review with these related environmental review and consultation requirements and decisions subject to CEQA should be listed, preferably in the order in which they will occur.

Chapter 3.0, Project Description, of the Recirculated Draft EIR is consistent with these requirements and describes the characteristics of the proposed project. Figure 3-1 shows the project site's regional and local context and Figure 3-2 shows the project site and surrounding land uses, consistent with the requirements of Section 15124(a). In addition, the proposed project's objectives are listed in Section 3.2, Project Objectives, consistent with the requirements of Section 15124(b). A description of the proposed project is included in Section 3.3, Project Description, consistent with the requirements of Section 15124(c). In addition, the list of agencies and potential permits and approvals that may be required is included in Section 3.4, Approvals/Permits, consistent with the requirements of Section 15124(d). As such, the Project Description is consistent with CEQA requirements. In addition, the Notice of Availability for the Recirculated Draft EIR stated that all documents related to the project were availability for public review at the lead agency.

As identified on page 3-18 of the Recirculated Draft EIR, the proposed project would not require any soil import or export. The project site is relatively flat; therefore, soil would be balanced on site without any requirement for soil import or export.

In addition, as described on page 3-13 of the Recirculated Draft EIR, the buildings' exterior would be up to 44 feet high, with an interior height of up to 36 feet, and designed with a total of 201 loading dock doors on the north and south sides of the buildings. Further, the building height is identified on page 4.2-5 of the Recirculated Draft EIR and is evaluated in the aesthetics analysis. In addition, the project's parking is described in Section 3.3.1 of the Recirculated Draft EIR.

In addition, as discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. Detailed floor plans and elevations would not provide additional details that would aid in evaluating impacts to aesthetics analysis or compliance with the Fresno County ALUCP as the proposed heights and massing of the buildings are known and were considered in the Recirculated Draft EIR analysis.

Response B1-4: This comment asserts that the Recirculated Draft EIR does not include for analysis relevant environmental justice issues in reviewing potential impacts, including cumulative impacts such as air pollution. This comment also claims

that the census tract (6019000700) ranks in the 100th percentile, indicating that it is among the most polluted census tracts in the State. This comment also states that the surrounding community, including residences adjacent to the south and adjacent SB 535 census tracts, bears the impact of multiple sources of pollution and is more polluted than average on several pollution indicators measured by CalEnviroScreen.

As identified on pages 4.2-10 and 4.2-11 of the Recirculated Draft EIR, the OEHHA, on behalf of the California Environmental Protection Agency (CalEPA), released Version 4.0 of CalEnviroScreen in October 2021. CalEnviroScreen identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution. Pollution burden scores for each census tract are derived from the average percentiles of the seven Exposures indicators (ozone and $PM_{2.5}$ concentrations, DPM emissions, drinking water contaminants, pesticide use, toxic releases from facilities, and traffic density) and the five Environmental Effects indicators (cleanup sites, impaired water bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities). According to the CalEnviroScreen 4.0 Map,[1] the project site has a pollution burden percentile of 97. Surrounding areas have pollution burdens ranging from 56 to 100.0. In addition, according to the SB 535 Disadvantaged Communities Map,[2] the project area is designated as an SB 535 disadvantaged community.

In addition, as described on page 4.2-26 of the Recirculated Draft EIR, the San Joaquin Valley Air Basin (SJVAB) is designated as non-attainment for ozone and $PM_{2.5}$ for federal standards and non-attainment for ozone, PM_{10}, and $PM_{2.5}$ for State standards. The SJVAPCD's non-attainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in non-attainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant. In developing thresholds of significance for air pollutants, the SJVAPCD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified SJVAPCD significance thresholds, its emissions would be cumulatively

1 Office of Environmental Health Hazard Assessment (OEHHA). 2021. *CalEnviroScreen 4.0.* Website: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40 (accessed May 2021).

2 OEHHA. 2022. *SB 535 Disadvantaged Communities using CalEnviroScreen 4.0 results.* Website: https://experience.arcgis.com/experience/1c21c53da8de48f1b946f3402fbae55c/page/SB-535-Disadvantaged-Communities/.pdf (accessed October 2022).

considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. As shown in Tables 4.2-G and 4.2-H of the Recirculated Draft EIR, the proposed project would generate construction and operational emissions that are below the SJVAPCD's thresholds. As such, the proposed project would not result in a cumulative air quality impact and additional analysis to assess cumulative impacts is not required.

Although the project site has a pollution burden percentile of 97, is designated as an SB 535 disadvantaged community, and is considered a diverse community, there is no methodology to quantify the cumulative areawide or localized health risks within a community-wide area. The SJVAPCD's recommended thresholds of significance apply to individual development projects and evaluate the incremental increase in emissions from a proposed source. In developing thresholds of significance for individual projects, the SJVAPCD considered the emission levels for which a project's individual emissions would be cumulatively considerable. The City relies on the SJVAPCD's recommended methodology to evaluate cumulative impacts, which is to conclude that an impact considered to be significant on a project-specific basis would also cause a significant cumulative impact.

Response B1-5: This comment states that the census tract ranks in the 94th percentile for hazardous waste impacts, in the 84th percentile for contaminated drinking water, in the 45th percentile for groundwater threats, and in the 78th percentile for solid waste facility impacts.

Although the project's census tract ranks in the 94th percentile for hazardous waste impacts, impacts related to hazardous waste are addressed in Section 4.7, Hazards and Hazardous Materials, of the Recirculated Draft EIR. As described in Section 4.7, Hazards and Hazardous Materials, a Phase I Environmental Site Assessment (ESA) was conducted for the project site by SALEM Engineering Group, Inc. (SALEM) on January 29, 2021, and a Phase II ESA was conducted for the project site by SALEM on February 3, 2021. The Phase I ESA identified evidence of Recognized Environmental Conditions (RECs) and one Historical Recognized Environmental Condition (HREC). The Phase II ESA was performed to address the RECs and HREC identified in the Phase I ESA, to gather data regarding current site conditions, to establish baseline soil and soil vapor concentrations, and to evaluate if soil vapor conditions pose a potential vapor intrusion risk to future occupants at the project site. Based on the results of the Phase II ESA, it was determined that no additional assessment activities are required. The Phase II ESA determined that the project site is suitable for unrestricted use and no engineering controls (i.e., VOC vapor barrier) are required. In the event the project site would undergo any redevelopment that would include soil disturbance, the Phase II ESA recommended that a Soil Management Plan (SMP) be prepared to address soil management procedures that may arise based on historical

use of the project site and total petroleum hydrocarbons (TPH) and arsenic, which was required by Mitigation Measure HAZ-1. Implementation of Mitigation Measure HAZ-1, which would require preparation of an SMP, would effectively mitigate any impacts related to a significant hazard to the public or the environment to less than significant levels.

In addition, although the census tract also ranks in the 84th percentile for contaminated drinking water, the 45th percentile for groundwater threats, and the 78th percentile for solid waste facility impacts, as described in Section 4.8, Hydrology and Water Quality, and Section 4.11, Utilities and Service Systems, of the Recirculated Draft EIR, the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality, and would comply with federal, State, and local statutes and regulations related to solid waste. As such, the proposed project would not contribute to significant cumulative water quality or solid waste facility impacts.

Response B1-6: This comment states that this census tract is a diverse community with a high rate of low educational attainment and a high rate of poverty, which can affect health when people cannot afford healthy living and working conditions, nutritious food, and necessary medical care. This comment also states that poor communities are often located in areas with high levels of pollution and that poverty is also an indication that residents may lack health insurance or access to medical care. Further, this comment states that the project census tract is identified as SB 535 Disadvantaged Communities and that the Recirculated Draft EIR must include an analysis of impacts on the disadvantaged communities.

See Response B1-4. Although the project site is designated as an SB 535 disadvantaged community and is considered a diverse community, there is no methodology to quantify the cumulative areawide or localized health risks within a community-wide area. The SJVAPCD's recommended thresholds of significance apply to individual development projects and evaluate the incremental increase in emissions from a proposed source. These thresholds do not apply to cumulative projects. The City relies on the SJVAPCD's recommended methodology to evaluate cumulative impacts, which is to conclude that an impact considered to be significant on a project-specific basis would also cause a significant cumulative impact.

Response B1-7: This comment claims that California's Building Energy Code Compliance Software (CBECC) is the State's only approved energy compliance modeling software for non-residential buildings, in compliance with Title 24, and that CalEEMod is not the approved software.

As described in the SJVAPCD's GAMAQI,[1] when quantifying project emissions, the latest approved models by the SJVAPCD should always be used for air quality analysis. The latest approved model available is CalEEMod, which is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.[2] The commenter asserts the use of CalEEMod to estimate the project's energy demand was inappropriate and that CBECC should have been used instead. The compliance modeling software that is referenced by the commenter is used to confirm the final design of a development project and complies with applicable energy efficiency regulations based on detailed information included in construction drawings. As such, the purpose of the CBECC model is to evaluate compliance with the 2022 Title 24 standards, not to evaluate potential energy impacts under CEQA.

The information needed to demonstrate compliance with Title 24 using the CBECC model is not available at this time and is not typically prepared until after a project has been approved/entitled. After approval and preparation of detailed building plans, the project would be required to demonstrate compliance with Title 24 using the CBECC model. As described in the CalEEMod User's Guide, CalEEMod utilizes widely accepted methodologies for estimating emissions combined with default data that can be used when site-specific information is not available. [3,4] Sources of these methodologies and default data include, but are not limited to, the USEPA AP-42 emission factors, CARB vehicle emission models, and studies commissioned by California agencies such as the CEC and CalRecycle. The User's Guide also states that CalEEMod calculates construction and operations emissions from land use development projects which can be used to support preparation of air quality and GHG analyses in CEQA documents, including EIRs. In addition, the User's Guide states that the emissions inventory modules also contain default values for estimating utility consumption (e.g., water, electricity,

1 San Joaquin Air Pollution Control District. 2015. *Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI)*. March 19. Website: http://www.valleyair.org/transportation/GAMAQI.pdf (accessed May 2023).

2 Ibid.

3 California Air Pollution Control Officers Association. 2021. *California Emissions Estimator Model User's Guide.* May. Website: http://www.aqmd.gov/docs/default-source/caleemod/user-guide-2021/01_user-39-s-guide2020-4-0.pdf?sfvrsn=6 (accessed May 2023).

4 Detailed information regarding CalEEMod default assumptions can be found in the User's Guide: http://www.aqmd.gov/caleemod/user's-guide.

natural gas) that may be useful for preparing hydrology and energy analyses in other sections of a CEQA document. Additionally, it should also be noted that the energy use factors included in the CalEEMod model, which was used to estimate energy for the project, are based on the CEC-sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies, which provide a more conservative assumption based on actual use surveys and are the best available information for purposes of this assessment. As such, CalEEMod is appropriate for use in energy analyses. Further, as discussed in Chapter 3.0, Project Description, of the Recirculated Draft EIR, the proposed project would comply with the latest CALGreen building measures and 2022 Title 24 Standards. Therefore, use of the CBECC model would not change the findings identified in the Recirculated Draft EIR.

Response B1-8: This comment states that the City's General Plan has not been updated to be consistent with the Fresno County ALUCP Updates to the December 3, 2018 plan (amended December 2021). As such, this comment asserts that ALUC review of the revised General Plan would be required to ensure consistency with the ALUCP. Therefore, ALUC review of the proposed project is required pursuant to Public Utilities Code Section 21676.5(a), and the Recirculated Draft EIR must be revised to include this information for analysis and include a finding of significance because the review has not occurred. In addition, this comment asserts that the Recirculated Draft EIR must include a calculation of the project's maximum intensity of people per acre in order to accurately and adequately analyze the potentially significant impacts.

The ALUC has reviewed the proposed project and has provided comments. As discussed in Response A2-3, based on the Fresno County ALUCP safety requirements, in zone 4, the maximum non-residential intensity is 150 persons per acre, and in zone 6, the maximum non-residential intensity is 300 persons per acre. As identified in Chapter 3.0, Project Description, of the Recirculated Draft EIR, the project site is 48.03 acres. Therefore, the maximum non-residential intensity would be between 7,204 and 14,409 persons. As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. As such, at this time, the specific number of employees is not yet known. However, given that the project site would primarily be used for warehouse uses, it is not expected that the proposed project would generate more than 7,204 employees.

Further, as discussed in Response A2-6 and as discussed in Section 3.3.2, Open Space and Landscaping, of the Recirculated Draft EIR, consistent with City requirements, landscaping would be provided throughout the project site. The project would also include a vegetative plan that includes the planning of trees and other landscaping materials throughout the perimeter

of the project site. As such, the vegetative plan would be consistent with the 10–20 percent open land requirement of the airport safety zones.

In addition, the proposed project would not include any structures higher than 70 feet, hazardous uses, hazards to flight, or prohibited land uses. In addition, the proposed project would not include any structures that would penetrate 14 Code of Federal Regulations (CFR) Part 77 surfaces. Therefore, revisions to the Recirculated Draft EIR are not required.

Response B1-9: This comment asserts that the Recirculated Draft EIR does not demonstrate compliance with General Plan policies related to traffic and traffic studies (MT-1-n Peak Hour Vehicle LOS and MT-2-i Transportation Impact Studies) and is not adequate as an informational document because it has not analyzed compliance with these policies.

As discussed on pages 4.10-7 and 4.10-8 of the Recirculated Draft EIR, level of service (LOS) analysis is no longer a criterion of significance for traffic impacts under CEQA. Threshold 4.10.1 used in the analysis is consistent with Appendix G of the *State CEQA Guidelines,* which states that the proposed project would result in a significant impact related to transportation if it would conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. The City of Fresno General Plan includes policies that utilize LOS to determine project conditions of approval. As such, the Recirculated Draft EIR evaluates LOS impacts on pages 4.10-7 through 4.10-11 and in the TIS (Appendix M of the Recirculated Draft EIR).

General Plan Policy MT-1-n requires the City to maintain a peak-hour vehicle LOS standard of D or better for all roadway areas outside of identified Activity Center and Bus Rapid Transit Corridor districts, unless the City Traffic Engineer determines that mitigation to maintain this LOS would be infeasible and/or conflict with the achievement of other General Plan policies. General Plan Policy MT-2-i requires a TIS to assess the impacts of new development projects on existing and planned streets, unless it is determined by the City Traffic Engineer that the project site and surrounding area already has appropriate multi-modal infrastructure improvements. The commenter is incorrect that the Recirculated Draft EIR does not demonstrate compliance with these policies because a TIS was prepared for the proposed project and evaluates LOS.

As discussed on page 4.10-10 of the Recirculated Draft EIR, the intersection of Marks Avenue/Belmont Avenue is currently operating at a deficient LOS and will worsen with time. This intersection meets several signal warrants under the Existing, Existing with Project, Near-Term Approved and Pending with Project, Cumulative Year (2035) without Project, and Cumulative Year (2035) with Project scenarios. As discussed in the Recirculated Draft EIR, the

project adds to the existing and forecasted deficiency at this location. The City, however, has already earmarked this location for installing a signal and has a funding mechanism in place (the City's Traffic Signal Mitigation Impact [TSMI] fee program). As discussed in the Recirculated Draft EIR, this intersection is forecast to operate at a satisfactory LOS with the implementation of the proposed improvement, and impacts to intersection LOS would be less than significant with implementation of the signal. Therefore, the commenter is incorrect in stating that the Recirculated Draft EIR is not adequate as an informational document because it has not analyzed compliance with City's General Plan policies.

For the reasons described above, this comment does not identify any new significant environmental issues or impacts that were not already addressed in the Recirculated Draft EIR. Neither this comment nor the response constitutes new information requiring recirculation of the Recirculated Draft EIR.

Response B1-10: This comment asserts that the Recirculated Draft EIR has not correctly addressed VMT consistent with the significance threshold and legislative intent of SB 743 to reduce GHG emissions by reducing VMT.

As described on pages 4.10-12 through 4.10-14 of the Recirculated Draft EIR, the Fresno Council of Governments' (Fresno COG) Activity-Based Model (ABM) was used to estimate the project's VMT and VMT metric. ABM is a tour-based model that captures travel behavior of the region comprehensively. As such, the project employee VMT included VMT from all employee tours and sub-tours, which include employee commute tours, project-related delivery tours within the region, and any other tours related to the project. In addition, the project VMT and the VMT metric used for this analysis are consistent with the City's and Fresno COG's adopted methodology/guidelines for preparation of VMT analysis. The guidelines provide substantial evidence demonstrating the appropriateness of the VMT analysis methodology, consistent with the intended goals for SB 743. Truck trips were not included in the VMT analysis, consistent with CEQA Guidelines Section 15064.3, subdivision (a), which states "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." The technical guidance from the Office of Planning and Research (OPR) does say that heavy-duty truck VMT "*could be included*"; however, the Guidance goes on to state that this would be for modeling convenience and ease of calculation. Heavy-duty trucks are not included in the CEQA guidelines for VMT analysis, are not included in the Fresno COG model, and therefore were not included in the VMT analysis. "An agency's use of a reasonable standard for gauging the significance of an impact may not be set aside on the ground the impact would have been found significant if other recognized standards had instead been used." (Kostka, §

6.45, p. 6-50/50; see *Jensen*, *supra*, 23 Cal.App.5th at 887; *Citizens for Responsible Equitable Environmental Development*, *supra*, 197 Cal.App.4th at 336–336.) Therefore, the project's analysis of VMT is consistent with the significance threshold and legislative intent of SB 743, and additional analysis is not required.

For the reasons described above, this comment does not identify any new significant environmental issues or impacts that were not already addressed in the Recirculated Draft EIR. Neither this comment nor the response constitutes new information requiring recirculation of the Recirculated Draft EIR.

Response B1-11: This comment claims that the Recirculated Draft EIR has not adequately analyzed the project's potential to substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses, or the project's potential to result in inadequate emergency access.

As described on pages 4.10-14 and 4.10-15 of the Recirculated Draft EIR, the project site plan does not add any sharp curves or hazardous geometric features. As shown on Figure 3-5, Site Plan, of the Recirculated Draft EIR, all internal roadways within the project are 40 feet wide. These internal roadways are perpendicularly connected to each other, avoiding any sharp curves, hazardous geometric feature, or any requirement for sharp maneuvers. Further, as shown on the site plan, within the project site, there are multiple areas for vehicles (both cars and trucks) turning or backing up to avoid any conflicting movements, if required. Additionally, as shown on the site plan, with the docking and parking areas, truck maneuvering spaces are a minimum of 185 feet wide, which is wide enough for safe maneuvering of large semitrailer trucks. All these measurements shown on the site plan demonstrate that the project does not create any hazardous design.

As identified on page 3-5 of the Recirculated Draft EIR, the project site is surrounded by low-density residential, light and heavy industrial, and cemetery uses, as well as vacant, undeveloped land. As the proposed project is located near existing light and heavy industrial uses, truck-intensive uses are currently present in the project site vicinity. Trucks access these sites using the intersections and driveways along Marks Avenue, Nielsen Avenue, and Hughes Avenue. The project is not anticipated to be accessed by any vehicle larger than the existing trucks using the circulation network along the project frontages.

As shown on the project site plan, the project would have seven driveways along Marks Avenue, Nielsen Avenue, and Hughes Avenue. Trucks would access the project site using the central driveway along Marks Avenue or the other project driveways along Nielsen Avenue and Hughes Avenue designed

for truck access. All of these driveways have been designed in accordance with the City's standard for driveways to be utilized by truck traffic. The site plan, including the project driveway designs, has been reviewed and confirmed to maintain the City's design standard for truck access during the planning process. As such, all project truck traffic would have adequate maneuvering and turning spaces in and along the project frontages, including at the project driveways.

Further, as discussed on page 4.10-15, due to the presence of multiple driveways along all three project frontages, emergency vehicles have adequate alternatives to access the project, if required. Additionally, the proposed project's site plan would be subject to review and approval by the Fresno Fire Department (FFD) to ensure the project includes adequate emergency access. Improvements identified in the TSMI fee program would provide for an enhanced roadway network that accommodates forecasted travel demand and would provide adequate emergency access in the project vicinity. As such, the proposed project would not physically interfere with emergency evacuation or FFD access to and from the project site, and a less than significant impact would occur.

For the reasons described above, this comment does not identify any new significant environmental issues or impacts that were not already addressed in the Recirculated Draft EIR. Neither this comment nor the response constitutes new information requiring recirculation of the Recirculated Draft EIR.

Response B1-12: This comment asserts that a reasonable range of alternatives was not included in the Recirculated Draft EIR.

As discussed on page 5-1 of the Recirculated Draft EIR, an accordance with CEQA and the CEQA Guidelines (Section 15126.6), an EIR must describe a range of reasonable alternatives to the project, or to the location of the project, that would "feasibly attain most of the project's basic objectives, while avoiding or substantially lessening any of the significantly adverse environmental effects of the project." An EIR does not need to consider every conceivable alternative to a project; rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. The range of alternatives required in an EIR is governed by a "rule of reason."

Furthermore, as discussed on page 5-3 of the Recirculated Draft EIR, *State CEQA Guidelines* Section 15126.6I requires an EIR to identify and briefly discuss any alternatives that were considered by the lead agency but rejected as infeasible during the scoping process. The City considered certain alternatives during the preparation of this EIR and found them to be infeasible. Section 5.3 of the Recirculated Draft EIR provides a description of

potential alternatives that were identified and considered by the City and the reasons why they were ultimately not selected for further evaluation in the Recirculated Draft EIR. In dismissing these alternatives from detailed evaluation in the Recirculated Draft EIR, primary considerations were whether the alternatives would meet *most* of the project's basic objectives, whether the alternatives were *feasible*, and whether they would substantially *reduce the significant impacts* of the proposed project. As described in Section 5.3, an alternative that would develop residential uses on the project site was considered but dismissed from detailed evaluation because such an alternative would not achieve three of the four objectives of the proposed project. Further, residential uses on the project site would not be consistent with the project site's General Plan land use designation of Heavy Industrial (IH) and zoning designation of Heavy Industrial District (IH). In addition, as described in Section 5.3, other parcels in the Fresno area could be suitable for the development of industrial warehouse uses comparable to the proposed project. However, similar to the proposed project, the development on other sites would still have the potential to result in significant impacts on air quality, biological, cultural, and hazards and would require the same or comparable mitigation measures. Further, there would be similarly significant aesthetics and noise impacts. As this alternative would not reduce or avoid the project's significant impacts, and because the applicant does not own the site or can reasonably acquire it, this alternative was not carried forth for detailed evaluation.

Response B1-13: This comment incorrectly states that the Recirculated Draft EIR does not provide a consistency analysis with all applicable Fresno General Plan goals and policies, including policies MT-1-n, Peak Hour Vehicle LOS, and MT-2-I, Transportation Impact Studies. This comment asserts that although LOS analysis is not required to determine transportation impacts, it is fully required to determine compliance with the General Plan.

Refer to Response B1-9, above. As discussed on pages 4.10-7 and 4.10-8 of the Recirculated Draft EIR, LOS analysis is no longer a criterion of significance for traffic impacts under CEQA. Threshold 4.10.1 used in the analysis is consistent with Appendix G of the *State CEQA Guidelines,* which states that the proposed project would result in a significant impact related to transportation if it would conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. The City of Fresno General Plan includes policies that utilize LOS to determine project conditions of approval. As such, the Recirculated Draft EIR evaluates LOS impacts on pages 4.10-7 through 4.10-11 and in the TIS (Appendix M of the Recirculated Draft EIR).

Response B1-14: This comment states that the Recirculated Draft EIR does not provide a detailed site plan, floor plan, grading plan, or elevations for public review to

determine conformance with the City's development standards and requirements, including the maximum permitted floor area ratio (FAR).

As described in Response B1-3, above, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. Further, as discussed in Response B3-1, the information contained in Chapter 3.0, Project Description, of the Recirculated Draft EIR is consistent with the requirements of Section 15124 of the CEQA Guidelines. In addition, the Notice of Availability for the Recirculated Draft EIR stated that all documents related to the project were availability for public review at the lead agency. Detailed site plans, floor plans, grading plans, and elevations would not provide additional details that would aid in evaluating impacts to conformance with the maximum permitted FAR as the overall square footage and siting of the buildings were known and were considered in the Recirculated Draft EIR analysis. Further, the City is reviewing the proposed project to determine conformance with the City's development standards and requirements, including the maximum permitted FAR.

Response B1-15: This comment states that the Recirculated Draft EIR has not provided any consistency analysis with the Fresno COG's 2022 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and that the proposed project has significant potential for inconsistency with Goal 2: Vibrant communities that are accessible by sustainable transportation options; Policy 4: Encourage alternatives to single-occupancy vehicles that reduce vehicle miles traveled (VMT) and GHG emissions; and Policy 6: Encourage sustainable development that focuses growth near activity centers and mobility options that achieve greater location efficiency. This comment also states that the project site is also identified as an environmental justice area in the Fresno COG's 2022 RTP/SCS.

As demonstrated on page 4.10-14 of the Recirculated Draft EIR, the project would result in a less than significant VMT impact concerning consistency with CEQA Guidelines Section 15064.3(b). In addition, consistent with the City's General Plan policies, the project would implement multi-modal improvements along the project frontage, including the addition of sidewalks all along the project frontage. In addition, as described in Appendix H, Greenhouse Gas Reduction Plan Update Checklist, of the Recirculated Draft EIR, the project would have over 100 employees and would be required to comply with SJVAPCD Rule 9410, which requires the implementation of trip reduction programs such as increasing transit use, carpooling, vanpooling, bicycling, or other measures to reduce VMT. As such, the commenter is incorrect that the proposed project would be inconsistent with Goal 2, Policy 4, or Policy 6 in the Fresno COG's 2022 RTP/SCS. Refer to Responses B1-4, B1-5, and B1-6 for a discussion of impacts related to environmental justice. The

project site is consistent with the Heavy Industrial General Plan land use designation and is located in a primarily industrial area; therefore, the proposed project would be compatible with the surrounding uses and would not be inconsistent with the Fresno COG's 2022 RTP/SCS.

Response B1-16: This comment states that the Recirculated Draft EIR utilizes uncertain language and does not provide any meaningful analysis or supporting evidence to substantiate the conclusion that there will be no significant impacts to population and housing. The comment also states that the EIR/Initial Study does not provide a calculation of jobs created by the project during construction or operations and that it does not provide information regarding the location of qualified workers to fill the construction and operational jobs.

As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The TIS (Appendix M of the Recirculated Draft EIR) estimated approximately 4,920 employees for purposes of the VMT analysis. As discussed on page 96 of the TIS, the employment was calculated based on a building square footage to employee conversion factor in the ITE Trip Generation Manual, 10th Edition. Daily trip rates per employee were divided by daily trip rates per 1,000 square feet to estimate the ratio between land use square footage and number of employees. However, this employment calculation was only used for the purposes of the VMT analysis. In addition, based on CalEnviroScreen, the project's census tract is in the 97th percentile for unemployment. Since the proposed project is located in an area with high unemployment, it is expected that there would be an available pool of employees to fill future employment positions at the project site. As discussed in the Initial Study, included as Appendix B of the Recirculated Draft EIR, the proposed project would not result in direct population growth as the use proposed is not residential and would not contribute to permanent residency on-site. Further, the site is designated Heavy Industrial by the General Plan and would not generate growth beyond that anticipated in the General Plan. Therefore, the proposed project would not induce substantial unplanned population growth in an area, either directly or indirectly.

Response B1-17: This comment states that the City must prepare a revised EIR for the proposed project and is noted. For the reasons explained in the responses above, the Recirculated Draft EIR properly evaluated the proposed project's potential impacts, and the commenter has not presented substantial evidence to the contrary. Therefore, a revised EIR is not required.

Comment Letter B2

May 17, 2023

Advocates for the Environment

A non-profit public-interest law firm
and environmental advocacy organization

Steven Martinez
Planner
City of Fresno
2600 Fresno Street, Room 3043
Fresno CA, 93721

Via U.S. Mail and email to Steven.Martinez@fresno.gov

re: Comments on the Draft Environmental Impact Report on 2740 West Nielsen Avenue Office/Warehouse Project, SCH No. 2022050265

Dear Mr. Martinez:

Advocates for the Environment submits the comments in this letter regarding the Recirculated Draft Environmental Impact Report (**RDEIR**) for the 2740 West Nielsen Avenue Office/Warehouse Project (**Project**) located at 2740 West Nielsen Avenue, on the north side of West Nielsen Avenue between North Marks and North Hughes Avenues in the City and County of Fresno, California. The Project proposes to construct four concrete tilt-up office/warehouse buildings for heavy industrial uses with a total gross floor area of 901,438 square feet on a 48.03-acre lot. There would be a total of 594 on-site parking spaces.

The comments below are based on the concern that the RDEIR violates CEQA. Advocates for the Environment is a public interest law firm and advocacy organization with the mission to educate the public about the law as it pertains to the environment and provide legal services in support of environmental causes. It is within the scope of Advocates for the Environment's mission to provide comments on the development of this project, especially because the RDEIR reflects potential issues of non-compliance with CEQA. Advocates for the Environment has reviewed the RDEIR released in February 2023 and provides its comments below on the sufficiency of the RDEIR's greenhouse gas (**GHG**) analysis.

B2-1

GHG Significance Analysis

The RDEIR incorporated three significance thresholds for GHG emissions that will be discussed below. For all three thresholds, there was a conclusion of "less than significant" impact, and that no mitigation is required to reach this level of significance. (RDEIR 4.6-20-26). However, this conclusion is not supported by substantial evidence. In reality, the Project is likely to have a significant impact on GHG emissions that should be analyzed and mitigated appropriately according to the Project's fair share of cumulative emissions.

B2-2

10211 Sunland Blvd., Shadow Hills, CA 91040 (818) 650-0030 X101 dw@aenv.org

The RDEIR concludes that this proposed Project would have a less than significant impact. However, evidence in the record before the City indicates that the Project is inconsistent with applicable plans and policies designed to reduce greenhouse gas (**GHG**), and failed to fall within the adopted significance thresholds, and is therefore likely to have a significant environmental impact due to high levels of GHG emissions. B2-3

Threshold 4.6.1 – Direct or Indirect Significant Impact

The first significance threshold adopted by the RDEIR is Threshold 4.6.1: "the project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment." (RDEIR 4.6-20). The Project estimated annual construction emissions at approximately 1,961.0 Metric Tons Carbon Dioxide Equivalent (**MTCO2e**) per year, with total operational emissions of approximately 4,967 MTCO2e annually. GHG emissions were calculated using CalEEMod. The RDEIR states that "if a project is consistent with an adopted qualified Greenhouse Gas Reduction Strategy that meets the standards, it can be presumed that the project would not have significant GHG emission impacts." (RDEIR, p. 4.6-22.) The City claims that the RDEIR qualifies, based on consistency with the Fresno Reduction Plan Update (**RPU**), as determined by compliance with the Consistency Checklist (**Checklist**). (RDEIR, p. 4.6-23).

The City concluded that the Project meets all the Checklist requirements, does not conflict with the City of Fresno GHG Reduction Plan Update, and therefore results in a less than significant impact. However, the resulting significance determination on this basis is erroneous because the Project would not meet all the applicable requirements of the RPU's Consistency Checklist. In particular, the Project is not compliant with Checklist item 2:b, which requires commercial buildings to "provide EV charging spaces capable of supporting EV capable spaces at 4% to 10% of the parking space." (Appendix H). The City claims that this item is not applicable to this Project because it "would not include commercial uses." Yet, the title of the Project as an "Office/Warehouse" indicates that offices—a well-known commercial use—will be one of the primary uses. And in certain cases warehouses are also commercial. Although it may not be a commercial project on the whole due to the potential inclusion of industrial uses, the Checklist specifies that this item applies to commercial "buildings." Thus, the Project will need to demonstrate that it will install the required EV charging spaces for all of the buildings intended to be used as offices in order to be in compliance with the Checklist. B2-4

This apparent failure to meet all the applicable Checklist requirements means that the City cannot rely on the Checklist as a mechanism to rule out a determination of significant GHG impact, and results in the Project being deemed inconsistent with the entire RPU. (Appendix H). Thus, the City will need to apply a different standard for determining "direct or indirect impact" if it is to use Threshold 4.6.1 as one of the significance thresholds and cannot

claim no significant impact on this basis. Further, any project that fails to meet all of the applicable Checklist requirements must go a step further by incorporating all of the Checklist measures "to the extent feasible," which would likely go beyond the minimal requirements. B2-4 cont.

Threshold 4.6.2 - Inconsistent with Applicable Plans

The second significance threshold adopted by the RDEIR is Threshold 4.6.2: the project would not "conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases." (RDEIR, p. 4.6-23). This language requires the Project to comply with *all* applicable plans, not only the plans most favored by the City. But here the RDEIR excluded a meaningful analysis of several applicable plans while identifying and comparing plans that are no longer applicable. The RDEIR concluded the Project would have no significant GHG impact under this adopted threshold, but that conclusion is not supported by substantial evidence.

The RDEIR analyzed five applicable plans: Executive Order (**EO**) B-30-15, SB 32, AB 197, the 2017 Scoping Plan, and the 2022 Scoping Plan. The RDEIR conclusively stated that "the proposed project would comply with existing State regulations adopted to achieve the overall GHG emissions reduction goals identified in EO B-30-15, SB 32, AB 197, and would be consistent with applicable plans and programs designed to reduce GHG emissions, mainly based on the argument that the Project is consistent with the RPU. (RDEIR 4.6-25.) B2-5

For example, the RDEIR states that because the Project is consistent with the RPU, that "emissions associated with the project would not hinder the City's ability to meet the reduction targets outlined in SB 32." (RDEIR 4.6-26). However, as demonstrated above, the Project is not consistent with the RPU, so the lead agency will need to find a different basis to establish consistency with SB 32.

The RDEIR was unable to establish, with substantial evidence, that the Project is consistent with all of the identified appliable plans, policies, and regulations for the reduction of GHGs. Therefore, its conclusion that the proposed Project would have less than significant impact is not supported.

There are significant inconsistencies with the CARB 2017 Scoping Plan which the RDEIR analysis failed to address. The Scoping Plan was developed to facilitate California's compliance with SB 32, which requires statewide GHG emissions to be reduced to 40% below 1990 levels by 2030. (Health & Safety Code § 38566.) The 2017 CARB Scoping Plan sets out statewide goals for total GHG emissions targets of 6 MTCO2e/capita by 2030, and 2 MTCO2e/capita by 2050 (CARB Scoping Plan, p. 99).

From the information provided in the RDEIR, it is impossible to determine the Project's actual per capita metric, because there is no mention of the number of workers that would B2-6

comprise the Project's service population, but the average warehouse employs 182 workers.[1] Because the Project's net operational GHG emissions are estimated to be 4,967 MTCO2e/year, the Project's per-service population emissions would be about 27.29 MTCO2e/service population each operating year.[2] As this is more than four times the 2030 goal of 6 MTCO2e/capita, and the building would likely last more than seven years, there is a fair argument that this inconsistency demonstrates significant GHG impact. To the extent that the true predicted service population differs from this average, the City should update the resulting estimated per capita emissions and compare the result to the goals set out in the 2017 Scoping Plan for the Project's full lifespan.

B2-6 cont.

Further, the Project is clearly inconsistent with the 2022 Scoping Plan, which aims to achieve carbon neutrality by 2045. It is likely that this Project will be operating well into 2045, due to the long lifespan of warehouses, so the RDEIR must demonstrate consistency with the entire operation of the Project. Here, there is no showing that the Project would achieve carbon neutrality by 2045 because it anticipates using natural gas and other carbon-intensive fuels with no future plan for reduction.

The RDEIR should be updated to reflect consistency not only with the identified applicable plans, but also other applicable plans that it disregarded. Specifically, for the Project's impacts to be insignificant, the Project must be consistent with the EO B-55-18, because it is an applicable policy.

B2-7

And the RDEIR made no effort to reconcile the Project with EO B-55-18, which aims to achieve carbon neutrality by 2045. As this Project requires industrial storage and transportation using large vehicles, with no plans of reducing or offsetting emissions to zero by 2045, the City has made no demonstration of consistency with B-55-18, which is an applicable policy that the Project must demonstrate consistency with in order to conclude that the impact is less than significant.

Threshold 4.6.1 – Cumulative Impact

"Threshold 4.6.3: The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative impact with respect to greenhouse gas emissions." There is no need for this to be analyzed in a separate significance threshold because CEQA requires that all GHG impact to be cumulative. For the reasons given above, the Project would contribute to significant cumulative GHG impact because the RDEIR has not demonstrated that the GHG impact is below the significance thresholds.

B2-8

[1] www.mmh.com/article/2018_warehouse_distribution_center_survey_labor_crunch_driving_automation
[2] 4,967 MTCO2e ÷ 182 people = 27.29 MTCO2e/service population

CalEEMod Deficiencies

Appendix C contains the CalEEMod output sheets, which show the basis for the RDEIR's GHG emissions estimates. There is no evidence for the CO_2 efficiency of 203.98 lb/MWhr, a parameter which was used for CalEEMod. Evidence demonstrates that the intensity score in reality is much higher, at about 352.45 lb/MWhr.[3] There is also no indication on the CalEEMod parameters of where the intensity score originated or otherwise was calculated from, for all intensity metrics of CO2, CH4, and NO2. The agency should amend the intensity scores for all of them as necessary and cite where the numbers are from. **B2-9**

Additionally, the CalEEMod analysis indicates a population of zero although presumably there will be some non-zero service population due to the need for employees to conduct general operations at the warehouse. The RPU Consistency Checklist indicates that the Project will employ over 100 individuals, although it does not specify how many. The agency should amend the CalEEMod population parameter to reflect the true estimated value because it could affect the Project's emissions. **B2-10**

Certain EMFAC Adjustment factors were changed to be lower than their default value, which would result in a reduction in the total CO2e estimation. But the RDEIR does not support these alterations of the default with any evidence or rationale for why they would be any different from the standard program used for modeling vehicle emissions. The result of this is an underreporting of VMT-related GHG emissions without a basis for doing so.

Lastly, certain values are reported as zero when there is evidence that it would result in emissions in reality. For example, the entry for "architectural coatings," which are paints or other products for the exterior of the building, would likely be used and release some amount of GHGs that should be accounted for in section 6.2 (Appendix H). **B2-11**

Overall, the total estimation of 4,967 MTCO2e per year appears to be an under-exaggeration which does not reflect an accurate estimation of the Project's GHG emissions.

Feasible Mitigation

No mitigation measures were considered for GHGs due to the erroneous determination of less than significant impact. The identification and analysis of mitigation is necessary because the REIR does not sufficiently demonstrate that GHG emissions would have a less than significant impact. However, because the City should have found significant impact for GHG emissions, it should update its findings accordingly and would therefore be required to mitigate to the fair share level. To do so, the RDEIR should incorporate mitigation measures to make it **B2-12**

[3] https://findenergy.com/ca/fresno-county-electricity/#fuel-types (1,002,972,444 kg * conversion factor = 2211175739.13 lbs. 2211175739.13 lbs/6,273,644 MWh = 352.4547678).

clear that the Project's effects would be sufficiently mitigated to lower GHG impact to the fair share extent.

There are many mitigation measures that can feasibly be adopted. For example, while Cal Green standards would be met, it would not follow any other green ratings. One mitigation that could be implemented is adherence to the LEED certification standard, among other green building standards. The warehouse could incorporate energy-generating features such as rooftop solar panels or sponsor local renewable energy programs. The Project could require future tenants to use electric equipment and vehicles to the extent possible, and strictly prohibit idling on the premises.

B2-12 cont.

Vehicle Miles Traveled Impact Analysis

Finally, the RDEIR identified the impact of Vehicle Miles Traveled (**VMT**) as "less than significant" without mitigation, simply based on the fact that the Project's estimated VMT per employee is lower than the regional average of 25.6 miles. (RDEIR 4.10-14). However, this conclusion cannot stand without adequately supporting the validity of chosen significance threshold.

The RDEIR recognizes that "a quantitative analysis of VMT impacts must be prepared and compared against the adopted VMT thresholds of significance." (RDEIR 4-10.13). Although the RDEIR may have technically satisfied this requirement, the conclusion it came to is not supported by substantial evidence because the adopted threshold of significance (namely, comparing the estimated VMT to the current regional average) does not have a rational basis. Specifically, the RDEIR has not demonstrated that the *current* average VMT of the region is a rational significance threshold. This logic, without more evidentiary support, is invalid because there is no reason why a current average value could not also be a "significant" VMT value; it is not mutually exclusive. Thus, this threshold relies on the inherent presumption that the current average value is necessarily less than significant without demonstrating that this is the case.

B2-13

Even if the City can demonstrate that the current average value is less than significant, it must still analyze the potential need for VMT reductions in the future and how the Project will meet the goals for the reasonable lifetime of an office/warehouse building. In all likelihood, average VMT may have to be reduced in the near future and consistently achieve reductions from the current average in order to meet local, regional, and statewide VMT goals and concomitant GHG reductions. And because the significance analysis must account for the reasonable lifetime of the Project in its entirety, the VMT analysis should likewise demonstrate that the Project will not only demonstrate a VMT impact that meets the current standard, but also will be able to achieve VMT reductions in alignment with future standards to the extent that it would create an above-significant impact during the Project's operation.

Comment Letter B2 Cont.

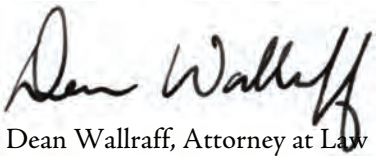
Conclusion

In conclusion, the lead agency assumed, without analyzing, that the project will comply with the measures outlined in applicable plans and policies, but clearly conflicts with those plans. And it entirely ignored several key applicable plans for GHG reductions.

B2-14

Please put Advocates for the Environment on the list of interested parties to receive updates about the progress of this potential project approval.

Sincerely,



Dean Wallraff, Attorney at Law
Executive Director, Advocates for the Environment

10211 Sunland Blvd., Shadow Hills, CA 91040 (818) 650-0030 X101 dw@aenv.org

LETTER B2
Advocates for the Environment
Dean Wallraff, Attorney at Law
May 17, 2023

Response B2-1: This introductory comment is noted. More specific comments provided in this letter are further responded to below.

Response B2-2: This comment asserts that no substantial evidence supported the less than significant impact conclusion for three significance thresholds for GHG emissions. This comment also claims that the proposed project is likely to have a significant impact on GHG emissions that should be analyzed and mitigated appropriately according to the project's fair share of cumulative emissions.

The analysis of GHG impacts contained in the Recirculated Draft EIR is supported by substantial evidence. As described on page 4.6-22 of the Recirculated Draft EIR, Section 15064.4 of the *State CEQA Guidelines* states that: "A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of GHG emissions resulting from a project." In performing that analysis, the lead agency has discretion to determine whether to use a model or methodology to quantify GHG emissions or to rely on a qualitative analysis or performance-based standards. In making a determination as to the significance of potential impacts, the lead agency then considers: (1) the extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

In accordance with CEQA, the City made a good-faith effort to evaluate the project's GHG emissions based on the City's GHG Reduction Plan. Consistent with the *State CEQA Guidelines*, Section 15183.5, if a project is consistent with an adopted qualified GHG Reduction Plan that meets the standards, the lead agency may presume that the project would not have significant GHG emission impacts.

The City of Fresno's GHG Reduction Plan was adopted in December 2014 to reduce local community GHG emissions to 1990 levels by the year 2020, consistent with the State objectives set forth in AB 32. The City's 2014 GHG Reduction Plan meets the requirements for a Qualified GHG Reduction Plan and is designed to streamline environmental review of future development projects in Fresno, consistent with *State CEQA Guidelines* Section 15183.5.

The City of Fresno updated its 2014 GHG Reduction Plan in 2021 to conform with existing applicable State climate change policies and regulations to reduce local community GHG emissions to 40 percent below 1990 levels by the year 2030, consistent with the State objectives set by SB 32. The GHG Plan Update outlines strategies that the City will undertake to achieve its proportional share of GHG emission reductions. As required by CEQA Guidelines Section 15183.5, the Program EIR[1] for the General Plan and GHG Reduction Plan Update and City Council Hearings provide the environmental review and adoption in a public process.

The GHG Reduction Plan Update requires an analysis of GHG emissions to ensure that the change in land use designation would not result in a significant increase in GHG emissions compared to the existing land use designation. The proposed project would not require a change in the General Plan land use designation or the current zoning and would be consistent with the City's General Plan and Zoning applicable to the project site. Therefore, an analysis of the proposed project's estimated GHG emissions compared to the estimated GHG emissions associated with the maximum buildout of the existing designation would not be required.

The GHG Reduction Plan Update includes a Consistency Checklist to help the City provide a streamlined review process for new development projects that are subject to discretionary review pursuant to CEQA. The City evaluated the proposed project using the Consistency Checklist for consistency with the City's GHG Reduction Plan Update, as discussed on pages 4.6-22 and 4.6-23 of the Recirculated Draft EIR. The project's Consistency Checklist is included in Appendix H of the Recirculated Draft EIR. As shown in the Consistency Checklist, the proposed project would be consistent with the applicable strategies from the GHG Reduction Plan Update. Therefore, the proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant effect on the environment, and impacts would be less than significant.

In addition, as described further in Responses B2-3 through B2-9 and on pages 4.6-23 through 4.6-26 of the Recirculated Draft EIR, the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and would have a less than significant cumulative impact.

Response B2-3: The commenter states that evidence in the record before the City indicates that the project is inconsistent with applicable plans and policies designed to reduce GHG emissions, failed to fall within the adopted significance

[1] The Program EIR can be found online at: https://ceqanet.opr.ca.gov/2019050005/3.

thresholds, and is therefore likely to have a significant environmental impact due to high levels of GHG emissions.

Please refer to Response B2-2, above. The City's GHG Reduction Plan Update meets the requirements for a Qualified GHG Reduction Plan and is designed to streamline environmental review of future development projects in Fresno, consistent with *State CEQA Guidelines* Section 15183.5.

The Recirculated Draft EIR concluded that the proposed project is consistent with the City's GHG Reduction Plan Update, and the commenter has not presented evidence to the contrary. In addition, as described on pages 4.6-23 through 4.6-25 of the Recirculated Draft EIR, the proposed project was analyzed for consistency with Executive Order (EO) B-30-15, SB 32, AB 197, the 2017 Scoping Plan, and the 2022 Scoping Plan. The City's GHG Reduction Plan Update is consistent with the SB 32 statewide goal of reducing GHG emissions to 40 percent below 1990 levels by 2030. Further, as identified on page 4.6-25 of the Recirculated Draft EIR, Mitigation Measure AIR-1 requires the infrastructure for AC and/or DC chargers for electric heavy-duty trucks, which would be consistent with the State's advanced clean fleets rule, which has a goal of achieving a zero-emission truck and bus California fleet by 2045. Therefore, the Recirculated Draft EIR concluded that the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and impacts would be less than significant, and the commenter has not presented evidence to the contrary.

Response B2-4: This comment states that the proposed project's estimated annual construction emissions would be approximately 1,961.0 metric tons of carbon dioxide equivalent (CO_2e) per year and the total operational emissions would be approximately 4,967 metric tons of CO_2e per year. Further, this comment states that the City concluded that the project meets all the Consistency Checklist requirements, does not conflict with the City of Fresno GHG Reduction Plan Update, and therefore results in a less than significant impact. However, this comment asserts that the significance determination is erroneous because the project is not compliant with Checklist item 2:b, which requires that new commercial buildings provide electric vehicle (EV) capable charging spaces at 4% to 10% of the parking spaces per the 2019 CALGreen code (Title 24, Part 11), Section 5.106.5.3.

The commenter is incorrect that the proposed project's estimated annual construction emissions would be approximately 1,961.0 metric tons of CO_2e per year. As shown in Table 4.6.E of the Recirculated Draft EIR, the proposed project would generate approximately 1,961.0 metric tons of CO_2e over the entire construction period, not per year.

As discussed in Appendix H, Greenhouse Gas Reduction Plan Update Checklist, of the Recirculated Draft EIR, the proposed project would not include commercial uses. As identified in the Project Description, the project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. As shown in Figure 3-5 of the Recirculated Draft EIR, the four buildings would be configured for heavy industrial uses and would potentially include small offices that would support the industrial/warehouse uses. The proposed project would not be considered an office or commercial land use. Therefore, Checklist item 2:b, intended for commercial land uses, is not applicable to the project. In addition, as identified in the Project Description, the proposed project would comply with the latest CALGreen building measures and 2022 Title 24 Standards. The 2022 CALGreen code includes mandatory measures for non-residential projects, which apply to all new non-residential buildings and include requirements for EV-capable spaces in accordance with Table 5.105.5.3.1 of CALGreen.[1] As such, although the proposed project is not a commercial project, the proposed project would be consistent with the 2022 CALGreen code, which is consistent with the requirements in the Greenhouse Gas Reduction Plan Update Checklist.

Response B2-5: This comment claims that the Recirculated Draft EIR excluded a meaningful analysis of several applicable plans adopted for the purpose of reducing GHG emissions and that the Recirculated Draft EIR identified and compared plans that are no longer applicable, including EO B-30-15, SB 32, AB 197, the 2017 Scoping Plan, and the 2022 Scoping Plan. In addition, this comment claims that the project is not consistent with the GHG Reduction Plan Update, so the lead agency will need to find a different basis to establish consistency with SB 32.

Please refer to Responses B2-2, B2-3, and B2-4. The City's GHG Reduction Plan Update meets the requirements for a Qualified GHG Reduction Plan and is designed to streamline environmental review of future development projects in Fresno, consistent with *State CEQA Guidelines* Section 15183.5. The Recirculated Draft EIR concluded that the proposed project is consistent with the City's GHG Reduction Plan Update, and the commenter has not presented evidence to the contrary. The City's GHG Reduction Plan Update is consistent with the SB 32 statewide goal of reducing GHG emissions to 40 percent below 1990 levels by 2030. In addition, the Recirculated Draft EIR qualitatively evaluates the proposed project according to the goals of EO B-30-15, SB 32, the 2017 Scoping Plan, and the 2022 Scoping Plan. The Recirculated Draft EIR concluded that the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of

[1] International Code Council. 2023. op. cit.

reducing the emissions of GHGs and impacts would be less than significant, and the commenter has not presented evidence to the contrary.

Response B2-6: This comment asserts that the proposed project would exceed estimated per-capita emissions and compares the result to the goals set out in the 2017 Scoping Plan. This comment incorrectly claims that the warehouse would employ 182 workers, resulting in per-service population emissions of approximately 27.29 metric tons of CO_2e per year, which is more than four times the 2030 goal of 6.0 metric tons of CO_2e per year.

As discussed in Response B2-2, above, on page 4.6-23 of the Recirculated Draft EIR, and in the GHG Reduction Plan Update, a quantitative analysis of GHG emissions is only required for projects that would require a change in the General Plan land use designation or zoning designation. The proposed project would not require a change in the General Plan land use designation or the current zoning and would be consistent with the City's General Plan and Zoning Ordinance. Therefore, an analysis of the proposed project's estimated GHG emissions would not be required. As stated above, the GHG Reduction Plan Update includes a Consistency Checklist to help the City provide a streamlined review process for new development projects that are subject to discretionary review pursuant to CEQA, which was used for the GHG analysis in the Recirculated Draft EIR. Therefore, an evaluation of per-capita emissions is not required. Furthermore, as discussed in Response B1-16, the TIS (Appendix M of the Recirculated Draft EIR) estimated that the proposed project would have approximately 4,920 employees. As such, the proposed project would result in per-service population emissions of 1.0 metric tons of CO_2e per year, which is well below the 2030 goal of 6.0 metric tons of CO_2e per year identified in the comment letter. Therefore, the proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant effect on the environment, and impacts would be less than significant.

Response B2-7: This comment claims that the project is inconsistent with the 2022 Scoping Plan, which aims to achieve carbon neutrality by 2045.

In addition, as explained in Responses B2-4 and B2-5, the proposed project would comply with the latest CALGreen building measures and 2022 Title 24 Standards. As such, the proposed project would be consistent with State building code requirements as Title 24 advances to implement the building decarbonization goals by 2045 from the 2022 Scoping Plan. Further, as identified on page 4.6-25 of the Recirculated Draft EIR, Mitigation Measure AIR-1 requires the infrastructure for AC and/or DC chargers for electric heavy-duty trucks, which would be consistent with the State's advanced clean fleets rule, which has a goal of achieving a zero-emission truck and bus California fleet by 2045.

Response B2-8: This comment claims that the project would contribute to a significant cumulative GHG impact because the Recirculated Draft EIR has not demonstrated that the GHG impact is below the significance thresholds. Please refer to Responses B2-2, B2-3, and B2-4. The City's GHG Reduction Plan Update meets the requirements for a Qualified GHG Reduction Plan and is designed to streamline environmental review of future development projects in Fresno, consistent with *State CEQA Guidelines* Section 15183.5. The Recirculated Draft EIR concluded that the proposed project is consistent with the General Plan land use designation and the City's GHG Reduction Plan Update, and the commenter has not presented evidence to the contrary. Therefore, the Recirculated Draft EIR properly determined that the proposed project would not result in any significant project or cumulative impacts related to GHG emissions.

Response B2-9: This comment states that there is no evidence for the carbon dioxide (CO_2) efficiency of 203.98 pounds per megawatt-hour (lbs/MWhr), a parameter that was used for CalEEMod.

The CO_2 intensity in CalEEMod was based on default assumptions based on PG&E as the utility company. As discussed in the CalEEMod User Guide,[1] when a specific utility is selected, the intensity factors for CO_2, methane (CH_4) and nitrous oxide (N_2O) will be automatically populated with defaults applicable to the specified utility. The intensity factors are used in various modules to calculate the GHG emissions associated with electricity use. The default values are based on CARB's Local Government Operations Protocol (LGO)[2] for CO_2, updated public utility protocols for CO_2, and E-Grid values for CH_4 and N_2O. Each default CO_2 intensity factor is based on the latest reporting year available for each utility. Appendix D, Table 1.2, of the CalEEMod User Guide provides the default CO_2 intensity factor and reporting year from which the factor was identified for each utility identified in the drop-down list.

Response B2-10: This comment states that the CalEEMod analysis indicates a population of zero, although presumably there will be some non-zero service population due to the need for employees to conduct general operations at the warehouse.

In regard to comments regarding the population of zero, according to the CalEEMod User Guide, Appendix A, population data is only used to estimate emissions associated with ***residential*** land uses. CalEEMod does not consider employees as population. Since the proposed project does not include residential uses and population is not used to calculate non-residential

[1] California Air Pollution Control Officers Association (CAPCOA). 2021. *California Emissions Estimator Model User's Guide Version 2020.4.0.* May. Website: http://www.aqmd.gov/caleemod/user's-guide (accessed May 2022).

[2] Available at: http://www.arb.ca.gov/cc/protocols/localgov/localgov.htm.

emissions, the Recirculated Draft EIR's use of a zero population for CalEEMod purposes was appropriate and consistent with standard practice.

Response B2-11: This comment states that certain EMFAC adjustment factors were changed and that certain values are reported as zero when there is evidence that it would result in emissions in reality. For example, the entry for "architectural coatings," which are paints or other products for the exterior of the building, would likely be used and release some amount of GHGs that should be accounted for.

Further, the comments claiming EMFAC adjustment factors were changed and that certain values are reported as zero, including architectural coating, are not correct. The non-default changes to CalEEMod include the following: adjusting the construction schedule based on the project schedule; updating the vehicle trips and fleet mix to account for the vehicle and truck trip generation for the proposed project as identified in the TIS; and assuming compliance with SJVAPCD Regulation VIII (Fugitive PM_{10} Prohibitions) and use of Tier 4 construction equipment as required by Mitigation Measure AIR-2. These nondefault changes were made in CalEEMod based on project-specific information provided by the project applicant. The commenter is incorrect that changes were made to EMFAC adjustment factors and architectural coating assumptions in CalEEMod.

Response B2-12: This comment states that the identification and analysis of mitigation is necessary for the proposed project. Please refer to Responses B2-2 and B2-3. The City's GHG Reduction Plan Update meets the requirements for a Qualified GHG Reduction Plan and is designed to streamline environmental review of future development projects in Fresno, consistent with *State CEQA Guidelines* Section 15183.5. In addition, the proposed project would comply with the latest CALGreen building measures and 2022 Title 24 standards and would also include cool roof materials. The proposed project would include EV-capable spaces and Mitigation Measure AIR-1, as identified in Section 4.2, Air Quality, which requires the infrastructure for AC and/or DC chargers for electric heavy-duty trucks. This would be consistent with the State's advanced clean fleets rule, which has a goal of achieving a zero-emission truck and bus California fleet by 2045. The Recirculated Draft EIR concluded that the proposed project is consistent with the City's GHG Reduction Plan Update, and the commenter has not presented evidence to the contrary. Therefore, the Recirculated Draft EIR properly determined that the proposed project would not result in any significant impacts related to GHG emissions. As such, identification and analysis of mitigation measures is not required. (See Public Resources Code [PRC] § 21100, subd. (b)(3); *San Franciscans for Reasonable Growth v. City and County of San Francisco* [1989] 209 Cal.App.3d 1502, 1517.)

Response B2-13: This comment claims that the Recirculated Draft EIR identified VMT impacts as "less than significant" without mitigation, based on the fact that the project's estimated VMT per employee is lower than the regional average of 25.6 miles. This comment states that this conclusion cannot stand without adequately supporting the validity of the chosen significance threshold. This comment also states that even if the City can demonstrate that the current average value is less than significant, it must still analyze the potential need for VMT reductions in the future and how the project will meet the goals for the reasonable lifetime of an office/warehouse building.

As discussed on page 4.10-12 of the Recirculated Draft EIR, CEQA Guidelines Section 15064.3(b)(4) states that "[a] lead agency has discretion to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revision to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section."

In addition, as discussed on page 4.10-12, on June 25, 2020, the City of Fresno adopted CEQA Guidelines for Vehicle Miles Traveled Thresholds (VMT Guidelines), pursuant to SB 743, to be effective as of July 1, 2020. The City's document serves as a detailed guideline for preparing VMT analyses consistent with SB 743 requirements for development projects, transportation projects, and plans. Project applicants are required to follow the guidance provided in the City's document for preparation of CEQA VMT analysis. As such, the significance threshold used in the Recirculated Draft EIR was obtained from the City's VMT Guidelines. The City's VMT Guidelines include substantial evidence for establishment of the region's significance thresholds. The City's VMT Guidelines state the following:

> "The purpose of the CEQA analysis is to disclose and reduce GHG emissions by reducing the number and length of automobile trips. As part of the SB 375 land use/transportation integration process and the GHG goal setting, the State and Regional Transportation Planning Agencies (RTPA) have agreed to reduce GHG through integrated land use and transportation planning by a statewide average of approximately 15 percent by 2035..."

Based on the City's VMT Guidelines, to achieve these goals, the regional VMT per employee would be reduced if a project's VMT per employee is less than the regional VMT per employee threshold. In case of the Fresno region, the threshold is 13 percent below the existing VMT per employee for the region.

Therefore, a project that would have a VMT per employee lower than the regional threshold would help achieve the targeted VMT and GHG goals for the region.

The analysis for existing conditions presents a conservative scenario. The project trip lengths are longer in the existing conditions compared to future conditions as explained on page 4.10-14 of the Recirculated Draft EIR. The project trip lengths are reduced in the future due to additional developments occurring in the region compared to existing conditions. These additional developments allow for intervening opportunities closer to the project, compared to the lengthier distances between existing land uses under existing conditions. Therefore, the existing conditions have been analyzed for the project consistent with recommendations from the City's guidelines. The guidelines provide substantial evidence demonstrating the appropriateness of the VMT analysis methodology consistent with the intended goals for SB 743.

This comment does not identify any new significant environmental issues or impacts that were not already addressed in the Recirculated Draft EIR. Neither this comment nor the response constitutes new information requiring recirculation of the Recirculated Draft EIR.

Response B2-14: This comment states that the project conflicts with the measures outlined in applicable plans and policies and clearly conflicts with key plans. This comment is noted. For the reasons explained in the responses above, the Recirculated Draft EIR properly evaluated the proposed project's potential impacts, and the commenter has not presented substantial evidence to the contrary. Therefore, a revised EIR is not required.

Comment Letter B3

ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4721
TEL: (916) 444-6201
FAX: (916) 444-6209
kcarmichael@adamsbroadwell.com

SO. SAN FRANCISCO OFFICE
601 GATEWAY BLVD., SUITE 1000
SO. SAN FRANCISCO, CA 94080
TEL: (650) 589-1660
FAX: (650) 589-5062

KEVIN T. CARMICHAEL
CHRISTINA M. CARO
THOMAS A. ENSLOW
KELILAH D. FEDERMAN
RICHARD M. FRANCO
ANDREW J. GRAF
TANYA A. GULESSERIAN
RACHAEL E. KOSS
AIDAN P. MARSHALL
TARA C. RENGIFO

Of Counsel
MARC D. JOSEPH
DANIEL L. CARDOZO

May 19, 2023

Via Email and Overnight Mail

Steven Martinez, Planner
City of Fresno Planning and Development Department
City Hall
2600 Fresno Street, Room 3043,
Fresno, California, 93721-3604
Email: Steven.Martinez@fresno.gov

Re: **Comments on Draft Environmental Impact Report for the 2740 West Nielsen Avenue Office/Warehouse Project, Development Permit Application No. P21-02699 and Tentative Parcel Map No. P21-05930 (SCH 2022050265)**

Dear Mr. Martinez:

We write on behalf of Fresno Residents for Responsible Development ("Fresno Residents") to provide comments on the Draft Environmental Impact Report ("DEIR") and Recirculated DEIR ("RDEIR") prepared by the City of Fresno ("City") for the 2740 West Nielsen Avenue Office/Warehouse Project, Development Permit Application No. P21-02699 and Tentative Parcel Map No. P21 05930 (SCH 2022050265) ("Project"), proposed by Scannell Properties ("Applicant").[1]

B3-1

The Project proposes construction of four office/warehouse buildings that would be configured for heavy industrial uses.[2] The proposed buildings would result in a total gross floor area of approximately 901,438 square feet.[3] The buildings' exterior height would be up to 44 feet with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south

[1] City of Fresno, Draft Environmental Impact Report, 2740 West Nielsen Avenue Office/Warehouse Project (SCH: 2022050265) (hereinafter "DEIR") (February 2023); *and* Recirculated Draft Environmental Impact Report, 2740 West Nielsen Avenue Office/Warehouse Project (SCH: 2022050265) (hereinafter "RDEIR") (April 2023) available at https://ceqanet.opr.ca.gov/2022050265/3
[2] DEIR, p. 1-3.
[3] DEIR, p. 1-3.

printed on recycled paper

sides of the buildings.[4] The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors.[5] The Project site is located at 2740 West Nielsen Avenue, between North Marks and North Hughes Avenues in the City and County of Fresno.[6] The 48.03-acre Project site is currently vacant but formerly consisted of an industrial warehouse that has since been demolished.[7] The Project site is bounded to the north by partially developed land, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue.[8] Regional access to the site is provided by State Route 180 ("SR-180"), which is located approximately 0.3 mile south of the project site, and State Route 99 ("SR-99"), which is located approximately 0.8 miles east of the project site.[9]

B3-1 cont.

The Project proposes a total of 594 on-site parking spaces for vehicles and trucks.[10] Of the 594 parking spaces, 385 spaces are allocated for passenger vehicles, 11 spaces for accessible vehicles, and 10 spaces for accessible vans. [11] The remaining 188 spaces are allocated for trailers and are proposed to be located along the eastern and western edges of the project site.[12]

The Applicant seeks the following approvals from the City in order to construct the Project: certification of the EIR; development permit; tentative parcel map; water connection permit; and sanitary sewer connection permit.[13] The Project also requires approval from Pacific Gas & Electric ("PG&E") for electrical and natural gas connections, Central Valley Regional Water Quality Control Board ("RWQCB") for a Storm Water Pollution Prevention Plan, and San Joaquin Valley Air Pollution Control District ("SJVAPCD") for a Dust Control Plan Approval letter and compliance with Rule 9510 – Indirect Source Review.[14]

[4] DEIR, p. 1-3.
[5] DEIR, p. 1-3.
[6] DEIR, p. 2-2.
[7] DEIR, p. 3-5.
[8] DEIR, pp. 2-1 – 2-2.
[9] DEIR, p. 3-1.
[10] DEIR, p. 1-3.
[11] DEIR, p. 1-3.
[12] DEIR, p. 1-3.
[13] DEIR, p. 3-18.
[14] DEIR, p. 3-18.

Based upon our review of the DEIR and supporting documentation, we conclude that the DEIR fails to comply with the requirements of the California Environmental Quality Act[15] ("CEQA"). The DEIR fails to adequately analyze many of the Project's significant environmental impacts and fails to propose enforceable mitigation measures that can reduce those impacts to a less than significant level, as required by CEQA.

As explained more fully below, the DEIR fails to properly analyze and mitigate the Project's transportation, air quality, health risk, GHG emissions, energy, and noise impacts. The DEIR fails to support its significant findings with substantial evidence, and fails to mitigate the Project's significant impacts to the greatest extent feasible, in violation of CEQA. The Project also conflicts with applicable land use plans and policies, resulting in land use inconsistencies as well as significant impacts under CEQA. The City may not approve the Project until the City revises the DEIR to adequately analyze the Project's significant direct, indirect and cumulative impacts, and incorporates all feasible mitigation measures to avoid or minimize these impacts to the greatest extent feasible. B3-2

We reviewed the DEIR, technical appendices, and reference documents, with the assistance of our expert consultants, including air quality and hazardous materials expert James J.J. Clark, Ph.D. of Clark and Associates, noise expert Derek Watry of Wilson Ihrig, and transportation expert Normal Marshall of Smart Mobility whose comments and qualifications are included as Attachment A, Attachment B, and Attachment C respectively.[16] Dr. Clark, Mr. Watry, and Mr. Marshall provide substantial evidence of potentially significant impacts that have not been adequately disclosed, analyzed, or mitigated. The City must address and respond to their comments separately and fully.[17]

I. STATEMENT OF INTEREST

Fresno Residents is an unincorporated association of individuals and labor organizations that may be adversely affected by the potential impacts associated with Project development. East Bay Residents includes the International Brotherhood of Electrical Workers Local 100, Plumbers and Pipefitters UA Local B3-3

[15] Pub. Resources Code (hereinafter "PRC") §§ 21000 et seq.; 14 Cal. Code Regs (hereinafter "CEQA Guidelines") §§ 15000 et seq.
[16] **Exhibit A**, James J.J. Clark, Ph.D., Clark & Associates (hereinafter "Clark Comments"); **Exhibit B**, Derek Watry, Wilson Ihrig (hereinafter "Watry Comments"); **Exhibit C**, Norman Marshall, Smart Mobility (hereinafter "Marshall Comments").
[17] CEQA Guidelines §§ 15088(a), (c).

442, Sheet Metal Workers Local 104, Sprinkler Fitters Local 669, District Council of Ironworkers their members and their families, and other individuals that live and/or work in the City of Fresno and Fresno County.

Fresno Residents support sustainable development in the City. Residents have a strong interest in enforcing the State's environmental laws that encourage sustainable development and ensure a safe working environment for its members. Large warehouse projects like this Project should avoid adverse impacts to air quality, noise levels, transportation, biological resources, and public health, and should take all feasible steps to ensure unavoidable impacts are mitigated to the maximum extent feasible. Only by maintaining the highest standards can commercial and industrial development truly be sustainable.

The individual members of Fresno Residents live, work, recreate, and raise their families in the City of Fresno and surrounding communities. Accordingly, they would be directly affected by the Project's environmental and health and safety impacts. Individual members may also work constructing the Project itself. They would be the first in line to be exposed to any health and safety hazards which may be present on the Project site. They each have a personal interest in protecting the Project area from unnecessary, adverse environmental and public health impacts.

B3-3 cont.

In addition, Fresno Residents has an interest in enforcing environmental laws that encourage sustainable development and ensure a safe working environment for its members. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for business and industry to expand in the region, and by making the area less desirable for new businesses and new residents. Indeed, continued environmental degradation can, and has, caused construction moratoriums and other restrictions on growth that, in turn, reduce future employment opportunities.

Finally, Fresno Residents is concerned with projects that can result in serious environmental harm without providing countervailing economic benefits. CEQA provides a balancing process whereby economic benefits are weighed against significant impacts to the environment.[18] It is in this spirit we offer these comments.

[18] PRC § 21081(a)(3); *Citizens for Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151, 171.

II. LEGAL BACKGROUND

CEQA requires public agencies to analyze the potential environmental impacts of their proposed actions in an EIR.[19] "The foremost principle under CEQA is that the Legislature intended the act to be interpreted in such manner as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language."[20]

CEQA has two primary purposes. First, CEQA is designed to inform decisionmakers and the public about the potential significant environmental effects of a project.[21] "Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. Thus, the EIR 'protects not only the environment but also informed self-government.'"[22] The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return."[23] As the CEQA Guidelines explain, "[t]he EIR serves not only to protect the environment but also to demonstrate to the public that it is being protected."[24]

B3-4

Second, CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring consideration of environmentally superior alternatives and adoption of all feasible mitigation measures.[25] The EIR serves to provide agencies and the public with information about the environmental impacts of a proposed project and to "identify ways that environmental damage can be avoided or significantly reduced."[26] If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has

---

[19] PRC § 21100.
[20] *Laurel Heights Improvement Assn. v. Regents of Univ. of Cal ("Laurel Heights I")* (1988) 47 Cal.3d 376, 390 (internal quotations omitted).
[21] PRC § 21061; CEQA Guidelines §§ 15002(a)(1); 15003(b)-(e); *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 517 ("[T]he basic purpose of an EIR is to provide public agencies and the public in general with detailed information about the effect [that] a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project.").
[22] *Citizens of Goleta Valley,* 52 Cal.3d at p. 564 (quoting *Laurel Heights I*, 47 Cal.3d at 392).
[23] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810; *see also Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs.* (2001) 91 Cal.App.4th 1344, 1354 ("*Berkeley Jets*") (purpose of EIR is to inform the public and officials of environmental consequences of their decisions *before* they are made).
[24] CEQA Guidelines § 15003(b).
[25] CEQA Guidelines § 15002(a)(2), (3); *see also Berkeley Jets*, 91 Cal.App.4th at 1354; *Citizens of Goleta Valley*, 52 Cal.3d at p. 564.
[26] CEQA Guidelines § 15002(a)(2).

"eliminated or substantially lessened all significant effects on the environment" to the greatest extent feasible and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns."[27]

While courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position. A clearly inadequate or unsupported study is entitled to no judicial deference."[28] As the courts have explained, a prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process."[29] "The ultimate inquiry, as case law and the CEQA guidelines make clear, is whether the EIR includes enough detail 'to enable who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.'"[30]

B3-4 cont.

III. THE PROJECT DESCRIPTION IS INADEQUATE

The DEIR does not meet CEQA's requirements because it fails to include an accurate and complete Project description, rendering the entire analysis inadequate. California courts have repeatedly held that "an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR."[31] CEQA requires that a project be described with enough particularity that its impacts can be assessed.[32] Without a complete project description, the

B3-5

[27] PRC § 21081(a)(3), (b); CEQA Guidelines §§ 15090(a), 15091(a), 15092(b)(2)(A), (B); *Covington v. Great Basin Unified Air Pollution Control Dist*. (2019) 43 Cal.App.5th 867, 883.
[28] *Berkeley Jets*, 91 Cal.App.4th at p. 1355 (emphasis added) (quoting *Laurel Heights I*, 47 Cal.3d at 391, 409, fn. 12).
[29] *Berkeley Jets*, 91 Cal.App.4th at p. 1355; *see also San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 722 (error is prejudicial if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process); *Galante Vineyards*, 60 Cal.App.4th at p. 1117 (decision to approve a project is a nullity if based upon an EIR that does not provide decision-makers and the public with information about the project as required by CEQA); *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 946 (prejudicial abuse of discretion results where agency fails to comply with information disclosure provisions of CEQA).
[30] *Sierra Club,* 6 Cal.5th at p. 516 (quoting *Laurel Heights I*, 47 Cal.3d at 405).
[31] *County of Inyo v. County of Los Angeles* (1977) 71 Cal.App.3d 185, 193.
[32] CCR § 15124; *see, Laurel Heights Improvement Assn. v. Regents of the Univ. of Cal.* (1988) 47 Cal.3d 376, 192–193.

environmental analysis under CEQA is impermissibly limited, thus minimizing the project's impacts and undermining meaningful public review.[33] A lead agency may not hide behind its failure to obtain a complete and accurate project description.[34]

CEQA Guidelines section 15378 defines "project" to mean "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment."[35] "The term "project" refers to the activity which is being approved and which may be subject to several discretionary approvals by governmental agencies. The term project does not mean each separate governmental approval.[36] Courts have explained that a complete description of a project must "address not only the immediate environmental consequences of going forward with the project, but also all "reasonably foreseeable consequence[s] of the initial project."[37] "If a[n]…EIR…does not adequately apprise all interested parties of the true scope of the project for intelligent weighing of the environmental consequences of the project, informed decisionmaking cannot occur under CEQA and the final EIR is inadequate as a matter of law."

B3-5 cont.

A. The DEIR Fails to Identify the End Users of the Project

The Project description typically need not identify the end user for a project because CEQA is concerned with the project's environmental impacts, not who uses it.[38] However, courts have held that where the tenant, or type of business, is known and there is evidence that an impact unique to that tenant or type of business will result, an EIR must disclose that information.[39] Here, the type of end users of the Project may have significant environmental impacts depending on the truck trips that those end users will generate.

B3-6

The DEIR assumes that the end users of the site will generate truck trips consistent with the average trip generation rate of 2.13 trucks per 1,000 square feet found in the Western Riverside Council of Governments ("WRCOG") Transportation Uniform Mitigation Fee ("TUMF") High-Cube Warehouse Trip Generation Study

---

[33] *Id.*

[34] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311 ("*Sundstrom*").

[35] 14 C.C.R. 15378(a).

[36] CEQA Guidelines § 15378.

[37] *Laurel Heights*, 47 Cal.3d at p. 396 (emphasis added); *see also Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 449-50.

[38] *Maintain Our Desert Env't v. Town of Apple Valley* (2004) 124 CA4th 430.

[39] *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 CA4th 1184, 1213.

("WRCOG Study").[40] However, the WRCOG Study shows that trip generation rates can vary widely depending on the end user of a project. For example, the WRCOG Study found that an Amazon facility generated 4.5 daily trips per 1,000 square feet, twice the rate assumed in the DEIR.[41] This approach is unsupported and is likely to underestimate impacts. Since the City lacks information about the type of end user that will ultimately occupy the Project warehouses after construction, the DEIR should have analyzed truck trips based on the *most intensive* reasonably foreseeable use of the site, not an average use, because the City has no evidence that Project truck trips will less intensive, or "average," when compared to other comparable facilities.

B3-6 cont.

The DEIR relies on average trip generation rates for its analysis of the Project's operational air quality, health risk, GHG emissions, energy, noise, and vehicle miles traveled ("VMT") impacts. The DEIR may therefore substantially underestimate the severity of each of these impacts of a more trip-intensive use occurs at the Project site. The DEIR should be revised to calculate impacts based on the most intensive foreseeable uses at the Project site.

B. The DEIR Fails to Disclose Whether the Project Will Require Use of Backup Generators

An EIR must include an analysis of the environmental effects of a proposed future expansion or other future action at a project site if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects.[42] Commercial and industrial businesses commonly rely on backup generators ("BUG") to supply emergency power during project operations in order to limit downtime.

B3-7

A recent study of BUG use in California ("BUG Study") found that backup generator use is sharply rising among commercial and industrial land uses, and are clustered in existing environmentally burdened communities.[43] For example, in the South Coast Air Quality Management District, BUG use significantly expanded between 2020 and 2021, growing from 12,104 in 2020 to 14,785 in 2021, a 22

[40] DEIR, 4.10-9.

[41] Marshall, p. 4.

[42] *Id*.

[43] M.Cubed, Diesel Back-Up Generator Population Grows Rapidly in the Bay Area and Southern California ("BUG Use Study") (2021) p. 7. Available at

percent increase.[44] The BUG Use Study found that forty-seven percent of generators are sited in communities classified as being in CalEnviroScreen's 80th to 100th percentile for pollution burden, with 33 percent of BUGs located in communities above the 90th percentile.[45] Backup generators commonly rely on fuels such as natural gas or diesel,[46] and thus can significantly impact air quality, GHG emissions, and public health through toxic diesel particulate ("DPM") emissions.[47] As the end users of the Project will likely not want to stop operations during power supply emergencies, it is reasonably foreseeable that the Project would use on-site BUGs. Therefore, the DEIR must disclose whether the Project will use BUGs, and, if so, analyze the effects of the Project's use of generators. The DEIR's failure to provide any information about the use of generators causes the DEIR to fail as an informational document.

B3-7 cont.

C. The DEIR Fails to Disclose Whether the Project Will Require Use of Diesel Fire Pumps

The DEIR fails to analyze the diesel emissions from routine testing and operation of fire pumps at the Project site. An email from the City Fire Department to the City Planning Department sent on September 16, 2022 explains that "warehouse developments of this [Project's] size will typically have high demand fire sprinkler systems for high rack storage and fire sprinkler systems will be

B3-8

[44] BUG Use Study, p. 8.

[45] BUG Use Study, p. 7.

[46] SCAQMD, Fact Sheet on Emergency Backup Generators, http://www.aqmd.gov/home/permits/emergency-generators ("Most of the existing emergency backup generators use diesel as fuel").

[47] California Air Resources Board, Emission Impact: Additional Generator Usage Associated with Power Outage (January 30, 2020), available at https://ww2.arb.ca.gov/resources/documents/emissions-impact-generator-usage-during-psps (showing that generators commonly rely on gasoline or diesel, and that use of generators during power outages results in excess emissions); California Air Resources Board, Use of Back-up Engines for Electricity Generation During Public Safety Power Shutoff Events (October 25, 2019), available at https://ww2.arb.ca.gov/resources/documents/use-back-engines-electricity-generation-during-public-safety-power-shutoff ("When electric utilities de-energize their electric lines, the demand for back-up power increases. This demand for reliable back-up power has health impacts of its own. Of particular concern are health effects related to emissions from diesel back-up engines. Diesel particulate matter (DPM) has been identified as a toxic air contaminant, composed of carbon particles and numerous organic compounds, including over forty known cancer-causing organic substances. The majority of DPM is small enough to be inhaled deep into the lungs and make them more susceptible to injury. Much of the back-up power produced during PSPS events is expected to come from engines regulated by CARB and California's 35 air pollution control and air quality management districts (air districts)").

supplemented with private fire pumps as needed."[48] However, the DEIR's CalEEMod output sheets located in Appendix C, which show the results of the DEIR's air quality impacts analysis, fail to include an output for the Project's fire pumps.[49] The DEIR's failure to provide any information about the Project's use of fire pumps causes the DEIR to fail as an informational document.

B3-8 cont.

IV. THE DEIR FAILS TO ADEQUATELY ESTABLISH THE EXISTING BASELINE

The DEIR fails to accurately disclose the baseline environmental conditions related to the Project's health risk impacts. As a result, the DEIR lacks the necessary baseline information against which to measure the Project's environmental impacts with regard to impacts on sensitive receptors from construction.

The existing environmental setting is the starting point from which the lead agency must measure whether a proposed project may cause a significant environmental impact.[50] CEQA defines the environmental setting as the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, from both a local and regional perspective.[51] Describing the environmental setting accurately and completely for each environmental condition in the vicinity of the Project is critical to an accurate, meaningful evaluation of environmental impacts. The courts have clearly stated that,"[b]efore the impacts of a project can be assessed and mitigation measures considered, an [environmental review document] must describe the existing environment. It is only against this baseline that any significant environmental effects can be determined."[52]

B3-9

[48] DEIR, Appendix A: NOP Comments, pdf. p. 65. Email from Byron Beagles to Steven Martinez re Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for 2740 W. Nielsen Office/Warehouse Project (September 16, 2022)

[49] DEIR, Appendix C: CalEEMod Output Sheets, p. 34 of 34.

[50] *See, e.g.*, *Communities for a Better Env't v. S. Coast Air Quality Mgmt. Dist.* (March 15, 2010) 48 Cal.4th 310, 316.

[51] CEQA Guidelines §15125(a) (emphasis added); *Riverwatch v. County of San Diego* (1999) 76 Cal.App.4th 1428, 1453 ("*Riverwatch*").

[52] *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 952.

A. The DEIR Fails to Adequately Establish the Existing Baseline with Respect to Valley Fever

The DEIR includes a single paragraph describing the cause of Valley Fever and its impacts on health.[53] However, the DEIR fails to explain the significance of Valley Fever with regard to the Project site, thereby failing to provide context on the environmental setting of the Project. This results in the failure to analyze the potential impacts of Valley Fever exposure to Project construction workers and nearby sensitive receptors.

Valley Fever is a disease that can spread when persons are exposed to *Coccidioides immitis* ("*Cocci*") fungus spores during ground disturbance.[54] Impacts to human health from Valley Fever can be severe, cause long lasting health problems, and can even result in death.[55] The fungus lives in the top 2 to 12 inches of soil, and when disturbed by activities such as digging, construction activities (e.g. site preparation and grading), dust storms, or during earthquakes, the fungal spores become airborne.[56] The Project will disturb up to 120 acres of soil during construction which may lead to the release of fungus spores resulting in impacts to Project workers and nearby sensitive receptors.[57]

B3-10

Valley Fever is highly endemic in Fresno County.[58] According to the California Department of Public health, Fresno County had a Valley Fever case rate of 43.6 per 100,000 residents in 2020, and 39.8 per 100,000 residents in 2021.[59] The Valley Fever case rate in Fresno County was approximately double the statewide case rate averages in 2020 and 2021 of 18.2 and 20.1 respectively and the County has the fifth highest case rate among California's 58 counties.[60] For this reason, the Legislature mandates that employers at worksites in Fresno County provide effective awareness training on Valley Fever to all employees.[61]

---

[53] DEIR, pp. 4.2-5 – 4.2-6.
[54] Clark, p. 4.
[55] California Department of Public Health ("CDPH"), Valley Fever Basics (May 7, 2020), *available at* https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/ValleyFeverBasics.aspx.
[56] Clark Comments, p. 4.
[57] DEIR, Appendix C, CalEEMod Output Sheets, p. 9 of 34.
[58] Labor Code § 6709(b).
[59] California Department of Public Health, Epidemiologic Summary of Valley Fever (Coccidioidomycosis) in California, 2020-2021 (hereinafter "Valley Fever Report") (December 2022) p. 5. Available at https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/CocciEpiSummary2020-2021.pdf
[60] Valley Fever Summary, p. 5.
[61] Labor Code § 6709(a)-(d).

Despite the known presence of Valley Fever in the Project's vicinity and the potential impacts posed by exposure to the fungus spores, the DEIR fails to provide any information regarding the prevalence of *Cocci* fungus spores in the Project's vicinity, fails to discuss applicable construction worker Valley Fever training requirements and fails to include any Valley Fever-specific mitigation in the MMRP. This lack of information precludes meaningful analysis and mitigation of the potential health impacts the Project will cause to onsite construction workers and other individuals in close proximity to the Project site from disturbing soils which may be contaminated with Valley Fever spores site during Project construction.

B3-10 cont.

The City must prepare a revised DEIR which includes a proper discussion of the potential for the presence of *Cocci* fungus spores at the Project site in order to accurately analyze and mitigate the Project's potentially significant health risk impacts from Valley Fever.

V. THE DEIR FAILS TO DISCLOSE, ANALYZE AND MITIGATE POTENTIALLY SIGNIFICANT IMPACTS

An EIR must fully disclose all potentially significant impacts of a Project and implement all feasible mitigation to reduce those impacts to less than significant levels. The lead agency's significance determination with regard to each impact must be supported by accurate scientific and factual data.[62] An agency cannot conclude that an impact is less than significant unless it produces rigorous analysis and concrete substantial evidence justifying the finding.[63]

B3-11

Moreover, the failure to provide information required by CEQA is a failure to proceed in the manner required by CEQA.[64] Challenges to an agency's failure to proceed in the manner required by CEQA, such as the failure to address a subject required to be covered in an EIR or to disclose information about a project's environmental effects or alternatives, are subject to a less deferential standard than challenges to an agency's factual conclusions.[65] In reviewing challenges to an

[62] CEQA Guidelines § 15064(b).
[63] *Kings Cty. Farm Bur. v. Hanford* (1990) 221 Cal.App.3d 692, 732.
[64] *Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236.
[65] *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435.

agency's approval of an EIR based on a lack of substantial evidence, the court will 'determine de novo whether the agency has employed the correct procedures, scrupulously enforcing all legislatively mandated CEQA requirements.'[66]

Additionally, CEQA requires agencies to commit to all feasible mitigation measures to reduce significant environmental impacts.[67] In particular, the lead agency may not make required CEQA findings, including finding that a project impact is significant and unavoidable, unless the administrative record demonstrates that it has adopted all feasible mitigation to reduce significant environmental impacts to the greatest extent feasible.[68]

B3-11 cont.

Even when the substantial evidence standard is applicable to agency decisions to certify an EIR and approve a project, reviewing courts will not 'uncritically rely on every study or analysis presented by a project proponent in support of its position. A clearly inadequate or unsupported study is entitled to no judicial deference.'"[69]

A. The DEIR Fails to Adequately Disclose, Analyze and Mitigate the Project's Significant Transportation Impacts

The DEIR concludes that the transportation impacts of the Project will be less than significant.[70] However, the transportation impacts analysis is flawed in with respect to the analysis of the Project's trip generation and the vehicle miles traveled ("VMT") impacts. In addition, the DEIR's incorrect and unsupported conclusions with respect to VMT and trip generation undermine the DEIR's analyses of the Project's air quality, health risk, energy, and GHG emissions impacts, which rely heavily on DEIR's trip generation and VMT calculations in their respective analyses.

B3-12

1. The DEIR Incorrectly Calculates the Project's Operational Trip Generation and Trip Length

The DEIR's trip generation analysis is not supported by substantial evidence because it relies on unsupported assumptions which contradict assumptions made elsewhere in the DEIR.

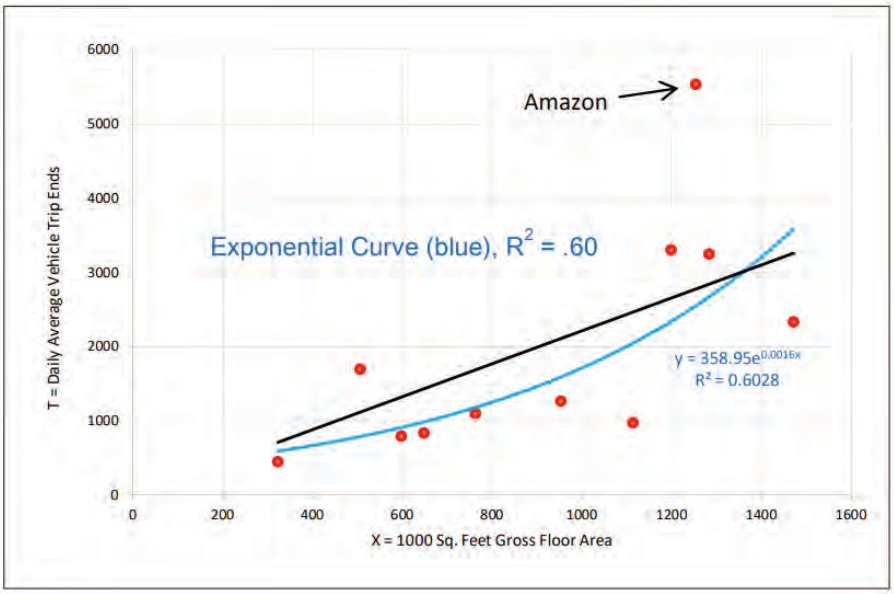
B3-13

[66] *Id., Madera Oversight Coal., Inc. v. County of Madera* (2011) 199 Cal. App. 4th 48, 102.
[67] CEQA Guidelines § 15002(a)(2).
[68] PRC § 21081(a)(3), (b); CEQA Guidelines §§ 15090, 15091; *Covington v. Great Basin Unified Air Pollution Control Dist*. (2019) 43 Cal.App.5th 867, 883.
[69] *Berkeley Jets*, 91 Cal.App.4th at 1355.
[70] DEIR, p. 4.10-14.

As described above, the DEIR's transportation impacts analysis relies on the WRCOG Study to estimate the Project's trip generation.[71] The DEIR estimates that the Project would generate approximately 1,920 daily trips, with the AM and PM peak hours generating 110 and 148 trips respectively.[72]

The DEIR lacks substantial evidence to support the estimated trip generation because the DEIR unreasonably and without justification relies on the average derived from the WRCOG study. Mr. Marshall explains that data in the WRCOG Study are much more variable than the average rates suggest.[73] The WRCOG Study is based on counts at 16 warehouses, segmented between 11 fulfillment centers and 5 parcel hubs. As seen in Figure 1 below, the fulfillment center sites studied exhibited a wide range of trip generation rates, with an Amazon facility having an especially high rate.

Figure 1: WRCOG Study Facility Trip Generation Measurements[74]



B3-13 cont.

Based on the results of the WRCOG Study, it is clear that information regarding the future use of the Project site is crucial in understanding the trip generation rates of the Project. The DEIR admits that the future tenants of the

[71] DEIR, p. 4.10-9.
[72] DEIR, p. 4.10-9.
[73] Marshall Comments, p. 2.
[74] Marshall Comments, p. 2.

Project site have not been identified.[75] Because the future tenants are unknown, the City lacks the justification to assume that the Project will generate the average rate determined in the WRCOG Study, and should instead analyze a more intensive trip rate to ensure that the severity of the Project's potential transportation impacts is accurately disclosed. Mr. Marshall explains that, if the Amazon trip generation rate were applied to the Project, the Project would result in a trip generation rate twice as high as estimated in the DEIR.[76] Additionally, if the parcel hub rate of approximately 14 trips per 1,000 square feet were applied, the Project would generate over six times the number of trips estimated in the DEIR.[77]

B3-13 cont.

Because the City does not have information on the future tenants of the Project site, nor what the eventual use of the Project buildings will be, the City's reliance on the selected trip rates is unreasonable and unsupported. To reasonably analyze the full scope of the Project's impacts related to future tenant uses, analysis of the Projects trip generation should use the most conservative estimate and present the data in a revised and recirculated DEIR for public review.

2. The DEIR Fails to Disclose and Analyze the Project's Potentially Significant VMT Impacts

The City's CEQA Guidelines for Vehicle Miles Traveled Thresholds ("VMT Guidelines") establish the criteria for evaluating a project's VMT impacts.[78] Specifically, the VMT Guidelines state that VMT per employee is the appropriate metric against which to measure a project's impacts, and that a project would have a significant impact if it will generate 13 percent or greater employee VMT than the existing regional average for specific uses.[79] The DEIR's transportation impact analysis relies on the Fresno Council of Governments ("COG") Activity Based Model ("ABM") and the trip generation rates discussed above to calculate the Project's anticipated VMT.[80] The DEIR's transportation analysis states that the existing regional average is 25.6 VMT per employee and that the Project will generate 19.8

B3-14

[75] DEIR, p. 1-3.
[76] Marshall Comments, p. 3.
[77] Marshall Comments, p. 3.
[78] City of Fresno, CEQA Guidelines for Vehicle Miles Traveled Thresholds (hereinafter "VMT Guidelines") (June 18, 2020) available at https://fresno.legistar.com/View.ashx?M=F&ID=8601948&GUID=9AEF1630-3BE3-45BF-9BB8-3D4BB9DB1677
[79] VMT Guidelines, p. 26.
[80] DEIR, p. 4.10-14.

VMT per employee.[81] Based on these figures, the DEIR concludes that the Project's VMT per employee rate is 22.66 percent lower than the existing regional average and therefore will not result in a significant impact.[82]

In his review, Mr. Marshall found that the Project's VMT analysis likely underestimates Project VMT. Mr. Marshall states that the DEIR estimates that 10.2% of daily trips are made by heavy trucks (5+ axles) and another 7.6% are made by medium trucks (2-4 axles) and that the average trip lengths are calculated to be 9.5 miles for work trips, and 7.3 miles for "other" trips.[83] However, these estimates are likely much lower than the actual average truck trip lengths that could be generated by the Project. Mr. Marshall notes that major intermodal facilities that would serve a warehouse distribution use at the Project site are located far away from the Project site, including:

- Rail intermodal facilities in Bakersfield 110 miles,
- Rail intermodal facilities in Stockton 120 miles,
- Port of Oakland 175 miles, and
- Port of Los Angeles 240 miles.

B3-14 cont.

As explained above, without knowing what the eventual use of the Project site will be, it is impossible to fully evaluate trip lengths. However, until more is known about the facility operations the City must account for the possibility of much greater truck trip length generation by the Project. Additionally, Mr. Marshall found that the DEIR's VMT analysis fails to incorporate data regarding trips that originate from outside of the Fresno COG ABM region.[84] As discussed above, this failure to include out of region trips is particularly important to understanding truck trip lengths to intermodal facilities and ports.

A full VMT analysis should be completed for the Project, including explicit consideration of truck trip length and truck VMT, and included in a revised and recirculated DEIR for the Project.

[81] DEIR, p. 4.10-14.
[82] DEIR, p. 4.10-14.
[83] Marshall Comments, p. 5.
[84] Marshall Comments, p. 6.

3. The DEIR Fails to Require Mitigation Measures to Reduce the Project's Potentially Significant Impacts

As discussed above, the Project may result in significant transportation impacts. Pursuant to the City's VMT Guidelines, when a Project exceeds the threshold, the Project's environmental document must include a section that contains mitigation measures to reduce the VMT impacts.[85]

As the VMT Guidelines note, the California Air Pollution Control Officers Association ("CAPCOA") *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* ("Handbook")[86] includes various strategies to reduce VMT which should be considered for implementation where a project will have a significant VMT impact.[87] The Handbook includes data regarding GHG emissions and proven effective methods that a local agency can employ to reduce GHG impacts, including reduction in GHG impacts from VMT.[88]

B3-15

The DEIR states that the Project may be subject to SJVAPCD Rule 9410 – Employer Based Trip Reduction, which requires employers with 100 or more eligible employees to establish employee trip reduction programs to reduce VMT, reducing emissions associated with work commutes.[89] However, compliance with this rule is not included in any mitigation measures for the Project. SJVAPCD Rules 9410 is similar to CAPCOA's measure "T-6 Implement Commute Trip Reduction Program (Mandatory Implementation and Monitoring)" which, according to CAPCOA, can result in up to 26 percent reduction in GHG emissions from VMT.[90] The Handbook states that the VMT reduction (and therefore, GHG emissions reduction) could be as great as 45 percent with the implementation of additional measures which include:

B3-16

- T-7 Implement Commute Trip Reduction Marketing
- T-8 Provide Ridersharing Program
- T-9 Implement Subsidized or Discounted Transit Program

[85] VMT Guidelines, p. 27.
[86] California Air Pollution Control Officers Association ("CAPCOA") Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (hereinafter "CAPCOA Handbook") (December 2021) available at https://www.airquality.org/ClimateChange/Documents/Final%20Handbook_AB434.pdf
[87] VMT Guidelines, p. 41.
[88] CAPCOA Handbook, p. 35.
[89] DEIR, p.
[90] CAPCOA Handbook, pp. 86-87.

- T-10 Provide End-of Trip Bike Facilities
- T-11 Provide Employer-Sponsored Vanpool
- T-12 Price Workplace Parking
- T-13 Implement Employee Parking Cash-Out[91]

Many of the individual measures included in the Handbook offer high potential reductions *even if only one measure is used*. For example, the maximum reduction produced by "T-11 Provide Employer-Sponsored Vanpool" is 20.4 percent.[92]

B3-16 cont.

The DEIR fails to include any mitigation measures to reduce the Project's VMT impacts and fails to include analysis of the feasibility of the above methods, or any other methods, to reduce the Project's potentially significant impacts. The City must evaluate the feasibility and effectiveness of mitigation measures to reduce the Project's VMT impacts in a revised and recirculated DEIR for the Project.

B. The DEIR Fails to Disclose, Analyze, and Mitigate the Project's Potentially Significant Health Risk Impacts

1. The DEIR Fails to Accurately Analyze the Project's Operational Health Risk

In order to assess the impact of the Project's operational emissions, the DEIR prepared a health risk assessment ("HRA") using AERMOD, which is used to estimate exhaust concentrations based on site and source geometry, source emissions strength, distance from the source to the receptor, and meteorological data.[93] Here, AERMOD was used to calculate the ground level concentration of DPM emissions associated with the project.[94] However, Dr. Clark found that that the air dispersion model used to calculate the Project's operational emissions has a structural flaw that results in inaccurate estimates of the Project emissions within the community.[95]

B3-17

Dr. Clark reviewed the City's AERMOD modeling and found that the City failed to account for the impact on emissions from building downwash, rendering the analysis incomplete. Dr. Clark explains that building downwash occurs as the wind flows over and around buildings and impacts the dispersion of pollution from

[91] CAPCOA Handbook, pp. 89-115.
[92] CAPCOA Handbook, p. 104.
[93] DEIR, p. 4.2-32.
[94] Clark Comments, p. 8.
[95] Clark Comments, p. 8.

nearby stacks.[96] A plume caught in the path of this flow is drawn into the wake, temporarily trapping it in a recirculating cavity which leads to higher ground-level concentration of chemicals emitted from sources.[97] Furthermore, the downwash effect increases as the relative difference between the release height and top of the building increases.[98] This effect is well-understood and is commonly used in emissions modeling. For example, analysis and mitigation of downwash is discussed in Section 123 of the Clean Air Act.[99]

The DEIR completely fails to account for this impact in its AERMOD modeling, nor does it provide any justification why. When a standard, accepted methodology is available to assess a significant impact, an EIR must evaluate the impact unless a reasoned basis for not doing so is provided.[100] In *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Comm'rs*, the court reviewed a DEIR's failure to analyze health risk from TAC exposure. The DEIR claimed that no methodology or standards of significance existed for assessing the health risk from TAC exposure.[101] The court determined that the lead agency abused its discretion, reasoning that the lead agency failed to consider, in good faith, comments from the public showing that it was feasible to analyze health risk from TAC exposure:[102]

> The Port has not cited us to any reasonably conscientious effort it took either to collect additional data or to make further inquiries of environmental or regulatory agencies having expertise in the matter….At the very least, the documents submitted by the public raised substantial questions about the project's effects on the environment and the unknown health risks to the area's residents...the Port has not offered any justification why more definitive information could not have been provided.

Here, the City failed to analyze a critical dispersion factor - building downwash – which affects the rate and severity of exposure to toxic air contaminants, without explaining why. The City's failure to include this emission

B3-17 cont.

---

[96] Clark Comments, p. 8.
[97] Clark Comments, p. 8.
[98] Clark Comments, p. 8.
[99] 42 U.S. Code § 7423 - Stack heights ("For purposes of this section, good engineering practice means, with respect to stack heights, the height necessary to insure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies or wakes which may be created by the source itself, nearby structures or nearby terrain obstacles").
[100] *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Comm'rs* (2001) 91 CA4th 1344, 1370
[101] *Id.* at 1369.
[102] *Id.* at 1370.

factor in its health risk analysis represents a failure to accurately analyze and disclose the ground level concentration of DPM emissions generated by the Project. The DEIR fails as an informational document in this respect, and must be revised.

B3-17 cont.

2. The DEIR Fails to Analyze and Mitigate Valley Fever Impacts from Project Construction

As explained above, the DEIR fails to disclose the potential presence of *Cocci* fungus spores and fails to discuss any Valley Fever employee training measures the Applicant intends to take to protect its construction workers from Valley Fever exposure. As a result, the DEIR fails to analyze the Project's threat of Valley Fever exposure to workers and sensitive receptors, and fails to include mitigation measures to reduce the health risk impacts of Valley Fever.

According to the DEIR's air quality analysis, Project construction will include 40 days of site preparation which will disturb 60 acres of soil, and 40 days of grading activities which will disturb 120 acres of soil at the Project site.[103] Dr. Clark explains that, when soil containing the spores are disturbed by construction activities, the spores become airborne, exposing construction workers and other nearby sensitive receptors to potential infection.[104] Sensitive receptors near the Project site, including workers and those who live nearby are at risk from exposure from disturbed dust during Project construction.[105]

B3-18

Dr. Clark states that the most at-risk populations are construction and agricultural workers.[106] Additionally, he notes that the potentially exposed population in surrounding areas is much larger than construction workers because the nonselective raising of dust during Project construction will carry the very small spores which measure 0.002–0.005 millimeters into nonendemic areas, potentially exposing large non-Project-related populations.[107] According to the DEIR, the closest sensitive receptors to the Project site include the single-family residences located approximately 110 feet south of the project site across West Nielsen Avenue.[108] These sensitive receptors are at risk of Valley Fever infection from Project construction resulting in a significant health risk impact, and are not subject to the training requirements of Labor Code 6702. Furthermore, the small fungus spore particles will not be controlled by the conventional construction dust

[103] DEIR, Appendix C, CalEEMod Output Sheets, pp. 8 and 9 of 34.
[104] Clark Comments, p. 4.
[105] Clark Comments, p. 4.
[106] Clark Comments, p. 6.
[107] Clark Comments, p. 6.
[108] DEIR, p. 4.2-31.

control mitigation measures proposed in the DEIR under Mitigation Measure ("MM") Air-1.[109] Thus, off-site sensitive receptors may have a significant risk of exposure to Valley Fever spores with no mitigation.

The DEIR must be revised and recirculated to include an analysis of the Project's significant Valley Fever impacts, and to require that any and all mitigation measures that will reduce Valley Fever risks are incorporated as binding mitigation in the Project's Mitigation Monitoring and Reporting Program ("MMRP"). B3-18 cont.

3. Feasible Mitigation is Available to Reduce the Project's Significant Health Risk Impacts from Valley Fever

CEQA imposes the duty on the City to adopt all feasible mitigation measures to reduce significant health impacts from the Project. Yet here, the DEIR fails to incorporate any mitigation measures that would address Valley Fever risks to construction employees and sensitive receptors.

In his comments, Dr. Clark proposes a variety of feasible mitigation measures the DEIR should consider and adopt in a revised DEIR to reduce potential health impacts from Valley Fever.[110] The following mitigation measures identified in Dr. Clark's comments are based on actual experience during construction of projects in areas affected by the fungi that cause Valley Fever, these measures should be included in the DEIR's mitigation measures in addition to the measures required under MM Air-1:[111] B3-19

(1) Include specific requirements in the Project's Injury and Illness Prevention Program regarding safeguards to prevent Valley Fever.
(2) Control dust exposure through the following methods:

- Apply chemical stabilizers at least 24-hours prior to high wind event;
- Apply water to all disturbed areas a minimum of three times per day. Watering frequency should be increased to a minimum of four times per day if there is any evidence of visible wind-driven fugitive dust;
- Provide National Institute for Occupational Safety and Health (NIOSH)-approved respirators for workers with a prior history of Valley Fever.
- Half-face respirators equipped with a minimum N-95 protection factor

[109] Clark Comments, p. 6. *See also* DEIR, pp. 4.2-30 – 4.2-31.
[110] Clark Comments, pp. 6-8.
[111] *Id.* pp. 4-8.

for use during worker collocation with surface disturbance activities. Half-face respirators equipped with N-100 or P-100 filters should be used during digging activities. Employees should wear respirators when working near earth-moving machinery.

- Prohibit eating and smoking at the worksite, and provide separate, clean eating areas with hand-washing facilities.
- Avoid outdoor construction operations during unusually windy conditions or in dust storms.
- Consider limiting outdoor construction during the fall to essential jobs only, as the risk of cocci infection is higher during this season.

(3) Prevent transport of cocci outside endemic areas:

- Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate;
- Provide workers with coveralls daily, lockers (or other systems for keeping work and street clothing and shoes separate), daily changing and showering facilities.
- Clothing should be changed after work every day, preferably at the work site.
- Train workers to recognize that cocci may be transported offsite on contaminated equipment, clothing, and shoes; alternatively, consider installing boot-washing.
- Post warnings onsite and consider limiting access to visitors, especially those without adequate training and respiratory protection.

B3-19 cont.

(4) Improve medical surveillance for employees:

- Employees should have prompt access to medical care, including suspected work-related illnesses and injuries.
- Work with a medical professional to develop a protocol to medically evaluate employees who have symptoms of Valley Fever.
- Consider preferentially contracting with 1-2 clinics in the area and communicate with the health care providers in those clinics to ensure that providers are aware that Valley Fever has been reported in the area. This will increase the likelihood that ill workers will receive prompt, proper and consistent medical care.
- Respirator clearance should include medical evaluation for all new employees, annual re-evaluation for changes in medical status, and annual training, and fit-testing.

- Skin testing is not recommended for evaluation of Valley Fever.112
- If an employee is diagnosed with Valley Fever, a physician must determine if the employee should be taken off work, when they may return to work, and what type of work activities they may perform.

Any mitigation measures must be included in the DEIR and be fully enforceable through permit conditions, agreements, or other legally binding instruments.[113] Failure to include enforceable mitigation measures is considered a failure to proceed in the manner required by CEQA.[114] In order to meet this requirement, mitigation measures must be incorporated directly into the EIR to be enforceable.[115]

B3-19 cont.

The DEIR must be revised and recirculated to include mitigation measures such as the those proposed by Dr. Clark to reduce the impacts of exposure to Valley Fever causing fungus spores and mitigate impacts to sensitive receptors.

C. The DEIR Fails to Analyze the Project's Potentially Significant Air Quality Impacts

The DEIR's air quality modeling fails to account for the use of diesel fueled backup generators and fire pumps during Project operation, resulting in a failure to accurately analyze the Project's air quality impacts. Additionally, as discussed above, the Project's trip generation rates are unsupported and cannot be relied upon by the City to determine that the Project will not have significant transportation impacts. The unsupported trip generation and VMT calculations resulted in a failure to analyze the Project's GHG emissions and air quality impacts. The failure to analyze specific Project components, and the reliance on unsupported conclusions in the DEIR undermined the Project's air quality analysis and prevented the City from finding that the Project will not result in significant air quality impacts.

B3-20

---

[112] Short-term skin tests that produce results within 48 hours are now available. See Kerry Klein, NPR for Central California, New Valley Fever Skin Test Shows Promise, But Obstacles Remain, November 21, 2016; available at http://kvpr.org/post/new-valley-fever-skin-test-shows-promise-obstacles-remain.

[113] CEQA Guidelines §15126.4(a)(2).

[114] *San Joaquin Raptor Rescue Ctr. v. County of Merced* (2007) 149 Cal.App.4th 645, 672.

[115] *Lotus v. Dept of Transportation* (2014) 223 Cal. App. 4th 645, 651-52.

1. The DEIR Fails to Analyze Air Quality Impacts from the Operation of Backup Generators

The DEIR's air quality analysis fails to account for the operation of backup generators ("BUGs") during Project operation. Dr. Clark explains that diesel powered backup generators are commonly used in industrial warehouse Projects and would be operated during routine testing and in the event of a power failure.[116] The operation of BUGs generates diesel particulate matter ("DPM") which is identified as a toxic air contaminant, composed of carbon particles and numerous organic compounds, including over forty known cancer-causing organic substances.[117]

Additionally, by omitting BUGs from the air quality analysis, the DEIR fails to analyze all uses that stem from the reasonably foreseeable increase of generator use during Public Safety Power Shutoff ("PSPS") events and extreme heat events.[118] The recent rise of Extreme Heat Events ("EHEs") in the State has increased the amount of PSPS events and thus increased the amount of time generators are used.[119]

B3-21

EHEs "are defined as periods where in the temperatures throughout California exceed 100 degrees Fahrenheit."[120] In 2021, the Governor released one Executive Order regarding EHEs and one Proclamation for a State of Emergency with the intention to help avoid PSPS events.[121] CARB notes though that the number of Extreme Heat Events is likely to increase, and thereby PSPS events, with the continuing change in climate that the State is currently undergoing.[122]

According to the California Public Utilities Commission ("CPUC") de-energization report in October 2019, there were almost 806 PSPS events that impacted almost 973,000 customers (~7.5% of households in California) of which

---

[116] Clark Comments, p. 14.

[117] Clark Comments, p. 14.

[118] Clark Comments, p. 15.

[119] Clark Comments, p. 15.

[120] Governor of California. 2021. Proclamation of a state of emergency. June 17, 2021; Clark Comments p. 6.

[121] Cal. Governor Executive Order N-11-21, https://www.gov.ca.gov/wp-content/uploads/2021/07/EO-N-11-21-Extreme-Heat-Event-07.10.21.pdf; Cal. Governor Proclamation of a State of Emergency, June 16, 2021, https://www.gov.ca.gov/wp-content/uploads/2021/06/6.17.21-Extreme-Heat-proclamation.pdf.

[122] CARB 2017 Scoping Plan, p. 6, https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf

~854,000 of them were residential customers, and the rest were commercial, industrial, medical baseline, and other customers. [123] CARB's data also shows that on average each of these customers had about 43 hours of power outage in October 2019.[124] Dr. Clark notes that CARB concluded that PSPS events in October of 2019 alone generated 126 tons of NOx, 8.3 tons or particulate matter, and 8.3 tons of DPM.[125]

Dr. Clark concludes that every EHE and PSPS that occurs during Project operation would result in increased DPM from the reasonably foreseeable operation of BUGs at the Project.[126] While the City is not required to analyze the worst-case scenarios, there is substantial evidence demonstrating that PSPS events and EHE are reasonably foreseeable events which will require the use of BUGs at the Project site.

A detailed analysis of the emissions and noise from the hours of BUG testing and operation should be included in a revised EIR, including the extra time the BUG will need to run to account for EHEs and PSPS.

B3-21 cont.

2. The DEIR Fails to Analyze Air Quality Impacts from the Project's Truck Trips

As described above, the Project's transportation impact analysis fails to accurately analyze the Project's operational truck trip generation rates and likely underestimates the Project's VMT. The Project's air quality analysis relies on the transportation impact analysis' trip generation numbers and VMT in order to calculate the Project's air emissions and analyze the Project's air quality and GHG emissions impacts.[127] The DEIR's failure to accurately calculate the Project's trip generation results in the failure to accurately calculate the emissions from truck traffic during Project operation. The Project's transportation impact analysis must be corrected to accurately analyze the Project's air quality impacts in a revised DEIR.

B3-22

---

[123] https://www.cpuc.ca.gov/deenergization/ as cited in CARB, 2020. Potential Emission Impact of Public Safety Power Shutoff (PSPS), Emission Impact: Additional Generator Usage associated With Power Outage.

[124] CARB, 2020. Potential Emission Impact of Public Safety Power Shutoff (PSPS), Emission Impact: Additional Generator Usage associated With Power Outage.

[125] Clark Comments, p. 15.

[126] Clark Comments, p. 15.

[127] DEIR, Appendix C, CalEEMod Output Sheets, p. 1 of 34 (explaining that the vehicle trips and fleet mix used in the air quality analysis are "[b]ased on the trip generation prepared for the proposed project.")

D. The DEIR Fails to Adequately Analyze Potentially Significant Noise Impacts

The DEIR's noise analysis concludes that Project construction and operational noise is significant but will be reduced to less than significant with mitigation measures included in the DEIR.[128] Additionally, the DEIR found that the noise impacts from project-related traffic on offsite sensitive receptors would be less than significant and does not require mitigation.[129] However, the DEIR relies on a faulty methodology to analyze the Project's construction noise and improperly relies on a relative threshold of significance with regard to the Project's operational noise from traffic. The DEIR therefore fails to properly analyze and mitigate the Project's significant construction and operational noise impacts.

CEQA requires agencies to conduct noise analyses for projects that consider both the absolute noise levels expected, and the degree noise levels are expected to increase. Noise studies that rely on a single measure that excludes possible significant impacts from noise increases or noise extremes do not receive deference by reviewing courts.

B3-23

In *King & Gardiner Farms, LLC v. County of Kern*, the Court of Appeal held that an agency cannot simply rely on compliance with local noise regulations to conclude there will be no significant noise impacts without considering the impacts of increases in noise.[130] The County approved an EIR for proposed zoning amendments to streamline oil and gas permitting.[131] The EIR included an analysis of noise impacts that determined significance based solely on whether the 65 decibel day-night average ("dBA DNL") threshold in the County General Plan would be exceeded.[132] The Court of Appeal reasoned that the County General Plan did not conclude that all increases in the magnitude of noise are insignificant until the 65 dBA DNL threshold is exceeded, so the General Plan "does not constitute substantial evidence that the magnitude of an increase in ambient noise is irrelevant."[133] Rather, an EIR's noise analysis should consider both the increase in noise level and the absolute noise level associated with a project in determining the

[128] DEIR, pp. 4.9-18 and 4.9-23.
[129] DEIR, p. 4.9-21.
[130] *King & Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814, 894.
[131] *Id.* at 829.
[132] *Id.* at 830, 889.
[133] *Id.* at 894.

significance of the project's noise impacts.[134] The Court of Appeal concluded that an agency cannot exclusively rely on "a single cumulative DNL metric for determining the significance of the project's noise impacts" while deciding "the magnitude of the increase in ambient noise is irrelevant."[135]

In *Berkeley Jets*, the Court of Appeal invalidated the Port of Oakland's EIR for expansion of the Oakland Airport because of its reliance on an improper noise standard.[136] The EIR evaluated the significance of noise impacts based on whether the estimated level of sound would exceed 65 dB Community Noise Equivalent Level ("CNEL").[137] However, as the Court of Appeal explained, the CNEL metric—which averages noise over the course of a day—could not be the sole indicator of significant effects from noise because it does not provide a meaningful analysis of the "degree single overflights will create noise levels over and above the existing ambient noise level at a given location, and the community reaction to aircraft noise, including sleep disturbance."[138] Therefore, the Court concluded, a revised EIR with additional study of noise impacts from flights was necessary.[139]

B3-23 cont.

1. The DEIR Fails to Consider the Totality of Noise Impacts

With regard to the Project's traffic noise the DEIR relies only on a relative threshold to determine that the Project will not result in a significant impact. The DEIR states: "[b]ecause noise levels would increase less than 3.0 dBA, this is consistent with General Plan Policy NS-1-j: Significance Threshold which states that an increase of 3 dBA CNEL or more is considered significant."[140] However, as Mr. Watry points out, this rationale ignores the absolute increase in the noise environment and the cumulative effects of noise on sensitive receptors.[141]

B3-24

The DEIR cannot solely rely on a relative threshold of significance when looking at the sum of all noise sources against absolute criteria would reveal a significant noise impact. Indeed, as the court in *King & Gardiner Farms* held, an EIR should evaluate both the noise level increase *and* the absolute noise level associated with a Project when determining the significance of noise impacts.[142]

---

[134] *Id.*
[135] *Id.*
[136] *Berkeley Jets*, 91 Cal.App.4th at 1381–1382.
[137] *Id.* at 1373.
[138] *Id.* at 1381–1382.
[139] *Id.* at 1382.
[140] DEIR, p. 4.9-21.
[141] Watry Comments, p. 3.
[142] *King & Gardiner Farms*, 45 Cal.App.5th at 894.

Similarly, the DEIR should evaluate the total noise impacts from the Project on nearby residential receptors. CEQA Guidelines require EIRs to "analyze any significant environmental effects the project might cause or risk exacerbating by bringing development and people into the area affected."[143]

The City's General Plan Policy NS-1-a establishes "65 dBA Ldn or CNEL as the standard for the desirable maximum average exterior noise levels for defined usable exterior areas of residential and noise-sensitive uses" such as those along Nielsen Avenue, south of the Project site.[144] Based on the data provided in the DEIR, the roadway segment on Nielsen Avenue between Marks and Hughs will see an increase from the existing 64.0 dBA CNEL to 66.1 dBA CNEL with Project construction.[145] Based on the DEIR's own data, the Project will cause noise levels at nearby sensitive receptors to exceed the desirable maximum average exterior noise levels for defined usable exterior areas of residential and noise-sensitive uses of 65 dBA CNEL, resulting in a significant impact.

B3-24 cont.

Mr. Watry notes that both Caltrans and the Federal Transit Administration ("FTA") recognize the need for absolute thresholds of significance in addition to relative thresholds when determining the significance of noise impacts for projects.[146] The FTA's noise impact assessment guidelines dictate that a 3 dBA Ldn increase in noise exposure at residences would only be allowed if the existing noise exposure is 55 dBA Ldn or less.[147] When the existing noise environment is above 55 dBA Ldn, the allowable increase is progressively smaller.[148] For example, under the FTA's criteria, where the existing noise exposure is 64.0 dBA CNEL, as it is at the Project site along Nielsen Avenue, the allowable increase is 1.5 dBA.[149] Under the absolute threshold established by the FTA, the Project's anticipated 2.1 dBA CNEL increase results in a significant impact.

[143] CEQA Guidelines § 15126.2(a).
[144] City of Fresno, General Plan, Chapter 9: Noise and Safety, p. 9-19 available at https://www.fresno.gov/darm/wp-content/uploads/sites/10/2022/12/upload_temp_Consolidated-GP-10-13-2022.pdf
[145] DEIR, p. 4.9-19, Table 4.9.L.
[146] Watry Comments, p. 3.
[147] Watry Comments, p. 4.
[148] Watry Comments, p. 4.
[149] Watry Comments, p. 4.

2. The DEIR Fails to Analyze and Mitigate Potentially Significant Construction Noise Impacts

The DEIR's construction noise analysis calculates the noise levels expected from Project construction based on the Federal Highway Administration's ("FHWA") Roadway Construction Noise Model ("RCNM").[150] The DEIR includes the equations used to calculate the composite average noise level for construction equipment which considers: the reference noise emission level, the amount of time each piece of equipment is typically used, distance, and the total amount of equipment anticipated to be used on site.[151] However, as Mr. Watry states, the DEIR erroneously relies on FTA guidance which dictates that when specific information regarding Project construction is not known, construction noise may be calculated by combining the two loudest pieces of equipment assuming they are running at full power, 100 percent of the time.[152] Here however, specific project construction information is available, and can be used to produce a detailed calculation of the Project's construction noise impacts.

B3-25

Mr. Watry used the construction equipment inventory information contained in the DEIR's Appendix C: CalEEMod Output sheets to generate the list of equipment that will be used during each phase of Project construction. Using the reference noise emission levels and usage factors for the equipment from the DEIR in Table 4.9.K[153] Mr. Watry calculated the noise levels generated during each phase of construction combined with the existing ambient noise levels to determine the noise impacts on the closest residential receptors located south of the Project site.[154] Mr. Watry found that the Project's site prep phase will result in a noise level of 70.2 dBA Leq, while grading will result in noise levels of 71 dBA Leq, and building construction will result in noise levels of 69.0 dBA Leq.[155] When compared to the existing ambient noise level of 62.3 dBA Leq, Mr. Watry found that Project construction will result in noise exposure increases of 7.9, 8.7 and 6.7 dBA Leq during the Projects site prep, grading, and building phases respectively.[156] Therefore, the Project will exceed the DEIR's threshold of 5 dBA Leq during three phases of construction, resulting in a significant impact.

[150] DEIR, p. 4.9-16.
[151] Watry Comments, p. 5.
[152] Watry Comments, p. 5.
[153] DEIR, p. 4.9-16.
[154] Watry Comments, p. 5.
[155] Watry Comments, p. 6.
[156] Watry Comments, p. 6.

Finally, Mr. Watry notes that the requirements of MM NOI-1, which mandates the use of mufflers and the designation of a "disturbance coordinator" would not reduce the Project's significant construction noise impacts. First, Mr. Watry explains that the noise calculations use reference levels from equipment that are already equipped with mufflers, and it is unreasonable to believe that a second muffler would be added to construction equipment.[157] Second, he notes that while having a disturbance coordinator may be helpful to resolve noise issues as they arise, a noise coordinator will not reduce the noise emitted from Project construction equipment.[158]

B3-25 cont.

The City must revise the construction noise analysis in a recirculated DEIR and implement feasible construction noise mitigation measures to reduce the Project's significant noise impacts.

E. The DEIR Fails to Disclose, Analyze, and Mitigate the Project's Potentially Significant Energy Resources Impacts

1. The DEIR Lacks Evidentiary Support for the Determination that the Project Would Not Result in a Significant Environmental Impact Due to Wasteful, Inefficient, or Unnecessary Consumption of Energy Resources During Project Construction and Operation

B3-26

CEQA Guidelines Appendix F identifies the following means to achieve the goal of conserving energy: decreasing overall per capita energy consumption, decreasing reliance on fossil fuels, and increasing reliance on renewable energy sources.[159] In order to ensure that energy impacts are considered in project decisions, CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects and a detailed statement of mitigation measures designed to "minimize significant effects on the environment, including, but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy."[160]

---

[157] Watry Comments, p. 5.
[158] Watry Comments, p. 5.
[159] Appendix F at § I.
[160] PRC § 21100(b)(3); CEQA Guidelines, Appendix F, Energy Conservation ("Appendix F"), § I. Appendix F defines "Unavoidable Adverse Effects" as "wasteful, inefficient and unnecessary consumption of energy during the project construction, operation, maintenance and/or removal that cannot be feasibly mitigated."

Appendix F directs an EIR to consider the energy impacts of project operation, the effects on local and regional energy supplies, the effects on peak and base electricity demand, compliance with existing energy standards, and other effects on energy resources.[161] Further, Appendix F notes an EIR should consider whether the project involves "Unavoidable Adverse Effects" such as "wasteful, inefficient and unnecessary consumption of energy during the project construction, operation, maintenance and/or removal that cannot be feasibly mitigated."[162] Without the requisite energy analysis, the DEIR falls short of the mandates of Appendix F.

B3-26 cont.

First, the DEIR fails to adequately analyze the significance of the Project's energy impacts related to the Project's use of fossil fuels consumed by Project related vehicle trips. One of the stated goals in Appendix F is to *decrease* reliance on fossil fuels.[163] The DEIR states that the Project will increase gasoline consumption in the City of Fresno by 0.11 percent and diesel consumption by 0.5 percent and concludes that the increased fuel consumption from the Project is minimal and therefore not significant.[164] However, the DEIR fails to establish a threshold for fossil fuel consumption that would be significant. Therefore, the conclusion that the increased fuel consumption resulting from Project operation would not be significant is unsupported.

B3-27

The City must determine the appropriate threshold against which to measure the Project's fossil fuel consumption in order to determine whether the Project will result in a significant impact to energy resources. The analysis in the DEIR is deficient insofar as it does not assess or consider the significance of the increase in fossil fuel usage for the Project on energy resources consistent with Appendix F and does not consider mitigation to "minimize significant effects on the environment, including, but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy."[165]

Additionally, as detailed in the analysis of the Project's transportation impacts above, the DEIR fails to accurately account for the Project's trip generation, which Mr. Marshall found could exceed the DEIR's estimate by 100% or more. Increased trip generation would lead to increased fossil fuel use, and therefore, energy use, from Project related vehicle trips.

B3-28

[161] Appendix F §§ I, II.C, II.D.

[162] Appendix F § II.F.

[163] *Id.*

[164] DEIR, p. 4.5-9.

[165] PRC § 21100(b)(3).

Second, another stated goal for conserving energy set forth in Appendix F is "increasing reliance on renewable energy sources."[166] Appendix F further states that "Mitigation Measures may include: … 4. Alternate fuels (particularly renewable ones) or energy systems."[167] In line with Appendix F, the Fresno 2020 Greenhouse Gas Reduction Plan Update includes a Solar Assistance Policy intended to "[i]dentify and publicize information about financial mechanisms for private solar installations and provide over-the-counter permitting for solar installations meeting specified standards, which may include maximum size (in kV) of units that can be so approved."[168]

Here, the DEIR's discussion of renewable energy generation is virtually non-existent and fails to provide a meaningful "investigation into renewable energy options that might be available or appropriate for the project."[169] In *California Clean Energy Comm. v. City of Woodland*, the court held that the city's EIRs failed to comply with the requirements of Appendix F by not discussing or analyzing renewable energy options.[170] The court determined that "the City's EIRs omit any discussion or analysis of renewable energy options for Gateway II. CEQA is violated when an EIR contains no discussion of a potentially significant environmental consideration."[171]

B3-29

Here, the DEIR states that the Project would "comply with the "CALGreen Code (CCR Title 24, Part 11) and the California Energy Code (CCR Title 24, Part 6), which includes provisions related to insulation and design aimed at minimizing energy consumption."[172] However, the DEIR quickly dismisses any examination of further energy use reduction strategies by stating "[t]he California Energy Code includes solar photovoltaic system requirements for all newly constructed low-rise residential buildings; however, it currently does not include solar requirements for nonresidential buildings."[173] The DEIR must be revised to adequately analyze potential renewable energy generation for the Project and sufficiently analyze the related energy impacts.

---

[166] Appendix F § I.

[167] Appendix F § II.D.4.

[168] City of Fresno, Greenhouse Gas Reduction Plan Update (March 2020) p. 5-16. Available at https://www.fresno.gov/darm/wp-content/uploads/sites/10/2020/03/Appendix_G-GHG_Reduction_Plan_Update.pdf

[169] *California Clean Energy Comm. v. City of Woodland* (2014) 225 Cal. App. 4th 173, 213.

[170] *Id.*

[171] *Id.*

[172] DEIR, p. 4.5-11.

[173] DEIR, p. 4.5-11.

Finally, compliance with the Building Code and other energy efficiency requirements does not, by itself, constitute an adequate assessment of measures that can be taken to address the energy impacts during construction and operation of the Project. In *Ukiah Citizens for Safety First v. City of Ukiah*, the court held that the EIR inadequately described the energy impacts of a Costco project where the EIR relied on the project's compliance with energy conservation standards to conclude that energy consumption would be less than significant, and did not separately evaluate energy impacts from transportation, construction, or operation.[174] Here, the DEIR relies on the California Building Code and Title 24 energy efficiency standards, CALGreen code, green building practices, and a number of green building measures and design features, consistent with the Fresno General Plan and GHG Reduction strategy to support the less than significant determination.[175] However, as described above, additional analysis is necessary under the requirements of Appendix F to support a determination that the Project would not result in the wasteful, inefficient, and unnecessary consumption of energy during construction and operations.

B3-29 cont.

Therefore, the DEIR fails to comply with Appendix F energy analysis requirements.

F. The DEIR Fails to Disclose the Project's Inconsistencies with Land Use and Planning Laws and Regulations

Pursuant to Appendix G of the CEQA Guidelines, a project will have a significant adverse environmental impact on land use and planning if it will cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.[176] Here, the DEIR fails to disclose inconsistency with the City's General Plan which result in a significant adverse environmental impact on land use and planning.

B3-30

1. The DEIR Fails to Disclose the Project's Inconsistencies with the Noise Element of the City's General Plan

Under California law, a general plan serves as a "charter for future development"[177] and embodies "fundamental land use decisions that guide the

B3-31

[174] *Ukiah Citizens for Safety First v. City of Ukiah* (2016) 248 Cal. App. 4th 256, 263-266.
[175] DEIR, p. 4.5-11.
[176] CEQA Guidelines, Appendix G §X(b).
[177] *Lesher Communications, Inc. v. City of Walnut Creek* (1990) 52 Cal.3d 531, 54.

future growth and development of cities and counties."[178] The general plan has been aptly described as "the constitution for all future developments" within a city or county.[179] Further, the "propriety of virtually any local decision affecting land use and development depends upon consistency with the applicable general plan and its elements."[180] The consistency doctrine has been described as the "linchpin of California's land use and development laws; it is the principle which infuses the concept of planned growth with the force of law."[181]

The City of Fresno's General Plan Noise Element includes objectives and policies that work to protect the citizens of the City from the harmful and annoying effects of exposure to excessive noise. The Noise Element includes the following policy to guide development:

> **NS-1-a** Desirable and Generally Acceptable Exterior Noise Environment. Establish 65 dBA Ldn or CNEL as the standard for the desirable maximum average exterior noise levels for defined usable exterior areas of residential and noise sensitive uses for noise, but designate 60 dBA Ldn or CNEL (measured at the property line) for noise generated by stationary sources impinging upon residential and noise sensitive uses. Maintain 65 dBA Ldn or CNEL as the maximum average exterior noise levels for non-sensitive commercial land uses, and maintain 70 dBA Ldn or CNEL as maximum average exterior noise level for industrial land uses, both to be measured at the property line of parcels where noise is generated which may impinge on neighboring properties.[182]

B3-31 cont.

As demonstrated above, the Project will result in significant noise impacts during Project operation that will violate Policy NS-1-a. Mr. Watry provides substantial evidence that the Project will exceed the desirable and generally acceptable noise thresholds established in Policy NS-1-a, and as a result, the DEIR fails to demonstrate consistency with the General Plan.

---

[178] *City of Santa Ana v. City of Garden Grove* (1979) 100 Cal.App.3d 521, 532.
[179] *Families Unafraid to Uphold Rural El Dorado County v. Board of Supervisors of El Dorado County* (1998) 62 Cal.App.4th 1334, 1335.
[180] *Citizens of Goleta Valley v. Board of Supervisors of County of Santa Barbara* (1990) 52 Cal.3d 553, 570.
[181] *Corona-Norco Unified School District v. City of Corona* (1993) 17 Cal.App.4th 985, 994.
[182] City of Fresno, General Plan, Chapter 9: Noise and Safety, p. 9-19 available at https://www.fresno.gov/darm/wp-content/uploads/sites/10/2022/12/upload_temp_Consolidated-GP-10-13-2022.pdf

VI. THE DEIR FAILS TO CONSIDER THE OFFICE OF THE ATTORNEY GENERAL'S BEST PRACTICES AND MITIGATION MEASURES FOR WAREHOUSE PROJECTS

In September 2022, the California Office of the Attorney General ("OAG") released an updated version of its guidance document titled "*Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act*" ("Best Practices").[183] The Best Practices were developed to aid local agencies to achieve CEQA compliance, and promote environmentally-just development when they are considering warehouse project proposals.[184] The OAG developed the Best Practices based on knowledge gained from monitoring, providing comments on, and litigating, warehouse development projects in California.[185] The Best Practices state that while CEQA analysis is necessarily project-specific, the document provides feasible best practices and mitigation measures which were adapted from actual warehouse projects in California.[186] The purpose of the Attorney General's guidance is to ensure that warehouse projects reduce their individual and cumulative impacts on the communities in which they are located to the greatest extent feasible.

B3-32

The Best Practices provides examples of environmentally superior methods of developing warehouse projects and offers sample mitigation measures that a local agency should consider when faced with a project such as the Project proposed here. For example, the Best Practices encourage local governing bodies to proactively plan for logistics projects by establishing industrial districts near major highway and rail corridors but away from sensitive receptors in order to help attract investment while avoiding conflicts between warehouse facilities and residential communities.[187]

Here, the proposed Project defies many of the recommendations in the Best Practices. For example:

- Per CARB guidance, siting warehouse facilities so that their property lines are at least 1,000 feet from the property lines of the nearest sensitive receptors.

[183] California Office of the Attorney General, Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act (hereinafter "Best Practices") (September 2022) available at https://oag.ca.gov/system/files/media/warehouse-best-practices.pdf
[184] Best Practices, p. 1.
[185] Best Practices, p. 1
[186] Best Practices, p. 1.
[187] Best Practices, p. 3.

- Placing facility entry and exit points from the public street away from sensitive receptors, e.g., placing these points on the north side of the facility if sensitive receptors are adjacent to the south side of the facility.[188]

As noted above, the closest receptor is 110 feet to the south of the project site, considerably closer than what is recommended by the Best Practices. Additionally, the entry and exit point to the Project site on Nielsen Avenue faces the sensitive receptors to the south, increasing the likelihood of causing significant impacts to those receptors.

The Best Practices also recommend that local jurisdictions take care when considering potential impacts from air quality and GHG emissions from project construction and operation. The DEIR does not comply with many of the recommendations and fails to include mitigation measures that conform with the Best Practices, which for construction include:

- Requiring off-road construction equipment to be zero-emission, where available, and all diesel-fueled off-road construction equipment, to be equipped with CARB Tier IV-compliant engines or better, and including this requirement in applicable bid documents, purchase orders, and contracts, with successful contractors demonstrating the ability to supply the compliant construction equipment for use prior to any ground-disturbing and construction activities.
- Prohibiting grading on days with an Air Quality Index forecast of greater than 100 for particulates or ozone for the project area.
- Limiting the amount of daily grading disturbance area.
- Providing electrical hook ups to the power grid, rather than use of diesel-fueled generators, for electric construction tools, such as saws, drills and compressors, and using electric tools whenever feasible.[189]

B3-32 cont.

For operational air quality and GHG emissions impacts, the Best Practices recommend:

- Requiring all heavy-duty vehicles entering or operated on the project site to be zero-emission beginning in 2030.
- Requiring on-site equipment, such as forklifts and yard trucks, to be electric with the necessary electrical charging stations provided.

[188] Best Practices, p. 6.
[189] Best Practices, p. 8.

- Requiring tenants to use zero-emission light- and medium-duty vehicles as part of business operations.
- Forbidding trucks from idling for more than two minutes and requiring operators to turn off engines when not in use.

The DEIR fails to demonstrate conformance with any of the above recommendations. The Best Practices also include several recommendations and suggested mitigation measures regarding warehouse noise and transportation impacts that the DEIR fails to take into account.

B3-32 cont.

The City must consider all of the recommendations of the OAG and incorporate any feasible measures recommended in the Best Practices as mitigation measures in the DEIR to further reduce the Project's potentially significant air quality, GHG emissions, transportation, energy, and noise impacts.

VII. THE CITY CANNOT MAKE THE FINDINGS REQUIRED FOR PROJECT APPROVAL

The Project requires approval of a Development Permit and a Tentative Parcel Map by the City. Pursuant to the Fresno City Code ("Code") the City Planning Director ("Director") has the authority to approve, conditionally approve, or deny the Project's applications based on specific sets of findings applicable to each permit.[190] In order to approve the Development Permit for the Project, the Director must find that the Project is consistent with the following:

B3-33

1. The applicable standards and requirements of [the City] Code.
2. The [City's] General Plan and any operative plan or policies the City has adopted.
3. Any applicable design guidelines adopted by the City Council.
4. Any approved Tentative Map, Conditional Use Permit, Variance, or other planning or zoning approval that the project required.
5. Fresno County Airport Land Use Compatibility Plan (as may be amended) adopted by the Fresno County Airport Land Use Commission pursuant to California Public Utilities Code Sections 21670—21679.5.[191]

[190] Fresno City Code ("FCC") § 15-5203 (Development Permit); *see also* FCC § 15-3308 (Tentative Parcel Map).
[191] FCC § 15-5206.

Additionally, pursuant to the Code, the Director may approve or conditionally approve a Tentative Parcel Map based on the following findings:

1. The proposed subdivision, together with the provisions for its design and improvement, is consistent with the General Plan, any applicable operative plan, adopted policies or guidelines, and the Municipal Code.
2. A subdivision for which a Tentative Map is required shall provide pursuant to the Map Act (Section 66473.1), to the extent feasible, for future passive or natural heating or cooling opportunities in the subdivision.
3. Water will be available and sufficient to serve a proposed subdivision with more than 500 dwelling units in accordance with the Map Act (Section 66473.7).
4. There exists sufficient infrastructure capacity for water, runoff, storm water, wastewater, and solid waste systems to serve the proposed subdivision. In cases where existing infrastructure is found to be deficient, plans shall show how sufficient capacity will be provided.
5. The proposed subdivision is compliant with the City of Fresno Floodplain Management Ordinance and the State of California Code of Regulations Title 23, as well as any other applicable State or federal law.[192]

B3-33 cont.

The City cannot make all of the above findings for the Project, thereby precluding approval of the Project's land use permits. As demonstrated in the foregoing comments, the Project is inconsistent with the General Plan's Noise and Safety Element. Therefore, the Director cannot find that the Project is consistent with the General Plan, precluding finding No. 2 for the Development Permit and Finding No. 1 of the Tentative Parcel Map and cannot make the necessary findings to approve the Project's entitlements until the deficiencies in the DEIR are corrected.

VIII. THE PROJECT FAILS TO COMPLY WITH THE SUBDIVISION MAP ACT

B3-34

As explained above, the Project requires the approval of a Tentative Parcel Map to subdivide the existing two parcels into four parcels.[193]

[192] FCC § 15-3309.
[193] DEIR, pg. 3-13.

The DEIR fails to analyze this component of the Project. The DEIR therefore lacks substantial evidence to support the Map Act's required factual findings to approve the Tentative Parcel Map, which require the City to find that a proposed subdivision is consistent with the general plan/specific plan, and does not have any detrimental environmental or public health effects.[194] In addition, as discussed above, there is substantial evidence demonstrating that the Project is likely to have, potentially significant impacts related to transportation, air quality, health risk, GHG emissions, noise, energy, and land use and planning. These impacts are not adequately mitigated in the DEIR. As a result of these unmitigated impacts, the Project fails to comply with mandatory Map Act requirements and the City cannot make the requisite findings to approve the Project's Tentative Parcel Map.

The purpose of the Map Act is to regulate and control design and improvement of subdivisions with proper consideration for their relation to adjoining areas, to require subdividers to install streets and other improvements, to prevent fraud and exploitation, and to protect both the public and purchasers of subdivided lands.[195] Before approving a tentative map, the Map Act requires the agency's legislative body to make findings that the proposed subdivision map, together with the provisions for its design and improvement, is consistent with the general plan and any specific plan.[196] The Map Act also requires the agency's legislative body to deny a proposed subdivision map in any of the following circumstances:[197]

B3-34 cont.

a) The proposed map is ***not consistent with applicable general and specific plans*** as specified in Section 65451.
b) The design or improvement of the proposed subdivision is ***not consistent with applicable general and specific plans***.
c) The site is not physically suitable for this type of development.
d) The site is not physically suitable for the proposed density of development.
e) The ***design of the subdivision or the proposed improvements are likely to cause substantial environmental damage*** or substantially and avoidably injure fish or wildlife or their habitat.
f) The ***design of the subdivision or type of improvements is likely to cause serious public health problems***.

[194] Gov Code §§66473.5, 66474.
[195] *Pratt v. Adams* (1964) 229 Cal.App.2d 602.
[196] Gov Code § 66473.5.
[197] Gov. Code § 66474 (emphasis added).

g) The design of the subdivision or the type of improvements will conflict with easements, acquired by the public at large, for access through or use of property within the proposed subdivision.

Residents' experts provide substantial evidence demonstrating that the Project is likely to have significant, unmitigated impacts to public health from exposure to Valley Fever causing fungus spores; on the environment and public health from construction and operational noise; and on the climate from excess GHG emissions and energy consumption. These impacts demonstrate that the Project, as analyzed in the DEIR, fails to comply with the General Plan, is "likely to cause substantial environmental damage," and "is likely to cause serious public health problems."[198] These unmitigated impacts render the Project inconsistent with Map Act requirements. The Map Act therefore requires the City to deny the Project's Tentative Parcel Map pursuant to Government Code Sections 66473.5 and 66474(a), (b), (e), and (f). B3-34 cont.

IX. CONCLUSION

For the foregoing reasons, we urge the City to fulfill its responsibilities under CEQA by preparing a legally adequate EIR that sufficiently addresses the potentially significant impacts described in this comment letter and the attached expert comments. A revised EIR is necessary to ensure that the Project's significant environmental impacts are mitigated to less than significant levels. B3-35

Thank you for your attention to these comments.

Sincerely,

Kevin Carmichael

KTC:ljl

[198] Gov. Code §§ 66474(a), (b), (e), and (f).

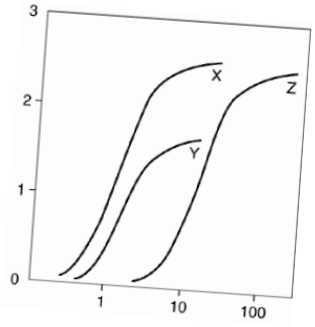
Comment Letter

B3

Attach.

ATTACHMENT A

Comment Letter
B3
Attach.



Clark & Associates
Environmental Consulting, Inc.

OFFICE
12405 Venice Blvd
Suite 331
Los Angeles, CA 90066

PHONE
310-907-6165

FAX
310-398-7626

EMAIL
jclark.assoc@gmail.com

May 19, 2023

Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814

Attn: Mr. Kevin T. Carmichael

Subject: Comments On Draft Environmental Impact Report (DEIR) For Development Permit Application No. P21-02699 & Tentative Parcel Map No. P21-05930

Dear Mr. Carmichael:

At the request of Adams Broadwell Joseph & Cardozo (ABJC), Clark and Associates (Clark) has reviewed materials related to the February 2023 City of Fresno (the City) DEIR for the above referenced project.

Clark's review of the materials in no way constitutes a validation of the conclusions or materials contained within the plan. If we do not comment on a specific item this does not constitute acceptance of the item.

B3-36

Project Description:

According to the City's DEIR, Development Permit Application No. P21-02699 and Tentative Parcel Map No. P21-05930 was filed by Scannell Properties. The applicant proposes to construct four office/warehouse buildings with a total area of 901,438 square feet, as well as associated circulation, parking, and infrastructure improvements.

The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading

B3-37

Comment Letter B3 Attach.

dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. The proposed project would also subdivide the project site into four separate parcels and would consist of each proposed building on a separate parcel. A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining 188 spaces would be dedicated for trailers and would be located along the eastern and western edges of the project site and would be located behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.

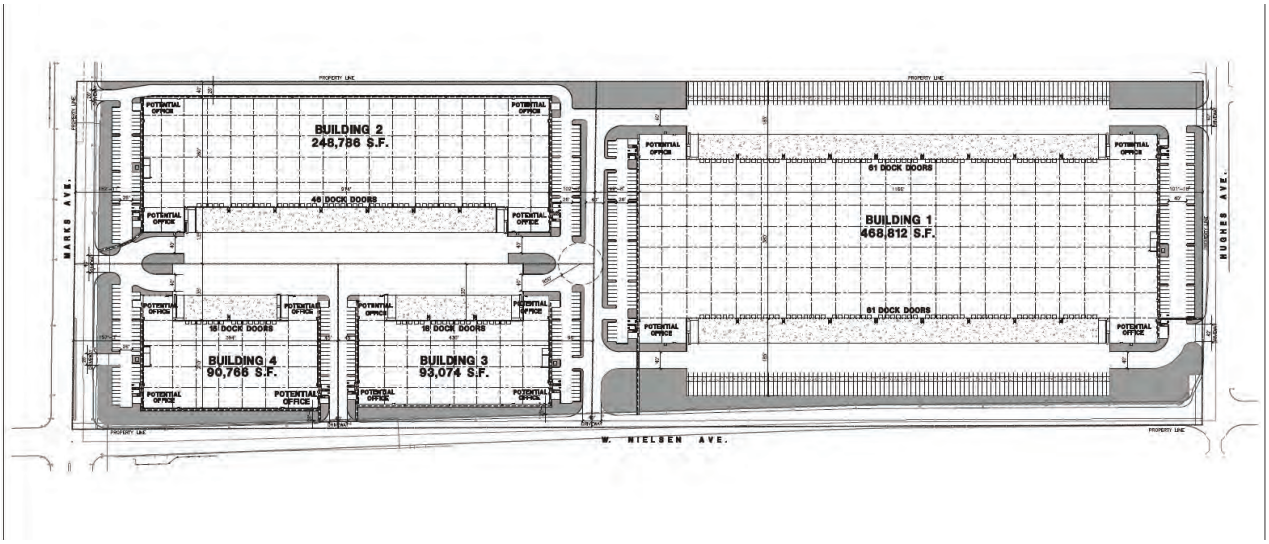


Figure 1: Project Site Plan

The 48.03-acre project site is currently vacant but formerly consisted of an industrial warehouse that has since been demolished. The project site is bounded to the north by partially developed land, to the east by North Hughes Avenue, to the south by West Nielsen Avenue, and to the west by North Marks Avenue. Regional access to the site is provided by State Route 180 (SR-180), which is located approximately 0.3 mile south of the project site, and State Route 99 (SR-99), which is located approximately 0.8 miles east of the project site.

B3-37 cont.

Comment Letter B3 Attach.

Figure 2: Site Vicinity Map

B3-37 cont.

The City's analysis assumes that the proposed project would be operational 24 hours per day, 7 days per week. A total of 594 on-site parking spaces would be provided for vehicles and trucks. Of

Comment Letter B3 Attach.

the 594 parking spaces, 385 spaces would be dedicated for standard vehicles, 11 spaces would be dedicated for accessible standard vehicles, and 10 spaces would be dedicated for accessible vans. The remaining 188 spaces would be dedicated for trailers and would be located along the eastern and western edges of the project site and would be located behind two 8-foot-tall gates, which would be installed to separate the general parking area from the truck storage and dock loading area.

B3-37 cont.

According to the conclusions of the DEIR, the proposed project is not expected to result in any significant unavoidable adverse impacts. The conclusion from the City that there will not be significant air quality impacts is not supported by the facts of the Project. There are substantial impacts that are not addressed in the City's analysis that must be addressed in a revised draft environmental impact report (RDEIR).

B3-38

Specific Comments:

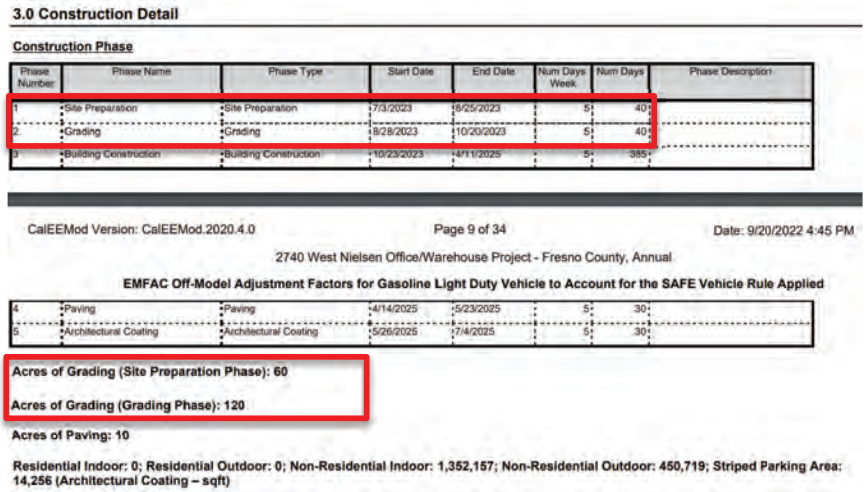
1. The DEIR Fails To Address Impacts from Exposure to *Coccidiodes Immitis* (Valley Fever Cocci) From Particulate Matter Released From Site During Construction Activities of The Project.

The DEIR fails to adequately address the known presence/issue of *Coccidiodes Immitis* (Valley Fever Cocci) in the Fresno, California area. Dust exposure is one of the primary risk factors for contracting Valley Fever (via *Coccidiodes imimitis (cocci)* exposure). When soil containing the *cocci* spores are disturbed by construction activities, the fungal spores become airborne, exposing construction workers and other nearby sensitive receptors.

The fungus lives in the top 2 to 12 inches of soil. When soil containing this fungus is disturbed by activities such as digging, vehicles, construction activities, dust storms, or during earthquakes, the fungal spores become airborne. According to the Air Quality Analysis of the DEIR (Appendix C), the project will involve 40 days of site preparation which will disturb 60 acres of soil and 40 days of grading activities which will disturb 120 acres of soil.

B3-39

Comment Letter B3 Attach.



3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/3/2023	8/25/2023	5	40	
2	Grading	Grading	8/28/2023	10/20/2023	5	40	
3	Building Construction	Building Construction	10/23/2023	4/11/2025	5	385	

CalEEMod Version: CalEEMod.2020.4.0 Page 9 of 34 Date: 9/20/2022 4:45 PM

2740 West Nielsen Office/Warehouse Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Paving	Paving	4/14/2025	5/23/2025	5	30
5	Architectural Coating	Architectural Coating	5/26/2025	7/4/2025	5	30

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 120

Acres of Paving: 10

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,352,157; Non-Residential Outdoor: 450,719; Striped Parking Area: 14,256 (Architectural Coating – sqft)

Figure 3: Details From CalEEMOD Analysis of Project

B3-39 cont.

The most at-risk populations are construction and agricultural workers.[1] Construction workers are the very population that would be most directly exposed by the Project. A refereed journal article on occupational exposures notes that "[l]abor groups where occupation involves close contact with the soil are at greater risk, especially if the work involves dusty digging operations."[2]

The potentially exposed population in surrounding areas is much larger than construction workers because the nonselective raising of dust during Project construction will carry the very small spores, 0.002–0.005 millimeters ("mm"), into nonendemic areas, potentially exposing large non-Project-related populations.[3],[4] These very small particles are not controlled by conventional construction dust control mitigation measures.

[1] Lawrence L. Schmelzer and R. Tabershaw, Exposure Factors in Occupational Coccidioidomycosis, *American Journal of Public Health and the Nation's Health*, v. 58, no. 1, 1968, pp. 107–113, Table 3; available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1228046/?page=1.

[2] *Ibid.*, p. 110.

[3] Schmelzer and Tabershaw, 1968, p. 110; Pappagianis and Einstein, 1978

[4] Pappagianis and Einstein, 1978, p. 527 ("The northern areas were not directly affected by the ground level windstorm that had struck Kern County but the dust was lifted to several thousand feet elevation and, borne on high currents, the soil and arthrospores along with some moisture were gently deposited on sidewalks and automobiles as 'a mud storm' that vexed the residents of much of California." The storm originating in Kern County, for example, had major impacts in the San Francisco Bay Area and Sacramento).

Comment Letter B3 Attach.

Since 2014, the number of cases of Valley Fever in Fresno County has increased from 161 in 2014 to 828 in 2017, as reported by the California Department of Public Health (CDPH).[5] In 2022, 450 cases were recorded in Fresno County,[6] almost three times (2.8 times exactly) as many as the amounts reported in 2014. In the first quarter of 2023, Fresno County reported 83 cases.

B3-39 cont.

2. The DEIR Fails To Include Adequate Mitigation Measures And Medical Monitoring Information To Prevent Exposure to *Coccidiodes Immitis* (Valley Fever Cocci) From Disturbed Soils On Site.

Standard fugitive dust mitigation measures are not adequate to protect construction workers and nearby sensitive receptors from this risk. In addition to the mitigation measures required under the DEIR's Mitigation Measure Air-1, the City should require the following measures from the Proponent to actively suppress the spread of VF by:

1. Include specific requirements in the Project's Injury and Illness Prevention Program (as required by Title 8, Section 3203) regarding safeguards to prevent Valley Fever.

B3-40

2. Control dust exposure:
   - Apply chemical stabilizers at least 24-hours prior to high wind event;
   - Apply water to all disturbed areas a minimum of three times per day. Watering frequency should be increased to a minimum of four times per day if there is any evidence of visible wind-driven fugitive dust;
   - Provide National Institute for Occupational Safety and Health (NIOSH)-approved respirators for workers with a prior history of Valley Fever.
   - Half-face respirators equipped with a minimum N-95 protection factor for use during worker collocation with surface disturbance activities. Half-face

[5] CDPH. 2019. Epidemiologic Summary of Valley Fever (Coccidiodomycosis) In California, 2019. Surveillance and Statistics Section, Infection Diseases Branch, Division of Communicable Disease Control, Center For Infectious Diseases, California Department of Public Health. https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/CocciEpiSummary2019.pdf

[6] CDPH. 2023. Coccidiodomycosis In California, Provisional Monthly Report, January – March 2023 (as of March 31, 2023). Surveillance and Statistics Section, Infection Diseases Branch, Division of Communicable Disease Control, Center For Infectious Diseases, California Department of Public Health. https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/CocciinCAProvisionalMonthlyReport.pdf

Comment Letter B3 Attach.

respirators equipped with N-100 or P-100 filters should be used during digging activities. Employees should wear respirators when working near earth-moving machinery.

- Prohibit eating and smoking at the worksite, and provide separate, clean eating areas with hand-washing facilities.
- Avoid outdoor construction operations during unusually windy conditions or in dust storms.
- Consider limiting outdoor construction during the fall to essential jobs only, as the risk of cocci infection is higher during this season.

3. Prevent transport of cocci outside endemic areas:
    - Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate;
    - Provide workers with coveralls daily, lockers (or other systems for keeping work and street clothing and shoes separate), daily changing and showering facilities.
    - Clothing should be changed after work every day, preferably at the work site.
    - Train workers to recognize that cocci may be transported offsite on contaminated equipment, clothing, and shoes; alternatively, consider installing boot-washing.
    - Post warnings onsite and consider limiting access to visitors, especially those without adequate training and respiratory protection.
4. Improve medical surveillance for employees:
    - Employees should have prompt access to medical care, including suspected work-related illnesses and injuries.
    - Work with a medical professional to develop a protocol to medically evaluate employees who have symptoms of Valley Fever.
    - Consider preferentially contracting with 1-2 clinics in the area and communicate with the health care providers in those clinics to ensure that providers are aware that Valley Fever has been reported in the area. This will increase the likelihood that ill workers will receive prompt, proper and consistent medical care.
    - Respirator clearance should include medical evaluation for all new employees, annual re-evaluation for changes in medical status, and annual training, and fit-testing.

B3-40 cont.

Comment Letter B3 Attach.

- Skin testing is not recommended for evaluation of Valley Fever.[7]
- If an employee is diagnosed with Valley Fever, a physician must determine if the employee should be taken off work, when they may return to work, and what type of work activities they may perform.

B3-40 cont.

The mitigation measures identified in this comment, based on actual experience during construction of projects in endemic areas, should be required for the Project. The City must include concrete measures like the ones listed above in a revised DEIR of the Project.

3. The Air Quality Analysis Of Operational Emissions Is Incomplete And Fails To Include Emissions From The Fire Pump System That Will Be Installed Onsite.

According to the Air Quality Analysis prepared by LSA[8] for the Project, operational emissions were calculated using the CalEEMOD (Version 2020.4.0) software. Included in the analysis are area source emissions and mobile source emissions. Not included in the analysis are emissions from the fire flow pump system that will need to be installed for the buildings to be compliant with the California Fire Code (CFC) and local fire authority requirements.

B3-41

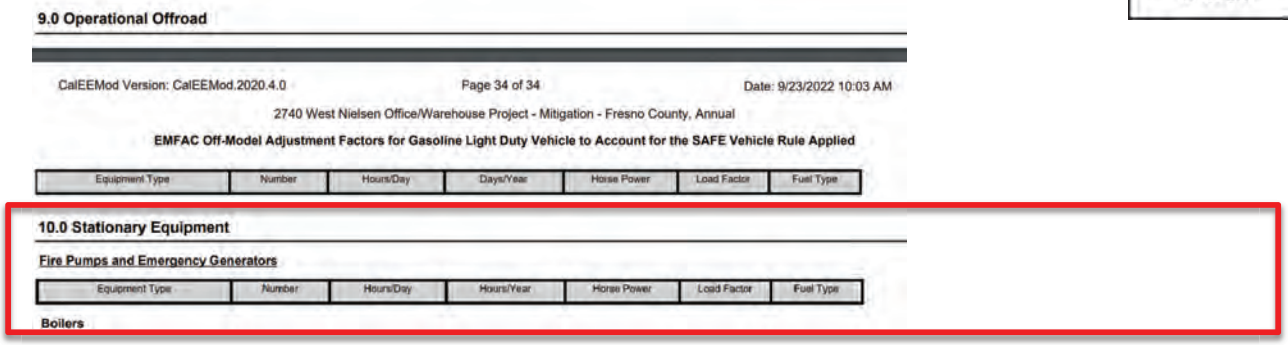
In the CalEEMOD outputs provided in the Appendix C to the DEIR prepared by LSA[9], no fire pump system is included in the analyses.

[7] Short-term skin tests that produce results within 48 hours are now available. See Kerry Klein, NPR for Central California, New Valley Fever Skin Test Shows Promise, But Obstacles Remain, November 21, 2016; available at http://kvpr.org/post/new-valley-fever-skin-test-shows-promise-obstacles-remain.

[8] LSA. 2023. Public Review Draft Environmental Impact Report Technical Appendices – Volume I – Appendices A-I. 2740 West Nielsen Avenue Office/Warehouse Project, Fresno, California.

[9] LSA. 2023. Public Review Draft Environmental Impact Report Technical Appendices – Volume I – Appendices A-I. 2740 West Nielsen Avenue Office/Warehouse Project, Fresno, California.

Comment Letter B3 Attach.


9.0 Operational Offroad

CalEEMod Version: CalEEMod.2020.4.0 Page 34 of 34 Date: 9/23/2022 10:03 AM

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Figure 4: CalEEMOD Output For Annual Operational Phase

B3-41 cont.

The City's analysis is therefore incomplete and must be corrected in a revised DEIR for the Project.

4. The Project's Air Quality Analysis Is Incomplete And Fails To Adequately Consider The Use of Refrigeration Units and TRU's Onsite

B3-42

According to the DEIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The project is being built as a "spec" building whereby tenant(s) would perform the final improvements, while the proposed project would fully build the office spaces. The description provided does not preclude the use of the buildings as refrigerated/cold storage warehouses. Given the vague description of the Project end use, the City should include an analysis of the Project assuming that the buildings could be used for cold storage and should also include the use of Transport Refrigeration Units (TRUs) on site in the air quality analysis.

Transport Refrigeration Units (TRU) are refrigeration systems powered by diesel internal combustion engines designed to refrigerate or heat perishable products that are transported in various containers, including truck vans, semi-truck trailers, shipping containers, and railcars. CARB[10] defines diesel exhaust as a complex mixture of inorganic and organic compounds that exists in gaseous, liquid, and solid phases. CARB and U.S. EPA identify 40 components of the exhaust as suspected human carcinogens, including formaldehyde, 1,3-butadiene, and benzo[a]pyrene. While acrolein is one of the most TAC in diesel exhaust it is not the only TAC. The inhalation unit risk factor identified by OEHHA for use in risk assessments is for the particulate matter (DPM) fraction

[10] CARB. 1998. Report to the Air Resources Board on the Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, Part A, Public Exposure To, Sources and Emissions of Diesel Exhaust In California. April 22, 1998. Pg A-1.

Comment Letter B3 Attach.

of diesel exhaust and not the vapor phase components identified by CARB and U.S. EPA.

Given the lack of a clear project description of the use of the Project Site, it is therefore reasonable to conclude that refrigeration units and TRUs are a foreseeable project component. The refrigeration units and TRU emissions have not been quantified in the DEIR, intentionally underestimating the foreseeable health risk to the community as well as the associated GHG emissions from the operation of the refrigeration units and TRUs. The City must assess the impacts since they are allowing for the potential future use of these sources of pollution onsite in a revised DEIR.

B3-42 cont.

5. The DEIR's Emission Estimates For Passenger Vehicles Is Different Than The Value Included In The Technical Appendices.

According to the DEIR, the proposed Project would result in a total of 1,920 vehicle trips per day. Of the 1,920 trips, there would be 1,578 car trips daily. The remaining 342 trips would be associated with trucks using the Project Site.

Table 4.10.A: Project Trip Generation

Trip Generation[1]	Average Daily Trips	Weekday AM Peak Hour[2]			Weekday PM Peak Hour[2]		
		In	Out	Total	In	Out	Total
Trip Generation							
Trip Generation (Cars)	1,578	75	18	93	105	24	129
Trip Generation (2–4 Axle Trucks)	146	5	2	7	8	2	10
Trip Generation (5+ Axle Trucks)	196	8	2	10	7	2	9
Trip Generation (Total Trucks)	342	13	4	17	15	4	19
Trip Generation (Total)	**1,920**	**88**	**22**	**110**	**120**	**28**	**148**
PCE Trip Generation							
Trip Generation (Cars)	1,578	75	18	93	105	24	129
PCE Trip Generation (2–4 Axle Trucks)[3]	292	10	4	14	16	4	20
PCE Trip Generation (5+ Axle Trucks)[3]	588	24	6	30	21	6	27
PCE Trip Generation (Total Trucks)	880	34	10	44	37	10	47
PCE Trip Generation (Total)	**2,458**	**109**	**28**	**137**	**142**	**34**	**176**

Source: LSA (2021).

[1] Rates from the Western Riverside Council of Governments (WRCOG) *TUMF High-Cube Warehouse Trip Generation Study*, January 2019, prepared by WSP.

[2] The WRCOG study does not provide in/out splits for the peak hour trip generation. Therefore, in/out splits from Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition) supplement Land Use 155 - "High-Cube Fulfilment Center Warehouse" have been used for obtaining in/out traffic.

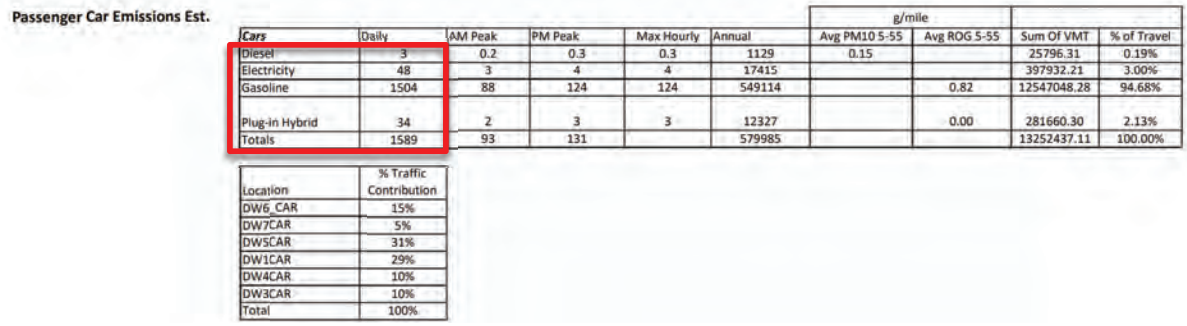
[3] A Passenger Car Equivalent (PCE) factor 2.0 has been taken for 2-4 axle trucks based on Highway Capacity Manual (HCM) recommendations. Further, as a conservative approach, a PCE factor of 3.0 is taken, for 5+ axle trucks, consistent with latest practices in numerous California jurisdictions.

B3-43

Figure 5: Daily Trip Estimation

Comment Letter B3 Attach.

A review of the underlying tables in Appendix C of the technical appendices shows that LSA assumed a different rate of trip generation. On page 227 of the pdf, the table for passenger vehicles shows a value of 1,589 passenger vehicles per day. [11]



Passenger Car Emissions Est.

Cars	Daily	AM Peak	PM Peak	Max Hourly	Annual	g/mile Avg PM10 5-55	g/mile Avg ROG 5-55	Sum Of VMT	% of Travel
Diesel	3	0.2	0.3	0.3	1129	0.15		25796.31	0.19%
Electricity	48	3	4	4	17415			397932.21	3.00%
Gasoline	1504	88	124	124	549114		0.82	12547048.28	94.68%
Plug-in Hybrid	34	2	3	3	12327		0.00	281660.30	2.13%
Totals	1589	93	131		579985			13252437.11	100.00%

Location	% Traffic Contribution
DW6_CAR	15%
DW7CAR	5%
DW5CAR	31%
DW1CAR	29%
DW4CAR	10%
DW3CAR	10%
Total	100%

Figure 6: Passenger Vehicle Estimates From Technical Appendices

The City must correct the numbers within the technical appendices and the DEIR to ensure there is consistency in the whole report. The City should provide those corrected results in a revised DEIR.

B3-43 cont.

5. **The Underlying Assumptions Regarding The Number of Vehicles Associated With Each Square Foot of Building Utilized In The Air Quality Analysis Under Estimates The Number of Daily Trips And Does Not Reflect The Range Of Values Reported By ITE.**

The choice of the daily trip rate has a profound impact on the calculated emissions for operational associated with the Project. The City's choice for the trip rate is at the lowest end of the values reported in the literature. The ITE manual includes a variety of average daily vehicle trips for HCWs which range from a low of 1.4 per 1,000 square feet for transload and short-term storage warehouses to a high of 6.44 trips per square feet for fulfillment center warehouses.[12] An averaged value of all the warehouse HCW types reported in the ITE manual would be 3.28 trips per 1,000 square

B3-44

[11] LSA. 2023. Public Review Draft Environmental Impact Report Technical Appendices – Volume I – Appendices A-I. 2740 West Nielsen Avenue Office/Warehouse Project, Fresno, California.

[12] Institute of Transportation Engineers (2020).

Comment Letter B3 Attach.

feet. The 2019 study of warehouse trip generation performed by WSP for the Western Riverside Council of Governments (WR-COG) cited in the DEIR, calculates an average daily trip rate across the 11 fulfillment centers of 2.13 per 1000 square feet, well below the average value for the ITE studies. The value reported in the WR-COG study is significantly lower than the average of the ITE studies (35% lower than the ITE average).

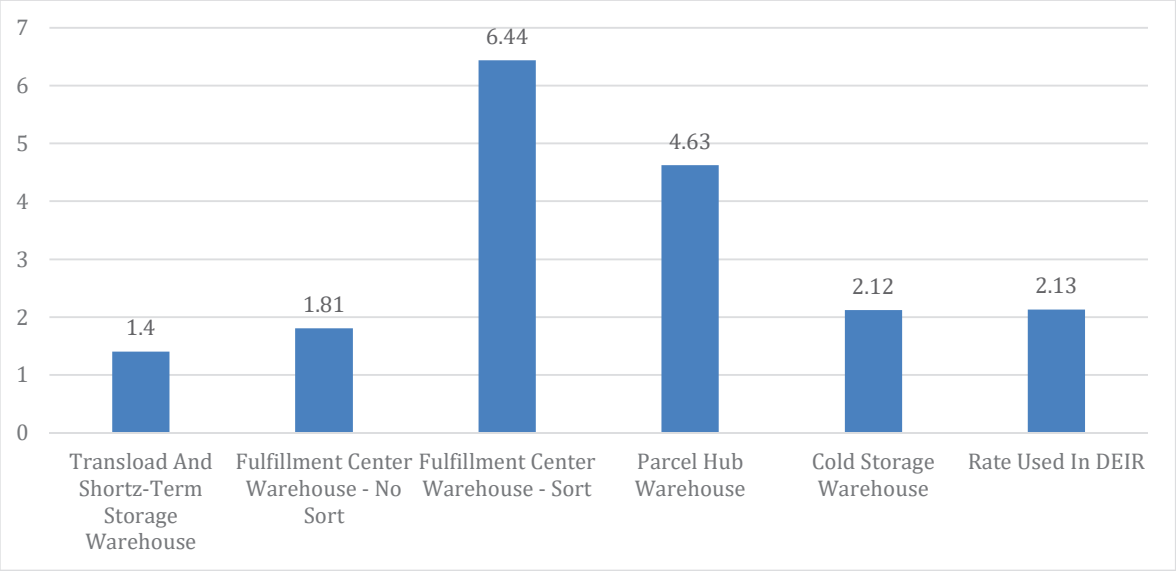
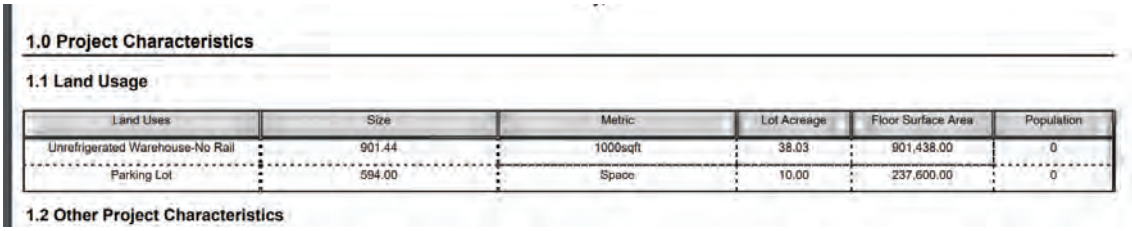


Figure 7: Trip rates per 1,000 square feet as reported in ITE manual



1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	901.44	1000sqft	38.03	901,438.00	0
Parking Lot	594.00	Space	10.00	237,600.00	0

1.2 Other Project Characteristics

Figure 8: Project Description in CalEEMOD

Using the ITE manual rates above, the proposed 901,440 square foot HCW Project could result in 1,262.0 to 5,805.27 daily trips. The averaged value of the daily trips (assuming 3.28 trips per thousand feet on average) is 2,956.72 trips, nearly 1,000 more trips per day than those assumed in the DEIR.

B3-44 cont.

The ITE studies suggest that the value used to justify the number of vehicle trips per day utilized by the City are not supportable, and the DEIR lacks any supporting evidence to justify its reliance on a 2.13 daily trip rate. Based on the evidence and reasonable calculations provided in the ITE studies, the City should, at a minimum, re-evaluate the Project's operational emissions based on the average value reported by ITE (3.28) in a revised DEIR.

B3-44 cont.

6. The Air Dispersion Model Used For The Health Risk Assessment For Operational Phases Of The Project Has A Structural Flaw That Result In Inaccurate Estimates Of The Project Emissions Within The Community

The modeling approach has a significant flaw - the model does not account for the impact on emissions from building downwash. If the building downwash were included in the model, then the Proponent would be reasonably expected to call that out in the text summary of the model. The AERMOD model calculates the ground-level concentration of DPM emission associated with the project.

B3-45

Building downwash occurs as the wind flows over and around buildings and impacts the dispersion of pollution from nearby stacks. A plume caught in the path of this flow is drawn into the wake, temporarily trapping it in a recirculating cavity. This downwash effect leads to higher ground-level concentration of chemicals emitted from sources. The downwash effect increases as the relative difference between the release height and top of the building increases.[13] For the closest receptors to the site, the residences to the east of the Project, this difference will create an additional air quality impact that is not accounted for in the City's analysis. Guidance from authoritative bodies in California regarding the preparation of health risk assessments of mobile sources of diesel emissions[14] requires the inclusion of building heights and dimensions for building downwash calculations.

[13] The so-called good engineering practice height (GEP) of the source. The GEP is defined in Section 123 of the Clean Air Act as "the height necessary to ensure that emissions from a stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies or wakes which may be created by the source itself, nearby structures or nearby terrain obstacles."

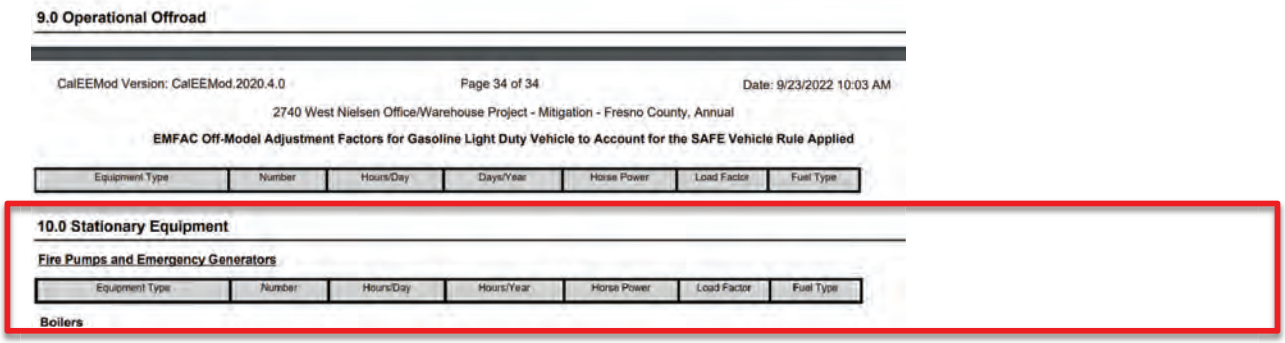
[14] SCAQMD. 2003. Health Risk Assessment Guidance For Analyzing Cancer Risks From Mobile Source Diesel Emissions. August, 2003. Page 2.

Comment Letter B3 Attach.

Omission of the building downwash effect underestimates the exposure point concentrations for receptors near the building(s). The City should address the impact of this issue in a R-DEIR. B3-45 cont.

7. The Air Quality Analysis Failed To Account For The Back-up Generator (BUG) Usage Onsite.

The DEIR's Air Quality Analysis does not account for the need for back-up generators on-site. Backup generators would only be used in the event of a power failure and would not be part of the Project's normal daily operations. In the CalEEMOD outputs provided in the Appendix C to the DEIR prepared by LSA[15], no BUGs are included in the analyses.


9.0 Operational Offroad

CalEEMod Version: CalEEMod.2020.4.0 Page 34 of 34 Date: 9/23/2022 10:03 AM

2740 West Nielsen Office/Warehouse Project - Mitigation - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

B3-46

Figure 9: CalEEMOD Output For Annual Operational Phase

The City's analysis is therefore incomplete and must be corrected in a revised DEIR for the Project.

In addition to the testing emissions the air quality analysis must include the substantial increase in operational emissions from BUGs in the Air Basin due to unscheduled events, including but not limited to Public Safety Power Shutoff (PSPS) events and extreme heat events. Extreme heat events are defined as periods where in the temperatures throughout California exceed 100 degrees Fahrenheit. The total duration of the PSPS events lasted between 141 hours to 154 hours in 2019. In 2021, the Governor Of California declared that during extreme heat events the use of stationary generators shall be deemed an emergency use under California Code of Regulations (CCR), title 17, section 93115.4 sub. (a) (30) (A)(2). The number of Extreme Heat Events is likely to increase in California with the continuing change in climate the State is currently undergoing.

[15] LSA. 2023. Public Review Draft Environmental Impact Report Technical Appendices – Volume I – Appendices A-I. 2740 West Nielsen Avenue Office/Warehouse Project, Fresno, California.

Comment Letter B3 Attach.

Power produced during PSPS or extreme heat events is expected to come from engines regulated by CARB and California's 35 air pollution control and air quality management districts (air districts). Of particular concern are health effects related to emissions from diesel back-up engines. Diesel particulate matter (DPM) has been identified as a toxic air contaminant, composed of carbon particles and numerous organic compounds, including over forty known cancer-causing organic substances. The majority of DPM is small enough to be inhaled deep into the lungs and make them more susceptible to injury.

According to the California Public Utilities Commission (CPUC) de-energization report in October 2019, there were almost 806 PSPS events (emphasis added) that impacted almost 973,000 customers (~7.5% of households in California) of which ~854,000 of them were residential customers, and the rest were commercial/industrial/medical baseline/other customers. CARB's data also indicated that on average each of these customers had about 43 hours of power outage in October 2019. Using the actual emission factors for each diesel BUG engines in the air district's stationary BUGs database, CARB staff calculated that the 1,810 additional stationary generators running during a PSPS in October 2019 generated 126 tons of NOx, 8.3 tons or particulate matter, and 8.3 tons of DPM.

B3-46 cont.

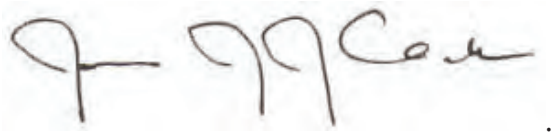
For every PSPS or Extreme Heat Event (EHE) triggered during the operational phase of the project, significant concentrations of DPM will be released. A R-DEIR should be prepared for the Project that includes an analysis of the operation of BUGs that will occur at the project site that are not accounted for in the current air quality and GHG analyses.

Conclusion

The facts identified and referenced in this comment letter lead me to reasonably conclude that the Project could result in significant unmitigated impacts if the DEIR is approved. The City must re-evaluate the significant impacts identified in this letter by requiring the preparation of a revised draft environmental impact report.

B3-47

Sincerely,



Comment Letter

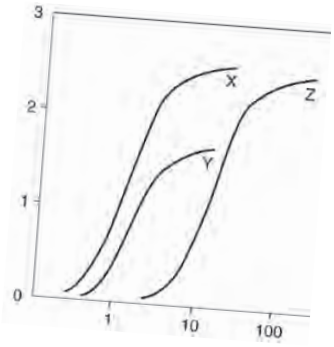
B3

Attach.

EXHIBIT A

CV

Comment Letter
B3
Attach.



Clark & Associates
Environmental Consulting, Inc

Office
12405 Venice Blvd.
Suite 331
Los Angeles, CA 90066

Phone
310-907-6165

Fax
310-398-7626

Email
jclark.assoc@gmail.com

James J. J. Clark, Ph.D.

Principal Toxicologist

Toxicology/Exposure Assessment Modeling

Risk Assessment/Analysis/Dispersion Modeling

Education:

Ph.D., Environmental Health Science, University of California, 1995

M.S., Environmental Health Science, University of California, 1993

B.S., Biophysical and Biochemical Sciences, University of Houston, 1987

Professional Experience:

Dr. Clark is a well-recognized toxicologist, air modeler, and health scientist. He has 30 years of experience in researching the effects of environmental contaminants on human health including environmental fate and transport modeling (SCREEN3, AEROMOD, ISCST3, Johnson-Ettinger Vapor Intrusion Modeling, RESRAD, GENII); exposure assessment modeling (partitioning of contaminants in the environment as well as PBPK modeling); conducting and managing human health risk assessments for regulatory compliance and risk-based clean-up levels; and toxicological and medical literature research.

SELECTED AIR MODELING RESEARCH/PROJECTS

Client(s) - Confidential

Dr. Clark performed a historical dose reconstruction for community members from an active 700 acre petroleum refinery in Los Angeles. The analysis included a multi-year dispersion model was performed in general accordance with the methods outlined by the U.S. EPA and the SCAQMD for assessing the health impacts in Torrance, California. The results of the analysis are being used as the basis for injunctive relief for the communities surrounding the refinery.

B3-48

Client(s) – Multiple

Indoor Air Evaluations, California: Performed multiple indoor air screening evaluations and risk characterizations consistent with California Environmental Protection Agency's (Cal/EPA) Department of Toxic Substances Control (DTSC) and Regional Water Quality Control Board (RWQCB) methodologies. Characterizations included the use of DTSC's

modified Johnson & Ettinger Model and USEPA models, as well as the attenuation factor model currently advocated by Cal/EPA's Office of Environmental Health and Hazard Assessment (OEHHA).

Client – Adams, Broadwell, Joseph Cardozo, P.C.

Dr. Clark has performed numerous air quality analyses and risk assessments of criteria pollutants, air toxins, and particulate matter emissions for sites undergoing evaluation via the California Environmental Quality Act (CEQA) process. The analyses include the evaluation of Initial Study (IS) and Environmental Impacts Reports (EIR) for each project to determine the significance of air quality, green house gas (GHG), and hazardous waste components of the projects. The analyses were compiled as comment letters for submittal to oversight agencies.

Client – Confidential

Dr. Clark performed a comprehensive evaluation of criteria pollutants, air toxins, and particulate matter emissions from a carbon black production facility to determine the impacts on the surrounding communities. The results of the dispersion model were used to estimate acute and chronic exposure concentrations to multiple contaminants and were be incorporated into a comprehensive risk evaluation.

B3-48 cont.

Client – Confidential

Dr. Clark performed a comprehensive evaluation of air toxins and particulate matter emissions from a railroad tie manufacturing facility to determine the impacts on the surrounding communities. The results of the dispersion model have been used to estimate acute and chronic exposure concentrations to multiple contaminants and have been incorporated into a comprehensive risk evaluation.

PUBLIC HEALTH/TOXICOLOGY

Client: Confidential

Dr. Clark performed a historical dose reconstruction for community members from radiologically impacted material (RIM) releases from an adjacent landfill. The analysis was performed in general accordance with the methods outlined by the Agency for Toxic Substances Control (ATSDR) for assessing radiation doses from historical source areas in North St. Louis County, Missouri.

Client: City of Santa Clarita, Santa Clarita, California

Dr. Clark managed the oversight of the characterization, remediation and development activities of a former 1,000 acre munitions manufacturing facility for the City of Santa

Comment Letter B3 Attach.

Clarita. The site is impacted with a number of contaminants including perchlorate, unexploded ordinance, and volatile organic compounds (VOCs). The site is currently under a number of regulatory consent orders, including an Immanent and Substantial Endangerment Order. Dr. Clark assisted the impacted municipality with the development of remediation strategies, interaction with the responsible parties and stakeholders, as well as interfacing with the regulatory agency responsible for oversight of the site cleanup.

Client: Confidential

Dr. Clark performed a historical dose reconstruction for community members exposed to radioactive waste released into the environment from legacy storage facilities. The releases resulted in impacts to soils, sediments, surface waters, and groundwater in the vicinity of the sites. The analysis was performed in general accordance with the methods outlined by the Agency for Toxic Substances Control (ATSDR) for assessing radiation doses from historical source areas in the community.

Client: Confidential

Dr. Clark performed a dose assessment of an individual occupationally exposed to metals and silica from fly ash who later developed cancer. A review of the individual's medical and occupational history was performed to prepare opinions regarding his exposure and later development of cancer.

B3-48 cont.

Client: Brayton Purcell, Novato, California

Dr. Clark performed a toxicological assessment of residents exposed to methyl-tertiary butyl ether (MTBE) from leaking underground storage tanks (LUSTs) adjacent to the subject property. The symptomology of residents and guests of the subject property were evaluated against the known outcomes in published literature to exposure to MTBE. The study found that residents had been exposed to MTBE in their drinking water; that concentrations of MTBE detected at the site were above regulatory guidelines; and, that the symptoms and outcomes expressed by residents and guests were consistent with symptoms and outcomes documented in published literature.

Client: Confidential

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to hexavalent chromium who later developed cancer. A review of the individual's medical and occupational history was performed to prepare opinions regarding her exposure and later development of cancer.

Comment Letter B3 Attach.

Client: Covanta Energy, Westwood, California

Evaluated health risk from metals in biosolids applied as soil amendment on agricultural lands. The biosolids were created at a forest waste cogeneration facility using 96% whole tree wood chips and 4 percent green waste. Mass loading calculations were used to estimate Cr(VI) concentrations in agricultural soils based on a maximum loading rate of 40 tons of biomass per acre of agricultural soil. The results of the study were used by the Regulatory agency to determine that the application of biosolids did not constitute a health risk to workers applying the biosolids or to residences near the agricultural lands.

Client: Kaiser Venture Incorporated, Fontana, California

Prepared PBPK assessment of lead risk of receptors at a 1,100-acre former steel mill. This evaluation was used as the basis for granting closure of the site by lead regulatory agency.

RISK ASSESSMENTS/REMEDIAL INVESTIGATIONS

Kaiser Ventures Incorporated, Fontana, California

Prepared health risk assessment of semi-volatile organic chemicals and metals for a fifty-year old wastewater treatment facility used at a 1,100-acre former steel mill. This evaluation was used as the basis for granting closure of the site by lead regulatory agency.

B3-48 cont.

ANR Freight - Los Angeles, California

Prepared a comprehensive Preliminary Endangerment Assessment (PEA) of petroleum hydrocarbon and metal contamination of a former freight depot. This evaluation was as the basis for reaching closure of the site with lead regulatory agency.

Kaiser Ventures Incorporated, Fontana, California

Prepared comprehensive health risk assessment of semi-volatile organic chemicals and metals for 23-acre parcel of a 1,100-acre former steel mill. The health risk assessment was used to determine clean up goals and as the basis for granting closure of the site by lead regulatory agency. Air dispersion modeling using ISCST3 was performed to determine downwind exposure point concentrations at sensitive receptors within a 1 kilometer radius of the site. The results of the health risk assessment were presented at a public meeting sponsored by the Department of Toxic Substances Control (DTSC) in the community potentially affected by the site.

Comment Letter B3 Attach.

Unocal Corporation - Los Angeles, California

Prepared comprehensive assessment of petroleum hydrocarbons and metals for a former petroleum service station located next to sensitive population center (elementary school). The assessment used a probabilistic approach to estimate risks to the community and was used as the basis for granting closure of the site by lead regulatory agency.

Client: Confidential, Los Angeles, California

Managed oversight of remedial investigation most contaminated heavy metal site in California. Lead concentrations in soil excess of 68,000,000 parts per billion (ppb) have been measured at the site. This State Superfund Site was a former hard chrome plating operation that operated for approximately 40-years.

Client: Confidential, San Francisco, California

Coordinator of regional monitoring program to determine background concentrations of metals in air. Acted as liaison with SCAQMD and CARB to perform co-location sampling and comparison of accepted regulatory method with ASTM methodology.

Client: Confidential, San Francisco, California

Analyzed historical air monitoring data for South Coast Air Basin in Southern California and potential health risks related to ambient concentrations of carcinogenic metals and volatile organic compounds. Identified and reviewed the available literature and calculated risks from toxins in South Coast Air Basin.

B3-48 cont.

IT Corporation, North Carolina

Prepared comprehensive evaluation of potential exposure of workers to air-borne VOCs at hazardous waste storage facility under SUPERFUND cleanup decree. Assessment used in developing health based clean-up levels.

Professional Associations

American Public Health Association (APHA)
Association for Environmental Health and Sciences (AEHS)
American Chemical Society (ACS)
International Society of Environmental Forensics (ISEF)
Society of Environmental Toxicology and Chemistry (SETAC)

Publications and Presentations:

Books and Book Chapters

Comment Letter B3 Attach.

Sullivan, P., **J.J. J. Clark,** F.J. Agardy, and P.E. Rosenfeld. (2007). *Synthetic Toxins In The Food, Water and Air of American Cities*. Elsevier, Inc. Burlington, MA.

Sullivan, P. and **J.J. J. Clark**. 2006. *Choosing Safer Foods, A Guide To Minimizing Synthetic Chemicals In Your Diet*. Elsevier, Inc. Burlington, MA.

Sullivan, P., Agardy, F.J., and **J.J.J. Clark**. 2005. *The Environmental Science of Drinking Water*. Elsevier, Inc. Burlington, MA.

Sullivan, P.J., Agardy, F.J., **Clark, J.J.J.** 2002. *America's Threatened Drinking Water: Hazards and Solutions.* Trafford Publishing, Victoria B.C.

Clark, J.J.J. 2001. "TBA: Chemical Properties, Production & Use, Fate and Transport, Toxicology, Detection in Groundwater, and Regulatory Standards" in *Oxygenates in the Environment.* Art Diaz, Ed.. Oxford University Press: New York.

Clark, J.J.J. 2000. "Toxicology of Perchlorate" in *Perchlorate in the Environment.* Edward Urbansky, Ed. Kluwer/Plenum: New York.

Clark, J.J.J. 1995. Probabilistic Forecasting of Volatile Organic Compound Concentrations At The Soil Surface From Contaminated Groundwater. UMI.

Baker, J.; **Clark, J.J.J.**; Stanford, J.T. 1994. Ex Situ Remediation of Diesel Contaminated Railroad Sand by Soil Washing. Principles and Practices for Diesel Contaminated Soils, Volume III. P.T. Kostecki, E.J. Calabrese, and C.P.L. Barkan, eds. Amherst Scientific Publishers, Amherst, MA. pp 89-96.

B3-48 cont.

Journal and Proceeding Articles

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equialency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. Organohalogen Compounds, Volume 70 (2008) page 002254.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. Organohalogen Compounds, Volume 70 (2008) page 000527

Hensley A.R., Scott, A., Rosenfeld P.E., **Clark, J.J.J.** (2007). "Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." *Environmental Research.* 105:194-199.

Rosenfeld, P.E., **Clark, J. J.,** Hensley, A.R., and Suffet, I.H. 2007. "The Use Of An Odor Wheel Classification For The Evaluation of Human Health Risk Criteria For Compost Facilities" Water Science & Technology. 55(5): 345-357.

Hensley A.R., Scott, A., Rosenfeld P.E., **Clark, J.J.J.** 2006. "Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." The 26th International Symposium on Halogenated Persistent Organic Pollutants –

Comment Letter B3 Attach.

DIOXIN2006, August 21 – 25, 2006. Radisson SAS Scandinavia Hotel in Oslo Norway.

Rosenfeld, P.E., **Clark, J. J.** and Suffet, I.H. 2005. "The Value Of An Odor Quality Classification Scheme For Compost Facility Evaluations" The U.S. Composting Council's 13th Annual Conference January 23 - 26, 2005, Crowne Plaza Riverwalk, San Antonio, TX.

Rosenfeld, P.E., **Clark, J. J.** and Suffet, I.H. 2004. "The Value Of An Odor Quality Classification Scheme For Urban Odor" WEFTEC 2004. 77th Annual Technical Exhibition & Conference October 2 - 6, 2004, Ernest N. Morial Convention Center, New Orleans, Louisiana.

Clark, J.J.J. 2003. "Manufacturing, Use, Regulation, and Occurrence of a Known Endocrine Disrupting Chemical (EDC), 2,4-Dichlorophnoxyacetic Acid (2,4-D) in California Drinking Water Supplies." National Groundwater Association Southwest Focus Conference: Water Supply and Emerging Contaminants. Minneapolis, MN. March 20, 2003.

Rosenfeld, P. and **J.J.J. Clark**. 2003. "Understanding Historical Use, Chemical Properties, Toxicity, and Regulatory Guidance" National Groundwater Association Southwest Focus Conference: Water Supply and Emerging Contaminants. Phoenix, AZ. February 21, 2003.

Clark, J.J.J., Brown A. 1999. Perchlorate Contamination: Fate in the Environment and Treatment Options. In Situ and On-Site Bioremediation, Fifth International Symposium. San Diego, CA, April, 1999.

Clark, J.J.J. 1998. Health Effects of Perchlorate and the New Reference Dose (RfD). Proceedings From the Groundwater Resource Association Seventh Annual Meeting, Walnut Creek, CA, October 23, 1998.

Browne, T., **Clark, J.J.J.** 1998. Treatment Options For Perchlorate In Drinking Water. Proceedings From the Groundwater Resource Association Seventh Annual Meeting, Walnut Creek, CA, October 23, 1998.

Clark, J.J.J., Brown, A., Rodriguez, R. 1998. The Public Health Implications of MtBE and Perchlorate in Water: Risk Management Decisions for Water Purveyors. Proceedings of the National Ground Water Association, Anaheim, CA, June 3-4, 1998.

Clark J.J.J., Brown, A., Ulrey, A. 1997. Impacts of Perchlorate On Drinking Water In The Western United States. U.S. EPA Symposium on Biological and Chemical Reduction of Chlorate and Perchlorate, Cincinnati, OH, December 5, 1997.

Clark, J.J.J.; Corbett, G.E.; Kerger, B.D.; Finley, B.L.; Paustenbach, D.J. 1996. Dermal Uptake of Hexavalent Chromium In Human Volunteers: Measures of Systemic Uptake From Immersion in Water At 22 PPM. Toxicologist. 30(1):14.

B3-48 cont.

Comment Letter B3 Attach.

Dodge, D.G.; **Clark, J.J.J.**; Kerger, B.D.; Richter, R.O.; Finley, B.L.; Paustenbach, D.J. 1996. Assessment of Airborne Hexavalent Chromium In The Home Following Use of Contaminated Tapwater. Toxicologist. 30(1):117-118.

Paulo, M.T.; Gong, H., Jr.; **Clark, J.J.J.** (1992). Effects of Pretreatment with Ipratroprium Bromide in COPD Patients Exposed to Ozone. American Review of Respiratory Disease. 145(4):A96.

Harber, P.H.; Gong, H., Jr.; Lachenbruch, A.; **Clark, J.**; Hsu, P. (1992). Respiratory Pattern Effect of Acute Sulfur Dioxide Exposure in Asthmatics. American Review of Respiratory Disease. 145(4):A88.

McManus, M.S.; Gong, H., Jr.; Clements, P.; **Clark, J.J.J.** (1991). Respiratory Response of Patients With Interstitial Lung Disease To Inhaled Ozone. American Review of Respiratory Disease. 143(4):A91.

Gong, H., Jr.; Simmons, M.S.; McManus, M.S.; Tashkin, D.P.; Clark, V.A.; Detels, R.; **Clark, J.J.** (1990). Relationship Between Responses to Chronic Oxidant and Acute Ozone Exposures in Residents of Los Angeles County. American Review of Respiratory Disease. 141(4):A70.

Tierney, D.F. and **J.J.J. Clark.** (1990). Lung Polyamine Content Can Be Increased By Spermidine Infusions Into Hyperoxic Rats. American Review of Respiratory Disease. 139(4):A41.

B3-48 cont.

Comment Letter

B3

Attach.

ATTACHMENT B

Comment Letter
B3
Attach.

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

CALIFORNIA
WASHINGTON
NEW YORK

WI #22-005

15 May 2023

Kevin T. Carmichael, Esq.
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, California 95814

Subject: **2740 West Nielsen Avenue Office/Warehouse Project**
Fresno, California
Review and Comment on Draft EIR Noise Analysis

Dear Mr. Carmichael,

In June of last year, we reviewed and commented upon the noise impact analysis in the following document:

Mitigated Negative Declaration for Development Permit Application No. P21-02699 & Tentative Parcel Map No P21-05930 ("MND")
Project Address: 2740 West Nielsen Avenue, Fresno, California
City of Fresno, Planning and Development Department
May 13, 2022

Subsequently, the City of Fresno had the consulting firm LSA prepare a Draft Environmental Impact Report for this project:

Public Review Draft Environmental Impact Report ("DEIR")
2740 West Nielsen Avenue Office/Warehouse Project
LSA Project No. SNN2102
February 2023

This letter reports our comments on the noise analysis in the DEIR.

B3-49

Wilson Ihrig, Acoustical Consultants, has practiced exclusively in the field of acoustics since 1966. During our 57 years of operation, we have prepared hundreds of noise studies for Environmental Impact Reports and Statements. We have one of the largest technical laboratories in the acoustical consulting industry. We also utilize industry-standard acoustical programs such as Environmental Noise Model (ENM), Traffic Noise Model (TNM), Roadway Construction Noise Model (RCNM), SoundPLAN, and CADNA. In short, we are well qualified to prepare environmental noise studies and review studies prepared by others.

B3-50

Adverse Effects of Noise[1]

Although the health effects of noise are not taken as seriously in the United States as they are in other countries, they are real and, in many parts of the country, pervasive.

Noise-Induced Hearing Loss. If a person is repeatedly exposed to loud noises, he or she may experience noise-induced hearing impairment or loss. In the United States, both the Occupational Health and Safety Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH) promote standards and regulations to protect the hearing of people exposed to high levels of industrial noise.

Speech Interference. Another common problem associated with noise is speech interference. In addition to the obvious issues that may arise from misunderstandings, speech interference also leads to problems with concentration fatigue, irritation, decreased working capacity, and automatic stress reactions. For complete speech intelligibility, the sound level of the speech should be 15 to 18 dBA higher than the background noise. Typical indoor speech levels are 45 to 50 dBA at 1 meter, so any noise above 30 dBA begins to interfere with speech intelligibility. The common reaction to higher background noise levels is to raise one's voice. If this is required persistently for long periods of time, stress reactions and irritation will likely result. The problems and irritation that are associated with speech disturbance have become more pronounced during the COVID-19 pandemic because many people find themselves and the people they live with trying to work and learn simultaneously in spaces that were not designed for speech privacy.

B3-51

Sleep Disturbance. Noise can disturb sleep by making it more difficult to fall asleep, by waking someone after they are asleep, or by altering their sleep stage, e.g., reducing the amount of rapid eye movement (REM) sleep. Noise exposure for people who are sleeping has also been linked to increased blood pressure, increased heart rate, increase in body movements, and other physiological effects. Not surprisingly, people whose sleep is disturbed by noise often experience secondary effects such as increased fatigue, depressed mood, and decreased work performance.

Cardiovascular and Physiological Effects. Human's bodily reactions to noise are rooted in the "fight or flight" response that evolved when many noises signaled imminent danger. These include increased blood pressure, elevated heart rate, and vasoconstriction. Prolonged exposure to acute noises can result in permanent effects such as hypertension and heart disease.

Impaired Cognitive Performance. Studies have established that noise exposure impairs people's abilities to perform complex tasks (tasks that require attention to detail or analytical processes) and it makes reading, paying attention, solving problems, and memorizing more difficult. This is why there are standards for classroom background noise levels and why offices and libraries are designed to provide quiet work environments. While sheltering-in-place during the COVID-19 pandemic, many people are finding working and learning more difficult because their home environment is not as quiet as their office or school was.

[1] More information on these and other adverse effects of noise may be found in *Guidelines for Community Noise*, eds B Berglund, T Lindvall, and D Schwela, World Health Organization, Geneva, Switzerland, 1999. (https://www.who.int/docstore/peh/noise/Comnoise-1.pdf)

Comments on Operational Noise Analysis – Traffic Noise

Our comments on the MND may succinctly be summarized as:

1. The MND failed to account for truck noise from the proposed facility, and
2. The MND selectively chose which City policy to use to establish thresholds of significance, thereby potentially failing to identify some significant impact.

B3-52

The DEIR corrects the first failing, and, in doing so, substantiates the second failing.

Policy NS-1-a of Fresno General Plan, Chapter 9, Noise and Safety, states:

> **Desirable and Generally Acceptable Exterior Noise Environment.** Establish 65 dBA Ldn or CNEL as the standard for the desirable maximum average exterior noise levels for defined usable exterior areas of residential and noise-sensitive uses . . .[2]

It is very important that cities like Fresno adopt absolute standards for the noise environments of their citizens because if only relative standards are used – like the sole standard adopted by the DEIR – then there would literally be no limit to environmental noise exposure over time. Such a notion clearly runs contrary to the spirit of CEQA.

The DEIR adopts as the significance criteria for traffic noise a relative increase of 3.0 dBA CNEL, and it concludes that the residences along Nielsen Avenue will not be significantly impacted by project noise because the increase will be, at most, 2.1 dBA CNEL. [DEIR at p. 4.9-21] The obvious fallacy of this analysis is that if the project wanted to expand its operations, say, 5 years after it becomes operational, the next DEIR could adopt this same threshold, the noise could increase by another 2.1 dBA CNEL (the baseline being "reset" to the then-prevalent conditions), and that would also be deemed a less-than-significant impact despite the 4.2 dBA CNEL increase relative to today's current conditions. The continual use of a relative threshold enables piecemealing project development with significant long-term impacts that evade identification.

B3-53

The obvious way to close this loophole in the application of CEQA is to adopt an absolute threshold in conjunction with, not in lieu of, a relative threshold. Caltrans recognizes the need for both types of standards when determining impacts:

> Traffic noise impacts as defined in 23CFR772.5 occur when the predicted noise level in the design year approaches or exceeds the Noise Abatement Criteria (NAC) specified in 23CFR772, or a predicted noise level substantially exceeds the existing noise level (a "substantial" noise increase).[3]

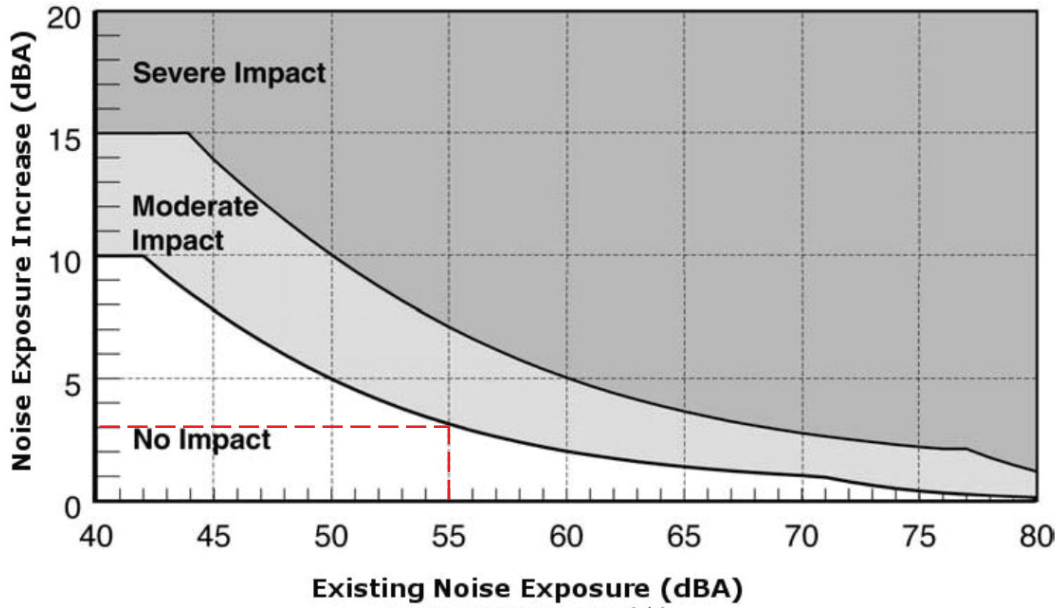
---

[2] The *day-night average sound level* (Ldn) is a 24-hour weighted average that incorporates a 10 dBA penalty during the night hours (10 p.m. to 7 a.m.) to account for the heighted sensitivity of people to noise during the night. The *community noise exposure level* (CNEL) additionally includes a 5 dBA penalty during the evening hours (7 p.m. to 10 p.m.). For transportation-dominated environments, the Ldn and CNEL are very similar, with the CNEL typically being higher than the Ldn by 0.1 to 0.5 dBA. In environmental acoustics, they are used interchangeably.

[3] California Department of Transportation, Division of Environmental Analysis. *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction Projects, and Retrofit Barrier Projects*. April 2020. p. 3-1.

The 23CFR772 Noise Abatement Criteria are absolute, not relative, values.

The Federal Transit Administration (FTA) also recognizes that as the absolute level of noise exposure increases, the relative increase that results in a significant impact reduces. In its formulation of noise impact assessment, a 3 dBA Ldn increase in noise exposure at residences would only be allowed if the existing noise exposure is 55 dBA Ldn or less. Above that, the allowable increase is progressively smaller. Where the existing noise exposure is 64.0 dBA CNEL, as it is along Nielsen Avenue according to the DEIR, the allowable increase is 1.5 dBA. [DEIR Table 4.9.L at p. 4.9-19]



Reference: FTA Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123, September 2018. p. 30.

B3-53 cont.

Table I presents information extracted from DEIR Table 4.9.L [p. 4.9-19]. Note that at every point in time that the noise is assessed, the noise exposure goes from a level that is lower than that established by General Plan Policy NS-1-a (65 dBA CNEL) to one that is higher. This constitutes a significant noise impact.

Table I Traffic Noise Levels Without and With Proposed Project

Roadway Segment	CNEL (dBA) 50 ft from Centerline of Nearest Lane					
	Existing		Opening Year		Year 2035	
	Without	With	Without	With	Without	With
Nielsen Ave between Marks and Hughes	64.0	**66.1**	64.4	**66.4**	64.4	**66.4**

B3-54

Comments on Construction Noise Analysis

The project construction noise analysis is presented on pages 4.915 to 4.9-18 of the DEIR. On page 4.9-16, reference noise levels for various types of construction equipment are presented. These reference levels are taken from the FHWA Roadway Construction Noise Model and are acceptable. On page 4.9-17, the DEIR presents equations to calculate the composite average (equivalent) noise level for construction equipment, a level that takes into account the reference noise emission level, the amount of time each piece of equipment it typically used, distance, and – potentially – the total amount of equipment anticipated to be used on site. I write "potentially" because the DEIR only calculated "the composite noise level of the two loudest pieces of equipment for each construction phase". [DEIR at p. 4.9-17. This is a common error that stems from FTA guidance that preliminarily, before much is known about construction, the order of magnitude of construction noise may be had by combining the levels of the two loudest pieces of equipment assuming they are running at full power 100% of the time. In this matter, the types and number of equipment is known in detail from the air quality assessment, so it is appropriate to conduct a detailed calculation of construction noise. As an aside, the calculation that the DEIR makes does not assume usage 100% of the time for the two loudest pieces of equipment, so does not even comport with the FTA preliminary guidance. **B3-55**

Table II shows a proper analysis of the noise levels for the first three phases of construction. The types and number of equipment are taken from the DEIR Appendix C, CalEEMod Output Sheets, 9/20/2002, p. 9. The reference emission levels (E.F.) and usage factors (U.F.) are from Table 4.9.K of the DEIR. Finally, the "average acoustical distance" used for the calculations is, as the DEIR explains, "calculated by multiplying the shortest distance between the receiver and the noise source area by the farthest distance, and then taking the square root of the product." For the homes on Nielsen Avenue, the shortest distance to the project site is 115 feet and the distance to the far corner is about 1,930 feet. The square root of 115 x 1,930 is 471 feet. **B3-56**

Following the DEIR analysis, the construction noise levels are logarithmically ("decibel") summed with the ambient (62.3 dBA Leq DEIR Table 4.9.D at p. 4.9-7) to arrive at the combined noise levels shown in Table III. Also shown in Table III is the increase in noise exposure which is larger than the 5 dBA increase the DEIR is using as the threshold of significance. [DEIR at p. 4.9-18] As such, construction noise should be flagged as a significant noise impact. **B3-57**

Finally on this point, I note that Mitigation Measure NOI-1 requires the use of mufflers and the designation of a "disturbance coordinator". While both of these are good ideas that should be implemented, neither would reduce the noise levels shown in Table II. The noise calculations use reference levels from equipment fit with mufflers (so, if the mufflers fall off or rusts away, the noise would be louder than shown, but it's not reasonable to assert that a second muffler could or would be added). Having a disturbance coordinator is always helpful for getting noise issues resolved, but does not, in and of itself, reduce noise levels. **B3-58**

Comment Letter B3 Attach.

Table II Construction Noise Calculations

Site Preparation						
	RCNM Ref Values @ 50 ft			Noise Level @ Receptor		
Equipment	**E.L.**	**U.F.**	**No.**	**Distance**	**Lmax**	**Leq**
Dozer	85	40%	3	471 ft	66	66.3
Tractor/Loader/Backhoe	84	40%	4	471 ft	65	66.6
Total					**66**	**69.4**
Grading						
	RCNM Ref Values @ 50 ft			Noise Level @ Receptor		
Equipment	**E.L.**	**U.F.**	**No.**	**Distance**	**Lmax**	**Leq**
Excavator	85	40%	2	471 ft	66	64.5
Grader	85	40%	1	471 ft	66	61.5
Dozer	85	40%	1	471 ft	66	61.5
Scraper	85	40%	2	471 ft	66	64.5
Tractor/Loader/Backhoe	84	40%	2	471 ft	65	63.5
Total					**66**	**70.3**
Bldg Construction						
	RCNM Ref Values @ 50 ft			Noise Level @ Receptor		
Equipment	**E.L.**	**U.F.**	**No.**	**Distance**	**Lmax**	**Leq**
Crane	85	16%	1	471 ft	66	57.6
Forklift	85	20%	3	471 ft	66	63.3
Tractor/Loader/Backhoe	84	40%	3	471 ft	65	65.3
Welder	73	40%	1	471 ft	54	49.5
Total					**66**	**67.9**

Table III Construction Noise Assessment

	Noise Levels, dBA Leq		
	Site Prep	**Grading**	**Building**
Ambient	62.3	62.3	62.3
Construction Noise	69.4	70.3	67.9
Combined	70.2	71.0	69.0
Increase	**7.9**	**8.7**	**6.7**

B3-59

Conclusion

1. The DEIR noise analysis substantiates that project traffic noise will cause noise exposure at residences on Nielsen Avenue to go from levels that are below the City's "desired maximum" – established as 65 dBA CNEL per General Plan Policy NS-1-a – to levels that are above the desired maximum. Because the project would the proximate cause for exceedance of this absolute threshold established by City policy, the project's operational noise impact is significant.

2. The DEIR construction noise analysis erred in that it used a preliminary analysis when the requisite information for a detailed analysis is available, and (to no end) it misapplied the preliminary analysis procedure. A proper detailed analysis conducted using information from the DEIR indicates that construction noise levels will exceed the adopted threshold of significance. As such, the construction noise impact is also significant.

B3-60

♦ ♦ ♦ ♦ ♦

Please contact me if you have any question about this review of the noise analysis in the *2740 West Nielsen* DEIR noise analysis.

B3-61

Very truly yours,

WILSON IHRIG

Derek L. Watry
Principal

Comment Letter

B3

Attach.

ATTACHMENT C

Comment Letter
B3
Attach.

794 Sawnee Bean Road
Thetford Center VT 05075

Norman Marshall, President
(802) 356-2969

nmarshall@smartmobility.com

May 19, 2023

Kevin T. Carmichael
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814

Subject: 2740 West Nielsen Avenue Warehouse Project

Dear Mr. Carmichael,

I have reviewed trip generation, vehicle miles traveled (VMT) impacts and greenhouse gas (GHG) impacts of the City of Fresno Draft Environmental Impact Report for a proposed warehouse project at 2740 West Nielsen Avenue ("DEIR"). I make the following findings:

1) Given that the tenants have not been identified, trip generation is highly uncertain. The trip generation study the DEIR relies on includes warehouse sites with trip rates of two to six times the rate used in the DEIR.
2) Undercounting trips translates directly into undercounting VMT and GHG.
3) The DEIR applied the Fresno COG ABM to estimate that the project would generate 19.8 VMT per employee per day. The model covers only Fresno County and excludes the portion of travel outside the county. This issue is particularly important for truck trips because major intermodal facilities are 110 – 240 miles from the proposed project. The VMT analysis should be supplemented to include an analysis of external travel with a particular focus on truck travel.
4) The DEIR answers affirmatively that the project includes transportation demand strategies. The DEIR needs to document these trip reduction programs and explain how they will be enforced on the currently unknown tenants.

B3-62

Comment Letter B3 Attach.

Project Trip Generation Could Be Much Higher Than Assumed

The project is comprised of four office/warehouse buildings with a total gross floor area of 901,438 square feet. (DEIR, p. 1-3) The tenants have not been identified, and the nature of the operations are unknown at this time.

The DEIR estimates trip generation based on a 2019 study of warehouse trip generation done by WSP for the Western Riverside COG.[1] This study was based on counts at 16 warehouses, segmented between 11 fulfillment centers and 5 parcel hubs. Using average rates, the DEIR calculated trip generation is shown in Table 8, partially reproduced here. The DEIR estimates that the project will generate 1,920 trips per day including 342 truck trips per day.

Table 4.10.A: Project Trip Generation

Trip Generation[1]	Average Daily Trips	Weekday AM Peak Hour[2]			Weekday PM Peak Hour[2]		
		In	Out	Total	In	Out	Total
Trip Generation							
Trip Generation (Cars)	1,578	75	18	93	105	24	129
Trip Generation (2–4 Axle Trucks)	146	5	2	7	8	2	10
Trip Generation (5+ Axle Trucks)	196	8	2	10	7	2	9
Trip Generation (Total Trucks)	342	13	4	17	15	4	19
Trip Generation (Total)	**1,920**	**88**	**22**	**110**	**120**	**28**	**148**
PCE Trip Generation							
Trip Generation (Cars)	1,578	75	18	93	105	24	129
PCE Trip Generation (2–4 Axle Trucks)[3]	292	10	4	14	16	4	20
PCE Trip Generation (5+ Axle Trucks)[3]	588	24	6	30	21	6	27
PCE Trip Generation (Total Trucks)	880	34	10	44	37	10	47
PCE Trip Generation (Total)	**2,458**	**109**	**28**	**137**	**142**	**34**	**176**

Source: LSA (2021).

[1] Rates from the Western Riverside Council of Governments (WRCOG) *TUMF High-Cube Warehouse Trip Generation Study*, January 2019, prepared by WSP.

[2] The WRCOG study does not provide in/out splits for the peak hour trip generation. Therefore, in/out splits from Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition) supplement Land Use 155 - "High-Cube Fulfilment Center Warehouse" have been used for obtaining in/out traffic.

[3] A Passenger Car Equivalent (PCE) factor 2.0 has been taken for 2-4 axle trucks based on Highway Capacity Manual (HCM) recommendations. Further, as a conservative approach, a PCE factor of 3.0 is taken, for 5+ axle trucks, consistent with latest practices in numerous California jurisdictions.

The data in the Western Riverside COG study are much more variable than the average rates suggest. As shown in the figure below, the different fulfillment center sites have wildly different trip generation rates, with an Amazon facility having an especially high rate.

B3-63

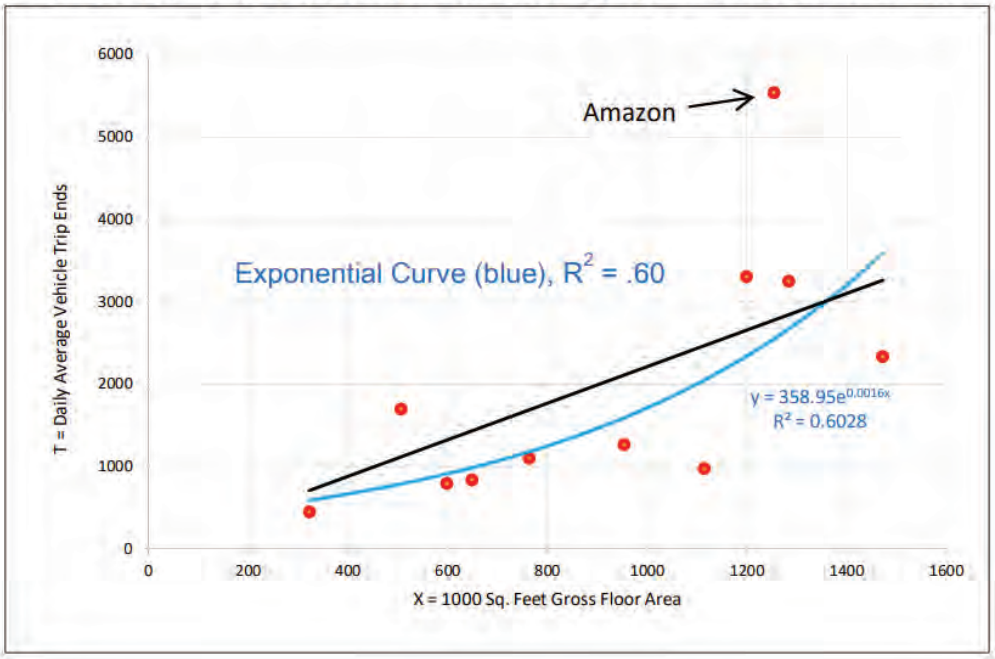
[1] https://wrcog.us/AgendaCenter/ViewFile/Agenda/_02212019-292

Comment Letter

B3

Attach.

Exhibit 1: Data Plot for Daily Total Vehicle Trip Ends against Building Size (Fulfillment Center)



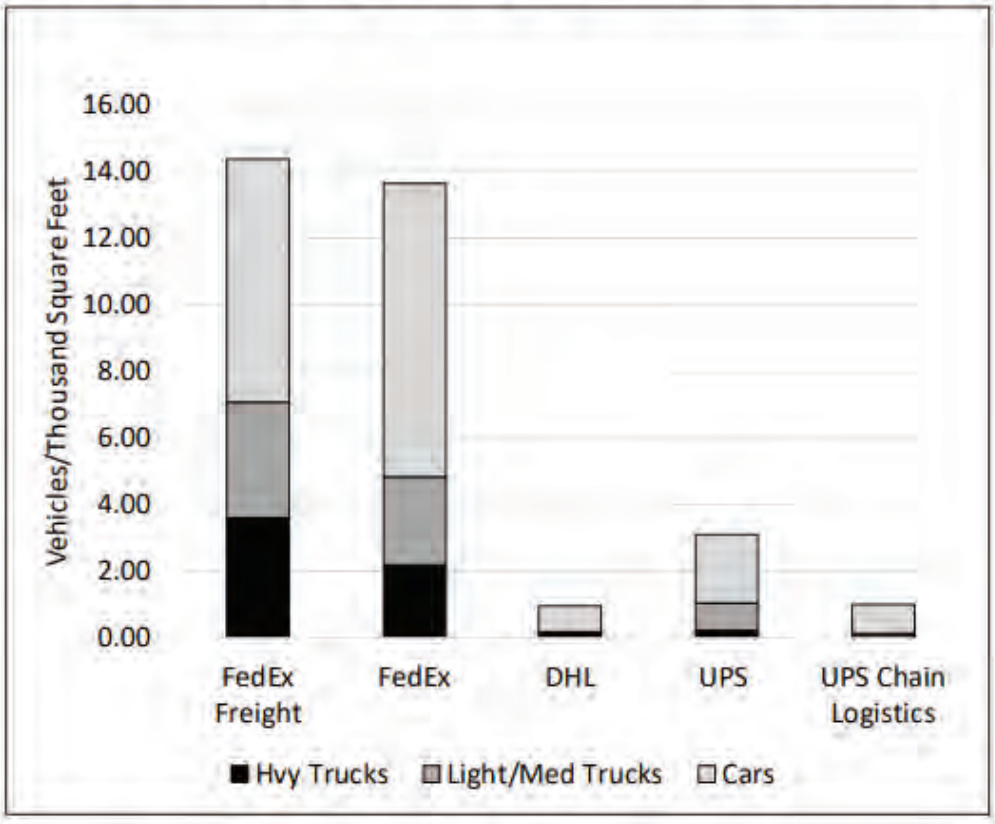
B3-63 cont.

Other businesses are copying many of Amazon's logistics methods, so the higher rate could be applicable to many new operations. For example, the trip generation rate at the Walmart site in the Western Riverside COG study also is higher than the average used in the DEIR. If the Amazon rate were applied to the proposed Fresno warehouse, project trip generation would be twice as high as estimated in the DEIR.

The observed trip generation rates at two of the parcel hub sites are even higher, i.e., more than six times the rate used in the DEIR.

Comment Letter B3 Attach.

Exhibit 11: Daily Trip Generation Rates at Parcel Hubs



B3-63 cont.

To be conservative, the DEIR should apply the Amazon trip generation rate, or possibly the even higher parcel hub rate if parcel hub tenants are possible in this project. The Amazon rate is about 4.5 daily trips per 1000 square feet. With the Amazon trip generation rate, the project would generate about 4,000 trips per day, i.e., twice the 1,920 trips per day estimated in the DEIR. The parcel hub trip generation rates are about 14 trips per day per 1000 square feet. At the parcel rate, the project would generate about 12,600 trips per day, i.e., over six times as many as estimated in the DEIR.

Comment Letter B3 Attach.

Project VMT and GHG Emissions Could Be Much Higher Than Assumed

The DEIR estimates project 5.6 million VMT per year using CalEEMod Version 4.0 (DEIR Vol. 1 Appendices A – I p. 146 of 1022). In CalEEMod, VMT is calculated from a combination of the assumed daily trip generation rate (discussed above) and assumptions about trip lengths.

If the Amazon trip generation rate were used instead, the VMT output from CalEEMod would be twice as high. If the parcel hub rate were used, the VMT output would six times as high.

The default CalEEMod trip lengths were applied in the DEIR:

- Work trips 9.5 miles
- Other trips 7.3 miles

If these default values are too low, this also would cause VMT to be underestimated. The DEIR estimates that 10.2% of daily trips are made by heavy trucks (5+ axles) and another 7.6% are made by medium trucks (2-4 axles). It is likely that the average truck trip lengths are much higher than assumed in the CalEEMod default values. Major intermodal facilities are far from the project site including: B3-64

- Rail intermodal facilities in Bakersfield 110 miles,
- Rail intermodal facilities in Stockton 120 miles,
- Port of Oakland 175 miles, and
- Port of Los Angeles 240 miles.

It is impossible to fully evaluate trip lengths until more is known about the facility operations.

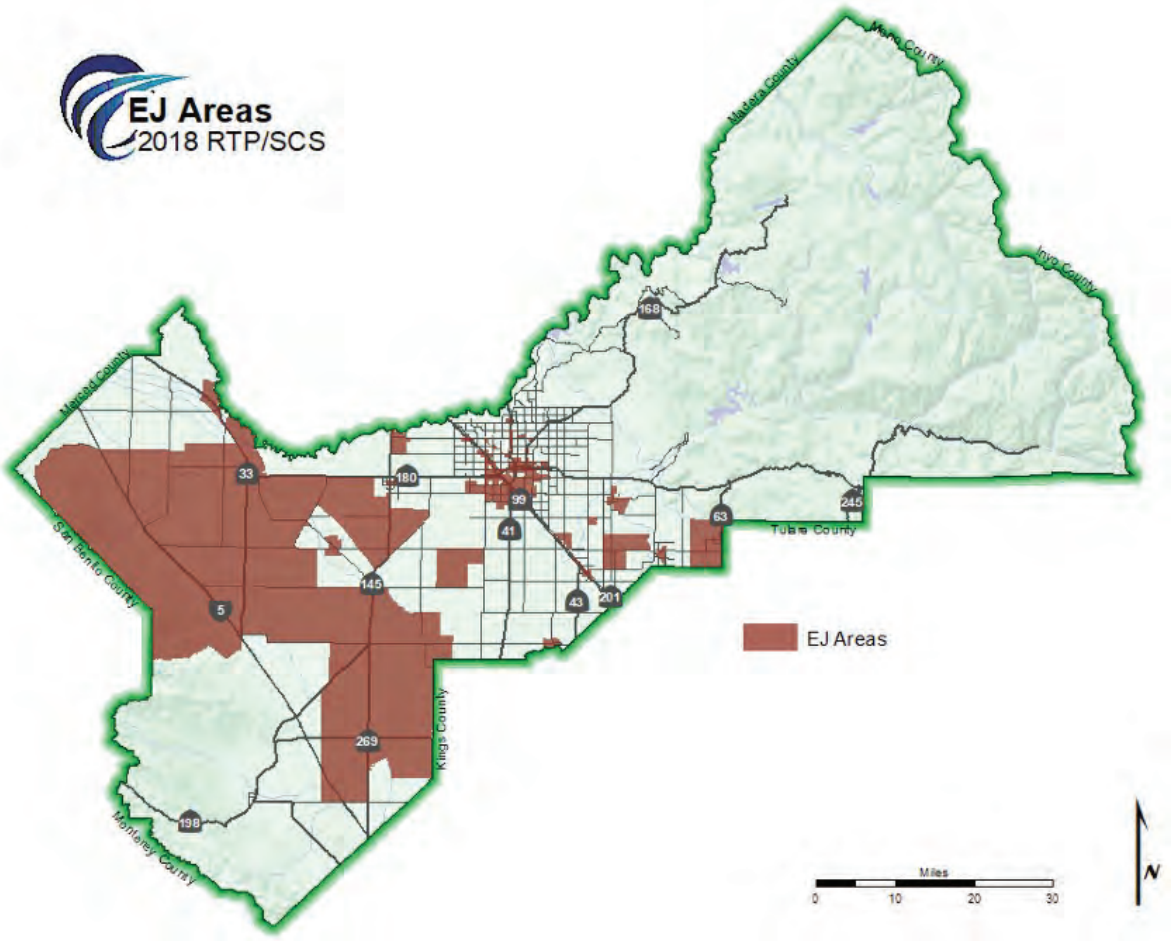
Any VMT underestimation translates to underestimating GHG as well.

Comment Letter
B3
Attach.

The DEIR Likely Underestimates VMT Impacts

The DEIR applied the Fresno COG ABM to estimate that the project would generate 19.8 VMT per employee per day. (DEIR, XHIBIT-6.-2740-W-Nielsen-Appendices-Vol-2_J-M-Copy.pdf, p. 396-398 of 786.

As shown in the Figure[2] below, the Fresno ABM covers only Fresno County.



A significant percentage of Fresno County trips have origins or destinations that are outside the County. As this issue is not discussed in the DEIR, it appears that all of the VMT outside the County ("external" travel) is excluded from the analysis.

This issue is particularly important for truck trips. As discussed in the previous section, major intermodal facilities are 110 – 240 miles from the proposed project. The VMT analysis should be supplemented to include an analysis of external travel with a particular focus on truck travel.

B3-65

[2] Fresno Council of Governments. Fresno Activity-Based Model. agendas.fresnocog.org/itemAttachments/596/II_D_Modeling_101_Slides.pdf

Comment Letter B3 Attach.

Transportation Demand Strategies Not Described in the DEIR

The DEIR includes a Greenhouse Gas (GHG) Reduction Plan Update – CEQA Project Consistency Checklist as Appendix H. This checklist answers in the affirmative:

- Does the project implement pedestrian bicycle, and transit linkages with surrounding land uses and neighborhoods? For GHG Reduction Plan consistency, the project must include all sidewalks, paths, trails, and facilities required by the General Plan and Active Transportation Plan, as implemented through the Fresno Municipal Code and project conditions of approval.
- Will the project accommodate a large employer (over 100 employees) and will it implement trip reduction programs such as increasing transit use, carpooling, vanpooling, bicycling, or other measures to reduce vehicle miles traveled pursuant to San Joaquin Valley Air Pollution Control District Rule 9410?

These transportation demand strategies are not described anywhere else in the DEIR, and they should be. In particular, the DEIR needs to explain how the second bullet regarding trip reduction programs will be enforced on the currently unknown tenants.

B3-66

Sincerely,

Norman L. Marshall

Norman L. Marshall

Comment Letter B3 Attach.

Resume

NORMAN L. MARSHALL, PRESIDENT

nmarshall@smartmobility.com

EDUCATION:

Master of Science in Engineering Sciences, Dartmouth College, Hanover, NH, 1982
Bachelor of Science in Mathematics, Worcester Polytechnic Institute, Worcester, MA, 1977

PROFESSIONAL EXPERIENCE: (33 Years, 19 at Smart Mobility, Inc.)

Norm Marshall helped found Smart Mobility, Inc. in 2001. Prior to this, he was at RSG for 14 years where he developed a national practice in travel demand modeling. He specializes in analyzing the relationships between the built environment and travel behavior and doing planning that coordinates multi-modal transportation with land use and community needs.

Regional Land Use/Transportation Scenario Planning

Portland Area Comprehensive Transportation System (PACTS) – the Portland Maine Metropolitan Planning Organization. Updating regional travel demand model with new data (including AirSage), adding a truck model, and multiclass assignment including differentiation between cash toll and transponder payments.

Loudoun County Virginia Dynamic Traffic Assignment – Enhanced subarea travel demand model to include Dynamic Traffic Assignment (Cube). Model being used to better understand impacts of roadway expansion on induced travel.

Vermont Agency of Transportation-Enhanced statewide travel demand model to evaluate travel impacts of closures and delays resulting from severe storm events. Model uses innovate Monte Carlo simulations process to account for combinations of failures.

B3-67

California Air Resources Board – Led team including the University of California in $250k project that reviewed the ability of the new generation of regional activity-based models and land use models to accurately account for greenhouse gas emissions from alternative scenarios including more compact walkable land use and roadway pricing. This work included hands-on testing of the most complex travel demand models in use in the U.S. today.

Climate Plan (California statewide) – Assisted large coalition of groups in reviewing and participating in the target setting process required by Senate Bill 375 and administered by the California Air Resources Board to reduce future greenhouse gas emissions through land use measures and other regional initiatives.

Chittenden County (2060 Land use and Transportation Vision Burlington Vermont region) – led extensive public visioning project as part of MPO's long-range transportation plan update.

Flagstaff Metropolitan Planning Organization – Implemented walk, transit and bike models within regional travel demand model. The bike model includes skimming bike networks including on-road and off-road bicycle facilities with a bike level of service established for each segment.

Chicago Metropolis Plan and Chicago Metropolis Freight Plan (6-county region)— developed alternative transportation scenarios, made enhancements in the regional travel demand model, and used the enhanced

model to evaluate alternative scenarios including development of alternative regional transit concepts. Developed multi-class assignment model and used it to analyze freight alternatives including congestion pricing and other peak shifting strategies.

Municipal Planning

City of Grand Rapids – Michigan Street Corridor – developed peak period subarea model including non-motorized trips based on urban form. Model is being used to develop traffic volumes for several alternatives that are being additional analyzed using the City's Synchro model

City of Omaha - Modified regional travel demand model to properly account for non-motorized trips, transit trips and shorter auto trips that would result from more compact mixed-use development. Scenarios with different roadway, transit, and land use alternatives were modeled.

City of Dublin (Columbus region) – Modified regional travel demand model to properly account for non-motorized trips and shorter auto trips that would result from more compact mixed-use development. The model was applied in analyses for a new downtown to be constructed in the Bridge Street corridor on both sides of an historic village center.

City of Portland, Maine – Implemented model improvements that better account for non-motorized trips and interactions between land use and transportation and applied the enhanced model to two subarea studies.

B3-67 cont.

City of Honolulu – Kaka'ako Transit Oriented Development (TOD) – applied regional travel demand model in estimating impacts of proposed TOD including estimating internal trip capture.

City of Burlington (Vermont) Transportation Plan – Led team that developing Transportation Plan focused on supporting increased population and employment without increases in traffic by focusing investments and policies on transit, walking, biking and Transportation Demand Management.

Transit Planning

Regional Transportation Authority (Chicago) and Chicago Metropolis 2020 – evaluated alternative 2020 and 2030 system-wide transit scenarios including deterioration and enhance/expand under alternative land use and energy pricing assumptions in support of initiatives for increased public funding.

Capital Metropolitan Transportation Authority (Austin, TX) Transit Vision – analyzed the regional effects of implementing the transit vision in concert with an aggressive transit-oriented development plan developed by Calthorpe Associates. Transit vision includes commuter rail and BRT.

Bus Rapid Transit for Northern Virginia HOT Lanes (Breakthrough Technologies, Inc and Environmental Defense.) – analyzed alternative Bus Rapid Transit (BRT) strategies for proposed privately-developing High Occupancy Toll lanes on I-95 and I-495 (Capital Beltway) including different service alternatives (point-to-point services, trunk lines intersecting connecting routes at in-line stations, and hybrid).

Roadway Corridor Planning

I-30 Little Rock Arkansas – Developed enhanced version of regional travel demand model that integrates TransCAD with open source Dynamic Traffic Assignment (DTA) software, and used to model I-30 alternatives. Freeway bottlenecks are modeled much more accurately than in the base TransCAD model.

Comment Letter B3 Attach.

South Evacuation Lifeline (SELL) – In work for the South Carolina Coastal Conservation League, used Dynamic Travel Assignment (DTA) to estimate evaluation times with different transportation alternatives in coastal South Caroline including a new proposed freeway.

Hudson River Crossing Study (Capital District Transportation Committee and NYSDOT) – Analyzing long term capacity needs for Hudson River bridges which a special focus on the I-90 Patroon Island Bridge where a microsimulation VISSIM model was developed and applied.

PUBLICATIONS AND PRESENTATIONS (partial list)

DTA Love: Co-leader of workshop on Dynamic Traffic Assignment at the June 2019 Transportation Research Board Planning Applications Conference.

Forecasting the Impossible: The Status Quo of Estimating Traffic Flows with Static Traffic Assignment and the Future of Dynamic Traffic Assignment. *Research in Transportation Business and Management* 2018.

Assessing Freeway Expansion Projects with Regional Dynamic Traffic Assignment. Presented at the August 2018 Transportation Research Board Tools of the Trade Conference on Transportation Planning for Small and Medium Sized Communities.

B3-67 cont.

Vermont Statewide Resilience Modeling. With Joseph Segale, James Sullivan and Roy Schiff. Presented at the May 2017 Transportation Research Board Planning Applications Conference.

Assessing Freeway Expansion Projects with Regional Dynamic Traffic Assignment. Presented at the May 2017 Transportation Research Board Planning Applications Conference.

Pre-Destination Choice Walk Mode Choice Modeling. Presented at the May 2017 Transportation Research Board Planning Applications Conference.

A Statistical Model of Regional Traffic Congestion in the United States, presented at the 2016 Annual Meeting of the Transportation Research Board.

MEMBERSHIPS/AFFILIATIONS

Associate Member, Transportation Research Board (TRB)

Member and Co-Leader Project for Transportation Modeling Reform, Congress for the New Urbanism (CNU)

LETTER B3
Adams Broadwell Joseph & Cardozo
Kevin Carmichael
May 19, 2023

Response B3-1: This introductory comment is noted. This comment also provides a brief project description and does not contain any substantive comments or questions about the environmental analysis or conclusions contained in the Recirculated Draft EIR. Therefore, no further response is necessary.

Response B3-2: This introductory comment asserts that the DEIR fails to adequately analyze many of the project's significant environmental impacts and fails to propose enforceable mitigation measures that can reduce those impacts to a less than significant level. This comment is noted. Comments provided in this letter and in the technical appendices prepared by Clark and Associates, Wilson Ihrig, and Smart Mobility are further responded to below.

Response B3-3: This comment is a statement of the commenter's interest in enforcing environmental laws in the City of Fresno. The comment is noted, but it does not raise any significant environmental issues related to the project, or the analysis contained in the Recirculated Draft EIR.

Response B3-4: This comment is a statement of the commenter's understanding of various requirements under CEQA. The comment is noted, but it does not raise any significant environmental issues related to the project, or the analysis contained in the Recirculated Draft EIR.

Response B3-5: This comment claims that the Recirculated Draft EIR does not meet CEQA's requirements because it fails to include an accurate and complete Project Description, rendering the entire analysis inadequate.

Section 15124 of the CEQA Guidelines states that the description of the project shall contain the following information but should not supply extensive detail beyond that needed for evaluation and review of the environmental impact:

(a) The precise location and boundaries of the proposed project shall be shown on a detailed map, preferably topographic. The location of the project shall also appear on a regional map.

(b) A statement of the objectives sought by the proposed project. A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include

the underlying purpose of the project and may discuss the project benefits.

(c) A general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals, if any, and supporting public service facilities.

(d) A statement briefly describing the intended uses of the EIR, including: a list of the agencies that are expected to use the EIR in their decision making; a list of permits and other approvals required to implement the project; and a list of related environmental review and consultation requirements of federal, State, or local laws, regulations, or policies. To the fullest extent possible, the lead agency should integrate CEQA review with these related environmental review and consultation requirements and decisions subject to CEQA should be listed, preferably in the order in which they will occur.

Chapter 3.0, Project Description, of the Recirculated Draft EIR is consistent with these requirements and describes the characteristics of the proposed project. Figure 3-1 shows the project site's regional and local context and Figure 3-2 shows the project site and surrounding land uses, consistent with the requirements of Section 15124(a). In addition, the proposed project's objectives are listed in Section 3.2, Project Objectives, consistent with the requirements of Section 15124(b). A description of the proposed project is included in Section 3.3, Project Description, consistent with the requirements of Section 15124(c). In addition, the list of agencies and potential permits and approvals that may be required is included in Section 3.4, Approvals/Permits, consistent with the requirements of Section 15124(d). As such, the Project Description is consistent with CEQA requirements.

Response B3-6: This comment states that the Recirculated Draft EIR fails to identify the end uses of the project. Further, this comment suggests that the Recirculated Draft EIR uses an inappropriate trip generation rate. This comment claims that since the City lacks information about the type of end user that will ultimately occupy the project warehouses after construction, the Recirculated Draft EIR should have analyzed truck trips based on the most intensive reasonably foreseeable use of the site, such as an Amazon facility. Further, the comment also claims that since the Recirculated Draft EIR relies on average trip generation rates for its analysis of the project's operational air quality, health risk, GHG emissions, energy, noise, and VMT impact, the Recirculated Draft EIR may underestimate the severity of each of these impacts if a more trip-intensive use occurs at the project site.

The commenter claims that the Recirculated Draft EIR should have analyzed truck trips based on the most intensive reasonably foreseeable use of the site, such as an Amazon facility. As discussed in the Recirculated Draft EIR, the

proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. However, the project applicant has confirmed an Amazon facility is not under consideration to be a possible tenant. Since Amazon has not been identified as a tenant, using Amazon trip generation rates would not be accurate or applicable to the proposed project. The suggestion that Amazon trip generation rates would more accurately reflect the project's impacts is therefore speculative and unsupported by substantial evidence. (See CEQA Guidelines, § 15064, subd. (f)(5).) It should also be noted that Amazon has multiple existing facilities already located in Fresno. It is possible that Amazon could build another facility in Fresno; however, Amazon is not expected to locate another facility at the project site. (See id. at § 15145.)

As discussed in the TIS in Appendix M of the Recirculated Draft EIR, the trip generation for the proposed project was developed using rates from the Western Riverside Council of Governments (WRCOG) Study, included as an appendix to the TIS (Appendix M of the Recirculated Draft EIR). As discussed in the TIS, trip generation rates from the ITE manual for the High-Cube Fulfillment Center Warehouse land use have a small sample size. The WRCOG Study facilitated a trip generation study for such facilities. Further, trip generation rates using the WRCOG study are higher than trip generation rates from the ITE manual for the High-Cube Fulfillment Center Warehouse land use. As such, trip generation rates from the WRCOG Study are conservative and are appropriate for use. The WRCOG Study provides separate trip generation rates for passenger vehicles, 2- to 4-axle trucks, and 5+ axle trucks. The truck trips were converted to passenger car equivalent (PCE) trips using a PCE factor of 2.0 for 2- to 4-axle trucks, consistent with Highway Capacity Manual (HCM) recommendations. However, as a conservative approach, a PCE factor of 3.0 was used for 5+ axle trucks, consistent with the practices in several regions within the State. Additionally, as established in the WRCOG Study, the Amazon facility is an outlier. However, as further noted, that facility was also included to calculate the average trip generation rates for High-Cube Fulfilment Center Warehouse land uses. This methodology is also consistent with the recommended trip generation estimate methodology by ITE, which recommends using average trip generation rates for land uses. The WRCOG Study found that for larger projects, percentages of truck trips compared to total trips are lower than a fulfillment center of a smaller size. Therefore, the commenter is incorrect in stating that the trip generation assumptions substantially underestimated project trips.

As such, the project's operational air quality, health risk, GHG emissions, energy, noise, and VMT analyses used the correct traffic assumptions and the commenter has not provided evidence of a potentially significant environmental impact. This comment does not identify any new significant

environmental issues or impacts that were not already addressed in the Recirculated Draft EIR. Neither this comment nor the response constitutes new information requiring recirculation of the Recirculated Draft EIR.

Response B3-7: This comment states that the Recirculated Draft EIR did not disclose whether the project would require the use of backup generators. As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for industrial uses by tenants that have not been identified. The use of such equipment would be dependent on specific tenants and is not being proposed as part of the project.

However, as described in Response A4-6, to be conservative, a supplemental analysis to evaluate potential emissions associated with equipment, emergency backup generators, and diesel fire pumps was conducted using CalEEMod. This supplemental analysis conservatively assumed that 40 diesel-powered forklifts would be used for 8 hours per day and that four diesel-powered 500 HP emergency backup generators and four diesel-powered 500 HP diesel fire pumps would be used for up to 50 hours per year. The results of the supplemental analysis, shown in Table A under Response A4-6, indicate that the use of equipment, emergency backup generators, and diesel fire pumps would not exceed the significance criteria for annual ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$ emissions. Because emissions would still be below the SJVAPCD's thresholds, operational emissions would still be considered less than significant. However, it is important to note that the use of equipment, emergency backup generators, and diesel fire pumps would be dependent on specific tenants and is not being proposed as part of the project.

Response B3-8: This comment states that the Recirculated Draft EIR did not disclose whether the project would require the use of diesel fire pumps. The comment also states that an email from the City Fire Department to the City Planning Department states that warehouse developments of this size will typically have high demand fire sprinkler systems for high rack storage and fire sprinkler systems will be supplemented with private fire pumps as needed.

The email from the City Fire Department states the following:

> A site plan entitlement has been submitted to the City of Fresno Planning and Development and circulated for comments from effected public agencies. With multiple public street frontages and the availability of 14 and 16 inch public water mains along those frontages, adequate fire access and water service connections for private fire hydrants and fire sprinkler systems are available. Based on the proposed buildings sizes, all buildings are required to install automatic fire sprinkler systems connected to an approved fire alarm monitoring service for rapid initiation

> of a fire department response. Warehouse developments of this size will typically have high demand fire sprinkler systems for high rack storage and fire sprinkler systems will be supplemented with private fire pumps as needed.

As such, this email states that fire sprinkler systems are only supplemented with private fire pumps needed. Diesel fire pumps are not being proposed as part of the project. Identifying such equipment would be speculative and unsupported by evidence. Further, as discussed in the Initial Study (provided in Appendix B of the Recirculated Draft EIR), the proposed project would be required to comply with all applicable codes for fire safety and emergency access. In addition, the project applicant would be required to submit plans to the FFD for review and approval prior to the issuance of building permits to ensure the project would conform to applicable building and fire codes.

However, as discussed in Responses A4-6 and B3-7, to be conservative, a supplemental analysis to evaluate potential emissions associated with equipment, emergency backup generators, and diesel fire pumps, was conducted using CalEEMod. This supplemental analysis conservatively assumed that 40 diesel-powered forklifts would be used for 8 hours per day and that four diesel-powered 500 HP emergency backup generators and four diesel-powered 500 HP diesel fire pumps would be used for up to 50 hours per year. The results of the supplemental analysis, shown in Table A under Response A4-6, indicate that the use of equipment, emergency backup generators, and diesel fire pumps would not exceed the significance criteria for annual ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$ emissions. Because emissions would still be below the SJVAPCD's thresholds, operational emissions would still be considered less than significant. However, it is important to note that the use of equipment, emergency backup generators, and diesel fire pumps would be dependent on specific tenants and is not being proposed as part of the project.

Response B3-9: This comment incorrectly claims that the Recirculated Draft EIR fails to accurately disclose the baseline environmental conditions related to the project's health risk impacts and that it lacks necessary baseline information against which to measure the project's environmental impacts with regard to impacts on sensitive receptors from construction.

The commenter is incorrect that the Recirculated Draft EIR fails to disclose the baseline environmental conditions related to the project's health risk impacts. Section 4.2.1, Environmental Setting of the Recirculated Draft EIR provides an overview of existing air quality conditions in the region and in the City of Fresno. Ambient air quality standards and the regulatory framework are summarized and climate, air quality conditions, and typical air pollutant types and sources are also described. Further, as identified on page 4.2-31 of the Recirculated Draft EIR, the closest sensitive receptors include the single-

family residences located approximately 110 feet south of the project site across West Nielsen Avenue.

As identified on pages 4.2-10 and 4.2-11 of the Recirculated Draft EIR, the OEHHA, on behalf of the CalEPA, released Version 4.0 of CalEnviroScreen in October 2021. CalEnviroScreen identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution. Pollution Burden scores for each census tract are derived from the average percentiles of the seven Exposures indicators (ozone and $PM_{2.5}$ concentrations, DPM emissions, drinking water contaminants, pesticide use, toxic releases from facilities, and traffic density) and the five Environmental Effects indicators (cleanup sites, impaired water bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities). According to the CalEnviroScreen 4.0 Map,[1] the project site has a pollution burden percentile of 97. Surrounding areas have pollution burdens ranging from 56 to 100.0. In addition, according to the SB 535 Disadvantaged Communities Map,[2] the project area is designated as an SB 535 disadvantaged community.

Although the project site has a pollution burden percentile of 97, there is no methodology to quantify the cumulative areawide or localized health risks within a community-wide area. The SJVAPCD's recommended thresholds of significance apply to individual development projects and evaluate the incremental increase in emissions from a proposed source. These thresholds do not apply to cumulative projects. The City relies on the SJVAPCD's recommended methodology to evaluate cumulative impacts, which is to conclude that an impact considered to be significant on a project-specific basis would also cause a significant cumulative impact. As shown in Table 4.2.K of the Recirculated Draft EIR, a project-specific HRA shows that the project would not result in a significant health risk to surrounding receptors at the project or cumulative level.

In addition, as described on page 4.2-26 of the Recirculated Draft EIR, the SJVAB is designated as non-attainment for ozone and $PM_{2.5}$ for federal standards and non-attainment for ozone, PM_{10}, and $PM_{2.5}$ for State standards. The SJVAPCD's non-attainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in non-attainment of ambient

1 Office of Environmental Health Hazard Assessment (OEHHA). 2021. *CalEnviroScreen 4.0.* Website: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40 (accessed May 2021).

2 OEHHA. 2022. *SB 535 Disadvantaged Communities using CalEnviroScreen 4.0 results.* Website: https://experience.arcgis.com/experience/1c21c53da8de48f1b946f3402fbae55c/page/SB-535-Disadvantaged-Communities/.pdf (accessed October 2022).

air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant. In developing thresholds of significance for air pollutants, the SJVAPCD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified SCAQMD significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, since a project's individual emissions are not cumulatively considerable, additional analysis to assess cumulative impacts is not necessary.

As shown in Tables 4.2-G and 4.2-H of the Recirculated Draft EIR, the proposed project would generate construction and operational emissions that are below the SJVAPCD's thresholds. As such, the proposed project would not result in a cumulative air quality impact.

Response B3-10: This comment states that the Recirculated Draft EIR fails to adequately establish the existing baseline with respect to Valley Fever. In addition, this comment asserts that the Recirculated Draft EIR must include a proper discussion of the potential for the presence of coccidioidomycosis fungus spores at the project site in order to accurately analyze and mitigate the project's potentially significant health risk impacts from Valley Fever.

Background information regarding Valley Fever is discussed on pages 4.2-5 and 4.2-6 of the Recirculated Draft EIR. However, the air quality analysis contained in Section 4.2, Air Quality, of the Recirculated Draft EIR was prepared using the methodologies and assumptions contained in the SJVAPCD's GAMAQI. The GAMAQI does not include requirements or thresholds of significance for addressing Valley Fever. The closest sensitive receptors include the single-family residences located approximately 110 feet south of the project site across West Nielsen Avenue. Except under high wind conditions, this distance is sufficient that particulate matter will settle prior to reaching the nearest sensitive receptor. In addition, crosswinds influenced by adjacent traffic intersections would help dissipate any particulate matter associated with the construction phase of the project. Therefore, any Valley Fever spores suspended with the dust will not reach the sensitive receptors. However, during project construction, it is possible that workers could be exposed to Valley Fever through fugitive dust. Dust control measures, consistent with SJVAPCD Regulation VIII (as required by Mitigation Measure AIR-1), would reduce the exposure of the workers. Dust from the construction of the project is not anticipated to exacerbate or significantly add to the existing exposure of people to Valley Fever.

Response B3-11: This comment is a statement of the commenter's understanding of CEQA's "substantial evidence" standard and discusses the standard of review that applies when a court is determining whether a lead agency failed to proceed in a manner required by law. The comment is noted, but it does not raise any significant environmental issues related to the project or the analysis contained in the Recirculated Draft EIR.

Response B3-12: This comment claims that the transportation impacts analysis is flawed with respect to the analysis of the project's trip generation and VMT impacts.

As discussed in Response B3-6, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. However, the project applicant has confirmed that an Amazon facility is not under consideration to be a possible tenant. Since Amazon has not been identified as a tenant, using Amazon trip generation rates would not be accurate or applicable to the proposed project. The suggestion that Amazon trip generation rates would more accurately reflect the project's impacts is therefore speculative and unsupported by substantial evidence. (See CEQA Guidelines, § 15064, subd. (f)(5).) It should also be noted that Amazon has multiple facilities already located in Fresno. It is possible that Amazon could build another facility in Fresno; however, Amazon is not expected to locate another facility at the project site. (See id. at § 15145.)

In addition, as demonstrated in Response B3-14, the Fresno COG ABM was used for the proposed project's VMT analysis. As discussed on page 4.10-14 of the Draft EIR, the project is non-residential in nature but would not be classified as an office or retail project. Additionally, the project does not require a General Plan Amendment. Therefore, the project's VMT per employee was compared to the existing regional average VMT per employee. The existing regional average is 25.6 VMT per employee, as established in the City of Fresno CEQA Guidelines for Vehicle Miles Traveled Thresholds. Based on the Fresno COG ABM output, the project's VMT was calculated to be 19.8 VMT per employee. As such, the project's VMT per employee rate is 22.66 percent lower than the existing regional average VMT per employee or the City's threshold. In conclusion, the project would result in a less than significant VMT impact concerning consistency with CEQA Guidelines Section 15064.3(b). Therefore, the commenter is incorrect in stating that the trip generation and VMT assumptions were flawed.

Response B3-13: This comment claims that the Recirculated Draft EIR incorrectly calculates the project's operational trip generation because the City does not have information on the future tenants of the project site or what the eventual use of the project buildings will be. The comment states the City's reliance on the selected trip rates is therefore unreasonable and unsupported.

Please refer to Response B3-6. The commenter claims that the Recirculated Draft EIR should have analyzed truck trips based on the most intensive reasonably foreseeable use of the site, such as an Amazon facility. As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. However, the project applicant has confirmed that Amazon is not under consideration as a possible tenant. Since Amazon has not been identified as a tenant, using Amazon trip generation rates would not be accurate or applicable to the proposed project. As discussed in Response B3-6, Amazon has multiple existing facilities already located in Fresno and is not expected to locate another facility at the project site. The project applicant has confirmed that no tenants have been identified, and the suggestion that Amazon trip generation rates would more accurately reflect the project's impacts is therefore speculative and unsupported by substantial evidence. (See CEQA Guidelines, § 15064, subd. (f)(5).) Additionally, as established in the WRCOG Study, the Amazon facility is an outlier. Also, the WRCOG Study recommends using the average rates on page 4 of the WRCOG Study. However, as further noted, that facility was also included to calculate the average trip generation rates for High-Cube Fulfilment Center Warehouse land uses. This methodology is also consistent with the recommended trip generation estimate methodology by ITE, which recommends using average trip generation rates for land uses.[1] It should also be noted that the WRCOG Study found that for larger projects, percentages of truck trips compared to total trips are lower than a fulfillment center of a smaller size. Therefore, the commenter is incorrect in stating that the trip generation assumptions were not adequate. The commenter has not shown substantial evidence of a potentially significant environmental impact.

Response B3-14: This comment asserts that the Recirculated Draft EIR underestimates project VMT. This comment states that the Recirculated Draft EIR estimates that 10.2 percent of daily trips are made by heavy trucks (5+ axles) and another 7.6 percent are made by medium trucks (2 to 4 axles), and that the average trip lengths are calculated to be 9.5 miles for work trips and 7.3 miles for other trips. This comment claims that these estimates are likely much lower than the actual average truck trip lengths that could be generated by the project.

As discussed on pages 4.10-12 through 4.10-14 of the Recirculated Draft EIR, the Fresno COG ABM was used to estimate the project VMT and VMT metric. ABM is a tour-based model that captures the travel behavior of the region comprehensively. As such the project employee VMT included VMT from all employee tours and sub-tours. This comprises employee commute tours, project-related delivery tours within the region, and any other tours related

[1] Institute of Transportation Engineers. 2017. *Trip Generation Handbook, 3rd Edition* (page 26). September.

to the project. Also, project VMT and the VMT metric used for this analysis are consistent with both the City's and the Fresno COG's adopted methodology/guidelines for preparation of VMT analysis. The guidelines provide substantial evidence demonstrating the appropriateness of the VMT analysis methodology consistent with the intended goals for SB 743.

The commenter is incorrect in stating that the VMT analysis did not include or fully evaluate trips that originate/are destined outside Fresno County. As shown in Appendix G of the traffic study, the project VMT included employee trips that originated/were destined outside of Fresno County (internal-external/external-internal trips). Therefore, the project VMT estimates accounted for trips originating from outside the Fresno COG ABM region as well.

In addition, truck trips were not included in the VMT analysis, consistent with the CEQA Guidelines Section 15064.3, subdivision (a), which states "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." The technical guidance from OPR does say that heavy-duty truck VMT "*could be included*"; however, the Guidance goes on to state that this would be for modeling convenience and ease of calculation. Heavy-duty trucks are not included in the CEQA guidelines for VMT analysis, are not included in the Fresno COG model, and therefore were not included in the VMT analysis. "An agency's use of a reasonable standard for gauging the significance of an impact may not be set aside on the ground the impact would have been found significant if other recognized standards had instead been used." (Kostka, § 6.45, p. 6-50/50; see *Jensen*, *supra*, 23 Cal.App.5th at 887; *Citizens for Responsible Equitable Environmental Development*, *supra*, 197 Cal.App.4th at 336–336.)

This comment does not identify any new significant environmental issues or impacts that were not already addressed in the Recirculated Draft EIR. Neither this comment nor the response constitutes new information requiring recirculation of the Recirculated Draft EIR.

Response B3-15: This comment claims that the Recirculated Draft EIR fails to include any mitigation measures to reduce the project's VMT impacts and fails to include analysis of the feasibility of the above methods, or any other methods, to reduce the project's potentially significant impacts.

Refer to Responses B2-13 and B3-14. As discussed on pages 4.10-13 and 4.10-14 of the Recirculated Draft EIR, a detailed VMT analysis discussion is included in Chapter 13 of the TIS (see Appendix M), consistent with the requirements of SB 743. As recommended in the City of Fresno CEQA Guidelines for Vehicle Miles Traveled Thresholds, for projects that could not be screened out from a quantitative VMT assessment, the VMT analysis should be conducted using the Fresno COG ABM, which is a tour-based model. Therefore, the Fresno

COG ABM was used for the project VMT analysis. The model database was updated with the project land uses to calculate project VMT.

The project is non-residential in nature but would not be classified as an office or retail project because of the warehouse and heavy industrial uses contemplated for the buildings. Additionally, the project does not require a General Plan Amendment. Therefore, the project's VMT per employee was compared to the existing regional average VMT per employee. The existing regional average is 25.6 VMT per employee, as established in the City of Fresno CEQA Guidelines for Vehicle Miles Traveled Thresholds. Based on the Fresno COG ABM output, the project's VMT was calculated to be 19.8 VMT per employee. As such, the project's VMT per employee rate is 22.66 percent lower than the existing regional average VMT per employee, or the City's threshold. In conclusion, the project would result in a less than significant VMT impact concerning consistency with CEQA Guidelines Section 15064.3(b). The commenter did not demonstrate that the project would result in a potentially significant environmental impact based on substantial evidence. Therefore, the Recirculated Draft EIR properly determined that the proposed project would result in a less than significant impact related to VMT. As such, identification and analysis of mitigation measures is not required.

Response B3-16: The comment asserts that the Recirculated Draft EIR states that the project may be subject to SJVAPCD Rule 9410 – Employer Based Trip Reduction, but that it does not include this rule as mitigation for the project. In addition, this comment claims that the Recirculated Draft EIR fails to include any mitigation measures to reduce the project's VMT impacts, including individual measures included in SJVAPCD Rule 9410.

As discussed in Response A4-18, the proposed project would comply with all required SJVAPCD rules and regulations. In addition, as identified in Appendix H, Greenhouse Gas Reduction Plan Update Checklist, of the Recirculated Draft EIR, the project would have over 100 employees and would be required to comply with SJVAPCD Rule 9410. Further, as discussed in Response B3-15, the project would result in a less than significant VMT impact concerning consistency with CEQA Guidelines Section 15064.3(b). As such, identification and analysis of mitigation measures is not required.

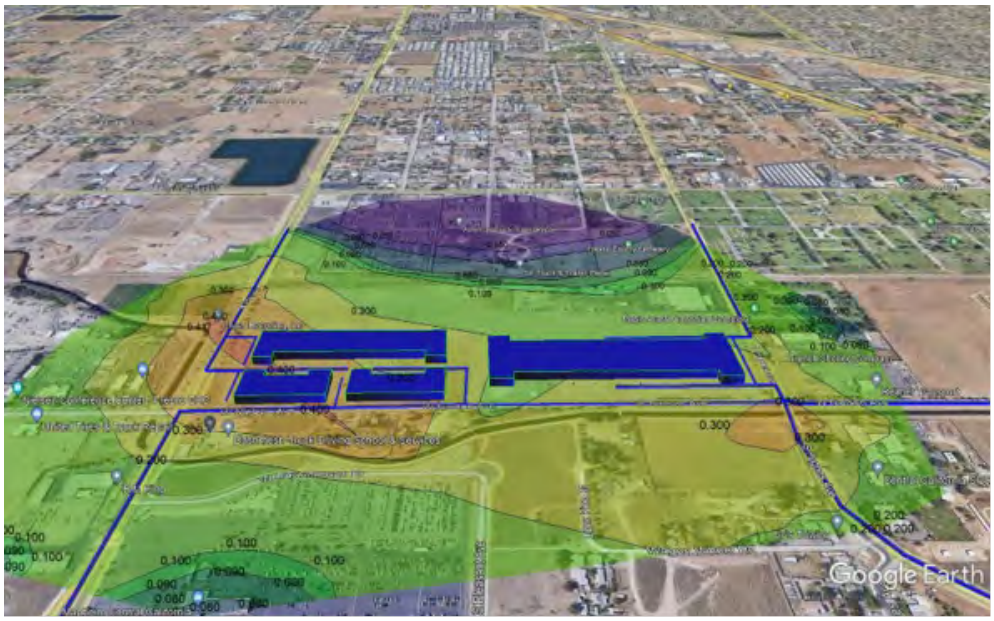
Response B3-17: This comment claims that the Recirculated Draft EIR failed to accurately analyze the project's operational health risk and that the air dispersion model used in the analysis has a structural flaw that results in inaccurate estimates of the project emissions within the community. In addition, this comment claims that building downwash effect was not included, resulting in an underestimation of exposure concentrations.

As discussed on page 4.2-34 of the Recirculated Draft EIR, an HRA was prepared in accordance with policies and procedures of the State OEHHA and the SJVAPCD. It evaluates the project against the significance criteria established by the SJVAPCD and was prepared in compliance with all applicable requirements, including, but not limited to, the City of Fresno General Plan Program EIR Mitigation Measure AIR-3.1. In order to assess the dispersion of emissions associated with the project, air dispersion modeling was performed using AERMOD. The model is approved by the USEPA when estimating the air quality impacts associated with point and fugitive sources in simple and complex terrain. The model was used to calculate the annual average pollutant concentrations associated with each emitting source.

CARB's HARP2 model was used to translate the TAC concentrations from AERMOD into long-term carcinogenic and chronic, and short-term acute health risk levels following the guidance in the SJVAPCD risk assessment guidelines. To estimate chronic noncancer risks at residential receptors, the "OEHHA-Derived Method" risk-calculation option was used. Following the OEHHA guidance, an 8-hour chronic noncancer risk was calculated for residential receptors because the project would operate more than 8 hours per day and 5 days per week.

Discrete variants for daily breathing rates, exposure frequency, and exposure duration were obtained from relevant distribution profiles presented in the OEHHA guidance document entitled *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* and guidance from SJVAPCD. As such, the modeling conducted for the HRA is adequate.

The SJVAPCD Guidance suggests that building downwash effects be included. The commenter incorrectly states that the EIR fails to account for building downwash. In fact, the modeling conducted for the project included building downwash, as recommended by the SJVAPCD. The following image shows a snapshot of the model and 3-D representation of the building heights that were used to model the downwash effect. The model was made available to the public for review and download at the City. As such, the HRA represents an accurate representation of the project and the disclosed emissions are accurate.



Response B3-18: This comment states that the Recirculated Draft EIR fails to analyze and mitigate Valley Fever impacts from project construction. Refer to Response B3-10. Background information regarding Valley Fever is discussed on pages 4.2-5 and 4.2-6 of the Recirculated Draft EIR. The air quality analysis contained in Section 4.2, Air Quality, of the Recirculated Draft EIR was prepared using the methodologies and assumptions contained in the SJVAPCD's GAMAQI. Neither the GAMAQI nor the *State CEQA Guidelines* include requirements or thresholds of significance for addressing Valley Fever. The closest sensitive receptors include the single-family residences located approximately 110 feet south of the project site across West Nielsen Avenue. Except under high wind conditions, this distance is sufficient that particulate matter will settle prior to reaching the nearest sensitive receptor. In addition, crosswinds influenced by adjacent traffic intersections would help dissipate any particulate matter associated with the construction phase of the project. Therefore, any Valley Fever spores suspended with the dust will not reach the sensitive receptors. Dust control measures, consistent with SJVAPCD Regulation VIII (as required by Mitigation Measure AIR-1), would reduce the exposure of the workers. Dust from the construction of the project is not anticipated to exacerbate or significantly add to the existing exposure of people to Valley Fever.

Response B3-19: This comment states that the Recirculated Draft EIR fails to incorporate mitigation measures that would address Valley Fever risks to construction employees and sensitive receptors. Refer to Response B3-18. As noted above, there are no CEQA standards for coccidioidomycosis exposure. Any exposure to workers would be subject to the Occupational Safety and Health (OSH) Act of 1970, 29 United States Code (USC) 654(a)(1), and other appliable

Occupational Safety and Health Administration requirements, including Respiratory Protection (29 CFR 1910.134), which covers respirator use in the workplace. However, the proposed project would not exacerbate or significantly add to the existing exposure of people to Valley Fever and therefore mitigation to reduce CEQA impacts is not required.

Response B3-20: This comment states that the Recirculated Draft EIR did not analyze air quality impacts associated with the use of backup generator and fire pumps. This comment also claims that the project's trip generation rates and VMT are unsupported, resulting in significant air quality and GHG impacts.

The proposed project did not identify the use of backup generators or fire pumps. As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The use of such equipment would be dependent on specific tenants and is not being proposed as part of the project.

However, as discussed in Responses A4-6 and B3-7, to be conservative, a supplemental analysis to evaluate potential emissions associated with equipment, emergency backup generators, and diesel fire pumps was conducted using CalEEMod. This supplemental analysis conservatively assumed that 40 diesel-powered forklifts would be used for 8 hours per day and that four diesel-powered 500 HP emergency backup generators and four diesel-powered 500 HP diesel fire pumps would be used for up to 50 hours per year. The results of the supplemental analysis, shown in Table A under Response A4-6, indicate that the use of equipment, emergency backup generators, and diesel fire pumps would not exceed the significance criteria for annual ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$ emissions. Because emissions would still be below the SJVAPCD's thresholds, operational emissions would still be considered less than significant. However, it is important to note that diesel fire pumps are not being proposed as part of the project.

For a discussion of the project's trip generation rates and VMT, please refer to Responses B3-6, B3-12, B3-13, B3-14, and B3-15. As explained in these responses, the Recirculated Draft EIR properly evaluated the project's trip generation rates and VMT. As such, the project's air quality and GHG analyses used the correct trip generation and VMT assumptions and the commenter has not shown substantial evidence of a potentially significant environmental impact.

Response B3-21: This comment states that the Recirculated Draft EIR fails to account for the operation of backup generators. As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. However, as discussed in

Responses A4-6 and B3-7, to be conservative, a supplemental analysis to evaluate potential emissions associated with equipment, emergency backup generators, and diesel fire pumps was conducted using CalEEMod. This supplemental analysis conservatively assumed that 40 diesel-powered forklifts would be used for 8 hours per day and that four diesel-powered 500 HP emergency backup generators and four diesel-powered 500 HP diesel fire pumps would be used for up to 50 hours per year. The results of the supplemental analysis indicate that the use of equipment, emergency backup generators, and diesel fire pumps would not exceed the significance criteria for annual ROG, NOX_x, CO, SO_X, PM_{10}, or $PM_{2.5}$ emissions. Because emissions would still be below the SJVAPCD's thresholds, operational emissions would still be considered less than significant. However, it is important to note that generators are not proposed as part of the project.

Response B3-22: This comment asserts that the transportation impact analysis fails to accurately analyze the project's operational truck trip generation rates and likely underestimates the project's VMT. This comment also asserts that the project's air quality analysis relies on the transportation impact analysis' trip generation numbers and VMT in order to calculate the project's air emissions and analyze the project's air quality and GHG emissions impacts. This comment claims that the project's transportation impact analysis must be corrected to accurately analyze the project's air quality impacts.

As described in Responses B3-6, B3-12, B3-13, B3-14, and B3-15, the traffic assumptions are supported by substantial evidence further explained in the TIS that was prepared for the project, included in Appendix M of the Recirculated Draft EIR. The Technical Memorandum prepared by WSP and dated January 29, 2019, which was included as an appendix to the TIS, explains in great detail the basis for the trip generation rates used in the traffic analysis and air quality analysis. Further, the air quality analysis did not incorporate the VMT from the TIS as the VMT analysis for SB 743 uses a different methodology than air quality. The air quality analysis utilized default trip lengths provided in CalEEMod. Refer to Response A4-3 for a detailed discussion of CalEEMod default assumptions. As demonstrated in Response A4-3, since a project-specific truck trip length is not yet known, the use of CalEEMod defaults is appropriate for projects in the SJVAPCD and the city of Fresno and is consistent with standard practice. As such, the project's air quality analyses used the correct trip generation and VMT assumptions.

Response B3-23: This comment claims that the Recirculated Draft EIR relies on a faulty methodology to analyze the project's construction noise and improperly relies on a relative threshold of significance with regard to the project's operational noise from traffic. It also claims that the Recirculated Draft EIR fails to properly analyze and mitigate the project's significant construction and operational noise impacts. This comment also states that CEQA requires

agencies to conduct noise analyses for projects that consider both the absolute noise levels expected and the degree noise levels are expected to increase. It claims that noise studies that rely on a single measure that excludes possible significant impacts from noise increases or noise extremes do not receive deference by reviewing courts.

This comment provides an introduction to following comments, which are responded to further in Response B3-24 and Response B3-25.

Response B3-24: This comment states that the Recirculated Draft EIR only relies on a relative threshold to determine that the project will not result in a significant impact. Further, this comment states that the City's General Plan Policy NS-1-a establishes "65 dBA L_{dn} or CNEL as the standard for the desirable maximum average exterior noise levels for defined usable exterior areas of residential and noise-sensitive uses" such as those along Nielsen Avenue, south of the project site. This comment also claims that based on the data provided in the Recirculated Draft EIR, the roadway segment on Nielsen Avenue between Marks Avenue and Hughes Avenue will see an increase from the existing 64.0 A-weighted decibels (dBA) Community Noise Equivalent Level (CNEL) to 66.1 dBA CNEL with the addition of project-generated traffic. Based on the Recirculated Draft EIR's own data, the project will cause noise levels at nearby sensitive receptors to exceed the desirable maximum average exterior noise levels for defined usable exterior areas of residential and noise-sensitive uses of 65 dBA CNEL, resulting in a significant impact.

As identified on page 4.9-13 of the Recirculated Draft EIR, as established in General Plan Policy NS-1-j: Significance Threshold, the City considers a 3 dBA increase to be a significant increase in ambient noise. As described on pages 4.9-18 through 4.9-21 of the Recirculated Draft EIR, project-related traffic noise would be no greater than 2.1 dBA. Noise level increases less than 3.0 dBA are not considered perceptible to most people in an outdoor environment. In addition, as shown in Table 4.9.D of the Recirculated Draft EIR, existing daily noise levels along West Nielsen Avenue near the existing sensitive receptors range from 67.6 dBA CNEL to 68.1 dBA CNEL. Because noise levels would increase less than 3.0 dBA, this is consistent with General Plan Policy NS-1-j: Significance Threshold, which states that an increase of 3 dBA CNEL or more is considered significant. There is currently no General Policy stating that a less than 3 dBA increase resulting in levels going from below 65 dBA CNEL to above 65 dBA CNEL would constitute a significant impact. Further, the 65 dBA CNEL standard applies to new development as a land use compatibility standard and is not an applicable threshold of significance for noise level increases. Therefore, the commenter is incorrect that 65 dBA CNEL is an applicable threshold. As such, traffic noise impacts from project-related traffic on off-site sensitive receptors would be less than significant.

Response B3-25: The commenter claims that they calculated the noise levels generated during each phase of construction combined with the existing ambient noise levels to determine the noise impacts on the closest residential receptors located south of the project site and found that the site preparation phase will result in a noise level of 70.2 dBA L_{eq}, while grading will result in a noise level of 71 dBA L_{eq} and building construction will result in a noise level of 69.0 dBA L_{eq}. Further, this comment claims that Mitigation Measure NOI-1 would not reduce the project's significant construction noise impacts.

As identified in Table 4.9.K of the Recirculated Draft EIR, construction noise levels were based on the Federal Highway Administration Roadway Construction Noise Model. In addition to the reference maximum noise level, the usage factor provided in Table 4.9.K is used to calculate the hourly noise level impact for each piece of equipment. Each piece of construction equipment operates as an individual point source. Therefore, a composite noise level can be calculated when multiple sources of noise operate simultaneously.

Using the equations from the methodology identified on page 4.9-17 of the Recirculated Draft EIR, the reference information in Table 4.9.K, and the construction equipment list provided, the composite noise level of the two loudest pieces of equipment for each construction phase was calculated. The project construction composite noise levels at a distance of 50 feet for would range from 74 dBA equivalent continuous noise level (L_{eq}) to 84 dBA L_{eq}, with the highest noise levels occurring during the grading phase.

Once composite noise levels are calculated, reference noise levels can then be adjusted for distance. In general, doubling the distance would decrease noise levels by 6 dBA, while halving the distance would increase noise levels by 6 dBA.

The Recirculated Draft EIR evaluated construction noise levels based on the composite noise level of the two loudest pieces of equipment for each construction phase, consistent with the Federal Transit Administration (FTA) Noise and Vibration Impact Assessment Manual (FTA Manual). The FTA Manual states that while it is not the purpose of the manual to specify standardized criteria for construction noise impacts, the guidelines can be considered reasonable criteria for assessment. The FTA Manual provides two options for noise assessment: Option A, General Assessment, to evaluate the two noisiest pieces of equipment for each phase of construction; and Option B, Detailed Analysis, to evaluate all equipment for each phase of construction. The air quality analysis utilized a default construction fleet from CalEEMod, which was used in the noise analysis. However, since the proposed project's specific construction equipment list is unknown at this time, for purposes of the noise assessment, it is likely that two pieces of equipment would be used at a specific distance from the receptor at any one time.

As discussed on pages 4.9-17 and 4.9-18 of the Recirculated Draft EIR, while construction noise will vary, it is expected that composite noise levels during construction at the nearest off-site sensitive residential use to the south would reach an average noise level of 64 dBA L_{eq} during daytime hours. While construction-related, short-term noise levels have the potential to be higher than quieter daytime ambient noise levels in the project area under existing conditions, the construction noise impacts would be approximately 1.7 dBA greater than the existing average daytime noise level of 64.7 dBA L_{eq} during the allowable hour of construction. When logarithmically combined with the existing average ambient noise level, the total noise level would be 66.2 dBA L_{eq}, resulting in an increase of 3.9 dBA L_{eq}. As identified in Table 4.9.I of the Recirculated Draft EIR, for stationary sources, mitigation shall only be required to limit noise to the ambient plus 5 dBA. Because the increase would be less than 5 dBA, construction noise would be considered less than significant.

However, when utilizing the detailed construction methodology and information from the CalEEMod results, assuming each piece of equipment operating simultaneously over the site for each phase, as suggested by the commenter, the composite noise levels during construction at the nearest off-site sensitive residential use to the south would reach an average noise level of 68.9 dBA L_{eq} at the acoustical average distance of 471 feet during daytime hours. Additionally, based on CalEEMod results, it is assumed that equipment would operate for no more than 8 hours per day. In order to provide a more accurate assessment consistent with CalEEMod results and the FTA methodology, the average ambient noise level at the nearest residential uses between the hours of 7:00 a.m. and 4:00 p.m., a period including an 8-hour work day and a 1 hour lunch, is 66.0 dBA L_{eq}. This noise level would be approximately 2.9 dBA greater than the existing average daytime noise level of 66.0 dBA L_{eq} during the allowable hours of construction. When logarithmically combined with the existing average ambient noise level, the total noise level would be 70.7 dBA L_{eq}, resulting in an increase of 4.7 dBA L_{eq}. Because the increase would still be less than 5 dBA, construction noise would still be considered less than significant.

The discrepancy between the 68.9 dBA L_{eq} calculated in the noise analysis and the commenter's calculation of 71 dBA L_{eq} is a result of the noise analysis using the actual measured noise levels as compared to spec data within the Roadway Construction Noise Model (RCNM). It is our professional opinion that the use of actual measured data is more accurate than spec data.

In addition, as discussed in the Recirculated Draft EIR, although the project's potential construction-related noise level increase would be less than 5 dBA, project construction noise has the potential to result in annoyance to surrounding receptors. Therefore, the applicant would be required to

implement Mitigation Measure NOI-1, which would ensure that all equipment, fixed or mobile, would be required to be equipped with properly operating and maintained mufflers, consistent with manufacturers' standards. Additionally, Mitigation Measure NOI-1 requires the project to designate a "disturbance coordinator" at the City who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem. This measure would reduce annoyance associated with construction noise as a significant construction noise impact was not identified. Additional construction noise mitigation measures are not required.

Response B3-26: This comment states that CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects and a detailed statement of mitigation measures designed to minimize significant effects on the environment (including, but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy). This comment also claims that the Recirculated Draft EIR falls short of the mandates of Appendix F.

As discussed in Section 4.5.3.1 of the Recirculated Draft EIR, thresholds for impacts related to energy used in the analysis are consistent with Appendix G of the *State CEQA Guidelines,* which state that development of the proposed project would result in a significant impact related to energy if it would: result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Further, Appendix F of the *State CEQA Guidelines* states that EIRs must include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. As demonstrated in Section 4.6, Energy, the proposed project would not result in inefficient, wasteful, and unnecessary consumption of energy, and the project would not result in a significant energy impact.

Response B3-27: This comment asserts that the Recirculated Draft EIR fails to adequately analyze the significance of the project's energy impacts related to the project's use of fossil fuels consumed by project-related vehicle trips. Further, this comment states that the Recirculated Draft EIR states that the project would increase gasoline consumption in the city of Fresno by 0.11 percent and diesel consumption by 0.5 percent, but that the Recirculated Draft EIR fails to establish a threshold for fossil fuel consumption that would be significant. Therefore, the comment claims that the conclusion that the

increased fuel consumption resulting from project operation would not be significant is unsupported.

As discussed on page 4.5-8, the proposed project would result in energy usage associated with gasoline and diesel fuel consumed by project-related vehicle trips. Trip generation rates for the proposed project were based on the project's trip generation estimates, as identified in Section 4.10, Transportation, of the Recirculated Draft EIR, which estimates that the proposed project would generate approximately 1,920 average daily trips, including 1,578 vehicle trips and 342 truck trips. Based on the operational energy consumption estimates shown in Table 4.5.B, operation of the proposed project would increase the annual natural gas consumption in Fresno County by approximately 0.05 percent. Further, vehicle and truck trips associated with the proposed project would increase the annual fuel use in Fresno County by approximately 0.11 percent for gasoline fuel usage and approximately 0.05 percent for diesel fuel usage.

The comment claims that the City must determine the appropriate threshold against which to measure the project's fossil fuel consumption in order to determine whether the project will result in a significant impact to energy resources. However, as identified in Response B3-26 and as discussed in Section 4.5.3.1 of the Recirculated Draft EIR, thresholds for impacts related to energy used in the analysis are consistent with Appendix G of the *State CEQA Guidelines,* which states that development of the proposed project would result in a significant impact related to energy if it would: result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Further, there is no quantitative energy threshold under CEQA, and given that the gasoline and diesel fuel demand generated by vehicle trips associated with the proposed project would be a minimal fraction of gasoline and diesel fuel consumption in Fresno County, project gasoline and fuel demand would not be considered wasteful, inefficient, or unnecessary consumption.

Therefore, as demonstrated in Section 4.6, Energy, the proposed project would not result in inefficient, wasteful, and unnecessary consumption of energy and the project would not result in a significant energy impact. The commenter has not shown evidence of a potentially significant environmental impact.

Response B3-28: This comment claims that the Recirculated Draft EIR fails to accurately account for the project's trip generation, which would lead to increased fossil fuel and energy use.

Refer to Response B3-6 for a discussion of the project's trip generation. The trip generation for the proposed project was developed using rates from the WRCOG Study based on a trip generation study for high-cube fulfilment center facilities. As demonstrated in Response B3-6, the commenter is incorrect in stating that the trip generation assumptions substantially underestimated project trips.

Response B3-29: This comment states that another goal for conserving energy is increasing reliance on renewable energy sources and that the Recirculated Draft EIR's discussion of renewable energy generation is virtually nonexistent and fails to provide a meaningful investigation into renewable energy options that might be available or appropriate for the project. This comment also claims that compliance with the Building Code and other energy efficiency requirements does not, by itself, constitute an adequate assessment of measures that can be taken to address the energy impacts during construction and operation of the project.

As discussed on page 4.5-8 of the Recirculated Draft EIR, the proposed buildings would likely be constructed using the 2022 Title 24 standards; however, based on available modeling tools, the CalEEMod analysis of energy use assumed the construction of buildings based on the 2019 Title 24 standards, which is a conservative analysis. As discussed on page 4.5-8, Title 24 Standards contain energy efficiency requirements and establish performance metrics in the form of an "energy budget" based on energy consumption per square foot of floor space. For this reason, the Title 24 Standards include both a prescriptive option, allowing builders to comply by using methods known to be efficient, and a performance option, allowing builders complete freedom in their designs provided the building achieves the same overall efficiency as an equivalent building using the prescriptive option. Reference appendices are adopted along with the Title 24 Standards containing data and various compliance tools to help builders achieve compliance. As discussed in Response, B1-7, after approval and preparation of detailed building plans, the project would be required to demonstrate compliance with Title 24 using the CBECC model.

In addition, as discussed on pages 4.5-9 and 4.5-10 of the Recirculated Draft EIR, proposed new development would be constructed using energy-efficient modern building materials and construction practices, and the proposed project also would use new modern appliances and equipment, in accordance with the Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608). The expected energy consumption during construction and operation of the proposed project would be consistent with typical usage rates for industrial uses; however, energy consumption is largely a function of personal choice and the physical structure and layout of buildings.

PG&E is the private utility that would supply the proposed project's electricity and natural gas services. In 2021, a total of 50 percent of PG&E's delivered electricity came from renewable sources, including solar, wind, geothermal, small hydroelectric, and various forms of bioenergy.[1] PG&E reached California's 2020 renewable energy goal in 2017 and is positioned to meet the State's 60 percent by 2030 renewable energy mandate set forth in SB 100. In addition, PG&E plans to continue to provide reliable service to its customers and upgrade its distribution systems as necessary to meet future demand.

Further, as discussed in Response B3-26, Appendix F of the *State CEQA Guidelines* states that EIRs must include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. As demonstrated in Section 4.6, Energy, the proposed project would not result in inefficient, wasteful, and unnecessary consumption of energy and would not result in a significant energy impact.

Response B3-30: This comment states that the Recirculated Draft EIR fails to disclose inconsistency with the City's General Plan, which would result in a significant adverse environmental impact on land use and planning. As discussed in Section 3.1.3, Existing Zoning and General Plan Land Use Designation, in the Recirculated Draft EIR, the project site is designated Heavy Industrial in the City of Fresno General Plan. This land use is intended to accommodate the broadest range of industrial uses, including manufacturing, assembly, wholesaling, distribution, and storage activities that are essential to the development of a balanced economic base. Small-scale commercial services and ancillary office uses are also permitted. The maximum FAR is 1.5. In addition, as discussed in the Initial Study (provided in Appendix B of the Recirculated Draft EIR), the proposed project would not require a change to the General Plan land use designation or the current zoning and would be consistent with the City's General Plan and Zoning Ordinance. Therefore, the project is consistent with the City's General Plan and would not result in a significant adverse environmental impact on land use planning.

Response B3-31: This comment asserts that the proposed project would exceed the City's Noise Element Policy NS-1-a Desirable and Generally Acceptable Exterior Noise Environment, which establishes 65 dBA day-night average level (L_{dn}) or CNEL as the standard for the desirable maximum average exterior noise levels for defined usable exterior areas of residential and noise-sensitive uses for noise, but designate 60 dBA L_{dn} or CNEL (measured at the property line) for noise generated by stationary sources impinging upon residential and noise-

[1] Pacific Gas and Electric (PG&E). 2022. *Exploring Clean Energy Solutions*. Website: https://www.pge.com/en_US/about-pge/environment/what-we-are-doing/clean-energy-solutions/clean-energy-solutions.page?WT.mc_id=Vanity_cleanenergy (accessed October 2022).

sensitive uses. The policy further states that they should maintain 65 dBA L_{dn} or CNEL as the maximum average exterior noise levels for non-sensitive commercial land uses, and maintain 70 dBA L_{dn} or CNEL as maximum average exterior noise level for industrial land uses, both to be measured at the property line of parcels where noise is generated that may impinge on neighboring properties.

As discussed in Response B3-24, the 65 dBA CNEL standard applies to new residential development as a land use compatibility standard when new residential development is proposed and is not an applicable threshold of significance for noise level increases. Because the proposed project would develop a new industrial use, the 65 dBA CNEL would not apply as a tool used to make a land use compatibility decision. Therefore, the commenter is incorrect that 65 dBA CNEL used for determining where residential uses may be placed is an applicable threshold.

Further, as it relates to potential noise impacts on surrounding residential uses due to traffic noise, the 65 dBA CNEL policy that is being referred to is derived from applying a 10 dBA penalty to nighttime noise level hourly standards presented in Section 10-102 of the Municipal Code to calculate a daily noise level. The Recirculated Draft EIR and supporting Noise Impact Analysis Memorandum (Appendix L of the Recirculated Draft EIR) provide an in-depth analysis of impacts to the residential uses to the south using the appropriate standards presented in Section 10-102 of the Municipal Code. With the implementation of MM NOI-2, operational noise levels would be less than significant.

For commercial uses during nighttime conditions (the more conservative conditions), the hourly noise level standard is 60 dBA L_{eq} and the anytime noise level for industrial uses is 70 dBA L_{eq}. As presented in the SoundPLAN printouts of the Noise Impact Analysis Memorandum (Appendix L of the Recirculated Draft EIR), the 60 dBA L_{eq} noise contour is within the site boundary to the east and west. At the northern property line, operational noise levels are expected to approach 64 dBA L_{eq}, which is below the 70 dBA L_{eq} standard for industrial uses. As such, the proposed project would not exceed maximum exterior noise level standards. Thus, the project complies with both absolute and relative noise level standards.

Response B3-32: This comment includes a number of recommendations to reduce impacts related to air quality and GHG and asserts that the DEIR fails to consider the Attorney General's Best Practices and mitigation for warehouse projects. Comments related to the design of the proposed project are noted. As discussed in Section 4.3, Air Quality, of the Recirculated Draft EIR, implementation of Mitigation Measure AIR-2 requires the use of Tier 4 construction equipment, consistent with the recommendations to require diesel-fueled off-road construction equipment to be equipped with CARB Tier

4-compliant engines. In addition, through implementation of Mitigation Measure AIR-3, the project applicant shall ensure that the proposed project would provide the infrastructure for AC and/or DC chargers for electric heavy-duty trucks. The infrastructure provided shall accommodate a minimum of one future charger per 50,000 square feet. Mitigation Measure AIR-3 is consistent with the recommendations relating to zero-emission heavy-duty vehicles. With implementation of Mitigation Measures AIR-2 and AIR-3, the proposed project's potential air quality impacts from construction and operation would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant. The comment does not present substantial evidence of the identification of a potentially significant environmental impact requiring additional mitigation.

Response B3-33: This comment claims that the City cannot make all of the findings for the proposed project, precluding approval of the project's land use permits. In addition, this comment claims that the project is inconsistent with the General Plan's Noise and Safety Element and is therefore inconsistent with the General Plan. Refer to Responses B3-24 and B3-25 for a discussion of consistency with the General Plan Noise Element. For the reasons explained in the responses above, the Recirculated Draft EIR properly evaluated the proposed project's potential impacts, and the commenter has not presented evidence to the contrary. Therefore, a revised EIR is not required.

Response B3-34: This comment claims that the project is likely to have potentially significant impacts related to transportation, air quality, health risk, GHG emissions, noise, energy, and land use and planning, and, as a result, would fail to comply with the Subdivision Map Act.

For the reasons explained in the responses above, the Recirculated Draft EIR properly evaluated the proposed project's potential impacts related to transportation, air quality, health risk, GHG emissions, noise, energy, and land use and planning, and the proposed project would not result in any significant and unavoidable impacts. The project complies with the Subdivision Map Act and is consistent with the General Plan and zoning as described in the Recirculated Draft EIR. The commenter has not presented evidence to the contrary.

Response B3-35: This comment states that the City must prepare a revised EIR for the proposed project. This comment is noted. For the reasons explained in the responses above, the Recirculated Draft EIR properly evaluated the proposed project's potential impacts, and the commenter has not presented evidence to the contrary. Therefore, a revised EIR is not required.

Response B3-36: This introductory comment is noted. This comment does not contain any substantive comments or questions about the environmental analysis or

conclusions contained in the Recirculated Draft EIR. Therefore, no further response is necessary.

Response B3-37: This comment provides a brief project description and does not contain any substantive comments or questions about the environmental analysis or conclusions contained in the Recirculated Draft EIR. Therefore, no further response is necessary.

Response B3-38: This introductory comment asserts that the Recirculated Draft EIR fails to adequately analyze significant environmental impacts. This comment is noted. Comments provided in this letter are further responded to below.

Response B3-39: This comment states that the Recirculated Draft EIR fails to address impacts from exposure to *Coccidiodes immitis* (Valley Fever cocci) from particulate matter released from the project site during construction activities.

Refer to Response B3-10. Background information regarding Valley Fever is discussed on pages 4.2-5 and 4.2-6 of the Recirculated Draft EIR. However, the air quality analysis contained in Section 4.2, Air Quality, of the Recirculated Draft EIR was prepared using the methodologies and assumptions contained in the SJVAPCD's GAMAQI. The GAMAQI does not include requirements or thresholds of significance for addressing Valley Fever. The closest sensitive receptors include the single-family residences approximately 110 feet south of the project site across West Nielsen Avenue. Except under high wind conditions, this distance is sufficient that particulate matter will settle prior to reaching the nearest sensitive receptor. In addition, crosswinds influenced by adjacent traffic intersections would help dissipate any particulate matter associated with the construction phase of the project. Therefore, any Valley Fever spores suspended with the dust will not reach the sensitive receptors. However, during project construction, it is possible that workers could be exposed to Valley Fever through fugitive dust. Dust control measures, consistent with SJVAPCD Regulation VIII (as required by Mitigation Measure AIR-1), would reduce the exposure of the workers. Dust from the construction of the project is not anticipated to exacerbate or significantly add to the existing exposure of people to Valley Fever.

Response B3-40: This comment claims that the Recirculated Draft EIR fails to include adequate mitigation measures and medical monitoring information to prevent exposure to *Coccidiodes immitis* (Valley Fever cocci) from disturbed soils on site. This comment also recommends the inclusion of several mitigation measures in the Recirculated Draft EIR.

Refer to Responses B3-10 and B3-39, above. The GAMAQI does not include requirements or thresholds of significance for addressing Valley Fever. Further, dust control measures, consistent with SJVAPCD Regulation VIII (as required by Mitigation Measure AIR-1), would reduce the exposure of the

workers. Dust from the construction of the project is not anticipated to exacerbate or significantly add to the existing exposure of people to Valley Fever. Implementation of the proposed project would not exceed any applicable SJVAPCD significance criteria and would result in a less than significant impact; the commenter has not presented evidence to the contrary. As such, identification and analysis of mitigation measures suggested in the comment would not be required to reduce emissions to a less than significant level.

Response B3-41: This comment states that the air quality analysis contained in the Recirculated Draft EIR did not include emissions from an on-site fire pump system.

As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. However, as discussed in Responses A4-6 and B3-7, to be conservative, a supplemental analysis to evaluate potential emissions associated with equipment, emergency backup generators, and diesel fire pumps was conducted using CalEEMod. This supplemental analysis conservatively assumed that 40 diesel-powered forklifts would be used for 8 hours per day and that four diesel-powered 500 HP emergency backup generators and four diesel-powered 500 HP diesel fire pumps would be used for up to 50 hours per year. The results of the supplemental analysis indicate that the use of equipment, emergency backup generators, and diesel fire pumps would not exceed the significance criteria for annual ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$ emissions. Because emissions would still be below the SJVAPCD's thresholds, operational emissions would still be considered less than significant. However, it is important to note that diesel fire pumps have not been identified as part of the project and are not included as part of the proposed project evaluated in this Recirculated Draft EIR.

Response B3-42: This comment claims that the air quality analysis contained in the Recirculated Draft EIR fails to consider the use of refrigeration units and transport refrigeration units (TRUs), resulting in underestimated foreseeable health risk to the community as well as associated GHG emissions.

The air quality analysis contained in the Recirculated Draft EIR assumed the trucks accessing the project site would idle using their main engines rather than an auxiliary power unit or plugging in to on-site electrical hookups throughout their time at the project site. This is a conservative assumption, as the loading docks are required to have electrical hookups and the trucks to have the ability to run their accessories from that electricity during any extended period of idling, so it is likely that the trucks would only briefly operate on their own power when maneuvering on site. It was also assumed that any refrigerated trucks would use the electrical hookups to power the

TRUs rather than operate their onboard diesel engines. Additionally, the CARB has developed a technical advisory to transition to near-zero-emission technologies and ultimately zero-emission technologies. These technologies will be phased in over time, possibly beginning in the 2020s and extending out to 2050. As such, because TRU trucks would be required to plug in, any increase in emissions associated with TRUs would be minimal and would not result in a significant increase in emissions. Therefore, no revisions to the analysis in the Recirculated Draft EIR are warranted.

Response B3-43: This comment states that the Recirculated Draft EIR states that the proposed project would result in a total of 1,920 average daily trips, including 1,578 passenger vehicle trips and 342 truck trips. This comment also claims that Appendix C of the Recirculated Draft EIR shows a total of 1,589 passenger vehicle trips per day.

Appendix C of the Recirculated Draft EIR contains the CalEEMod output sheets, which estimate that the proposed project would result in a total of 1,920 average daily trips. Appendix D of the Recirculated Draft EIR contains the HRA and its model output. The model output contained in Appendix D of the Recirculated Draft EIR does estimate 1,589 daily passenger vehicle trips and 344 truck trips, resulting in a total of 1,933 average daily trips. The proposed project's estimated trip generation is slightly less than the trip generation evaluated in the HRA; therefore, the analysis is conservative and likely overestimates operational project emissions. No revisions to the analysis in the Recirculated Draft EIR are warranted.

Response B3-44: This comment suggests that the Recirculated Draft EIR underestimates trip generation.

Refer to Response B3-5. As discussed in the TIS in Appendix M of the Recirculated Draft EIR, the trip generation for the proposed project was developed using rates from the WRCOG Study, which is included as an appendix to the TIS (Appendix M of the Recirculated Draft EIR). The study provides separate trip generation rates for passenger vehicles, 2- to 4-axle trucks, and 5+ axle trucks. The truck trips were converted to PCE trips using a PCE factor of 2.0 for 2- to 4-axle trucks, consistent with HCM recommendations. However, as a conservative approach, a PCE factor of 3.0 was used for 5+ axle trucks, consistent with the practices in several regions within the State. This methodology is also consistent with the recommended trip generation estimate methodology by ITE, which recommends using average trip generation rates for land uses. The WRCOG Study found that for larger projects, percentages of truck trips compared to total trips are lower than for a fulfillment center of a smaller size. Therefore, the commenter is incorrect in stating that the trip generation assumptions underestimated project trips.

Response B3-45: This comment claims that the Recirculated Draft EIR failed to account for the impact on emissions from building downwash, resulting in an underestimation of exposure concentrations.

Refer to Response B3-17. The SJVAPCD Guidance suggests that building downwash effects be included. The commenter incorrectly states that the EIR fails to account for building downwash. In fact, the modeling conducted for the project included building downwash, as recommended by the SJVAPCD. The image included in Response B3-17 shows a snapshot of the model and a 3-D representation of the building heights that were used to model the downwash effect. The model was made available to the public for review and download at the City. As such, the HRA represents an accurate representation of the project, and the disclosed emissions are accurate.

Response B3-46: This comment states that the air quality analysis contained in the Recirculated Draft EIR failed to account for backup generators.

The proposed project would not involve the use of backup generators. As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. Therefore, such equipment has not been identified and is not included as part of the proposed project.

However, as discussed in Responses A4-6 and B3-7, to be conservative, a supplemental analysis to evaluate potential emissions associated with equipment, emergency backup generators, and diesel fire pumps was conducted using CalEEMod. This supplemental analysis conservatively assumed that 40 diesel-powered forklifts would be used for 8 hours per day and that four diesel-powered 500 HP emergency backup generators and four diesel-powered 500 HP diesel fire pumps would be used for up to 50 hours per year. The results of the supplemental analysis indicate that the use of equipment, emergency backup generators, and diesel fire pumps would not exceed the significance criteria for annual ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$ emissions. Because emissions would still be below the SJVAPCD's thresholds, operational emissions would still be considered less than significant. However, it is important to note that emergency backup generators are not being proposed as part of the project.

Response B3-47: This comment claims that the City must prepare a revised EIR for the proposed project. This comment is noted. For the reasons explained in the responses above, the Recirculated Draft EIR properly evaluated the proposed project's potential impacts, and the commenter has not presented evidence to the contrary. Therefore, a revised EIR is not required.

Response B3-48: This comment includes the commenter's resume. The comment is noted, but it does not raise any significant environmental issues related to the project or the analysis contained in the Recirculated Draft EIR.

Response B3-49: This introductory comment is noted. This comment does not contain any substantive comments or questions about the environmental analysis or conclusions contained in the Recirculated Draft EIR. Therefore, no further response is necessary.

Response B3-50: This comment includes the commenter's qualifications. The comment is noted, but it does not raise any significant environmental issues related to the project or the analysis contained in the Recirculated Draft EIR.

Response B3-51: This comment is a statement of references presenting a summary related to the adverse effects of noise. The comment is noted, but it does not raise any significant environmental issues related to the project or the analysis contained in the Recirculated Draft EIR.

Response B3-52: This comment summarizes comments previously provided on the Initial Study prepared for the proposed project. This comment is noted and is responded to further in Responses B3-53 through B3-59.

Response B3-53: This comment presents Policy NS-1-a of Fresno General Plan, Chapter 9, Noise and Safety, and states that it is important that cities like Fresno adopt absolute standards for the noise environments of their citizens because if only relative standards are used, then there would be no limit to environmental noise exposure over time. In addition, this comment claims that the FTA also recognizes that as the absolute level of noise exposure increases, the relative increase that results in a significant impact reduces.

Refer to Responses B3-2 and B3-31, above. As identified on page 4.9-13 of the Recirculated Draft EIR, as established in General Plan Policy NS-1-j: Significance Threshold, the City considers a 3 dBA increase to be a significant increase in ambient noise. There is currently no General Policy stating that a less than 3 dBA increase resulting in levels going from below 65 dBA CNEL to above 65 dBA CNEL would constitute a significant impact. As such, traffic noise impacts from project-related traffic on off-site sensitive receptors would be less than significant.

Response B3-54: This comment presents information extracted from Table 4.9.L in the Recirculated Draft EIR. This comment states that the noise exposure goes from a level that is lower than that established by General Plan Policy NS-1-a (65 dBA CNEL) to one that is higher, constituting a significant noise impact.

Refer to Responses B3-24 and B3-31. As identified on page 4.9-13 of the Recirculated Draft EIR, as established in General Plan Policy NS-1-j:

Significance Threshold, the City considers a 3 dBA increase to be a significant increase in ambient noise. As such, traffic noise impacts from project-related traffic on off-site sensitive receptors would be less than significant.

Response B3-55: This comment asserts that the Recirculated Draft EIR only calculated the composite noise level of the two loudest pieces of equipment for each construction phase. The comment claims that is a common error that stems from FTA guidance that preliminarily, before much is known about construction, the order of magnitude of construction noise may be determined by combining the levels of the two loudest pieces of equipment, assuming they are running at full power 100 percent of the time. The comment also claims that the types and number of equipment are known in detail from the air quality assessment, so it is appropriate to conduct a detailed calculation of construction noise. The commenter also claims that the calculation include in the Recirculated Draft EIR does not assume usage 100 percent of the time for the two loudest pieces of equipment, so it does not even comport with the FTA preliminary guidance. Refer to Response B3-25, above.

Response B3-56: This comment asserts that the commenter properly estimated noise levels using the CalEEMod output contained in Appendix C of the Recirculated Draft EIR and based on the reference emission levels and usage factors from Table 4.9.K of the Recirculated Draft EIR. This comment also states that the average acoustical distance used for the calculations is, as the Recirculated Draft EIR explains, calculated by multiplying the shortest distance between the receiver and the noise source area by the farthest distance, and then taking the square root of the product, which is 471 feet. Refer to Response B3-25, above.

Response B3-57: This comment states that construction noise levels would result in an increase over the 5 dBA threshold of significance identified in the Recirculated Draft EIR. Refer to Response B3-25, above.

Response B3-58: This comment states that Mitigation Measure NOI-1 requires the use of mufflers and the designation of a “disturbance coordinator.” The commenter states that while both of these are good ideas that should be implemented, neither would reduce the noise levels. Refer to Response B3-25, above.

Response B3-59: This comment includes the commenter’s calculation of construction noise level increases. Refer to Response B3-25, above.

Response B3-60: This comment includes a conclusion and a summary of the comments provided in the letter. This comment is noted. For the reasons explained in the responses above, the Recirculated Draft EIR properly evaluated the proposed project’s potential impacts, and the commenter has not presented evidence to the contrary.

Response B3-61: This comment provides a closing to the comment letter and does not question the adequacy of the analysis included in the Recirculated Draft EIR. No further response is required.

Response B3-62: This comment provides an introduction to following comments, which are responded to further in Responses B3-63 through B3-66.

Response B3-63: This comment states that the project's trip generation could be much higher than assumed as the different fulfillment center sites have different trip generation rates, with an Amazon facility having an especially high rate. This comment also suggests that the Recirculated Draft EIR apply the Amazon trip generation rate.

Refer to Response B3-6. As discussed in the Recirculated Draft EIR, the proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. However, the project applicant has confirmed an Amazon facility is not under consideration to be a possible tenant. Since Amazon has not been identified as a tenant, using Amazon trip generation rates would not be accurate or applicable to the proposed project. The suggestion that Amazon trip generation rates would more accurately reflect the project's impacts is therefore speculative and unsupported by substantial evidence. (See CEQA Guidelines, § 15064, subd. (f)(5).) It should also be noted that Amazon has multiple existing facilities already located in Fresno. It is possible that Amazon could build another facility in Fresno; however, Amazon is not expected to locate another facility at the project site. (See id. at § 15145.)

As discussed in the TIS, trip generation rates from the ITE manual for the High-Cube Fulfillment Center Warehouse land use have a small sample size. The WRCOG Study facilitated a trip generation study for such facilities. Further, trip generation rates using the WRCOG study are higher than trip generation rates from the ITE manual for the High-Cube Fulfillment Center Warehouse land use. As such, trip generation rates from the WRCOG Study are conservative and are appropriate for use. The WRCOG Study provides separate trip generation rates for passenger vehicles, 2- to 4-axle trucks, and 5+ axle trucks. The truck trips were converted to PCE trips using a PCE factor of 2.0 for 2- to 4-axle trucks, consistent with HCM recommendations. However, as a conservative approach, a PCE factor of 3.0 was used for 5+ axle trucks, consistent with the practices in several regions within the State. Additionally, as established in the WRCOG Study, the Amazon facility is an outlier. However, as further noted, that facility was also included to calculate the average trip generation rates for High-Cube Fulfilment Center Warehouse land uses. This methodology is also consistent with the recommended trip generation estimate methodology by ITE, which recommends using average trip generation rates for land uses. The WRCOG Study found that for larger

projects, percentages of truck trips compared to total trips are lower than a fulfillment center of a smaller size. Therefore, the commenter is incorrect in stating that the trip generation assumptions substantially underestimated project trips.

Response B3-64: This comment claims that project VMT and GHG emissions could be much higher than assumed because if the Amazon trip generation rate were used instead, the VMT output from CalEEMod would be twice as high. If the parcel hub rate were used, the VMT output would six times as high.

As described in Responses B3-6, B3-12, B3-13, B3-14, and B3-15, the traffic assumptions are supported by substantial evidence further explained in the TIS that was prepared for the project, included in Appendix M of the Recirculated Draft EIR. The Technical Memorandum prepared by WSP and dated January 29, 2019, which was included as an appendix to the TIS, explains in great detail the basis for the trip generation rates used in the traffic analysis and air quality analysis. Further, the air quality analysis did not incorporate the VMT from the TIS as the VMT analysis for SB 743 uses a different methodology for air quality. The air quality analysis utilized default trip lengths provided in CalEEMod. Refer to Response A4-3 for a detailed discussion of CalEEMod default assumptions. As demonstrated in Response A4-3, since a project-specific truck trip length is not yet known, the use of CalEEMod defaults is appropriate for projects in the SJVAPCD and the city of Fresno and is consistent with standard practice. As such, the project's air quality analyses used the correct trip generation and VMT assumptions.

Further, the commenter states that GHG emissions could be much higher than assumed. However, as described in Response 2-2, the City evaluated the proposed project using the Consistency Checklist for consistency with the City's GHG Reduction Plan Update as discussed on pages 4.6-22 and 4.6-23 of the Recirculated Draft EIR. The project's Consistency Checklist is included in Appendix H of the Recirculated Draft EIR. As shown in the Consistency Checklist, the proposed project would be consistent with the applicable strategies from the GHG Reduction Plan Update. Therefore, the proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant effect on the environment, and impacts would be less than significant.

Response B3-65: This comment claims that a significant percentage of Fresno County trips have origins or destinations that are outside the county and claims that the Recirculated Draft EIR excluded all VMT outside of the county.

The commenter is incorrect in stating that the VMT analysis did not include or fully evaluate trips that originate/are destined outside Fresno County. As shown in Appendix G of the traffic study, the project VMT included employee trips that originated/were destined outside of Fresno County (internal-

external/external-internal trips). Therefore, the project VMT estimates accounted for trips originating from outside the Fresno COG ABM region as well.

In addition, as discussed in Response B3-14, truck trips were not included in the VMT analysis, consistent with the CEQA Guidelines Section 15064.3, subdivision (a), which states, "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." The technical guidance from OPR does say that heavy-duty truck VMT "*could be included*"; however, the Guidance goes on to state that this would be for modeling convenience and ease of calculation. Heavy-duty trucks are not included in the CEQA Guidelines for VMT analysis, are not included in the Fresno COG model, and therefore were not included in the VMT analysis. "An agency's use of a reasonable standard for gauging the significance of an impact may not be set aside on the ground the impact would have been found significant if other recognized standards had instead been used."

Response B3-66: This comment asserts that transportation demand management strategies, including implementation of pedestrian, bicycle, and transit linkages with surrounding land uses and neighborhoods and trip reduction programs consistent with SJVAPCD Rule 9410.

As discussed on page 4.10-11 of the Recirculated Draft EIR, there are no existing dedicated transit facilities within the study area for the proposed project. The proposed project is not located in an important transit corridor in the city; therefore, it is not anticipated that the construction of additional transit facilities would be required in the study area as a result of the proposed project. Further, as discussed on page 4.10-11, there are existing Class II bike lanes along Marks Avenue and Nielsen Avenue within the study area for the proposed project, in the vicinity of the project site. Pursuant to the City's Active Transportation Plan, future Class II bike lanes will be added along Belmont Avenue and Hughes Avenue within the project study area to improve bicycle and pedestrian accessibility and connectivity in the vicinity of the project site. In addition, as discussed on page 4.10-11, paved sidewalks are currently present intermittently on both sides of Belmont Avenue and Marks Avenue. Pursuant to the City's Active Transportation Plan, the City recommends pedestrian sidewalks to be constructed on Marks Avenue, Nielsen Avenue, Belmont Avenue, and Hughes Avenue within the study area. The proposed project would construct sidewalks along the project frontage on Marks Avenue, Nielsen Avenue, and Hughes Avenue. Sidewalks would be constructed pursuant to City standards and would increase pedestrian access and safety in the study area. Therefore, the commenter is incorrect that the Recirculated Draft EIR does not discuss bicycle and transit linkages with surrounding land uses and neighborhoods.

In addition, as discussed in Response A4-18, the proposed project would comply with all required SJVAPCD rules and regulations. In addition, as identified in Appendix H, Greenhouse Gas Reduction Plan Update Checklist, of the Recirculated Draft EIR, the project would have over 100 employees and would be required to comply with SJVAPCD Rule 9410.

Response B3-67: This comment includes the commenter's resume. The comment is noted, but it does not raise any significant environmental issues related to the project or the analysis contained in the Recirculated Draft EIR.

4.0 RECIRCULATED DRAFT EIR TEXT REVISIONS

This chapter presents specific changes to the text of the Recirculated Draft EIR that are being made to clarify any errors, omissions, or misinterpretation of materials in the Recirculated Draft EIR in response to comments received during the public review period and clarifications that are City-initiated. In no case do these revisions result in a greater number of impacts or impacts of a greater severity than those set forth in the Recirculated Draft EIR. Further, the clarifications and corrections provided in the following revisions do not constitute significant new information requiring recirculation of the Recirculated Draft EIR. Where revisions to the main text are called for, the page and paragraph are set forth, followed by the appropriate revision. Added text is indicated with double-underlined text, and deleted text is shown in strikeout.

4.1 SECTION 4.2, AIR QUALITY

The following text revision is made to page 4.2-35 of the Recirculated Draft EIR:

> For this HRA, the truck travel emissions were modeled as a series of volume sources along the on-site driveway~~, and~~ along ~~East~~North Marks Avenue going north and south of the site driveway, and along West Nielsen Avenue going east and west of the site driveway consistent with standard methodology.

4.2 SECTION 4.8, HYDROLOGY AND WATER QUALITY

The following text revision was made to page 4.8-13 of the Recirculated Draft EIR:

> ~~Project-specific~~The City's projected future water demand was calculated using the methodology from the 2020 UWMP, as described above, based on the following assumptions:
>
> - Figure 4-3 of the 2020 UWMP indicates there will be 5,201 acres of industrial uses in Fresno in 2025.
>
> - Table 4-6 of the 2020 UWMP indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.
>
> Therefore, ~~it is~~the 2020 UWMP assumed that industrial land uses~~, such as the proposed project,~~ will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres~~.~~; t~~T~~herefore, based on the assumptions for water demand associated with industrial land uses identified above, the ~~proposed project is~~2020 UWMP estimated ~~to demand~~ approximately 68.2 AFY for the project site.
>
> The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. In addition, at this time, the specific number of employees is not yet known. As such, the proposed project's water demand was calculated based on the

Water Study Demand Manual[1], which estimates that industrial uses demand approximately 0.9 acre-feet per year (AFY) per acre. The proposed project site is 48.03 acres; therefore, the proposed project is estimated to demand approximately 43.23 AFY. As such, the proposed project's water demand is below the 68.2 AFY planned for the project site in the 2020 UWMP.

4.3 SECTION 4.11, UTILITIES AND SERVICE SYSTEMS

The following text revision is made to page 4.11-5 of the Recirculated Draft EIR:

The FMFCD drainage area for stormwater from the project site is ~~b~~Basin Drainage Areas "AS" and "ZZ"~~, located southwest from the site~~.

The following text revision is made to page 4.11-14 of the Recirculated Draft EIR:

Once operational, water service to the project site would be provided by the City. New water within the project site would connect to the existing 14-inch main located on North Marks Avenue~~, and~~ the 16-inch main on North Hughes Avenue, and the 14-inch main on West Nielsen Avenue. The project would also include an on-site private 12-inch water main. Extension of the water infrastructure from the adjacent streets into the project site would be a routine part of the construction process analyzed in this EIR and would not have a material environmental impact. The water facility improvements would be limited to the project site and connection points to the adjacent, existing facilities. In addition, as described further in Threshold 4.11.2 below, the City has concluded that the City of Fresno's water system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045. Therefore, the proposed project would not require or result in the construction of new water facilities, or the expansion of existing facilities, which could cause a significant environmental impact, and the impact would be less than significant.

The following text revision is made to page 4.11-14 of the Recirculated Draft EIR:

Once operational, the City would provide wastewater collection and treatment for the proposed project, and maintains an existing 12- to 18-inch line located ~~in~~on West Nielsen Avenue, a 36-inch main on North Marks Avenue, and an 8-inch main on North Hughes Avenue. The proposed project includes the installation of a new on-site private 8-inch wastewater line that would connect to the City's existing line. Any sewer improvements associated with the proposed project would be designed and constructed to City standards. In addition, the City of Fresno Department of Public Utilities has determined that adequate sanitary sewer and wastewater services would be available to serve the proposed project subject to the payment of any applicable connection charges and/or fees and extension of services in a manner that is compliant with the Department of Public Utilities standards, specifications, and

[1] Sacramento, City of. 2018. *Water Study Demand Manual*. January.

policies. In addition, as described further in Threshold 4.11.2 below, the City has concluded that the City of Fresno's wastewater system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045. As such, the proposed project would result in less than significant impacts related to the construction or expansion of wastewater treatment facilities. Therefore, the proposed project would not require or result in the construction of new wastewater treatment or collection facilities, or the expansion of existing facilities, which could cause a significant environmental impact. Therefore, the impact would be less than significant.

The following text revision is made to page 4.11-18 of the Recirculated Draft EIR:

~~Project-specific~~The City's projected future water demand was calculated using the methodology from the 2020 UWMP, as described above, based on the following assumptions:

- Figure 4-3 of the 2020 UWMP indicates there will be 5,201 acres of industrial uses in Fresno in 2025.
- Table 4-6 of the 2020 UWMP indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.

Therefore, ~~it is~~the 2020 UWMP assumed that industrial land uses~~, such as the proposed project,~~ will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres~~.~~; t~~T~~herefore, based on the assumptions for water demand associated with industrial land uses identified above, the ~~proposed project is~~2020 UWMP estimated ~~to demand~~ approximately 68.2 AFY for the project site.

The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. In addition, at this time, the specific number of employees is not yet known. As such, the proposed project's water demand was calculated based on the Water Study Demand Manual[1], which estimates that industrial uses demand approximately 0.9 acre-feet per year (AFY) per acre. The proposed project site is 48.03 acres; therefore, the proposed project is estimated to demand approximately 43.23 AFY. As such, the proposed project's water demand is below the 68.2 AFY planned for the project site in the 2020 UWMP.

4.4 APPENDIX K, WATER SUPPLY ASSESSMENT

The following text revision is made to page 1 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR:

[1] Sacramento, City of. 2018. *Water Study Demand Manual*. January.

EXECUTIVE SUMMARY

The proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. As such, the project-specific water usage is not yet known. Project-specific water demand was calculated based on the Water Study Demand Manual[1], which estimates that industrial uses demand approximately 0.9 acre-feet per year (AFY) per acre. The proposed project site is 48.03 acres; therefore, the proposed project is estimated to demand approximately 43.23 AFY.

The project water demand evaluated in this WSA will be compared to the water service planned for future industrial uses in the City using the City's adopted 2020 UWMP methodologies, which was calculated on the basis of the following assumptions:

- Figure 4-3 of the 2020 UWMP indicates there will be 5,201 acres of industrial uses in Fresno in 2025.
- Table 4-6 of the 2020 UWMP indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.

Therefore, is the 2020 UWMP assumed that industrial land uses, will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres; therefore, based on the assumptions for water demand associated with industrial land uses identified above, the 2020 UWMP estimated approximately 68.2 AFY for the project site.

As identified above, the proposed project is estimated to demand approximately 43.23 AFY. As such, the proposed project's water demand is below the 68.2 AFY planned for the project site in the 2020 UWMP.

Since land use acreages and water demand in the 2020 UWMP were based on the City's General Plan land use designations for 2020 and buildout in 2056 and since the acreage associated with the proposed project was assumed Industrial in the 2020 UWMP, this WSA assumes that demand for water was accounted for in the 2020 UWMP. There is no evidence, in consideration of the calculated project water demand, that such demand exceeds that estimated in the 2020 UWMP. The adequacy of the water supply for the project is thus consistent with the basis of the analysis of the City's water supply in the adopted 2020 UWMP.

As such, this WSA concluded that the City of Fresno's water system has sufficient capacity to supply the proposed project and other projected demands within the City's service area through the year 2045.

[1] Sacramento, City of. 2018. *Water Study Demand Manual*. January.

The following text revision is made to page 5 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR:

> The project site is located in an urban area and is currently served by existing utilities, including: water, sanitary sewer, storm drainage, electricity, and natural gas infrastructure. Water service to the project site would be provided by the City. New water within the project site would connect to the existing 14-inch main located on North Marks Avenue, ~~and~~ the 16-inch main on North Hughes Avenue, and the 14-inch main on West Nielsen Avenue. The project would also include an on-site private 12-inch water main. The City would provide wastewater collection and treatment for the proposed project, and maintains an existing 12- to 18-inch line located ~~in~~on West Nielsen Avenue, a 36-inch main on North Marks Avenue, and an 8-inch main on North Hughes Avenue. The proposed project includes the installation of a new on-site private 8-inch wastewater line that would connect to the City's existing lines. The proposed project would include construction of a new curb and gutter along North Marks Avenue, West Nielsen Avenue, and North Hughes Avenue that would connect to the existing Fresno Metropolitan Flood Control District (FMFCD) stormwater system.

The following text revision is made to page 6 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR:

> The City of Fresno relies on groundwater from the North Kings Subbasin; surface water from the Central Valley Project (CVP), through a contract with the United States Bureau of Reclamation (USBR); Kings River water, through a contract with Fresno Irrigation District (FID); and recycled water to meet current and future water demands. The information provided on the following pages ~~are~~is extracted directly from the 2020 UWMP (Pages 6-1 through 6-32) in satisfaction of Water Code sections 10910(A)(1) and 10910(D)(2). This information is applicable to the entire City of Fresno municipal water service area, including the project site.

The following text revision is made to page 18 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR:

> As such, the supply projections in this plan limit the City's FID supply with the 29.0 percent cap~~, but if the agreement were revised in the future the City's FID allocation percentage could grow beyond 29.0 percent as the water service area expands~~.

The following text revision is made to page 45 of Appendix K, Water Supply Assessment, of the Recirculated Draft EIR:

> **Assumptions**
>
> ~~Project specific~~The City's projected future water demand was calculated using the methodology from the 2020 UWMP, as described above, based on the following assumptions:

- Figure 7 above (Figure 4-3 of the 2020 UWMP) indicates there will be 5,201 acres of industrial uses in Fresno in 2025.

- Table M above (Table 4-6 of the 2020 UWMP) indicates the projected water demand for industrial land uses in 2025 will be 7,410 AFY.

Therefore, ~~it is~~the 2020 UWMP assumed that industrial land uses~~, such as the proposed project,~~ will demand approximately 1.42 AFY per acre in 2025. The total project site is 48.03 acres; therefore, based on the assumptions for water demand associated with industrial land uses identified above, the 2020 UWMP estimated approximately 68.2 AFY for the project site.

Proposed Project Water Demand

~~The total project site is 48.03 acres. Therefore, based on the assumptions identified above, the proposed project is estimated to demand approximately 68.2 AFY.~~The project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. In addition, at this time, the specific number of employees is not yet known. As such, the proposed project's water demand was calculated based on the Water Study Demand Manual[1], which estimates that industrial uses demand approximately 0.9 AFY per acre. The proposed project site is 48.03 acres; therefore, the proposed project is estimated to demand approximately 43.23 AFY. As such, the proposed project's water demand is below the 68.2 AFY planned for the project site in the 2020 UWMP.

[1] Sacramento, City of. 2018. *Water Study Demand Manual*. January.

APPENDIX A

COMMENT LETTER B3 ATTACHMENTS

This page intentionally left blank

EXECUTIVE DEPARTMENT
STATE OF CALIFORNIA

PROCLAMATION OF A STATE OF EMERGENCY

WHEREAS beginning on June 16, 2021, a significant heat wave struck California, bringing widespread near-record temperatures well in excess of 100 degrees throughout the State (the "Extreme Heat Event"); and

WHEREAS as a result of this Extreme Heat Event, the National Weather Service issued an Excessive Heat Warning within the State; and

WHEREAS the Extreme Heat Event has and will continue to put significant demand and strain on California's energy grid; and

WHEREAS on June 16, 2021, the California Independent System Operator (CAISO) issued a Flex Alert, calling for voluntary electricity conservation from 5:00 PM to 10:00 PM on June 17, 2021 to mitigate impact to energy supplies during this Extreme Heat Event; and

WHEREAS the Extreme Heat Event is expected to last through at least June 18, 2021; and

WHEREAS it is necessary to take action to reduce the strain on the energy infrastructure and increase energy capacity during the Extreme Heat Event; and

WHEREAS it is critical that power plants in the State generate as much power as possible to satisfy the increased demand created by the Extreme Heat Event; and

WHEREAS under the provisions of Government Code section 8558, subd. (b), I find that conditions of extreme peril to the safety of persons and property exist due to the Extreme Heat Event throughout California; and

WHEREAS under the provisions of Government Code section 8625, subd. (c), I find that local authority is inadequate to cope with the magnitude and impacts of the Extreme Heat Event; and

WHEREAS under the provisions of Government Code section 8571, I find that strict compliance with various statutes and regulations specified in this Order would prevent, hinder, or delay appropriate actions to prevent and mitigate the effects of the Extreme Heat Event.

NOW, THEREFORE, I, GAVIN NEWSOM, Governor of the State of California, in accordance with the authority vested in me by the State Constitution and statutes, including the California Emergency Services Act, and in particular, Government Code sections 8567, 8571, 8625, and 8627, **HEREBY PROCLAIM A STATE OF EMERGENCY** to exist in California.

IT IS HEREBY ORDERED THAT:

1. In preparing for and responding to the Extreme Heat Event, all agencies of state government use and employ state personnel, equipment, and facilities or perform any and all activities consistent with the direction of the Governor's Office of Emergency Services and the State Emergency Plan. Also, all residents are to obey the direction of emergency officials with regard to this emergency in order to protect their safety.

2. For purposes of regulations concerning stationary generators, use of stationary generators during the Extreme Heat Event shall be deemed an "emergency use" under California Code of Regulations (CCR), title 17, section 93115.4, subd. (a)(30)(A)(2).

3. For purposes of regulations concerning portable generators, the Extreme Heat Event shall be deemed an "emergency event" under CCR, title 17, section 93116.1, subd. (b)(14), and a loss of electrical service shall be deemed "beyond the reasonable control of the owner or operator" under CCR, title 17, section 93116.2, subd. (a)(12)(A)(2). In addition, the Extreme Heat Event shall be deemed an "emergency event" under CCR, title 13, section 2452, subd. (j), and interruptions caused by the Extreme Heat Event shall be deemed an "unforeseen interruption of electrical power from the serving utility" under CCR, title 13, section 2453, subd. (m)(4)(E)(1).

4. In regulations concerning the use of auxiliary engines by ocean-going vessels berthed in California ports, the Extreme Heat Event shall be deemed an "emergency event" under CCR, title 17, section 93118.3, subd. (c)(14).

5. This Order shall be deemed to provide notice to reduce use of grid-based electrical power under CCR, title 17, section 93118.3, subd. (c)(14)(C), and notice under that same section that reduction is no longer necessary at 11:59 p.m. on June 19, 2021. Ships that are berthed at California ports between June 16, 2021 and June 19, 2021 shall not be required to use shore power until after 11:59 pm on June 22, 2021.

6. A ship operating on auxiliary engines pursuant to an "emergency event" under Paragraph 4 of this Order shall be deemed to qualify for an exemption under CCR, title 17, section 93118.3, subd. (d)(1)(E)(1)(a), and any visit occurring during the period described in Paragraph 5 of this Order shall be counted towards compliance under CCR, title 17, section 93118.3, subd. (d)(1)(F)(1).

7. The Air Resources Board shall exercise maximum discretion to permit the use of stationary and portable generators or auxiliary ship engines to reduce the strain on the energy infrastructure and increase energy capacity during the Extreme Heat Event.

8. The provisions of Water Code section 13385, subd. (i)(1)(A) as they pertain to daily average and instantaneous temperature limitations in waste discharge requirements for thermal power plants are suspended for any thermal power plant that maintains operations to abate the effects of the Extreme Heat Event. Any exceedance of the daily average or instantaneous temperature limitations resulting from maintaining operations during this time shall not constitute a violation for purposes of calculating mandatory minimum penalties under Water Code section 13385, subd. (i).

9. Permitting requirements or conditions of certification adopted by the Energy Commission pursuant to Public Resources Code, sections 25216.5, subd. (a) and 25500 et seq., as well as related permitting requirements adopted by local air quality management districts, that restrict the amount of power that a facility may generate, restrict the amount of fuel that a facility may use, or impose air quality requirements that prevent the facility from generating additional power during peak demand hours, from 3:00 p.m. to 10:00 p.m. or as otherwise needed to respond to the Extreme Heat Event, are suspended.

10. Any facility that operates in violation of permitting requirements or conditions of a certificate suspended by Paragraph 9 shall:

    (i) notify the relevant local air quality management district, the Energy Commission, and the Air Resources Board of its actions within 48 hours; and

    (ii) report additional fuel use, additional hours of operation, and energy produced by that additional use and operation to the relevant local air quality management district, the Energy Commission, and the Air Resources Board within 30 days of this Order.

11. Any permit, regulation or law prohibiting, restricting or penalizing the use of stationary or portable generators or auxiliary ship engines or other conduct allowed by this Order during the Extreme Heat Event is suspended.

12. The provisions in Paragraphs 2-9 of this Order shall expire at 11:59 p.m. on June 19, 2021, with the exception that, as provided in Paragraph 5, ships that are berthed at California ports between June 16, 2021 and June 19, 2021 shall not be required to use shore power until after 11:59 pm on June 22, 2021.

I FURTHER DIRECT that as soon as hereafter possible, this proclamation be filed in the Office of the Secretary of State and that widespread publicity and notice be given of this proclamation.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 17th day of June 2021.

GAVIN NEWSOM
Governor of California

ATTEST:

SHIRLEY WEBER
Secretary of State

2740 West Nielsen Avenue Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map No. P21-05930)

Summary

SCH Number	2022050265
Lead Agency	City of Fresno
Document Title	2740 West Nielsen Avenue Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map No. P21-05930)
Document Type	EIR - Draft EIR
Received	2/24/2023
Present Land Use	IH (Heavy Industrial) / Heavy Industrial
Document Description	The proposed project would result in the construction of four office/warehouse buildings that would be configured for heavy industrial uses by tenants that have not been identified. The proposed buildings would result in a total gross floor area of approximately 901,438 square feet. The buildings' exterior would be up to 44 feet high with an interior height of up to 36 feet and designed with a total of 201 loading dock doors on the north and south sides of the buildings. The four buildings would be comprised of the following: Building 1 would be 468,812 square feet and would provide 122 loading dock doors; Building 2 would be 248,786 square feet and would provide 46 loading dock doors; Building 3 would be 93,074 square feet and would provide 18 loading dock doors; and Building 4 would be 90,766 square feet and would provide 15 loading dock doors. A total of 594 on-site parking spaces would be provided for vehicles and trucks.

Contact Information

Name	Steven Martinez
Agency Name	City of Fresno, Planning and Development Department
Job Title	Planner
Contact Types	Lead/Public Agency
Address	2600 Fresno Street, Room 3043 Fresno, CA 93721
Phone	(559) 621-8047

Email	Steven.Martinez@fresno.gov

Location

Coordinates	36°44'39.408"N 119°50'23.964"W
Cities	Fresno
Counties	Fresno
Regions	Southern California
Cross Streets	northeast of intersection of North Marks Avenue and West Nielsen Avenue
Zip	93722
Total Acres	48.03
Parcel #	458-020-71 & 458-020-72
State Highways	180
Township	06
Range	14S
Section	20E

Notice of Completion

State Review Period Start	2/24/2023
State Review Period End	5/19/2023
State Reviewing Agencies	California Air Resources Board (ARB), California Department of Fish and Wildlife, Central Region 4 (CDFW), California Department of Parks and Recreation, California Department of Transportation, District 6 (DOT), California Department of Water Resources (DWR), California Highway Patrol (CHP), California Native American Heritage Commission (NAHC), California Natural Resources Agency, California Regional Water Quality Control Board, Central Valley Fresno Region 5 (RWQCB), Central Valley Flood Protection Board, Office of Historic Preservation, State Water Resources Control Board, Division of Drinking Water
Development Types	Industrial (Number of employees is unknown)(Sq. Ft. 901438, Acres 48.03, Employees 1)
Local Actions	Site Plan, Land Division (Subdivision, etc.)
Project Issues	Aesthetics, Agriculture and Forestry Resources, Air Quality, Biological Resources, Cultural Resources, Cumulative Effects, Energy, Flood Plain/Flooding, Geology/Soils, Greenhouse Gas Emissions, Hazards & Hazardous Materials, Hydrology/Water Quality, Land Use/Planning, Noise, Solid Waste, Transportation, Tribal Cultural Resources, Utilities/Service Systems
Local Review Period Start	2/24/2023

Local Review Period End 5/19/2023

Attachments

Draft Environmental Document [Draft IS, NOI_NOA_Public notices, OPR Summary Form, Appx,]

__Memo PDF 97 K
_2740 Nielsen_NOA PDF 172 K
_2740 W Nielsen Recirculated Public Review Draft EIR PDF 504 K
_City of Fresno Memo - 2740 W Nielsen Ave Project Recirculated DEIR PDF 469 K
2740 Nielsen Summary_Form PDF 612 K
2740 Nielsen_NOA PDF 164 K
2740 W Nielsen Appendices Vol 1_A - I PDF 45864 K
2740 W Nielsen Appendices Vol 2_J - M PDF 47112 K
2740 W Nielsen Public Review Draft EIR PDF 13595 K

Notice of Completion [NOC] Transmittal form

2740 Nielsen_NOC SIGNED 02 PDF 826 K

Disclaimer: The Governor's Office of Planning and Research (OPR) accepts no responsibility for the content or accessibility of these documents. To obtain an attachment in a different format, please contact the lead agency at the contact information listed above. You may also contact the OPR via email at state.clearinghouse@opr.ca.gov or via phone at (916) 445-0613. For more information, please visit OPR's Accessibility Site.

APPENDIX G

GREENHOUSE GAS REDUCTION PLAN UPDATE

This page intentionally left blank

GREENHOUSE GAS REDUCTION PLAN UPDATE

CITY OF FRESNO, CALIFORNIA

LSA

March 2020

This page intentionally left blank

GREENHOUSE GAS REDUCTION PLAN UPDATE

CITY OF FRESNO, CALIFORNIA

Submitted to:

City of Fresno
2600 Fresno Street #3043
Fresno, California 93721

Prepared by:

LSA
7086 North Maple Avenue, Suite 104
Fresno, California 93720
559.490.1210

Project No. CFO1802

March 2020

This page intentionally left blank

EXECUTIVE SUMMARY

The City of Fresno (City) is committed to providing a livable, equitable, and economically vibrant community through the reduction of greenhouse gas (GHG) emissions. By using energy more efficiently, harnessing renewable energy to power buildings, recycling waste, and enhancing access to sustainable transportation modes, the City will keep dollars in the local economy, create jobs, and improve the community's quality of life. To that end, the City has implemented a number of sustainability and conservation efforts and seeks to continue those efforts through local planning and partnerships. This GHG Reduction Plan Update (GHG Plan Update) integrates the City's past and current efforts with its future efforts to grow and thrive sustainably.

The City adopted its first GHG Reduction Plan (GHG Plan) in December 2014.[1] The GHG Plan established a target of reducing per capita GHG emissions in the city by 21.7 percent below 2020 business-as-usual (BAU) levels by 2020 and includes GHG reduction measures designed to achieve the reduction target. The GHG Plan is considered a "Qualified Plan," according to California Environmental Quality Act (CEQA) Guidelines §15183.5.[2] Since adoption of the GHG Plan, two significant regulations/decisions have been established. First, on September 28, 2016, Governor Brown signed Senate Bill (SB) 32 into law that sets a Statewide goal of reducing GHG emissions to 40 percent below 1990 levels by 2030. Additionally, on November 30, 2015, the California Supreme Court published its decision on the Newhall Ranch Specific Plan invalidating the Environmental Impact Report (EIR) for a variety of reasons, including the use of 29 percent below business-as-usual (BAU) as a threshold to determine significance of GHG emissions under CEQA without any supporting evidence. The GHG Plan Update ensures conformity with the mandates of California Supreme Court in the Newhall Ranch case and the State of California's latest GHG regulations. The GHG Plan Update re-evaluates the City's GHG reduction targets and existing reduction strategies from the 2014 GHG Plan. New goals and supporting measures are proposed to reflect and ensure compliance with changes in the local and State policies and regulations such as SB 32 and California's 2017 Climate Change Scoping Plan. The City's GHG inventory, based on the most recent data available for the year 2016 is evaluated and the future growth in emissions for the BAU and adjusted BAU (ABAU) scenarios (the ABAU scenario takes into account the State policies) for the years 2020, 2030, and 2035 are projected. The 2020 and 2030 forecast years are consistent with the goals identified in Assembly Bill (AB) 32 and SB 32, which identify Statewide GHG reduction targets by 2020 and 2030. The 2035 forecast year correspond to the City's General Plan horizon year and will allow the City to develop long-term strategies to continue GHG reductions.

1 FirstCarbon Solutions. 2014. Fresno General Plan Update, Greenhouse Gas Reduction Plan, prepared for the City of Fresno. July. Website: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2016/11/F-2-Greenhouse-Gas-Reduction-Plan.pdf (accessed December 2019).

2 CEQA Guidelines 15183.5 describes requirements of a GHG Reduction Plan that would mitigate cumulative levels of GHG emissions within a jurisdiction to a less-than-significant level and allows development project tiering from the GHG Reduction Plan.

The City's total GHG emissions in 2016 were 2,923,633 metric tons of carbon dioxide equivalent (MT CO_2e) (Table ES-A). Under the BAU scenario, in the absence of regulations and other measures to reduce GHG emissions, the City's BAU emissions in 2020 are estimated to be 3,092,486 MT CO_2e, or a 5.8 percent increase from 2016 emissions. By 2030, emissions are estimated to increase 19.7 percent from the 2016 level to 3,500,204 MT CO_2e. By 2035, emissions are estimated to increase 26.5 percent from the 2016 level to 3,697,738 MT CO_2e.

Table ES-A: City of Fresno 2016 Inventory Update and Business-as-Usual (BAU) Projections

Sector	2016 (MT CO_2e)	Percent of Total	2020 (MT CO_2e)	Percent of Total	2030 (MT CO_2e)	Percent of Total	2035 (MT CO_2e)	Percent of Total
Transportation	1,520,052	52	1,594,888	52	1,798,498	51	1,909,852	52
Commercial Energy	524,838	18	557,142	18	627,373	18	657,379	18
Residential Energy	479,371	16	514,053	17	579,546	17	603,951	16
Fugitive Emissions	270,130	9	288,573	9	335,316	10	357,008	10
Solid Waste	119,167	4	127,303	4	147,923	4	157,493	4
Industrial Energy	10,055	<1	10,506	<1	11,528	<1	12,035	<1
Agriculture Energy	20	<1	20	<1	20	<1	20	<1
Total	**2,923,633**	**100**	**3,092,486**	**100**	**3,500,204**	**100**	**3,697,738**	**100**

Source: City of Fresno 2016 Inventory Update (ICLEI Local Governments for Sustainability (2018). Compiled by LSA Associates, Inc. (2019).
Notes:
- Residential Energy Includes emissions from both electricity and natural gas.
- Commercial Energy includes emissions from both electricity and natural gas.
- Industrial Energy includes emissions associated with electricity.
- Agriculture Energy includes emissions associated with electricity.MT CO_2e = metric tons of carbon dioxide equivalent

Under the ABAU forecast (which represents State efforts in reducing GHG emissions within the city), emissions will be 2,132,326 MT CO_2e in 2020; 1,939,325 MT CO_2e in 2030; and 1,801,137 MT CO_2e in 2035 (Table ES-B).

Table ES-B: City of Fresno Adjusted Business-as-Usual (ABAU) Emissions

Sector	2016	2020	2030	2035
Transportation	1,520,052	1,170,329	1,131,034	1,072,955
Commercial Energy	524,838	355,121	290,950	255,226
Residential Energy	479,371	324,760	190,210	124,904
Fugitive Emissions	270,130	144,287	167,658	178,504
Solid Waste	119,167	127,303	147,923	157,493
Industrial Energy	10,055	10,506	11,528	12,035
Agriculture	20	20	20	20
Total	**2,923,633**	**2,132,326**	**1,939,325**	**1,801,137**

Source: Compiled by LSA Associates, Inc. (2019)

This GHG Plan Update assesses the previous GHG reduction targets identified in the 2014 GHG Plan and proposes new targets that are consistent with State policies. In order to bring the City of Fresno GHG Plan in-line with the State's GHG reduction goals, emission reduction targets have been

identified as shown in Table ES-C and Figure ES-1. Based on the City's ABAU Inventory, the City would meet the reduction target in 2020. In 2030 and 2035, the City would need to reduce emissions by 29,316 MT CO_2e and 209,463 MT CO_2e below the ABAU scenario, respectively, to meet the State-aligned target.

Table ES-C: State-Aligned GHG Emission Reduction Targets By Year

Sector	2010 [1]	2016	2020	2030	2035
BAU Emissions (MT CO_2e)	3,745,115	2,923,633	3,092,486	3,500,204	3,697,738
Adjusted BAU Emissions (MT CO_2e)	3,745,115	2,923,633	2,132,326	1,939,325	1,801,137
State-Aligned Target (Percent change from 1990)	—	—	0	-40	-50
State-Aligned Target (Percent change from 2010)	—	—	-15	-49	-58
State-Aligned Emissions Goal (MT CO_2e)	—	—	3,183,348	1,910,009	1,591,674
Reductions from Adjusted BAU needed to meet the State-Aligned Target (MT CO_2e)	—	—	Target Met	29,316	209,463

Source: Compiled by LSA Associates, Inc. (2019)
[1] Baseline (2010) emissions are from the City's 2014 GHG Reduction Plan.
BAU = Business-as-Usual
GHG = greenhouse gas
MT CO_2e = metric tons carbon dioxide equivalent

Figure ES-1: City of Fresno GHG Emissions Inventory, Forecast, and Targets

This GHG Plan Update provides a description of General Plan policies that support a reduction in GHGs from all sources within the City's ability to control or influence. These strategies enhance the effectiveness of State strategies by ensuring that the city is developed in ways that minimize emissions. In order to reach the long-term reduction targets, the City would also need to implement local reduction measures. These measures encourage Vehicle Miles Travel (VMT) reductions through mixed use and infill development, transportation demand management, development and penetration of electric vehicles (EVs), energy efficiency enhancement, water conservation, and

increased waste diversion. Public education and outreach would play a crucial role in educating stakeholders about the importance of implementing these measures.

Analysis of GHG emissions and potential climate change impacts for new development is required under CEQA. The GHG Plan Update provides strategies and guidelines for the reduction of GHG emissions in accordance with CEQA Guidelines Section 15183.5. A GHG Reduction Plan Consistency Checklist (Checklist) is presented to provide a streamlined review process for proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to CEQA.

Finally, the GHG Plan Update in itself is not enough to meet the reduction goals without a commitment to implementation and recurring monitoring. The GHG Plan Update identifies the process for implementing and monitoring the GHG reduction strategies. Through successful implementation of this GHG Plan Update, the City will demonstrate the potential economic, social, and environmental benefits of reducing GHG emissions and providing environmental stewardship within the community.

TABLE OF CONTENTS

EXECUTIVE SUMMARY i
TABLE OF CONTENTS v
FIGURES AND TABLES viii
LIST OF ABBREVIATIONS AND ACRONYMS ix
1.0 INTRODUCTION 1-1
1.1 PURPOSE 1-1
1.2 RELATIONSHIP TO THE GENERAL PLAN 1-2
1.3 ORGANIZATION AND PLAN CONTENT 1-2
1.4 BUILDING ON PRIOR ACTIONS 1-3
1.4.1 Fresno Green 2007 Sustainability Strategy 1-3
1.4.2 Zero Waste Strategic Action Plan 1-3
1.4.3 City of Fresno Urban Water Management Plan 1-4
1.4.4 Water Efficient Landscape Standards 1-4
1.4.5 Sustainable Groundwater Management Act 1-4
1.4.6 Recharge Fresno 1-4
1.4.7 General Plan Air Quality Update 2009 1-5
1.4.8 Fresno General Plan 1-5
1.5 CEQA TIERING AND STREAMLINING ANALYSIS OF GREENHOUSE GAS EMISSIONS 1-5
1.6 HOW DOES THE PLAN REDUCE GREENHOUSE GAS EMISSIONS? 1-6
1.7 RELATIONSHIP TO STATE AND FEDERAL ACTIONS TO REDUCE GREENHOUSE GAS EMISSIONS 1-7
1.8 COMMUNITY REDUCTION TARGETS 1-7
1.8.1 2020 Reduction Target 1-7
1.8.2 Targets After 2020 1-8
1.9 CHALLENGES AND OPPORTUNITIES 1-8
2.0 BACKGROUND INFORMATION 2-1
2.1 CITY OF FRESNO BACKGROUND 2-1
2.1.1 Location and Constraints to Growth 2-1
2.1.2 Transportation Facilities 2-1
2.1.3 General Plan Footprint and Buildout Statistics 2-2
2.2 CLIMATE CHANGE BACKGROUND 2-3
2.2.1 Global Warming Potential 2-3
2.2.2 Global Climate Change Trends 2-4
2.2.3 Greenhouse Gas Emission Inventories 2-5
2.3 EFFECTS OF CLIMATE CHANGE ON FRESNO 2-6
2.3.1 Wildfire 2-7
2.3.2 Water 2-7
2.4 FEDERAL, STATE, AND REGIONAL ACTIONS TO ADDRESS CLIMATE CHANGE 2-9
2.4.1 United States Environmental Protection Agency 2-9
2.4.2 State of California 2-10
2.4.3 Fresno County Council of Governments 2-12
2.4.4 San Joaquin Valley Air Pollution Control District 2-15

3.0 EMISSION INVENTORY 3-1
3.1 INVENTORY METHODS AND ASSUMPTIONS 3-1
3.1.1 Inventory Protocols 3-1
3.1.2 Baseline Inventory Source Categories 3-1
3.2 BASELINE INVENTORY SELECTION CRITERIA 3-2
3.3 BASELINE INVENTORY 3-2
3.4 BASELINE INVENTORY UPDATE 3-2
3.5 INVENTORY PROJECTIONS 3-4
3.5.1 BAU Inventory 3-4
4.0 REDUCTIONS FROM STATE REGULATIONS 4-1
4.1 MOTOR VEHICLES 4-1
4.2 ENERGY 4-2
4.2.1 Renewable Portfolio Standard (RPS) 4-2
4.2.2 Title 24, Part 6 Building Energy Efficiency Standards 4-2
4.2.3 California's Green Building Standard Code 4-2
4.3 REFRIGERANTS 4-3
4.4 REDUCTIONS FROM STATE REGULATIONS 4-3
4.4.1 Adjusted Business-as-Usual 4-3
4.4.2 Target Analysis 4-4
5.0 GREENHOUSE GAS REDUCTION STRATEGY 5-1
5.1 GHG PLAN REDUCTION STRATEGY 5-1
5.1.1 Land Use Strategies 5-2
5.1.2 Transportation Facilities Strategies 5-8
5.1.3 Transportation Demand Strategies 5-12
5.1.4 Energy Conservation Strategies for New and Existing Buildings 5-14
5.1.5 Water Conservation Strategies 5-17
5.1.6 Waste Diversion and Recycling and Energy Recovery 5-19
5.1.7 Municipal Strategies 5-22
5.1.8 Strategies for Existing Development 5-24
5.2 REDUCTION POTENTIAL FROM LOCAL MEASURES 5-26
5.2.1 Mobile Source Reductions 5-26
5.2.2 Energy Efficiency Reductions 5-28
5.2.3 Water Conservation 5-28
5.2.4 Waste Diversion and Recycling Reductions 5-30
5.2.5 Summary of Reductions from Local Measures 5-30
6.0 DEVELOPMENT PROJECT REQUIREMENTS 6-1
6.1 PROJECTS EXEMPT FROM CEQA 6-1
6.1.1 City Development Code 6-1
6.1.2 State Regulations 6-1
6.2 PROJECTS REQUIRING A DISCRETIONARY APPROVAL 6-1
6.2.1 New Discretionary Development Approval Process to Determine Consistency with GHG Reduction Plan Update 6-1
6.2.2 New Discretionary Development requiring a General Plan Amendment 6-2

7.0 GHG PLAN UPDATE IMPLEMENTATION MONITORING 7-1

7.1 GHG PLAN UPDATE IMPLEMENTATION 7-1
7.1.1 Administration and Staffing 7-1
7.1.2 Financing and Budgeting 7-2
7.1.3 Timelines for GHG reduction strategies Implementation 7-2
7.2 MONITORING THE GHG PLAN UPDATE 7-3
7.3 GHG PLAN UPDATE TRACKING TOOL 7-3

8.0 REFERENCES 8-1

APPENDICES

A: GENERAL PLAN POLICY LIST
B: GHG REDUCTION PLAN UPDATE: PROJECT CONSISTENCY CHECKLIST
C: GHG REDUCTION MEASURE FUNDING SOURCES

FIGURES AND TABLES

FIGURES

Figure 2-1: Global Atmospheric Concentration of CO_2 2-4
Figure 2-2: Carbon Dioxide Concentrations 1960 to 2019 2-5
Figure 2-3: Increases in Global Carbon Dioxide Emissions from Fossil Fuels 1900 to 2014 2-6
Figure 2-4: Fresno County Blueprint Preferred Scenario 2-14
Figure 3-1: City of Fresno 2016 Inventory Update and Business-as-Usual Projections 3-4
Figure 4-1: City of Fresno GHG Emissions Inventory, Forecast, and Targets 4-5
Figure 5-1: City of Fresno Growth Areas and Proposed BRT Corridors 5-5

TABLES

Table 2-A: General Plan Statistics 2-2
Table 2-B: General Plan Buildout Statistics 2-3
Table 2-C: Global Warming Potentials 2-4
Table 2-D: United States, California, and World GHG Emission Inventory (CO_2e) 2-6
Table 3-A: GHG Emissions by Sector for 2010 3-2
Table 3-B: Source Categories Comparison Between 2010 and 2016 Inventories 3-3
Table 3-C: City of Fresno 2016 Inventory Update and Business-as-Usual Projections 3-3
Table 4-A: Reductions from Statewide Measures 4-3
Table 4-B: City of Fresno Adjusted Business-as-Usual Emissions 4-4
Table 4-C: State-Aligned GHG Emission Reduction Targets By Year 4-4
Table 5-A: General Plan Chapter Cross Reference 5-1
Table 5-B: Strategies for Existing Development 5-25
Table 5-C: Emissions Reductions from Local Measures 5-31
Table 5-D: GHG Emissions and Targets Comparison 5-31

LIST OF ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
ABAU	adjusted business-as-usual
APS	Alternative Planning Strategy
BAU	business-as-usual
BMP	best management practices
BRT	Bus Rapid Transit
CALGreen	California's Green Building Standard Code
CAPCOA	California Air Pollution Control Officers Association
CAFE	Corporate Average Fuel Economy
CARB	California Air Resources Board
CBSC	California Building Standards Commission
CCAP	Climate Change Action Plan
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERP	Community Emission Reduction Plan
CH_4	methane
Checklist	GHG Reduction Plan Consistency Checklist
City	City of Fresno
CNG	compressed natural gas
CNRA	California Natural Resources Agency
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COG	Council of Governments
CPUC	California Public Utilities Commission
DWR	Department of Water Resources
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
EVs	electric vehicles
FAX	Fresno Area Express

FCMA	Fresno Clovis Metropolitan Areas
FEMA	Federal Emergency Management Agency
GHG	greenhouse gas
GHG Plan	Greenhouse Gas Reduction Plan
GHG Plan Update	Greenhouse Gas Reduction Plan Update
GHGRx	Greenhouse Gas Reduction Exchange
GSP	Groundwater Sustainability Plan
GVWR	gross vehicle weight rating
HFCs	hydrofluorocarbons
ICT	Innovative Clean Transit
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LEV	Low Emission Vehicle (Standards)
LOS	level of service
MEIR	Master Environmental Impact Report
MMT CO_2e	million metric tons of carbon dioxide equivalents
$MMTCO_2e$	Million metric tons of carbon dioxide equivalents
MPO	Metropolitan Planning Organization
MT CO_2e	metric tons of carbon dioxide equivalent
$MTCO_2e$	Metric tons of carbon dioxide equivalents: a measure of greenhouse gas emissions
N_2O	nitric oxide
ODS	ozone depleting substances
OPR	Office of Planning and Research
PEIR	Program EIR
PG&E	Pacific Gas and Electric
PV	photovoltaic
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
RWRF	Regional Wastewater Reclamation Facility
SAFE	Safer Affordable Fuel-Efficient
SB	Senate Bill

SBX7-7	Water Conservation Act of 2009
SCS	Sustainable Community Strategy
SGMA	Sustainable Groundwater Management Act
SJVAPCD	San Joaquin Valley Air Pollution Control District
SR-168	State Route 168
SR-180	State Route 180
SR-41	State Route 41
SR-99	State Route 99
TDM	Transportation Demand Management
UWMP	2010 Urban Water Management Plan
VMT	vehicle miles traveled
VOC	volatile organic compound
ZEB	zero-emission bus
ZEV	Zero-Emission Vehicles
ZNE	zero net energy

This page intentionally left blank

1.0 INTRODUCTION

1.1 PURPOSE

The City of Fresno (City) prepared its first Greenhouse Gas Reduction Plan (GHG Plan) in 2014 as a part of its General Plan and Master Environmental Impact Report (MEIR), which provided a clear mandate for actions on reducing GHG emissions with GHG specific policies and an implementation measure for the City to prepare a GHG Plan. The GHG Plan set a target to reduce GHG emissions by 21.7 percent below 2020 business-as-usual (BAU) levels of emissions by 2020 and included a suite of reduction measures designed to achieve the reduction target. In addition, the GHG Plan also suggested a monitoring program designed to monitor progress by annually documenting the 19 key indicators and citywide vehicle miles traveled (VMT) every 3 years. The GHG Plan discussed "interim" targets for years 2035 and 2050, pursuant to Executive Order S-03-05[3] and the Fresno Green Sustainability Strategy[4]. The GHG Plan included projections to show the amount of emission reductions needed to achieve State-aligned targets, but the GHG Plan did not include comprehensive strategies to meet the targets beyond 2020, because of the pending adoption of Statewide regulations for later years. The GHG Plan was considered a "Qualified Plan," using the criteria found in California Environmental Quality Act (CEQA) Guidelines §15183.5.

Since the adoption of the GHG Plan in December 2014, several events within the California legislature and a decision of the California Supreme Court that affects the GHG Plan have occurred. These events include the California Supreme Court's published decision on the Newhall Ranch Specific Plan, Governor Brown signing into law Senate Bill (SB) 32, and the California adoption of the 2017 Climate Change Scoping Plan.

On November 30, 2015, the California Supreme Court published its decision on the Newhall Ranch Specific Plan invalidating the Environmental Impact Report (EIR) for a variety of reasons, including the use of 29 percent below BAU as a threshold level of significance for GHG emissions. In this case, the Court found that the EIR did not contain any evidence supporting the threshold. On September 28, 2016, Governor Brown signed SB 32 into law. SB 32 sets a Statewide goal of reducing GHG emissions 40 percent below 1990 levels by 2030. The California Air Resources Board (CARB) was directed to develop a climate change scoping plan update that would provide the regulations and policies to achieve the 2030 reduction target. On December 14, 2017, the CARB finalized "California's 2017 Climate Change Scoping Plan," providing quantitative summaries of the regulations needed to achieve the 2030 reduction target.

This GHG Reduction Plan Update (GHG Plan Update) re-evaluates the City's existing GHG reduction targets and strategies, provides new goals and supporting measures to reflect and ensure compliance with changes in local and State policies, and strives to encourage economic growth to

[3] Executive Order S-3-05 laid out GHG reduction targets for State of California: by 2010 reduce GHG emissions to 2000 levels, by 2020 reduce GHG emissions to 1990 levels and by 2050 reduce emissions to 80 percent below 1990 levels.

[4] The Fresno Green Sustainability Strategy included a commitment to meet the 2020 AB 32 goal and to meet a reduction target of 80 percent below 1990 levels by 2050.

keep the city economically competitive while achieving GHG reductions and maintaining the "CEQA Qualified Plan" status.

1.2 RELATIONSHIP TO THE GENERAL PLAN

The City of Fresno General Plan and the MEIR were adopted in 2014. The General Plan provides a clear mandate for action on GHG emissions with GHG policies and an implementation measure for the City to prepare a Climate Action Plan as part of the General Plan and MEIR. The City developed the GHG Plan, which was concurrently approved with the General Plan and included as an appendix to the MEIR. The intent of the GHG Plan was to achieve compliance with State mandates by focusing on feasible actions the City can take to minimize the adverse impacts of growth and development on climate change and air quality. Since the General Plan was adopted and the MEIR was certified in 2014, some new local, State, and/or federal regulations have been enacted. In order to bring the General Plan into technical conformance with current local and State law, the City is also updating and converting the existing General Plan MEIR to a Program EIR (PEIR) with the goal of extending the life of the Fresno General Plan and the accompanying environmental document by up to 10 years. This update is intended to streamline implementation of the General Plan's programs and policies by supporting them with updated environmental analysis, a current regulatory framework, and mitigation measures, pursuant to CEQA. As part of the General Plan MEIR Update, the City's existing GHG Plan is also being updated to comply with current State regulations including SB 32, which has a Statewide goal of reducing emissions 40 percent below 1990 levels by 2030. This GHG Plan Update also reflects the changes in local policies to ensure these changes are accounted for and included in the City's GHG reduction measures and strategy.

1.3 ORGANIZATION AND PLAN CONTENT

The GHG Plan Update includes the following sections:

- A **Background** section that describes the environmental and regulatory setting for GHGs;
- An **Emission Inventory and Forecasts** section that accounts for the sources of emissions and forecasts to year 2020, 2030, and 2035;
- A **Statewide Reduction Strategy** section that summarizes the reductions from State regulations as outlined in the 2017 Climate Change Scoping Plan, and the reduced 2020, 2030, and 2035 emission forecasts that take into account State and local GHG reduction strategies;
- A **Local Reduction Strategy** section that includes the updates and refinements to the GHG reduction strategies from the 2014 GHG Plan, and new measures to meet the 2020, 2030, and 2035 reduction targets;
- A **Development Project Requirements** section that outlines the development review process used to ensure that future proposed development projects are consistent with the GHG Plan Update. A GHG Reduction Plan Update Consistency checklist to determine future project consistency with GHG Reduction Plan Update; and

- An **Implementation and Monitoring** section that outlines the steps and recommendations for effective implementation and monitoring of the GHG Reduction Plan Update.

1.4 BUILDING ON PRIOR ACTIONS

1.4.1 Fresno Green 2007 Sustainability Strategy

The City of Fresno has taken several important steps to improve the City's sustainability and reduce impacts that include GHG emissions. The Sustainability Strategy includes five Green Visions:

- **New City Beautiful:** Fresno will be nationally recognized for the innovative integration of buildings within their neighborhood context; good urban design; and giving priority to public health, open spaces, public art, historic preservation, urban forests, and the protection of natural habitats.

- **Sierra View 2025:** The Sierra Nevada mountain range will be clearly visible to all Valley residents by 2025. Public health will be improved by having cleaner air, enhanced public transportation, and additional opportunities for walking and cycling.

- **Solar Valley:** Fresno will become a leader in renewable energy use by maximizing new renewable sources as well as increasing the efficiency of its existing uses. Fresno will lead the State in the creation of related innovative technology and new business enterprises. With its abundant sunshine and population growth, the opportunity exists to improve air quality, reduce dependence on foreign energy, and provide attractive new jobs by harnessing solar and other types of renewable energy.

- **Green Enterprises and Economic Development:** The City of Fresno will become a center for innovative business enterprises that focus on the "triple bottom line" of providing environmental, economic, and social benefits.

- **City as Good Steward:** The City of Fresno will lead by example by greening up its facilities and practices, embracing a zero waste initiative, providing appropriate staff resources, and collaborating with other municipalities and agencies to develop regionally based Green programs.

1.4.2 Zero Waste Strategic Action Plan

The City of Fresno Zero Waste Strategic Action Plan, approved February 11, 2008, aims to achieve 75 percent diversion by 2012 and zero waste status by 2025.[5] Zero Waste is a philosophy and a design principle for the 21st Century that includes recycling but goes beyond recycling by taking a "whole system" approach to the vast flow of resources throughout society. It is a goal and guide for people to emulate sustainable natural cycles, where all discarded materials are resources for others to use.

[5] Fresno, City of. 2008. *City of Fresno – Zero Waste Strategic Action Plan*. Available online at: swalco.org/DocumentCenter/View/955/Zero-Waste-and-Sustainability---Fresno-CA---Zero-Waste-PDF?bidId= (accessed October 23, 2019).

1.4.3 City of Fresno Urban Water Management Plan

The Water Conservation Act of 2009 (SBX7-7) was enacted in November 2009. SBX7-7 requires urban retail water suppliers, such as the City of Fresno, to develop per capita water use targets to be met by 2015 and 2020. The overall statewide objective of SBX7-7 is to reduce per capita water use by 20 percent by the year 2020. The 2010 Urban Water Management Plan (UWMP) was adopted by the Fresno City Council on November 29, 2012 to meet this requirement. The UWMP contains water conservation best management practices (BMP) to achieve the required reductions in water use. The 2010 UWMP was updated in 2015[6] and describes the City's water demands and supplies, reliability and water conservation strategies. The 2015 UWMP includes data covering the years from 2011 to 2015 and was adopted by the City Council on June 23, 2016.

1.4.4 Water Efficient Landscape Standards

The City has adopted water conserving landscape requirements that are specified in the City Municipal Code (Section 6-522. Water Efficient Landscape Standards). These requirements define standards and procedures for the design, installation, and management of landscapes in order to utilize available plant, water, land, and human resources to the greatest benefit of the people of the city.

1.4.5 Sustainable Groundwater Management Act

In September 2014, Governor Brown signed legislation requiring that California's critical groundwater resources be sustainably managed by local agencies. The Sustainable Groundwater Management Act (SGMA) provides a framework for the sustainable management of groundwater supplies by local agencies, with a role for State intervention when necessary to protect the resource. The SGMA requires that Groundwater Sustainability Plans (GSPs) be developed for medium- and high-priority groundwater basins identified within the Department of Water Resources (DWR) Bulletin 118 report. Fresno county overlies five groundwater subbasins; Kings, Madera, Delta-Mendota, Westside, and Pleasant Valley. With the exception of Pleasant Valley, the four other basins are currently designated by DWR as high priority and subject to a condition of critical overdraft. The SGMA does not apply outside of mapped groundwater basins. The SGMA defines a process and timeline for local agencies to achieve the goal of sustainable management of groundwater basins. It also provides tools and authorities to take the necessary steps to achieve that goal. For local agencies involved in implementation, the requirements are significant and can be expected to take years to accomplish. As a first step, in March 2015, the Fresno County Board of Supervisors formed a workgroup to advise the Board of Supervisors regarding items relating to the SGMA.

1.4.6 Recharge Fresno

Recharge Fresno is the City's program to improve the pipelines and water system facilities that will capture, treat, and deliver water to Fresno homes and businesses, including surface water from the Sierra Nevada Mountains. This program has the following objectives: ensure a reliable and sustainable water supply for Fresno's present and future prosperity by increasing the available

[6] Fresno, City of. 2016. *2015 Urban Water Management Plan*. Available online at: www.fresno.gov/publicutilities/wp-content/uploads/sites/16/2016/11/CityofFresno2015UWMP_adopted.pdf (accessed October 23, 2019).

water supply; bring new, treated surface water from the Sierra Nevada Mountains to our community; improve natural and intentional groundwater recharge; maintain focus on conservation and its role in ensuring a sustainable water supply for Fresno; and ensure a safe and reliable water supply.

1.4.7 General Plan Air Quality Update 2009

The Air Quality Update satisfied the requirements of AB 170 that mandated cities and counties of the San Joaquin Valley to address air quality in their General Plans. Many of the goals, policies, and implementation measures that reduce air pollutant emissions also reduce GHGs. In addition, the Air Quality Update included GHG specific policies that are carried forward into the General Plan and formed the basis of the strategy defined in the existing GHG Plan. The GHG Plan Update is built upon the strategies identified in the existing GHG Plan.

1.4.8 Fresno General Plan

The Fresno General Plan was adopted in 2014 and includes the Resource Conservation Element that has objective RC-5, which requires the City to take the necessary and cost-effective actions to achieve and maintain reductions in GHG emissions. The General Plan specifies implementing policies (RC-5-a to RC-5-g) to achieve this objective. The policy RC-5-a requires the City to "Support State Goal to Reduce Statewide GHG Emissions" and RC-5-b requires developing a "GHG Plan" that should be periodically updated to reflect the State GHG regulations. Policy RC-5-b provides the following outlines to achieve objective RC-5:

- A baseline inventory of all known or reasonably discoverable sources of greenhouse gases (GHGs) that currently exist in the city and sources that existed in 1990 (Updated to 2010).
- A projected inventory of the GHGs that can reasonably be expected to be emitted in the city in the year 2035 in accordance with discretionary land use decisions pursuant to this General Plan and foreseeable communitywide and municipal operations.
- A target for the reduction of emissions from those identified sources.
- A list of feasible GHG reduction measures whose purpose shall be to meet the established local reduction target, including energy conservation and "green building" requirements in municipal buildings and private development.
- Periodically update municipal and community-wide GHG emissions inventories to determine the efficacy of adopted measures and to guide future policy formulation needed to achieve and maintain GHG emissions reduction targets.

1.5 CEQA TIERING AND STREAMLINING ANALYSIS OF GREENHOUSE GAS EMISSIONS

New development that would occur with the buildout of the General Plan must address GHG impacts to comply with CEQA. The California legislature has adopted tiering and streamlining provisions in SB 97 that encourage cities to adopt GHG reduction plans as a mechanism to assist with project CEQA

compliance. According to the CEQA Guidelines Section 15183.5,[7] GHG reduction plans and CAPs must meet the following criteria in order to use CEQA tiering and streamlining provisions:

A. Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;

B. Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable;

C. Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area;

D. Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;

E. Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels;

F. Be adopted in a public process following environmental review.

This GHG Plan Update is structured to meet the streamlining criteria listed above. Project compliance with the applicable General Plan policies and strategies identified in the Checklist would result in less-than-significant impacts related to GHG emissions.

1.6 HOW DOES THE PLAN REDUCE GREENHOUSE GAS EMISSIONS?

The largest source of GHGs is the combustion of carbon containing fuels resulting in carbon dioxide (CO_2). Although there are many other GHGs, the GHG Plan Update emphasizes actions under the City's control or influence that can reduce CO_2 emissions. Other GHGs such as methane (CH_4), nitric oxide (N_2O) and refrigerants such as hydrofluorocarbons (HFCs) are addressed in the plan, but have fewer sources and fewer control opportunities at the City level.

Strategies to reduce Citywide GHG emissions include:

- Improve the efficiency of the vehicles so they can achieve the same amount of work using less fuel (e.g., improve aerodynamics in cars and trucks/low friction oils).
- Move to low carbon power generation with zero or low GHG facilities such as solar, wind, biofuels.
- Improve the efficiency of the combustion process in the City-owned facilities to obtain more energy from the fuel being burned (e.g., high-efficiency burners, better fuels).

[7] CEQA Guidelines 15183.5 describes requirements of a GHG Reduction Plan that would mitigate cumulative levels of GHG emissions within a jurisdiction to a less-than-significant level and allows development project tiering from the GHG Reduction Plan.

- Conservation programs to reduce water use (reduced energy for water pumping and transport).
- Sequestration in urban forests (storing greenhouse gases).
- Reduce municipal waste to reduce emissions from transport and decomposition (e.g. recycling, reuse, diversion).

The GHG Plan Update provides a comprehensive approach utilizing different GHG reduction strategies to achieve emission reductions sufficient to demonstrate consistency with State of California targets. The GHG Plan Update builds on the General Plan policies and implementation measures. Where needed, the GHG Plan Update provides more details to clarify and focus action and to streamline implementation.

1.7 RELATIONSHIP TO STATE AND FEDERAL ACTIONS TO REDUCE GREENHOUSE GAS EMISSIONS

Efforts by cities to reduce GHGs are an important part of larger effort implemented by the State of California and to a lesser degree the federal government. Limited action has taken place on the federal level to reduce GHG emissions, making State of California actions the most important to the City. California has implemented ambitious control strategies to reduce GHG emissions. The State recognizes the magnitude of the challenge of reducing GHGs to the extent needed to prevent catastrophic effects of climate change is such that reductions throughout the state, including those at the local level, are required. Climate change is a global problem that will take unprecedented cooperation and action at international, national, state, and local levels. California has chosen to be a leader in this effort and a model for others to follow.

1.8 COMMUNITY REDUCTION TARGETS

Future development anticipated by the City of Fresno creates challenges and opportunities for reducing GHG emissions sufficiently to ensure that growth will not hinder or obstruct the implementation of State GHG regulations including AB 32 and SB 32. Cities with relatively high rates of growth, such as Fresno will produce a larger share of GHG emissions in the future compared with slow-growing and built-out parts of the State. However, new development presents opportunities, with its ability to incorporate the latest technologies into buildings to reduce energy use and its ability to build complete neighborhoods and commercial areas in ways that reduce vehicle travel. The policy mechanisms such as SB 743 further support environmentally beneficial development by allowing CEQA to facilitate the implementation of transit-oriented infill development.

1.8.1 2020 Reduction Target

AB 32 requires CARB to reduce Statewide GHG emissions to 1990 levels by 2020. As part of this legislation, CARB was required to prepare a “Scoping Plan” that demonstrates how the State will achieve this goal. The Scoping Plan was first adopted in 2011 and in it local governments were described as “essential partners” in meeting the Statewide goal, recommending a GHG reduction level of 15 percent below 2005 to 2008 level, depending on when a full emissions inventory is available, by 2020.

Reductions will be achieved by existing development and new projects. Residents of new development projects will achieve lower per capita rates than residents of existing development. This is because of greater energy efficiency in new structures and lower motor vehicle travel resulting from the project designs and higher development densities anticipated from General Plan implementation.

1.8.2 Targets After 2020

The CARB released the First Update to the Climate Change Scoping Plan on February 10, 2014 (CARB 2014). The draft update emphasized the need for a mid-term target between 2020 and 2050 to provide a continuum of action to reduce cumulative emissions. The EO B-30-15 and SB 32 required CARB to reduce Statewide GHG emissions to 40 percent below 1990 levels by 2030. The EO B-30-15 further stated that the emission reduction target of 40 percent below 1990 levels by 2030 is an interim-year goal to make it possible to reach the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050. The order directs CARB to provide a plan with specific regulations to reduce Statewide sources of GHG emissions. The Executive Order does not include a specific guideline for local governments. The 2017 Scoping Plan recommends local plan level GHG emissions reduction goals (CARB 2017).

At the growth rates projected for General Plan buildout, the city could continue to grow through 2050 without designating additional land for development. The General Plan and the GHG Plan Update ensure that the City of Fresno will do its part of reducing GHG emissions for the short-term (2020) and the long term (2050).

1.9 CHALLENGES AND OPPORTUNITIES

The effects of GHG emissions are cumulative. Global warming is the result of emissions from every source on the globe that combine to increase GHG concentrations in the atmosphere. Scientific evidence supports the need for drastic worldwide reductions to prevent catastrophic climate change. According to the Intergovernmental Panel on Climate Change (IPCC) to limit the global warming to 1.5 degree Celsius above pre-historic levels the world would have to curb its carbon emissions by at least 49 percent of 2017 levels by 2030 and then achieve carbon neutrality by 2050 (Nature 2018). This leads to the following questions:

- What is California's responsibility for reducing emissions?
- What is local government's responsibility for reducing emissions?
- What is an individual development project's responsibility for reducing emissions?
- What is each person's responsibility for reducing emissions?

The government structure in the United States with its checks and balances limits the power of the states to take action to reduce GHGs. For example, states are not allowed to interfere with interstate and international commerce; however, powers that are not vested in the federal government are reserved for the states. Individual rights for people to live how and where they want are also highly prized. This structure creates challenges for reducing GHG emissions that touch every sector of the economy and that are greatly influenced by individual choices and actions. With uneven action among the states and nations, the potential exists for regulations to cause businesses simply to relocate their emissions to nations, states, or cities with weak or no regulations. Fortunately, many

actions that reduce GHG emissions produce multiple benefits that offset the cost of implementation. However, it must be recognized that individuals or organizations implementing the action may not directly benefit from cost savings or may have difficulty with initial capital costs.

A thorough discussion of regulatory authority for GHG emissions is provided in Section 2. In short, the State has broad authority to regulate GHG emission sources. It has authority to regulate GHGs from motor and transit vehicles, power generation, and industrial processes, and sets efficiency standards for buildings, lighting, appliances, water use, and waste management/recycling. On the other hand, local government's role is mostly a supportive one. Local government is called upon to support state programs and to use its land use authority and police power to reduce GHG impacts. For example, local government is authorized by the State to adopt ordinances that exceed energy standards for buildings and exceed water conservation and recycling mandates. Through the development review process and CEQA, local government can require or encourage project designs that produce fewer vehicle trips and miles traveled and include mitigation measures with which projects must comply as conditions of approval.

Individual choice plays an important role in reducing GHG emissions. The State can mandate increasing numbers of EVs to be sold in California to meet emission standards, but it cannot force people to buy them. It can mandate energy efficient appliances and buildings but cannot make people turn out the lights and turn down the thermostat to save energy. It cannot prevent people from buying more and bigger televisions. However, the State and the City can provide incentives and disincentives that affect choice to align with the goal of reducing GHG emissions.

This page intentionally left blank

2.0 BACKGROUND INFORMATION

GHG emissions and climate change are complex issues that are the topics of hundreds of books, research papers, and policy documents. This section of the GHG Plan Update provides a brief overview of climate change and the local factors that affect the GHG emission inventory. The following information provides a discussion in a city of Fresno context.

2.1 CITY OF FRESNO BACKGROUND

The GHG Plan Update uses population, employment, and housing statistics as the basis for estimating current and future year emissions and reduction targets.

2.1.1 Location and Constraints to Growth

The city of Fresno is located in Fresno county, which is generally located in the center of the San Joaquin Valley, the most productive agricultural region in the nation and the world. Fresno's central location in California between San Francisco (184 miles) to the north and Los Angeles (222 miles) to the southwest has made it an important regional center.

There are no significant physical barriers to Fresno's future growth; however, political boundaries and policy considerations are very important in shaping future growth. The San Joaquin River and the Fresno/Madera County line run along the northern edge of the city. The city of Clovis abuts Fresno to the northeast and east, preventing growth in that direction. The land southeast, south and west are mostly prime farmland. The southeast area is a long-term growth area in the General Plan. No expansion of the sphere of influence is planned in the General Plan.

2.1.2 Transportation Facilities

The city of Fresno is crossed by two important State highways used for regional travel and commerce. State Route 99 (SR-99) runs northwest/southeast through the city, connecting Fresno to northern and southern California. State Route 41 (SR-41) connects Fresno to the Central Coast and is a main route to Yosemite National Park. SR-41 also acts as a primary commuter facility between northern and southern parts of Fresno. State Route 168 (SR-168) runs north/east to Clovis acting as a commute facility and beyond to the Sierra Nevada. SR-168 intersects with State Route 180 (SR-180), which runs east/west through the city, connecting Fresno with the communities of western Fresno county and with Kings Canyon and Sequoia National Parks.

Fresno is on the California High Speed Rail route and a station is planned for downtown Fresno. High Speed Rail is anticipated to be a major catalyst for development and redevelopment in Fresno, although the General Plan is not reliant on it to achieve its stated infill, development, and redevelopment goals. Fresno currently receives rail service from Amtrak. The City of Fresno's Transportation Department, via Fresno Area Express (FAX), provides bus transit service. FAX offers

17 fixed-route bus lines and Handy Ride Paratransit Service[8] FAX operates a modern clean and green fleet of over 100 buses.

2.1.3 General Plan Footprint and Buildout Statistics

The city of Fresno has a substantial development footprint. The General Plan Planning Area is 166 square miles (106,027 acres), which includes the 162 square miles (103,570 acres) sphere of influence, and the 4 square miles (2,486 acres) North Area, located at the northern tip of the city. The sphere of influence consists of both the incorporated 113 square mile city (72,224 acres) and the 49 square mile unincorporated county (33,803 acres) land. Some of the unincorporated land is completely surrounded by the city of Fresno and is referred to as a "county island," whereas other unincorporated land lies adjacent to the outer fringe of the city.

The sphere of influence is a boundary that encompasses lands that are expected to ultimately be annexed into the city. Until annexed, the lands are unincorporated and fall under the jurisdiction of the County of Fresno.

In accordance with the requirements of the State of California, the Local Agency Formation Commission (LAFCO) authorizes a "sphere of influence" around municipalities as the probable physical boundary and ultimate service area of that government.

Table 2-A shows the acreage within the General Plan Planning Area when the General Plan was approved.

Table 2-A: General Plan Statistics

Land Use Designations	General Plan Acreage
Residential	46,043
Commercial	6,913
Industrial	9,578
Mixed use	4,223
Public facilities	17,671
Open space	3,001
Other	18,598
TOTAL	**106,027**
Projected Population at Build-out	970,000

Source: City of Fresno Planning and Development Department (2019)

Table 2-B provides additional detail in terms of land use type for existing development and development anticipated with the continued implementation of the General Plan. The General Plan envisions an increase in the amount of multi-family residential compared with single-family residential development. The City assumes buildout of the General Plan Planning Area would occur after 2056.

[8] Fresno, City of, 2019. Department of Transportation, Fresno Area Express Routes. Website: www.fresno.gov/transportation/fax/routes (accessed October 23, 2019).

Table 2-B: General Plan Buildout Statistics

Land Use	Existing Development		General Plan Implementation		Incremental Increase	
	MSF	Acres	MSF	Acres	MSF	Acres
Single-Family Residential	109,000	26,147	169,626	38,961	60,626	12,814
Multiple-Family Residential	62,288	3,496	146,826	6,605	84,538	3,109
Commercial/Office/Public Facility	66.4	14,804	129.7	26,517	63.3	11,712
Mixed Use	0.1	10	20.9	4,213	20.8	4,223
Industrial	72.8	6,765	113.3	9,578	40.5	2,813
Open Space	—	12,288	—	1,546	—	-10,742
Agriculture	—	11,714	—	736	—	-10,978
Vacant	—	12,522	—	0	—	-12,522
Other	—	18,281	—	17,861	—	-420
Total	—	**106,027**	—	**106,027**	—	**0**
Population (persons)	545,000		970,000		425,000	

Source: City of Fresno Development and Resource Management Department (2012).
msf = million square feet

The growth statistics reveal two important points. First, substantial growth is projected for Fresno over the coming decades and that growth will increase GHG emissions. Second, the proposed mix of land uses that would accommodate the growth in population will increase development density.

Increased density when combined with a strong pedestrian and transit orientation can reduce motor vehicle travel and related GHG emissions.

2.2 CLIMATE CHANGE BACKGROUND

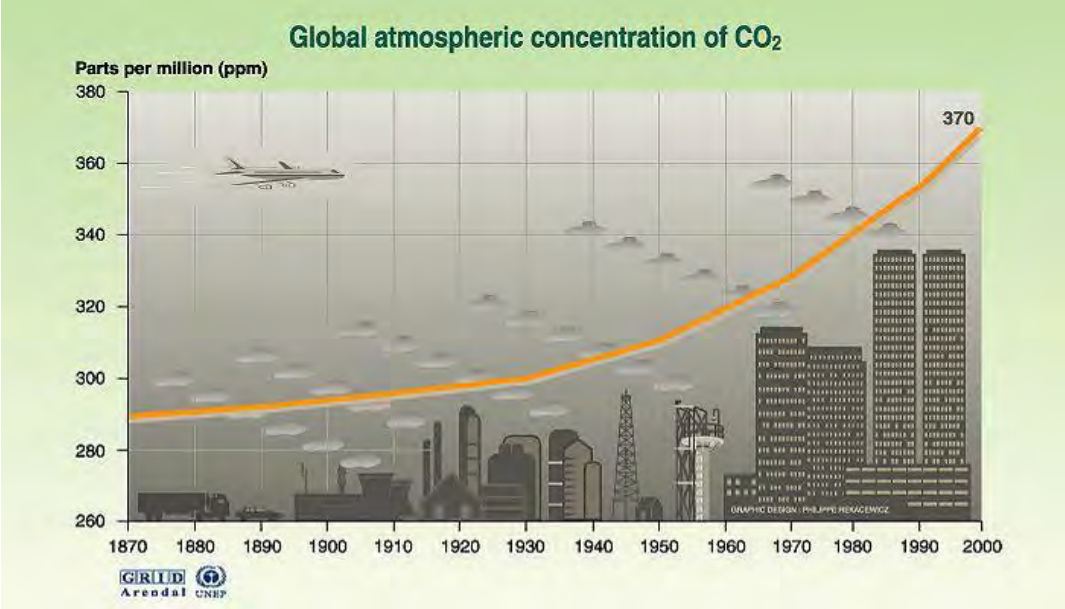
Climate scientists refer to gases that trap heat in the atmosphere as greenhouse gases. The effect is analogous to the way a greenhouse retains heat. The energy influx is maintained by three main factors: the amount of energy coming in, which depends on the earth's distance from the sun and solar activity; the albedo (the ability of the earth's surface to reflect light); and the chemical composition of the atmosphere. The presence of GHGs in the atmosphere regulates the earth's temperature.

The chemical composition of the atmosphere changes over time. Natural processes and human activities emit GHGs. As shown in Figure 2-1, carbon dioxide concentrations in the atmosphere have increased over time. The global atmospheric concentration of carbon dioxide (CO_2) data in Figure 2-1 prior to 1958 is from ice core measurements and post-1958 data are from the Mauna Loa, Hawaii site (NOAA 2019).

2.2.1 Global Warming Potential

GHGs have varying global warming potential and atmospheric lifetimes. Carbon dioxide, the reference gas for global warming potential, has a global warming potential of 1. The calculation of the carbon dioxide equivalent (CO_2e) is a consistent methodology for comparing emissions, since it normalizes various emissions to a consistent metric. Methane's warming potential of 21 indicates that methane has a 21 times greater warming effect than carbon dioxide on a molecule per

Figure 2-1: Global Atmospheric Concentration of CO_2



molecule basis. A carbon dioxide equivalent is the mass emissions of an individual GHG multiplied by its global warming potential. Emissions are typically shown in MT CO_2e or a million times that, million metric tons of carbon dioxide equivalents (MMT CO_2e). Global warming potentials are shown in Table 2-C.

Table 2-C: Global Warming Potentials

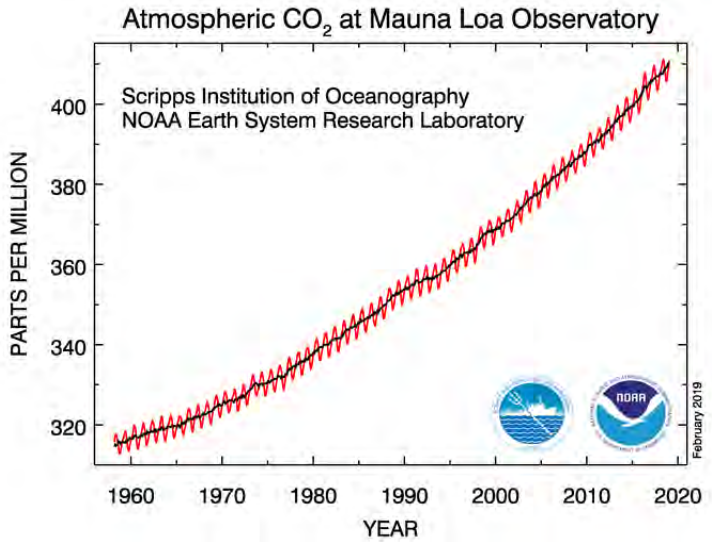
Greenhouse Gas	Global Warming Potential
Carbon dioxide (CO_2)	1
Methane (CH_4)	21
Nitrous oxide (N_2O)	310

Source: Intergovernmental Panel on Climate Change (2007).

2.2.2 Global Climate Change Trends

Figure 2-2 provides a more detailed look of concentrations since 1960 showing continuing steady increases even with international actions that have been taken to date. The National Oceanic and Atmospheric Administration reported that the global average CO_2 concentration was 410 parts per million (ppm) in 2019 (NOAA 2019).

Figure 2-2: Carbon Dioxide Concentrations 1960 to 2019



Source: NOAA 2019: Trends in Atmospheric Carbon Dioxide. Full Mauna Loa CO_2 Record.

2.2.3 Greenhouse Gas Emission Inventories

Emission inventories are databases that list by source and pollutant the amount of air pollutants discharged into the atmosphere during a given period of time. Inventories can range from individual businesses, cities, counties, states, nations, to global in scope. Emission inventories are used to help determine significant sources of air pollutants, establish emission trends over time, and target regulatory actions.

Emissions of GHGs are a true cumulative impact. Emissions anywhere and everywhere in the world contribute to increased concentrations of GHGs in the atmosphere and the potential for climate change. Viewing the emissions output at global, national, state, and local levels is important to understanding the scale of the problem and the relative contribution of each level of government organization.

Global carbon emissions from fossil fuels have increased rapidly since 1900 and continue to increase at an even faster pace since the year 2000 (EPA 2018). Figure 2-3 shows this trend with particularly dramatic increases after World War II and more recently with rapid increases in China and other rapidly industrializing nations in the last decade. Emissions have increased over 600 percent since 1950. The increases in emissions are consistent with the atmospheric concentrations shown in Figure 2-2 and Figure 2-3.

GHG 2017 inventory for all sources in the United States and California is shown in Table 2-D. The percentage of emissions for the United States is 12.2 percent of the global total yet accounts for only 4.4 percent of the world's population. This places extra responsibility for the United States to take a leadership role and to act as a model for other nations to follow. Although previous international efforts have not made substantial progress in slowing the growth in GHG emissions,

Figure 2-3: Increases in Global Carbon Dioxide Emissions from Fossil Fuels 1900 to 2014

Source: EPA (2018).

Table 2-D: United States, California, and World GHG Emission Inventory (CO_2e)

Inventory	MMT CO_2e	Percent of Total
California (2017)	424.1	0.8
United States (2017)	6,457	13.09
World (2016)	49,300	100

Sources: CARB 2019, EPA 2018, and PBL 2017.
CO_2e = carbon dioxide equivalent
GHG = greenhouse gas
MMT = million metric tons

the United States has many reasons to change to lower carbon economy. For example, reducing energy imports and increased energy security, cost savings from efficiency, employment in renewable energy.

2.3 EFFECTS OF CLIMATE CHANGE ON FRESNO

Scientific research indicates that an increase in global average temperature of 2 degrees Centigrade (°C) (3.6 degrees Fahrenheit [°F]) above pre-industrial levels poses risks to natural systems and human health and well-being. This is only 1.1°C (2.0°F) above present levels. In order to avoid temperatures above those levels, studies indicate that a concentration at or below 450 ppm CO_2e must be achieved. Other studies indicate a stable concentration of about 400 ppm CO_2e will be needed to prevent the 2.0°C (3.6°F) increase. As shown in Figure 2-2 above, readings at the Mauna Loa monitoring station have already exceeded 410 ppm CO_2e and the international average is likely to exceed 400 ppm in a few years. The existing trend is likely to cause substantial harm to future generations and nature (CARB 2014).

Despite efforts to reduce GHG emissions, these gases can remain in the atmosphere for hundreds of years and emissions are expected to continue to increase globally for some time. Therefore, it is probable that climate change impacts will be observed. The impacts are predicted to vary by region. In California, climate change may result in a decreased water supply, sea level rise, and increased wildfires, to name a few. In order to manage these impacts, the city's vulnerability to these impacts is assessed and strategies have been developed to adapt to the projected changes.

Determining potential future impacts from climate change is an evolving process. The 2009 California Climate Adaptation Strategy provides a proactive foundation for an ongoing adaptation process within California for the sectors with the greatest risks. The document provides strategies for state and local governments to adapt to climate change (CNRA 2009). By incorporating applicable strategies as Implementation Strategies, the City is taking a proactive approach to ensure that impacts to the city are minimized.

The following discussion describes the main risks from climate change that could be experienced in the city of Fresno. The General Plan sections related to safety, public utilities, hydrology, and resource conservation contain policies that would decrease the risks to residents of the city. In general, City programs and policies to respond to existing levels of risk may need to be implemented more frequently or expanded to protect city residents and resources from potential impacts from climate change. Response to more or bigger events can be expected to demand more city resources.

2.3.1 Wildfire

The city of Fresno is surrounded by irrigated agricultural lands, rural residential development, and the city of Clovis that are not subject to wildfire to any great extent. Fallow farmland and vacant land with weedy growth can become a fire hazard if not maintained. The San Joaquin River bluff area along the city's northern boundary could experience longer dry seasons and greater threats from wildfire.

2.3.2 Water

One of the potential impacts of climate change is a loss of natural snowpack, particularly the Sierra Nevada snowpack. Snowmelt provides an annual average of 15 million acre-feet of water, released between April and July each year (Department of Water Resources 2008). The California Department of Water Resources projects that the Sierra snowpack will experience at least a 25 percent reduction from its historic average by 2050 (DWR 2014). Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack.

Changes in precipitation patterns are expected to cause increased flooding. For the purposes of federal flood insurance, the Federal Emergency Management Agency (FEMA) has traditionally used the 100-year flood event, which refers to the level of flood flows that has a 1 percent chance of being exceeded in any single year. As California's hydrology changes, what is currently considered a 100-year flood may strike more often, leaving many communities at greater risk. Moreover, as peak flows and precipitation change over time, climate change calls into question assumptions of "stationarity" that are used in flood-related statistical analyses such as the 100-year flood. That is, the probable area of inundation does not change from year to year.

The California Department of Water Resources (2008) recommends that local governments implement land use policies that decrease flood risk. These following recommendations are included as GHG Plan implementation policies where applicable and feasible.

San Joaquin River Bluffs

San Joaquin River

- Local land use agencies should update General Plans to address increased flood risks posed by climate change. General Plans should consider an appropriate risk tolerance and planning horizon for each locality.
- Local governments should site new development outside of undeveloped floodplains unless the floodplain has at least a sustainable, 200-year level of flood protection.
- Local governments should use low-impact development techniques to infiltrate and store runoff.
- Local governments should include flood-resistant design requirements in local building codes. State, federal, and local agencies should develop conjunctive use management plans that integrate floodplain management, groundwater banking, and surface storage. Such plans could help facilitate system reoperation and provide a framework for the development of local projects that are beneficial across regions.
- Local land use agencies should adopt ordinances that protect the natural functioning of groundwater recharge areas.

As precipitation falls in the form of rain rather than snow with greater storm intensity, high-frequency flood events are projected to increase. There is currently no known literature that suggests an increase in flooding from climate change in the Fresno area; however, it is possible that there could be changing weather patterns that would result in heavy downpours of rain in the area, which could cause street flooding. In addition, the potential for increased wildfires in foothill and mountain areas upstream from Fresno resulting from climate change could increase floods following fire if reservoirs had insufficient capacity to capture the runoff at that time.

2.4 FEDERAL, STATE, AND REGIONAL ACTIONS TO ADDRESS CLIMATE CHANGE

2.4.1 United States Environmental Protection Agency

The United States Environmental Protection Agency (EPA) is responsible for implementing federal policy to address global climate change. The federal government's early efforts have focused on public-private partnerships to reduce GHG intensity through energy efficiency, renewable energy, methane and other non-CO_2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions.

The EPA is required to regulate carbon dioxide and other GHGs as pollutants under Section 202(a)(1) of the federal Clean Air Act. The first step in implementing its authority was the Mandatory Reporting Rule that required inventory data collection commencing on January 1, 2010 with first reports due March 2011. Effective January 2, 2011, the EPA requires new and existing sources of GHG emissions of 75,000 tons per year to obtain a permit under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit Program.

The main federal regulatory program for automobiles is the Corporate Average Fuel Economy (CAFE) program, which has been in place since 1975. Under previous administrations, CAFE was the primary means of limiting mobile source carbon emissions. Rules finalized in 2012 put in place binding standards through Model Year 2021 and offered estimated standards through 2024. The federal light-duty vehicle standards were developed in two phases that harmonized with California standards through 2016 (Phase 1) and 2025 (Phase 2) and developed the first ever federal GHG standards for medium-duty and heavy-duty vehicles. At the time, the EPA estimated that the new standards in this rule would reduce CO_2 emissions by approximately 270 MMT and save 530 million barrels of oil over the life of vehicles sold during the 2014 through 2018 model years.

In 2018, however, the EPA proposed a new, less-stringent set of standards called the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks. The SAFE Vehicles Rule would amend certain existing CAFE and tailpipe CO_2 emissions standards for passenger cars and light trucks and establish new standards, all covering model years 2021 through 2026. The standards have yet to be finalized.

In June 2013, President Obama approved the nation's first Climate Action Plan that lays out a series of executive actions to reduce carbon pollution, prepare the nation for the impacts of climate change, and lead international efforts to address global climate change. The Plan reiterated the President's 2009 pledge to reduce United States GHG emissions by 17 percent below 2005 levels by 2020. Under the President Trump administration, the nation's stance on climate change has shifted from being a part of global action to policy stagnation and deregulation. In June 2017, the U.S. decided to withdraw from the Paris Climate Agreement, which was an agreement among countries to reduce global GHG emissions resulting from the 2015 United Nations Climate Change Conference. Currently, the EPA has been engaged in research into approaches to reduce the U.S. contribution to climate change. Areas of climate research include economic analyses of regulatory policy instruments (e.g., emissions trading, estimation of GHG reduction benefits, the role of uncertainty, and modeling the economic impacts of ocean acidification). In the meantime, many U.S. States and

companies are putting in place their own commitments to reduce global climate change by enacting local climate action plans, policies, and standards.

2.4.2 State of California

California has adopted a variety of regulations aimed at reducing the State's GHG emissions. While state actions alone cannot stop climate change, the adoption and implementation of this legislation demonstrates California's leadership in addressing climate change. Key legislation and Executive Orders pertaining to the State's reduction targets are described below.

2.4.2.1 Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The State achieved the first goal of reducing emissions to 2000 levels by 2010. Total GHG emissions were reduced by 2.9 percent during that period even though population increased by 10.9 percent in the same period (CARB 2014). The State also appears to be on track for achieving the 2020 target.

2.4.2.2 Executive Order B-30-15

On April 29, 2015, California Governor Jerry Brown announced through EO B-30-15 the following GHG emissions target:

- By 2030, California shall reduce GHG emissions to 40 percent below 1990 levels.

The emissions reduction target of 40 percent below 1990 levels by 2030 is an interim-year goal to make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. The order directs CARB to provide a plan with specific regulations to reduce Statewide sources of GHG emissions. EO B-30-15 does not include a specific guideline for local governments.

2.4.2.3 Assembly Bill 32 (AB 32) and Senate Bill 32 (SB 32), California Global Warming Solutions Act

AB 32 requires CARB to reduce Statewide GHG emissions to 1990 levels by 2020. As part of this legislation, CARB was required to prepare a "Scoping Plan" that demonstrates how the State will achieve this goal. The Scoping Plan was adopted in 2011, and in it, local governments were described as "essential partners" in meeting the Statewide goal, recommending a GHG reduction level of 15 percent below 2005 to 2008 levels (depending on when a full emissions inventory is available) by 2020.

CARB released the 2017 Scoping Plan in November 2017. The 2017 Scoping Plan provides strategies for achieving the 2030 target established by EO B-30-15 and codified in SB 32 (40 percent below 1990 levels by 2030). The 2017 Scoping Plan recommends local plan-level GHG emissions reduction goals.

2.4.2.4 SB 375

SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPOs) are required to adopt a Sustainable Communities Strategy, which allocates land uses in the Metropolitan Planning Organization's Regional Transportation Plan. Qualified projects consistent with an approved Sustainable Communities Strategy or Alternative Planning Strategy and categorized as "transit priority projects" would receive incentives under new provisions of CEQA. SB 375 requires regional reduction targets for light duty passenger vehicle CO_2 emissions for each MPO.

2.4.2.5 AB 1493 (Pavley)

The Pavley Bill enacted in 2002 requires the maximum feasible and cost-effective reduction of GHGs from automobiles and light-duty trucks. In 2004, CARB approved the "Pavley I" regulations that applied to new passenger vehicles beginning with model year 2009 through 2016. Pavley I is expected to reduce GHG emissions from regulated vehicles by 30 percent from 2002 levels by 2016. Pavley II was incorporated into Amendments to the Low- Emission Vehicle Program referred to as LEV III. The amendments, effective August 7, 2012, apply to vehicles for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34 percent from 2016 levels by 2025 (CARB 2011).

2.4.2.6 Title 24 Energy Efficiency Standards

The State has adopted several other major regulations that will provide substantial reductions in GHGs. Title 24, Part 6 California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 to reduce California's energy consumption. The California Energy Commission revises Title 24 about every three years to incorporate cost-effective energy efficiency technological advancements into the construction of new buildings. The latest version is the 2019 Title 24 update, which will go into effect January 1, 2020. The 2019 Title 24 standards include the requirement by the California Public Utilities Commission (CPUC) Energy Efficiency Strategic Plan for net zero energy consumption for new residential development starting in 2020 and will ultimately incorporate requirements for net zero in new non-residential development by 2030.

2.4.2.7 Green Building Code

The California Green Building Standard Code (CALGreen) was adopted in 2010 and went into effect January 2011 (CGBSC 2010). CALGreen is a mandatory green building code that sets minimum environmental standards for new buildings including standards for volatile organic compound (VOC) emitting materials, water conservation, and construction waste recycling.

2.4.2.8 Senate Bill 97

SB 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. The legislation directed the California Office of Planning and Research to develop draft CEQA Guidelines "for the mitigation of GHG emissions or the effects of GHG emissions" and directed the California Natural Resources

Agency to certify and adopt the State CEQA Guidelines. CEQA Guidelines Section 15183.5, Tiering and Streamlining the Analysis of GHG Emissions, was added as part of the CEQA Guideline amendments that became effective in 2010 and describes the criteria needed in a GHG reduction plan that would allow for the tiering and streamlining of CEQA analysis for development projects.

2.4.2.9 Senate Bill x7-7

SB x7-7 requires water suppliers to reduce urban per capita water consumption 20 percent from a baseline level by 2020.

2.4.2.10 Renewable Portfolio Standard

The Renewable Portfolio Standard (RPS) requires energy providers to derive 33 percent of their electricity from qualified renewable sources by 2020. In 2018, the State Assembly passed and Governor Jerry Brown signed SB 100, which requires energy providers to derive 60 percent of their electricity from qualified renewable sources by 2030 and 100 percent by 2045. The RPS is anticipated to lower emission factors (i.e., fewer GHG emissions per kilowatt-hour used) from utilities across the State, including Pacific Gas and Electric (PG&E).

2.4.2.11 Innovative Clean Transit (ICT) Regulation

The ICT regulation was adopted in December 2018 and requires all public transit agencies to gradually transition to a 100 percent zero-emission bus (ZEB) fleet. Beginning in 2029, 100 percent of new purchases by transit agencies must be ZEBs, with a goal for full transition by 2040. It applies to all transit agencies that own, operate, or lease buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. It includes standard, articulated, over-the-road, double-decker, and cutaway buses.

2.4.2.12 **Other Regulations**

The CARB has adopted numerous regulations on sources of GHGs since the approval of the Climate Change Scoping Plan. Some of the more notable regulations include the Low Carbon Fuel Standard (LCFS) and regulations affecting vehicle efficiency such as the Tire Pressure Program, Low Friction Oil, and Heavy Duty Vehicle Aerodynamic Efficiency Standards. Also important are CARB regulations that apply to high global warming potential consumer products and refrigerants. SB 734, which requires the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines to provide an alternative to level of service (LOS) for evaluating transportation impacts. The law requires that those alternative criteria promote the reduction of GHG, the development of multimodal transportation networks, and a diversity of land uses.

2.4.3 Fresno County Council of Governments

2.4.3.1 SB 375 Regional Targets and Sustainable Community Strategy (SCS)

SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPO) are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the Metropolitan Planning Organization Regional Transportation Plan (RTP). Qualified projects consistent with an approved SCS

or Alternative Planning Strategy and categorized as "transit priority projects" would receive incentives under new provisions of CEQA.

In 2010, as part of its mandate under SB 375, the CARB set specific GHG emission reduction targets for cars and light trucks for each of the State's 18 metropolitan planning organizations from a 2005 base year. The GHG targets set for the Fresno region in 2010 called for a 5 percent per capita reduction by 2020 and a 10 percent per capita reduction by 2035. SB 375 requires that Fresno Council of Governments (COG) demonstrate in its SCS that GHG emission reduction targets will be met for 2020 and 2035. If not, then an Alternative Planning Strategy (APS) shall be prepared to demonstrate how the targets can be met through the alternative strategies in the APS. These numbers are subject to changes due to model validation, calibration, and ongoing local coordination efforts. The MPO growth scenario focuses on existing core areas without expansion of the city of Fresno sphere of influence (CARB 2010). Under the General Plan, growth would be distributed along major corridors and activity centers supported by the Bus Rapid Transit (BRT) system, and has a theme of complete neighborhoods to provide convenient access to different uses at the neighborhood level. The strategy relies on a combination of increasing density, mixed uses, and infill.

The Fresno COG developed an SCS to implement SB 375 requirements. The SCS, adopted by the Fresno COG on June 26, 2014 demonstrated that Fresno County will be able to achieve the GHG targets for light-duty vehicle travel adopted by the CARB for this area. In July 2018, the Fresno COG adopted a second SCS based on the previous SCS adopted in 2014. The Fresno COG would be able to meet the CARB GHG targets through 2018 RTP/SCS (Fresno COG 2018).

2.4.3.2 San Joaquin Valley Blueprint

The San Joaquin Valley Blueprint Planning Process is an effort by agencies, organizations, and individuals, including the Fresno COG, to identify visions, values, guiding principles, and alternative growth scenarios for development over a 20-year planning horizon. The 2018 RTP/SCS continues the blueprint development process that started in 2006.

The adopted 12 Blueprint Smart Growth Principles from this process are:

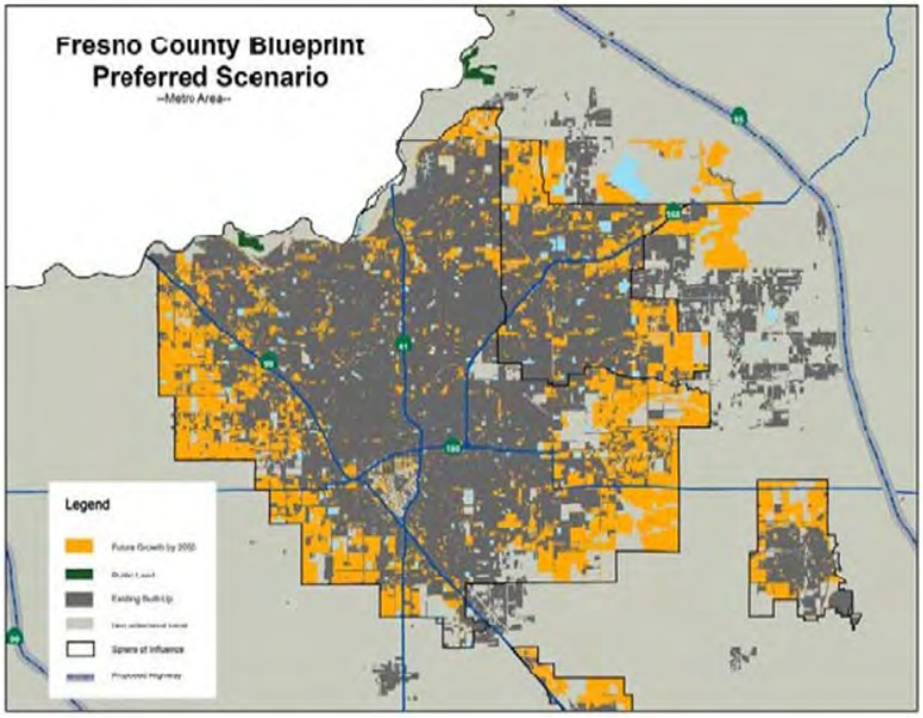
1. Create a range of housing opportunities and choices.
2. Create walkable neighborhoods.
3. Encourage community and stakeholder collaboration.
4. Foster distinctive, attractive communities with a strong sense of place.
5. Make development decisions predictable, fair, and cost-effective.
6. Mix land uses.
7. Preserve open space, farmland, natural beauty, and critical environmental areas.
8. Provide a variety of transportation choices.
9. Strengthen and direct development towards existing communities.
10. Take advantage of compact building design.
11. Enhance the economic vitality of the region.
12. Support actions that encourage environmental resource management.

Fresno County's Blueprint Vision is as follows:

- Fresno County will be composed of unique cities, communities and a diverse population in a connected high quality environment that accommodates anticipated population growth and is supported by:
    - A vibrant economy built on competitive strength and world class education
    - A healthy and sustainable environment where air, aquifers, surface waters, forests, soil, agriculture, open space and wildlife resources are enhanced and protected
    - A focus on cultural and community stewardship where all people enjoy fundamental rights as members of a free society, and where the community takes ownership of problems and their solutions.

The form of the Fresno region blueprint recognizes its economic, environmental, and cultural connectedness while maintaining a system of high-capacity multimodal transportation corridors that link the metro area to the rural areas and the State while preserving and maintaining the character of individual communities and the vital agricultural and natural resources between and around them (Fresno COG 2009). Figure 2-4 shows the Fresno County Blueprint preferred scenario.

Figure 2-4: Fresno County Blueprint Preferred Scenario



Source: Fresno Council of Governments (2009).

The Blueprint preferred scenario would result in a countywide average of 8.0 dwelling units/acre residential density for new growth between now and 2050. The density of new growth in the Fresno Clovis Metropolitan Areas (FCMA) will be 9.0 units/acre, while the average density of new development in the non-FCMA areas will be around 5.7 units/acre. This is comparable with the current trend density for Fresno county of 3.8 dwelling units/acre (Fresno COG 2009).

2.4.4 San Joaquin Valley Air Pollution Control District

The city of Fresno is within the San Joaquin Valley Air Basin, which is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The District has regulatory authority over certain stationary and industrial GHG emission sources and provides voluntary technical guidance on addressing GHGs for other emission sources in a CEQA context. District initiatives related to GHGs are described below.

2.4.4.1 Climate Change Action Plan

The District Governing Board approved the SJVAPCD Climate Change Action Plan (CCAP) on August 21, 2008. The CCAP began a public process to bring together stakeholders, land use agencies, environmental groups, and business groups, and to conduct public workshops to develop comprehensive policies for CEQA Guidelines, a carbon exchange bank, and voluntary GHG emissions mitigation agreements for the Governing Board's consideration. The CCAP contains the following goals and actions:

Goals.

1. Assist local land-use agencies with California Environmental Quality Act (CEQA) issues relative to projects with GHG emissions increases.

2. Assist Valley businesses in complying with mandates of AB 32 (Global Warming Solutions Act of 2006).

3. Ensure that climate protection measures do not cause increases in toxic or criteria pollutants that adversely impact public health or environmental justice communities.

Actions.

1. Develop GHG significance threshold(s) or other mechanisms to address CEQA projects with GHG emissions increases.

2. Develop necessary regulations and instruments for establishment and administration of the San Joaquin Valley Carbon Exchange Bank for voluntary GHG reductions created in the Valley.

3. Enhance the District's existing criteria pollutant emissions inventory reporting system to allow businesses subject to AB 32 emission reporting requirements to submit simultaneous streamlined reports to the District and the state of California with minimal duplication.

4. Develop and administer voluntary GHG emission reduction agreements to mitigate proposed GHG increases from new projects.

2.4.4.2 CEQA Greenhouse Gas Guidance

The District developed several resource documents that were used as guidance for developing the GHG Plan. The most important is the Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA, which is intended to assist local agencies in complying with CEQA and which contains a GHG threshold approach that has been widely accepted for use in the San Joaquin Valley and in other parts of the State. The District concluded that the existing science is inadequate to support quantification of the impacts that project-specific GHG emissions have on global climatic change. The District found that the effects of project-specific emissions to be cumulative, and without mitigation, their incremental contribution to global climatic change could be considered cumulatively considerable. The District found that this cumulative impact is best addressed by requiring all projects to reduce their GHG emissions, whether through project design elements or mitigation. Many San Joaquin Valley local jurisdictions, including Fresno, have used the District guidance for CEQA compliance.

The primary features of the District's approach include:

- Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less than significant cumulative impact. The GHG Plan is intended to meet the criteria as an approved plan or mitigation program.

- Projects for which there is no applicable approved plan or program, or those projects not complying with an approved plan or program, the lead agency would evaluate the project against a performance-based standards and would require the adoption of design elements, known as a Best Performance Standard, to reduce GHG emissions.

- Projects incorporating Best Performance Standards would not require specific quantification of GHG emissions, and automatically would be determined to have a less than significant cumulative impact for GHG emissions.

2.4.4.3 San Joaquin Valley Carbon Exchange and Rule 2301

The District initiated work on the San Joaquin Valley Carbon Exchange in November 2008. The Exchange was implemented with the adoption of Amendments to Rule 2301 Emission Reduction Credit Banking on January 19, 2012. The purpose of the carbon exchange is to quantify, verify, and track voluntary GHG emissions reductions generated within the San Joaquin Valley.

The District incorporated a method to register voluntary GHG emission reductions with amendments to Rule 2301. The purposes of the amendments to the rule include the following:

- Provide an administrative mechanism for sources to bank voluntary GHG emission reductions for later use.

- Provide an administrative mechanism for sources to transfer banked GHG emission reductions to others for any use.

- Define eligibility standards, quantitative procedures, and administrative practices to ensure that banked GHG emission reductions are real, permanent, quantifiable, surplus, and enforceable.

The District is participating in a new program developed by the California Air Pollution Control Officers Association (CAPCOA) to encourage banking and use of GHG reduction credits referred to as the CAPCOA Greenhouse Gas Reduction Exchange (GHGRx). The GHGRx provides information on GHG credit projects within participating air districts. The District is one of the first to have offsets available for trading on the Exchange.

2.4.4.4 Community Emissions Reductions Program: Assembly Bill 617 (AB 617)

AB 617 requires the CARB and air districts to develop and implement a Community Emission Reduction Plan (CERP) with additional emissions reporting, monitoring, and reduction plans and measures in an effort to reduce air pollution exposure in disadvantaged communities. Given that 20 of the 30 most disadvantaged communities in California are in the San Joaquin Valley, this process is expected to bring additional clean air resources and strategies to many Valley communities.

South Central Fresno and the City of Shafter are the first Valley communities selected by the California Air Resources Board for investment of additional resources under AB 617. The Valley Air District has established a steering committee for each of these communities comprising community residents, businesses, community advocates, and government representatives to assist in the development and implementation of community air monitoring and emission reduction programs.

This page intentionally left blank

3.0 EMISSION INVENTORY

Emission inventories are compilations of emissions generated by sources in a geographic area at a given time. GHG emission inventories are reported in units of MT CO_2e emissions per year. Emission inventories identify the contribution of each type or category of emissions to the total inventory of pollutants of interest. Emission inventories help rank sources by size to determine those that are most important to control.

Inventories are required to determine existing conditions and to forecast emissions in future years to account for the effects of growth.

3.1 INVENTORY METHODS AND ASSUMPTIONS

3.1.1 Inventory Protocols

Emission inventory protocols have been developed for many emission sources by governmental and independent agencies, and professional associations. The U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, developed by ICLEI Local Governments for Sustainability, provides guidance for developing community inventories prepared in the United States. The U.S. Community Protocol is not entirely applicable to inventories in California communities. For some inventory categories, a more detailed inventory may be required to ensure its adequacy for use in a CEQA context. California specific emission factors and data are available for many sources that when used produce a more accurate inventory. The inventory prepared for the City of Fresno GHG Plan Update follows the U.S. Community Protocol as modified for use in California.

3.1.2 Baseline Inventory Source Categories

The City developed its year 2010 baseline GHG inventory, which included the following source sectors:

- Motor Vehicles
- Electricity Use (Residential and Commercial)
- Natural Gas Use (Residential and Commercial)
- Waste
- Off-Road Equipment
- Refrigerants

The inventory did not include sources that comprise less than 3 percent of the inventory and sources that are not within the control or influence of the City of Fresno. One exception is off-road equipment, which is less than 1 percent but is commonly included in project level GHG analyses. Large industrial sources of emissions that are subject to CARB's reporting regulation and Cap-and-Trade regulation were not included in the inventory. The inventory did not include impacts of upstream emissions (e.g., emissions associated with an extraction process for purchased fuels—extraction, production, and transportation of fuels) because those sources are not within the control or influence of the City.

3.2 BASELINE INVENTORY SELECTION CRITERIA

The baseline inventory year is important because it forms the starting point for setting emission reduction targets in future years. Several criteria were considered in selecting the best year for the baseline inventory, including:

- Data availability;
- Relationship with State inventories and targets; and
- Recommended practices from other agencies and organizations.

Since the AB 32 target is based on returning emissions to 1990 levels by 2020, some jurisdictions include a 1990 inventory. The 1990 baseline represents Statewide emissions and not the emissions of individual cities and counties. Growth rates vary widely from city to city since 1990. A 1990 inventory and target that do not account for variations in growth from community to community do not provide a valid comparison of the effectiveness or stringency of a GHG reduction program. In addition, the City cannot go back in time and change the amount and type of development that has occurred since 1990; it can only work from existing conditions. Therefore, the City had determined that a 2010 baseline provides the most recent year with complete data available suitable for describing existing conditions.

3.3 BASELINE INVENTORY

The City of Fresno baseline inventory year for the GHG Plan is 2010. The CARB has prepared an updated inventory for 2010 that accounts for regulations adopted to that point in time. Therefore, 2010 provides the best available baseline for the GHG Plan and can be compared directly with State progress to date and targets. Table 3-A shows the baseline inventory.

Table 3-A: GHG Emissions by Sector for 2010

Sector	2010 (MT CO_2e)	Percent of Total
Motor Vehicles	1,899,799	51
Electricity - Residential	327,813	9
Electricity - Commercial	361,836	10
Natural Gas - Residential	362,832	10
Natural Gas - Commercial	394,417	11
Waste	123,945	3
Off-road Equipment	1,051	<1
Ozone Depleting Substance (ODS) Substitutes	273,422	7
Total	**3,745,115**	**100**

Source: City of Fresno Greenhouse Gas Reduction Plan (2014).
MT CO_2e = metric tons of carbon dioxide equivalent

3.4 BASELINE INVENTORY UPDATE

In September 2018, ICLEI Local Governments for Sustainability developed an inventory update for the year of 2016 for the City through the Statewide Energy Efficiency Collaborative. This inventory update is more recent and captures the GHG reductions from Statewide and local measures since 2010, therefore better reflects the current GHG emission levels in the city. The inventory update has

different source categories than the 2010 baseline inventory. The 2016 inventory update includes Agriculture and Industrial Energy sectors, which are additional to the 2010 baseline inventory. Therefore, the 2016 inventory update is more complete. Table 3-B shows the source categories comparison between 2010 baseline inventory and 2016 inventory update.

Table 3-B: Source Categories Comparison Between 2010 and 2016 Inventories

2010 Baseline Inventory Sector	2016 Inventory Update Sector
Motor Vehicles	Transportation
Electricity - Residential	Residential Energy
Electricity - Commercial	Commercial Energy
Natural Gas - Residential	Residential Energy
Natural Gas - Commercial	Commercial Energy
Waste	Solid Waste
Off-road Equipment	Transportation
Ozone Depleting Substance (ODS) Substitutes	Fugitive Emissions
Not Included	Agriculture
Not Included	Industrial Energy

Source: Compiled by LSA Associates, Inc. (2019).

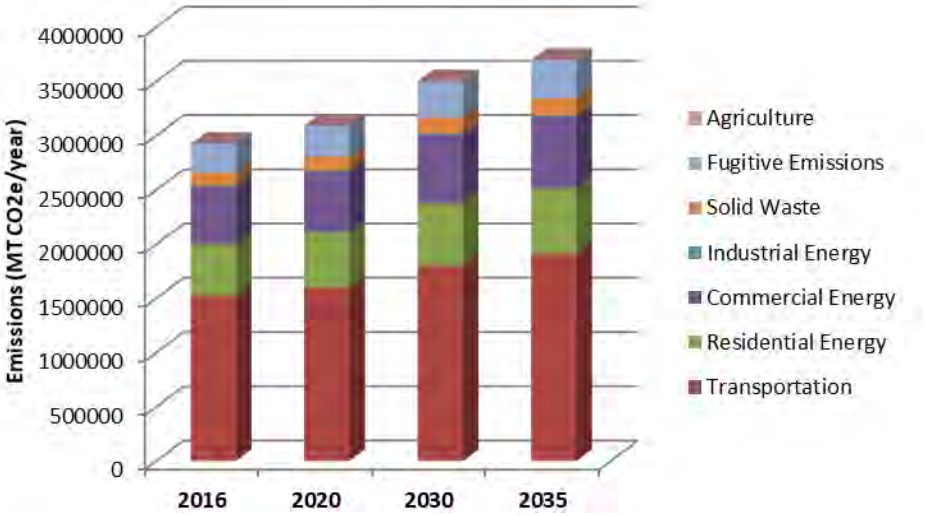
The City's total emissions in 2016 were 2,923,633 MT CO_2e. As shown in Table 3-C and Figure 3-1, the Transportation sector was the largest contributor to emissions in the 2016 inventory, with 52 percent of the City's total GHG emissions. Commercial and residential energy use were the second and third largest contributor of GHG emissions with 18 percent and 16 percent of total emissions, respectively. Fugitive emissions accounted for 9 percent of total emissions, solid waste accounted for 4 percent of total emissions, and industrial energy and agriculture sectors emitted less than 1 percent.

Table 3-C: City of Fresno 2016 Inventory Update and Business-as-Usual Projections

Sector	2016 (MT CO_2e)	Percent of Total	2020 (MT CO_2e)	Percent of Total	2030 (MT CO_2e)	Percent of Total	2035 (MT CO_2e)	Percent of Total
Transportation	1,520,052	52	1,594,888	52	1,798,498	51	1,909,852	52
Commercial Energy	524,838	18	557,142	18	627,373	18	657,379	18
Residential Energy	479,371	16	514,053	17	579,546	17	603,951	16
Fugitive Emissions	270,130	9	288,573	9	335,316	10	357,008	10
Solid Waste	119,167	4	127,303	4	147,923	4	157,493	4
Industrial Energy	10,055	<1%	10,506	<1%	11,528	<1%	12,035	<1%
Agriculture Energy	20	<1%	20	<1%	20	<1%	20	<1%
Total	**2,923,633**	**100**	**3,092,486**	**100**	**3,500,204**	**100**	**3,697,738**	**100**

Source: ICLEI Local Governments for Sustainability, City of Fresno 2016 Inventory Update, 2018. Complied by LSA Associates, Inc.
MT CO_2e = metric tons of carbon dioxide equivalent

Figure 3-1: City of Fresno 2016 Inventory Update and Business-as-Usual Projections



Source: Compiled by LSA Associates, Inc. (2019).

3.5 INVENTORY PROJECTIONS

The GHG Plan includes inventory projections for 2020, 2030, and 2035. The 2020 and 2030 forecast years are consistent with the goals identified in AB 32 and the 2017 Scoping Plan, which identify Statewide GHG reduction targets by 2020 and 2030. The 2035 forecast year correspond to the General Plan horizon and will allow the City to develop long-term strategies to continue GHG reductions.

3.5.1 BAU Inventory

BAU scenarios are commonly used in climate action planning to ensure that control measures are adequate to overcome the effects of cumulative growth in emissions by a target year. BAU is defined in the CARB AB 32 Scoping Plan as the forecasted GHG emissions through 2030 with existing policies and programs, but without any further action to reduce GHGs. BAU inventories allow for separate accounting of the benefits of regulations, strategies, and programs on future emissions.

The City's BAU GHG emissions for 2020, 2030, and 2035 were projected based on 2016 Inventory Update data using population, households, and employment growth rate from the Fresno County 2050 Growth Projections developed by Fresno County Council of Governments.[9] The BAU inventory for each forecast year is provided in Table 3-C and Figure 3-1.

[9] Applied Development Economics. 2017. Fresno County 2050 Growth Projections. Prepared for Fresno County Council of Governments. Website: www.fresnocog.org/wp-content/uploads/publications/Demographics/Fresno_COG_2050_Projections_Final_Report_050417.pdf (accessed March 4, 2019).

The BAU inventories presented above show that in the absence of regulations and other measures to reduce GHG emissions, the City's BAU emissions in 2020 are estimated to be 3,092,486 MT CO_2e, or a 5.8 percent increase from 2016 emissions. By 2030, emissions are estimated to increase 19.7 percent from the 2016 level to 3,500,204 MT CO_2e. By 2035, emissions are estimated to increase 26.5 percent from the 2016 level to 3,697,738 MT CO_2e.

This page intentionally left blank

4.0 REDUCTIONS FROM STATE REGULATIONS

The State has enacted many regulations pursuant to the requirements in AB 32 that would reduce emissions within the city. The State's strategy is detailed in the Climate Change Scoping Plan adopted by the CARB in November 2017. Scoping Plan strategies are primarily implemented through the adoption of regulations. The most important and applicable strategies from the previous iterations and most recent 2017 Scoping Plan are discussed below.

4.1 MOTOR VEHICLES

The CARB has adopted many Scoping Plan measures for mobile sources as regulations both in the previous versions and most recent Scoping Plan (CARB 2008, 2014 and 2017). Only the measures that have been adopted or put into practice are included in this assessment. The following regulations are included:

- **Pavley and Low Carbon Fuel Standard:** EMFAC2017 emission factors that include Pavley and the LCFS were used to estimate the impact of those regulations. In this way, the reductions from those measures are more specific than simply applying the statewide reduction estimates because the reductions in EMFAC take into account the variations between vehicle classes and region.

- **Low Emission Vehicle (LEV) III Standards:** The LEV III standards amend the exhaust and evaporative emission standards for passenger cars and light- and medium-duty trucks. The standards provide requirements for model years 2017 to 2025. The regulation applies to both criteria pollutant and GHG emissions. The standard drops GHG emission to 166 grams per mile, a reduction of 34 percent compared with 2016 levels. LEV III implements the Pavley II standards described in the Scoping Plan.

- **Tire Pressure Program:** This regulation is categorized under vehicle efficiency measures in the Scoping Plan. This regulation applies to automotive service providers performing or offering to perform automotive maintenance or repair services in California. This applies to passenger cars, light-duty trucks, medium-duty vehicles, and light heavy-duty trucks with gross vehicle weight ratings of less than or equal to 10,000 pounds (CARB 2010). This measure is anticipated to reduce emissions by 0.5 percent for those vehicle types.

- **Low Friction Oil:** CARB indicates that this measure has been achieved in practice. It is assumed that this measure would apply to the same vehicle types as in the tire pressure program. This measure is anticipated to reduce emissions by 2.2 percent.

- **Aerodynamic Efficiency:** This regulation improves the fuel efficiency of heavy-duty tractors that pull 53-foot or longer box-type trailers. Fuel efficiency is improved through improvements in tractor and trailer aerodynamics and the use of low rolling-resistance tires. This measure would reduce emissions by 2.1 percent from heavy-duty vehicles.

4.2 ENERGY

The State's strategy for reducing energy-related GHGs targets electric power utilities on the production side and energy efficiency on the consumer side. Two regulations are in place to reduce emissions from this source. The Renewable Portfolio Standard requires electric utilities to provide an increasing share of their energy from renewable sources with 33 percent by 2020, 60 percent by 2030, and 100 percent by 2045. Title 24 Energy Efficiency Standards for Residential and Non-Residential Buildings requires new structures to meet increasingly stringent energy efficiency standards. California's Green Building Code mandates increased water conservation that results in less electricity consumed to pump and transport water.

4.2.1 Renewable Portfolio Standard (RPS)

The electricity emission factor was decreased to account for the renewable energy regulations, which require 33 percent renewable energy by the year 2020, 60 percent by 2030, and 73 percent by 2035, which is interpolated from the 100 percent by 2045 requirement. The average renewable energy use for 2005-2009 for PG&E was calculated as 12.6 percent (California Public Utilities Commission 2013). Based on an approximation of electric generation from RPS-eligible sources divided by forecasted electricity retail sales for the year 2018, the Energy Commission estimates that 34 percent of California’s retail electricity sales in 2018 will be provided by RPS-eligible renewable resources. This shows that the State is already ahead of its 2020 goal (CEC 2018).

4.2.2 Title 24, Part 6 Building Energy Efficiency Standards

Building energy efficiency standards are designed to ensure that new and existing buildings achieve energy efficiency and preserve outdoor and indoor environmental quality. These standards are contained in the California Code of Regulations (CCR) Title 24, Part 6. The California Energy Commission (CEC) is required by State law to update energy efficiency standards every 3 years. The 2019 Standards, which will become effective in January 2020, are focused on achieving zero net energy (ZNE) homes by increasing energy efficiency and requiring solar photovoltaic (PV) systems for new homes (CEC 2019).

The reductions from Title 24 are applied to the energy consumption related emissions for new development and remodeling projects at existing buildings subject to the regulations. The benefits of the standards accrue as buildings subject to the standards are constructed to meet the standard applicable at the time. PG&E provided actual electricity and natural gas usage for 2008 through 2010, which reflect the benefits of all development subject to previous versions of the Title 24 standards. New development would provide additional reductions as buildings are constructed to comply with the latest standards.

4.2.3 California's Green Building Standard Code

CCR Title 24, Part 11 (California Green Building Standard Code [CALGreen]), was adopted on January 12, 2010. The State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which went into effect on January 1, 2011. The Code is a comprehensive and uniform regulatory code for all residential, commercial, and school Buildings. Further updates to CALGreen went into effect on January 1, 2017. CALGreen is the first Statewide

mandatory green building code and significantly raises the minimum environmental standards for construction of new buildings in California. The mandatory provisions in CALGreen will reduce the use of VOC-emitting materials, will strengthen water conservation, and will require construction waste recycling.

4.3 REFRIGERANTS

The State has adopted several refrigerant management regulations that are anticipated to achieve substantial reductions. For example, CARB predicts that the regulations that will apply to large commercial refrigeration units will reduce emissions by more than 50 percent.

4.4 REDUCTIONS FROM STATE REGULATIONS

The predicted reduction in emissions from State measures on city of Fresno emissions is shown in Table 4-A.

Table 4-A: Reductions from Statewide Measures

Sector	State Measures	Emission Reductions (MT CO_2e/year)		
		2020	2030	2035
Transportation	Pavley and Low Carbon Fuel Standard; Low Emission Vehicle Program III; Tire Tread Program; Tire Pressure Program; Low Friction Oil; HD Aerodynamic/MHD Hybridization	424,559	667,463	836,897
Residential Energy	Renewable Portfolio Standards	164,477	299,049	363,843
	Title 24 – Electricity	16,833	79,525	102,708
	Title 24 – Natural Gas	7,983	10,762	12,496
Commercial Energy	Renewable Portfolio Standards	174,877	317,958	386,849
	Title 24 – Electricity	9,614	5,532	4,196
	Title 24 – Natural Gas	17,530	12,933	11,108
Fugitive Emissions	Limit High GWP Use in Consumer Products; Motor Vehicle Air Conditioning; High GWP Refrigerant Management Program for Stationary Sources	144,287	167,658	178,504
	Total	**960,160**	**1,560,880**	**1,896,602**

Source: Compiled by LSA Associates, Inc. (2019).
GWP = global warming potential
HD = Heavy Duty
MHD = Medium Heavy Duty
MT CO_2e/year = metric tons of carbon dioxide equivalent per year

4.4.1 Adjusted Business-as-Usual

The adjusted business-as-usual (ABAU) inventory applies emission reductions achieved by Statewide regulations, programs, and measures. This inventory identifies the base from which reductions are needed from local strategies and measures to demonstrate consistency with the State-aligned targets. Table 4-B shows the emission inventories for each year after the application of State regulatory measures.

Table 4-B: City of Fresno Adjusted Business-as-Usual Emissions

Sector	2016	2020	2030	2035
Transportation	1,520,052	1,170,329	1,131,034	1,072,955
Commercial Energy	524,838	355,121	290,950	255,226
Residential Energy	479,371	324,760	190,210	124,904
Fugitive Emissions	270,130	144,287	167,658	178,504
Solid Waste	119,167	127,303	147,923	157,493
Industrial Energy	10,055	10,506	11,528	12,035
Agriculture Energy	20	20	20	20
Total	**2,923,633**	**2,132,326**	**1,939,325**	**1,801,137**

Source: Compiled by LSA Associates, Inc. (2019).

4.4.2 Target Analysis

The State has set goals for reducing GHG emissions by 2020, 2030, and 2050 through AB 32, SB 32, and EO B-30-15, respectively. The State has also provided guidance to local jurisdictions as "essential partners" in achieving the State's goals by identifying a 2020 recommended reduction goal. That goal, stated in the AB 32 Scoping Plan, was for local governments to achieve a 15 percent reduction below baseline levels by 2020, which aligns with the State's goal of not exceeding 1990 emissions levels by 2020. The State's long-term target is to emit no more than 20 percent of 1990 levels by 2050 (or, a reduction of 80 percent below 1990 levels by 2050). The State has also provided an interim target, which is 40 percent below 1990 levels by 2030. It is clear that the issue of climate change will not end in 2030 and continued reduction goals should be implemented to keep the State on a path toward the 2050 goal. A straight-line projection from the 2030 to 2050 goals would result in a reduction goal of 58 percent below baseline levels by 2035.

In order to keep the City of Fresno GHG Reduction Plan in line with the State's reduction goals, the targets, as shown in Table 4-C, have been identified. Based on these targets, the City would meet the reduction target from an ABAU forecast in 2020. In 2030 and 2035, the City would need to reduce 29,316 MT CO_2e and 209,463 MT CO_2e emissions below the ABAU scenario, respectively, to meet the State-aligned target (Table 4-C and Figure 4-1).

Table 4-C: State-Aligned GHG Emission Reduction Targets By Year

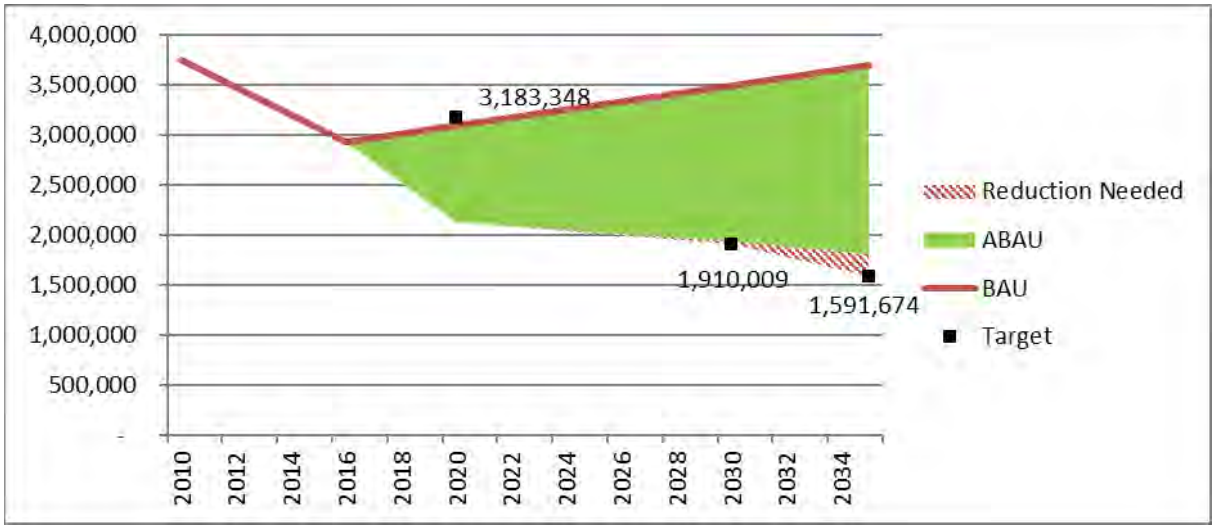
Sector	2010[1]	2016	2020	2030	2035
BAU Emissions (MT CO_2e)	3,745,115	2,923,633	3,092,486	3,500,204	3,697,738
Adjusted BAU Emissions (MT CO_2e)	3,745,115	2,923,633	2,132,326	1,939,325	1,801,137
State-Aligned Target (Percent change from 1990)			0	-40	-50
State-Aligned Target (Percent change from 2010)			-15	-49	-58
State-Aligned Emissions Goal (MT CO_2e)			3,183,348	1,910,009	1,591,674
Reductions from Adjusted BAU needed to meet the State-Aligned Target (MT CO_2e)			Target Met	29,316	209,463

Source: Compiled by LSA Associates, Inc. (2019).

[1] Baseline (2010) emissions are from the City's 2014 GHG Reduction Plan.

BAU = business-as-usual GHG = greenhouse gas MT CO_2e = metric tons of carbon dioxide equivalent

Figure 4-1: City of Fresno GHG Emissions Inventory, Forecast, and Targets



Source: Compiled by LSA Associates, Inc. (2019).

This page intentionally left blank

5.0 GREENHOUSE GAS REDUCTION STRATEGY

The GHG Reduction Plan is a comprehensive vision of the City's plan to reduce GHG emissions. The City is already on a path toward lower emissions through its prior actions. The City has adopted a several goals, policies, and programs from the General Plan that contributed towards reducing GHG emissions. The General Plan provides a comprehensive strategy to reduce GHG emissions from all sources within the City's ability to control or influence. The strategies enhance the effectiveness of State strategies by ensuring that the city is developed in ways that minimize emissions and by application to City-owned facilities. The relevant General Plan objectives and policies are listed throughout the following section. For convenience, a compilation of the General Plan objectives and policies is provided as Appendix A to this GHG Plan Update. Table 5-A provides a listing of General Plan Elements/Chapters and the associated letter designations to enable the reader to identify the General Plan Element/Chapter associated with the objectives and policies listed in this section.

Table 5-A: General Plan Chapter Cross Reference

General Plan Element and Chapter	Policy Prefix
Urban Form (Chapter 3)	UF
Land Use (Chapter 3)	LU
Design (Chapter 3)	D
Mobility and Transportation (Chapter 4)	MT
Park and Open Space (Chapter 5)	POSS
Public Utilities and Services (Chapter 6)	PU
Resource Conservation and Resilience (Chapter 7)	RC
Healthy Communities (Chapter 10)	HC
Economic Development and Fiscal Sustainability (Chapter 2)	ED

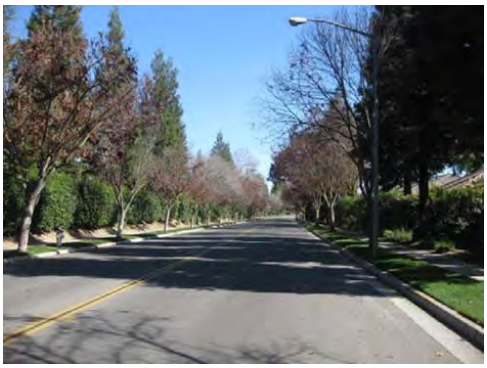
Source: FirstCarbon Solutions. 2014. Fresno General Plan Update, Greenhouse Gas Reduction Plan, prepared for the City of Fresno. July. Website: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2016/11/F-2-Greenhouse-Gas-Reduction-Plan.pdf (accessed December 2019).

5.1 GHG PLAN REDUCTION STRATEGY

The City can control or influence GHG emissions in several ways. The City has direct control over its own fleet vehicles and buildings where it can use its budgeting authority and purchasing decisions for high efficiency/low emission options. The City has influence over emissions from development and redevelopment projects through its land use authority and its responsibilities as a Lead Agency under CEQA. The City can also provide leadership and education to the community to encourage voluntary actions to reduce GHG emissions. The General Plan provides the comprehensive objectives and policies that direct development in the city. The GHG Plan Update relies upon the General Plan as the basis of the development related strategies to reduce GHG emissions.

Greenhouse gas emissions are generated by a multitude of sources and activities. There is no single technology or individual program that provides a silver bullet for addressing this problem. Comprehensive solutions on multiple fronts are required to make the progress needed to achieve reduction targets for 2020, 2030 and beyond.

The GHG Plan Update strategies are categorized as follows:



- Land Use and Transportation
- Transportation Facilities Strategies
- Transportation Demand Strategies
- Energy Conservation Strategies for New and Existing Buildings
- Water Conservation Strategies
- Waste Diversion and Recycling and Energy Recovery
- Strategies for Existing Development
- Municipal Strategies

As described in the previous section, motor vehicle emissions dominate the City's emission inventory. The City has control over the emissions from its government fleet vehicles through its purchasing decisions, but no control over the emissions from other vehicles that operate in and pass through the city. However, the City's authority over land use provides opportunities to influence the amount people drive and their choice of travel mode. In planning circles, this is called the land use, transportation, air quality connection.

Land use and transportation strategies are supported by the General Plan land use and circulation plans and policies that provide the City's vision of future development in the planning area to the extent that they reduce vehicle trips and miles traveled compared with alternative development plans and patterns. The City's General Plan includes many land use and transportation policies that when implemented result in lower greenhouse gas emissions through the promotion of smart growth; jobs/housing balance; transit-oriented development; and infill development through that application of land use designations, and zoning, and the use of public-private partnerships to encourage action.

The following are land use strategies utilizing goals and policies in the General Plan that with application to individual projects will achieve GHG emission reductions. Key GHG Plan Update indicators associated with the applicable General Plan policies are also identified to help the individual projects account for GHG emission reductions.

5.1.1 Land Use Strategies

Development that is more dense and compact places people closer to destinations that can be accessed by walking or bicycling, and transit. Higher densities near transit routes and facilities also increases the potential for more frequent high-quality transit service such as BRT. The General Plan includes the following related policy.

Policy RC-2-a **Link Land Use to Transportation.** Promote mixed-use, higher density infill development in multi-modal corridors. Support land use patterns that make more efficient use of the transportation system and plan future transportation investments in areas of higher-intensity development. Discourage investment in infrastructure that would not meet these criteria.

5.1.1.1 Compact and Infill Development

The General Plan provides for a substantial increase in development density in new growth areas compared to existing development. In addition, development trends show that more project developers can be expected to propose higher-density, single- and multi-family development than was constructed in the past. The General Plan land use designations provide density ranges that allow for higher average densities than experienced in the past for land already designated by the General Plan. The General Plan provide an increase in density in new growth areas.

Higher-density development tends to produce fewer vehicle trips per dwelling unit and more intense commercial development increases opportunities for walking, bicycling, and transit use for some trips. Although higher density is a prerequisite for achieving compact development, the design of the new projects is critical for maximizing reductions from being more compact related to walking, bicycling, and transit use. Approved but undeveloped subdivisions would comply with existing General Plan designations; however, market forces could result in requests for revisions to these subdivisions that would increase development density. Another way to increase density is to allow second units on residential lots. This practice increases overall development density and promotes more compact development that brings more people closer to commercial development.

Relevant General Plan Policies.

Policy UF-1-c **Identifiable City Structure**. Focus integrated and ongoing planning efforts to achieve an identifiable city structure, comprised of a concentration of buildings, people, and pedestrian-oriented activity in Downtown; along a small number of transit-oriented, mixed-use corridors and strategically located Activity Centers; and in existing and new neighborhoods augmented with parks and connected by multi-purpose trails and tree-lined bike lanes and streets.

Objective UF-12 Locate roughly one-half of future residential development in infill areas—defined as being within the City on December 31, 2012—including the Downtown core area and surrounding neighborhoods, mixed-use centers and transit-oriented development along major BRT corridors, and other non-corridor infill areas, and vacant land.

Policy UF-12-b **Activity Centers.** Mixed-use designated areas along BRT and/or transit corridors are appropriate for more intensive concentrations of urban uses. Typical uses could include commercial areas; employment centers; schools; compact residential development; religious institutions; parks; and other gathering points where residents may interact, work, and obtain goods and services in the same place.

Policy LU-2-a **Infill Development and Redevelopment.** Promote development of vacant, underdeveloped, and redevelopable land within the City Limits where urban services are available by considering the establishment and implementation of supportive regulations and programs.

Policy LU-2-b **Infill Development for Affordable Housing.** Establish a priority infill incentive program for residential infill development of existing vacant lots and underutilized sites within the City as a strategy to help to meet the affordable housing needs of the community.

Policy LU-3-b **Mixed-Use Urban Corridors that Connect the Downtown Planning Area.** Support the development of mixed-use urban corridors that connect the Downtown Planning Area with the greater Fresno-Clovis Metropolitan Area with functional, enduring, and desirable urban qualities along the Blackstone Avenue, Shaw Avenue, California Avenue, and Ventura Avenue/Kings Canyon corridors, as shown on Figure LU-1: General Plan Land Use Diagram.

Policy LU-3-c **Zoning for High Density on Major BRT Corridors.** Encourage adoption of supportive zoning regulations for compact development along BRT corridors leading to the Downtown Core that will not diminish long-term growth and development potential for Downtown.

Policy LU-5-f **High Density Residential Uses**. Promote high-density residential uses to support Activity Centers and BRT corridors, and walkable access to transit stops.

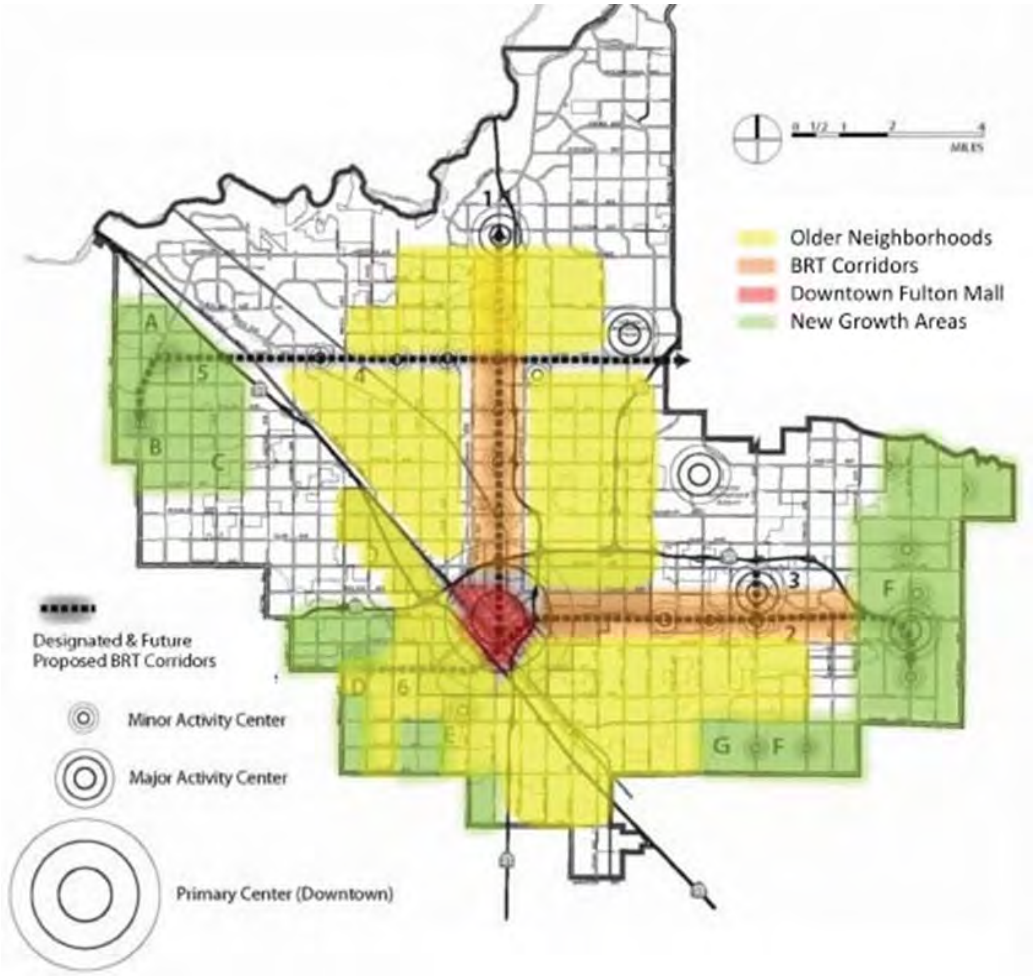
Policy RC-2-a **Link Land Use to Transportation.** Promote mixed-use, higher density infill development in multi-modal corridors. Support land use patterns that make more efficient use of the transportation system and plan future transportation investments in areas of higher-intensity development. Discourage investment in infrastructure that would not meet these criteria.

Figure 5-1 illustrates the conceptual location for the city of Fresno growth areas and the proposed BRT corridor. Compact development and infill provide the supporting base that maximizes the potential reductions in GHG emissions from the Plan strategy. Increased density, strategically located near quality transit and activity centers, is critical to successful implementation.

Key GHG Plan Indicators.

- Change in development density with time.
- Number of infill and redevelopment projects proposed.
- Changes in transit service and ridership.
- Compile ongoing development statistics for comparison with General Plan Policy objectives.
- Projects comply with General Plan policies.

Figure 5-1: City of Fresno Growth Areas and Proposed BRT Corridors



Source: City of Fresno (2019).

5.1.1.2 Mixed-Use Development

Mixed-use projects provide opportunities for walking between uses for some trips. Trips are reduced when visitors can park once at the development and obtain services, shopping, or go to a restaurant during a single trip. There are a variety of mixed-use development types with different mixes of uses and designs. Infill projects that provide residential development close to existing commercial development or vice versa can produce many of the same mixed-use benefits if done in a walkable environment.

Relevant General Plan Policies.

Policy RC-2-a **Link Land Use to Transportation.** Promote mixed-use, higher density infill development in multi-modal corridors. Support land use patterns that make more efficient use of the transportation system and plan future transportation investments in areas of higher-intensity development. Discourage investment in infrastructure that would not meet these criteria.

Policy RC-2-b **Provide Infrastructure for Mixed-Use and Infill.** Promote investment in the public infrastructure needed to allow mixed-use and denser infill development to occur in targeted locations, such as expanded water and wastewater conveyance systems, complete streetscapes, parks and open space amenities, and trails. Discourage investment in infrastructure that would not meet these criteria.

Policy UF-12-d **Appropriate Mixed-Use.** Facilitate the development of vertical and horizontal mixed-uses to blend residential, commercial, and public land uses on one or adjacent sites. Ensure land use compatibility between mixed-use districts in Activity Centers and the surrounding residential neighborhoods.

Policy UF-12-f **Mixed-Use in Activity Centers.** Update the Development Code which includes use regulations and standards to allow for mixed uses and shared parking facilities.

Key GHG Plan Indicators.

- The number of mixed use projects proposed.
- The number of mixed use project constructed.

5.1.1.3 Pedestrian-Oriented Development

Providing pedestrian-friendly infrastructure such as sidewalks, paths, and direct connections to neighboring uses such as shopping, schools, libraries, and parks increase the potential for people to make trips on foot instead of making a car trip.

This strategy is consistent with the Complete Streets concept that aims to make streets safe for walking and bicycling.

Relevant General Plan Policies.

Policy UF-12-e **Access to Activity Centers.** Promote adoption and implementation of standards supporting pedestrian activities and bicycle linkages from surrounding land uses and neighborhoods into Activity Centers and to transit stops. Provide for priority transit routes and facilities to serve the Activity Centers.

Policy UF-12-f	**Mixed-Use in Activity Centers.** Update the Development Code which includes use regulations and standards to allow for mixed uses and shared parking facilities.
Objective UF-14	Create an urban form to facilitate multi-modal connectivity.
Policy UF-14-a	**Design Guidelines for Walkability.** Develop and use design guidelines and standards for a walkable and pedestrian-scaled environment with a network of streets and connections for pedestrians and bicyclists, as well as transit and autos.
Policy UF-14-b	**Local Street Connectivity.** Design local roadways to connect throughout neighborhoods and large private developments with adjacent major roadways and pathways of existing adjacent development. Create access for pedestrians and bicycles where a local street must dead end or be designed as a cul-de-sac to adjoining uses that provide services, shopping, and connecting pathways for access to the greater community area.
Policy UF-14-c	**Block Length**. Create development standards that provide desired and maximum block lengths in residential, retail, and mixed-use districts in order to enhance walkability.
Policy D-3-c	**Local Streets as Urban Parkways.** Develop local streets as "urban parkways", where appropriate, with landscaping and pedestrian spaces.
Policy D-4-b	**Incentives for Pedestrian-Oriented Anchor Retail.** Consider adopting and implementing incentives for new pedestrian-friendly anchor retail at intersections within Activity Centers and along corridors to attract retail clientele and maximize foot traffic.
Policy MT-1-h	**Update Standards for Complete Streets.** Update the City's Engineering and Street Design Standards to ensure that roadway and streetscape design specifications reflect the Complete Streets concept, while also addressing the needs of through traffic, transit stops, bus turnouts, passenger loading needs, bike lanes, pedestrian accommodation, and short- and long-term parking.

Key GHG Plan Indicators.

- Project compliance with General Plan Policies

5.1.1.4 Transit-Oriented Development

Long-term development trends for increasing density and mixes of uses can lead to improved transit service in key areas of Fresno over time. Higher densities when combined with pedestrian orientation encourage transit use. A key factor is that both ends of the transit trip must be walkable and have the potential to serve reasonably large numbers of transit riders. The City's existing BRT

system combined with plans to increase development densities at BRT stations and along the corridor are critical elements of the City's transit oriented development strategy.

Relevant General Plan Policies.

Objective UF-12 Locate roughly one-half of future residential development in infill areas—defined as being within the City on December 31, 2012—including the Downtown core area and surrounding neighborhoods, mixed-use centers and transit-oriented development along major BRT corridors, and other non-corridor infill areas, and vacant land.

Policy UF-12-a **BRT Corridors.** Design land uses and integrate development site plans along BRT corridors, with transit-oriented development that supports transit ridership and convenient pedestrian access to bus stops and BRT station stops.

Policy UF-12-b **Activity Centers.** Mixed-use designated areas along BRT and/or transit corridors are appropriate for more intensive concentrations of urban uses. Typical uses could include commercial areas; employment centers; schools; compact residential development; religious institutions; parks; and other gathering points where residents may interact, work, and obtain goods and services in the same place.

Key GHG Plan Indicators.

- Comparison of development approved in infill areas versus non-infill areas such as comparison of development approved within 0.5 mile of BRT stations and 0.25 mile of transit stations versus non-BRT/non-transit station areas.
- Project designs consistent with General Plan policies.

5.1.2 Transportation Facilities Strategies

The following are strategies related to transportation infrastructure and facilities that encourage the use of alternative modes of transportation such as walking, bicycling, and transit use. This strategy would be implemented through support for and funding of transit, bicycle, and pedestrian connections, through transit and trail planning, and with regional cooperation among relevant agencies.

5.1.2.1 Transit Facilities

Transit facilities include bus stops, bus turnouts, multimodal transfer centers, and information kiosks. These facilities increase the comfort and convenience of using transit and minimize impacts on traffic flow from buses stopping for riders and re-entering traffic. Overall increases in transit service through the addition of new buses, new routes, and more frequent stops can also provide increased transit mode share. Transit

facility improvements are often provided by development projects in new growth areas as conditions of approval and mitigation measures. The improvements can also be provided as retrofits on existing streets and upgrades to existing transit stops using transportation funding.

Relevant General Plan Policies.

Objective MT-8 Provide public transit options that serve existing and future concentrations of residences, employment, recreation and civic uses and are feasible, efficient, safe, and minimize environmental impacts.

Policy MT-8-a **Street Design Coordinated with Transit**. Coordinate the planning, design, and construction of the major roadway network with transit operators to facilitate efficient direct transit routing throughout the Planning Area.

Policy MT-8-b **Transit Serving Residential and Employment Nodes**. Identify the location of current and future residential and employment concentrations and Activity Centers throughout the transit service area in order to facilitate planning and implementation of optimal transit services for these uses. Work with California State University, Fresno to determine locations within the campus core for bus stops.

Policy MT-8-g **High Speed Train**. If the State moves forward with HST, ensure it is constructed through Fresno in a manner that minimizes impacts to surrounding property owners and creates the most opportunity for redevelopment around the HST station.

Objective MT-9 Provide public transit opportunities to the maximum number and diversity of people practicable in balance with providing service that is high in quality, convenient, frequent, reliable, cost effective, and financially feasible.

Key GHG Plan Indicators.

- Transit route expansions
- Transit ridership trends
- Transition toward zero emission vehicles

5.1.2.2 Bicycle and Pedestrian Infrastructure

Adequate pedestrian infrastructure connecting frequently accessed destinations is critical to an increase in walking trips. Pedestrian infrastructure should be incorporated into project designs for new development, but also can be retrofitted in existing neighborhoods with barriers to walking such as lack of sidewalks or dangerous crossings.

Bicycle infrastructure including separate bicycle paths and bicycle lanes on roadways can increase the safety of cyclists and

encourage the use of this travel mode. Bicycle paths designed to provide more direct connections shorten travel distances and maximize safety. Bicycle lanes are less costly and can more easily connect multiple destinations for cyclists. The City of Fresno has an aggressive program in place to construct bike lanes and paths throughout the city. All new development is required to comply with the Bicycle, Pedestrian, and Trails Master Plan. Most arterials are now equipped with striped bike lanes. The City has also been installing sensors in the bike lanes that will trigger traffic lights to change when no motor vehicles are present.

Relevant General Plan Policies.

Objective MT-4 Establish and maintain a continuous, safe, and easily accessible bikeways system throughout the metropolitan area to reduce vehicle use, improve air quality and the quality of life, and provide public health benefits.

Policy MT-4-a **Active Transportation Plan**. To the extent consistent with this General Plan, continue to implement and periodically update the Active Transportation Plan to meet State standards and requirements for recommended improvements and funding proposals as determined appropriate and feasible.

Policy MT-4-b **Bikeway Improvements.** Establish and implement property development standards to assure that projects adjacent to designated bikeways provide adequate right-of- way and that necessary improvements are constructed to implement the planned bikeway system shown on Figure MT-2 to provide for bikeways, to the extent feasible, when existing roadways are reconstructed; and alternative bikeway alignments or routes where inadequate right-of-way is available.

Policy MT-4-c **Bikeway Linkages.** Provide linkages between bikeways, trails and paths, and other regional networks such as the San Joaquin River Trail and adjacent jurisdiction bicycle systems wherever possible.

Objective MT-5 Establish a well-integrated network of pedestrian facilities to accommodate safe, convenient, practical, and inviting travel by walking, including for those with physical mobility and vision impairments.

Policy MT-5-a **Sidewalk Development.** Pursue funding and implement standards for development of sidewalks on public streets, with priority given to meeting the needs of persons with physical and vision limitations; providing safe routes to school; completing pedestrian improvements in established neighborhoods with lower vehicle ownership rates; or providing pedestrian access to public transportation routes.

Objective MT-6 Establish a network of multi-purpose pedestrian and bicycle paths, as well as limited access trails, to link residential areas to local and regional open spaces and recreation areas and urban Activity Centers in order to enhance Fresno's recreational amenities and alternative transportation options.

Policy MT-6-a **Link Residences to Destinations.** Design a pedestrian and bicycle path network that links residential areas with Activity Centers, such as parks and recreational facilities, educational institutions, employment centers, cultural sites, and other focal points of the city environment.

Policy MT-6-g **Path and Trail Development.** Require all projects to incorporate planned multi-purpose path and trail development standards and corridor linkages consistent with the General Plan, applicable law and case-by-case determinations as a condition of project approval.

Policy POSS-7-h **Interlink City and San Joaquin River Parkway Trail Networks.** Strive to connect the parkway trail network to other trails in the vicinity, in order to create a community and regional trail system that offers a variety of different route combinations and enhances public access to the parkway.

Key GHG Plan Indicators.

- Active Transportation Plan implementation progress (projects funded and constructed).
- Developer funded and constructed bicycle and pedestrian projects.
- Compliance with General Plan policies and Development Code.

5.1.2.3 Traffic Calming Features

Design features and strategies to reduce vehicle speeds and reduce conflicts with pedestrians encourage more walking. Slower speeds encouraged by traffic calming can also improve safety and increase bicycling. Providing on-street parking, or street trees and landscaping to separate vehicles from pedestrians improve walkability.

Relevant General Plan Policies.

Policy MT-1-i **Local Street Standards.** Establish and implement local roadway standards addressing characteristics such as alignment, width, continuity and traffic calming, to provide efficient neighborhood circulation; to allow convenient access by residents, visitors, and public service and safety providers; and to promote neighborhood integrity and desired quality of life by limiting intrusive pass-through traffic.

Policy MT-1-j **Transportation Improvements Consistent with Community Character.** Prioritize transportation improvements that are consistent with the character of surrounding neighborhoods and supportive of safe, functional and Complete

Neighborhoods; minimize negative impacts upon sensitive land uses such as residences, hospitals, schools, natural habitats, open space areas, and historic and cultural resources.

In implementing this policy, the City will design improvements to:

- Facilitate provision of multi-modal transportation opportunities;
- Provide added safety, including appropriate traffic calming measures;
- Promote achievement of air quality standards;
- Provide capacity in a cost effective manner; and
- Create improved and equitable access with increased efficiency and connectivity.

Policy MT-5-e **Traffic Management in Established Neighborhoods.** Establish acceptable design and improvement standards and provide traffic planning assistance to established neighborhoods to identify practical traffic management and calming methods to enhance the pedestrian environment with costs equitably assigned to properties receiving the benefits or generating excessive vehicle traffic.

Key GHG Plan Indicators.

- Project compliance with General Plan Policies

5.1.3 Transportation Demand Strategies

These strategies provide programs and facilities that encourage employees to use alternative modes for commute trips.

5.1.3.1 Transportation Demand Management

Transportation Demand Management (TDM) refers to measures designed to reduce the demand for transportation facilities that are usually implemented at employment sites and event centers. These include programs targeting employee commute trips at the worksite such as vanpools, and incentives for alternative transportation and government-operated programs such as rideshare matching and outreach and incentives. Event center TDM measures involve the use of shuttles, encouraging carpooling, and staggering arrival and departure times to reduce congestion.

Large existing and new employers are required by existing regulations to implement TDM programs. The SJVAPCD has adopted Rule 9410 Employer Based Trip Reduction, which requires employers with over 100 employees to implement trip reduction programs. (SJVAPCD 2009) The rule targets employee commute trips and requires large employers to implement measures that reduce VMT by increasing transit use, carpooling, vanpooling, bicycling, or other measures to reduce trips. The SJVAPCD estimates that the rule will reduce light-duty mobile source criteria pollutants by approximately 6.8 percent by 2023 (SJVAPCD 2009). Similar reductions in greenhouse gas emissions would also be achieved with the reduction in trips and vehicle miles traveled from the rule.

End-of-trip facilities include items such as showers and lockers for people who bicycle to work, secure bike parking, onsite services such as dry cleaning pick-up and cafeterias, and break rooms to reduce trips for errands and lunch. These are measures intended to increase the convenience and reduce potential negatives associated with bicycling to work and to eliminate the need for some trips during the workday. End-of-trip facilities are often included as design features in large projects to attract employees and may be selected by businesses as compliance options for Rule 9410.

Relevant General Plan Policies.

Policy MT-10-c **Transportation Demand Management Guidelines.** Establish transportation demand management guidelines to allow for reduced off-street parking requirements.

5.1.3.2 Parking Measures

Providing limited parking is one of the most effective transportation measures. Use of parking structures and paid parking provide a strong incentive to use alternative modes and to take advantage of carpools and vanpools. This measure would only apply in higher-density development areas, downtown, and mixed-use projects specifically designed for this strategy.

Relevant General Plan Policies.

Policy MT-10-a **Updating Parking Standards.** Update off-street parking standards to reflect the context and location within activity areas of multiple uses and reductions appropriate for mixed residential and non-residential uses and proximity to existing or planned transit service.

Policy MT-10-b **Shared Parking.** Establish a strategy to promote the sharing of excess parking between uses within Activity Centers and BRT corridors, including specific provisions for this in the Development Code.

Policy MT-10-d **Parking Maximums.** Explore maximum off-street parking limits within Activity Centers proximate to BRT corridors, if such an Activity Center is determined compatible with promotion of a healthy and vigorous business environment.

Policy MT-10-f **Parking Benefit Districts.** Establish parking benefit districts to fund consolidated public parking where supported by local businesses.

Key GHG Plan Indicators.

- Completion of parking standards update incorporating the policies
- Projects with shared parking approved
- Employers and educational facilities participating in subsidized transit programs

5.1.3.3 Electric Vehicle Charging Stations

Infrastructure to charge electric vehicles while at work or other destinations would allow longer distance commuters and other drivers to use electric vehicles without concern for running out of charge on the return trip. Quick-charge technologies are in development that can partially charge a car battery in 15 minutes. Once quick-charging stations are widely available, the range impediment of electric vehicles will be much less important.

The interim solution to battery range is hybrid vehicles that can run on electricity or conventional fuels. Plug-in hybrids have larger battery packs that allow vehicles to travel greater distances under battery power prior to use of the gasoline engine.

Relevant General Plan Policies.

Policy RC-8-j **Alternative Fuel Network.** Support the development of a network of integrated charging and alternate fuel station for both public and private vehicles, and if feasible, open up municipal stations to the public as part of network development.

Key GHG Plan Indicators.

- Completion of EV charging stations and alternative fuel stations

5.1.4 Energy Conservation Strategies for New and Existing Buildings

Improving energy efficiency in new and existing buildings and facilities provides one of the most cost-effective strategies for reducing greenhouse gases. The energy savings from improved energy efficiency can often pay for the cost of the upgrades and retrofits over time. These strategies are implemented through the promotion of energy- and water-efficient buildings (e.g., LEED buildings and/or exceeding Title 24 standards) through green building ordinances, project timing, prioritization, and other implementing tools.

5.1.4.1 Energy Efficiency in New Buildings

New projects can exceed Title 24 Energy Efficiency Standards for new residential and non-residential buildings. The amount of reductions in energy use can be related to voluntary tier levels contained in Title 24 or through use of outside certifying programs such as LEED, EnergyStar or Greenpoint Rating systems. It should be noted that meeting LEED standards does not necessarily mean that a project would comply with Title 24, so additional measures may still be required for some projects to meet regulatory requirements. The state's ultimate goal is for new buildings to achieve "net zero" energy consumption. Net zero requires a combination of high efficiency buildings and energy self-generation through solar power or other means. Once net zero buildings become the norm, opportunities for reductions from new building energy efficiency become limited. Locations and building designs that are not suitable for onsite generation will not be able to achieve net zero energy consumption with currently available technologies. For those sites, offsite generation in common areas or through purchase of energy generated by zero emission facilities may be used.

Relevant General Plan Policies.

Objective RC-8 Reduce the consumption of non-renewable energy resources by requiring and encouraging conservation measures and the use of alternative energy sources.

Policy RC-8-a **Existing Standards and Programs.** Continue existing beneficial energy conservation programs, including adhering to the California Energy Code in new construction and major renovations.

Policy RC-8-b **Energy Reduction Targets**. Strive to reduce per capita residential electricity use to 1,800 kWh per year and nonresidential electricity use to 2,700 kWh per year per capita by developing and implementing incentives, design and operation standards, promoting alternative energy sources, and cost-effective savings.

Policy RC-8-c **Energy Conservation in New Development.** Consider providing an incentive program for new buildings that exceed California Energy Code requirements by fifteen percent.

Policy RC-8-d **Incentives.** Establish an incentive program for residential developers who commit to building all of their homes to ENERGY STAR performance guidelines.

Policy RC-8-e **Energy Use Disclosure.** Promote compliance with State law mandating disclosure of a building's energy data and rating of the previous year to prospective buyers and lessees of the entire building or lenders financing the entire building.

Key GHG Plan Indicators.

- Title 24 compliance reports demonstrating projects meet or exceed regulatory requirements.
- Project CEQA documents include discussion of energy conservation design features.
- Periodic compilation of building energy efficiency reports for comparison with Plan goals.

5.1.4.2 Energy Efficiency in Existing Buildings

Older buildings that were constructed prior to the adoption of Title 24 or that were constructed when early versions of Title 24 were in place provide significant opportunities for cost-effective energy retrofits. Most current energy retrofit programs are voluntary incentive based programs. The State of California and the federal government have from time to time offered tax credits and deductions for energy retrofits. Public utilities also offer energy efficiency rebates for projects such as whole-house fans, insulation, weatherization, and other actions that reduce energy consumption in residential and commercial buildings. Some jurisdictions have proposed mandatory energy efficiency retrofits at time of sale; however, those programs are currently considered by many to be infeasible because of the loss of equity experienced by many homeowners at the time of sale, especially when housing values are low.

In January 2011, the City Council unanimously approved the adoption of the California Property Assessed Clean Energy (PACE) program administered by figtreecompany.com for the City of Fresno.

PACE utilizes bond financing to provide property owners fixed-rate, property-based, no-money-down financing for energy and water efficiency retrofits to their properties, significantly reducing energy bills and expenses with instant cost savings. The City no longer has an active PACE program; however, in partnership with PG&E, the City has implemented programs to achieve reductions in electricity usage, particularly in the municipal sector.

Relevant General Plan Policies.

Policy RC-7-i **PACE Financing.** Develop a residential Property Assessed Clean Energy (PACE) program, if it is determined to be a feasible option, to help finance water efficiency and energy efficiency upgrades for property owners.

Key GHG Plan Indicators.

- Progress in implementing the PACE program.
- Report on types and numbers of projects funded.

5.1.4.3 Self-Generation Using Solar Panels and Solar Hot Water Systems

The city of Fresno's location and climate is excellent for solar electric generation and hot water systems with an average of 262 sunny days per year. Residential and commercial projects can include solar-ready roofs to allow future installation of solar panels or provide solar panels at the time of construction. Solar panel technology is becoming increasingly efficient in terms of power production and costs have declined substantially in recent years. Not all locations and project settings are conducive to solar power production, and cost-effectiveness is currently dependent on the receipt of incentives in most cases. Sites with the potential for other structures or trees shading the panel location greatly reduce feasibility. The projects also often require net metering where surplus power generated by the panels is sold to the utility and power is purchased from the grid during periods of low production or high usage. The utilities are only required to accept a limited amount of solar photovoltaic (PV) distributed generation into their systems each year. If limits are exceeded and net metering is not allowed, the systems become less feasible.

Solar hot water systems have been used for residential water heating for many years and are especially popular for residences with swimming pools to extend the days per year when the pool can be used. Another option for hot water is to use tankless, electric water heaters. These are increasingly used in new development. Tankless heating saves water and energy because it is not necessary to run the water for long periods for the water to arrive from the hot water tank to the faucet as is the case with the conventional water heaters.

Relevant General Plan Policies.

Policy RC-8-h **Solar Assistance.** Identify and publicize information about financial mechanisms for private solar installations and provide over-the-counter permitting for solar installations meeting specified standards, which may include maximum size (in kV) of units that can be so approved.

Key GHG Plan Indicators.

- Projects permitted

5.1.5 Water Conservation Strategies

Northeast Fresno Surface Water Treatment Plant

Water pumping and transport consumes approximately 20 percent of all energy used in California. Measures to reduce water consumption through improved efficiency in plumbing fixtures and landscaping can result in substantial savings compared to past practices. In some cases, it may be feasible to go beyond the water efficiency standards in the California Green Building Standards Code and the State Model Water Efficient Landscape Ordinance with new construction. Water reuse and recycling through non-potable "purple pipe" systems may reduce energy consumption for water transport. The City has started installing purple pipes through implementation of the Recycled Water Ordinance. The Ordinance requires that new developments within planned major recycled water distribution mains to install purple pipe. As the City's capital projects construct distribution infrastructure, these segments will be in place to facilitate connections to new customers. The City's initial implementation of the recycled water distribution system from the Recycled Water Reclamation Facility is currently under construction. The City plans to use 25,000 acre-feet per year of recycled water to irrigate open spaces, parks, street medians, and golf courses, and at groundwater recharge facilities. The City is constructing an advanced treatment facility at the Fresno-Clovis Regional Water Reclamation Facility (RWRF) to process and clean the water to meet State and federal standards and regulations for non-potable use. The initial capacity of the facility will be 5 million gallons per day with a future capacity of 30 million gallons per day. The new treatment facility will pump water into the new network of recycled water pipelines that will convey recycled water across the city. The route begins in a rural and agricultural area in Fresno county and moves to high traffic city streets. High traffic volumes, businesses, agriculture, cemeteries and residences are immediately adjacent to project route (Recharge Fresno 2018).

The use of recycled water focuses on new and existing large green spaces, industrial uses, and new development. However, the development of a gray water policy for the residential reuse of wastewater for household gardening and landscape irrigation on site may be feasible. Water users that implement these measures or purchase buildings and homes that include these features will benefit from savings in their water bills.

5.1.5.1 Relevant General Plan Policies

Policy RC-6-d **Recycled Water.** Prepare, adopt, and implement a City of Fresno Recycled Water Master Plan.

Objective RC-7 Promote water conservation through standards, incentives and capital investments.

Policy RC-7-a **Water Conservation Program Target.** Maintain a comprehensive conservation program that reduces per capita water usage in the city's water service area to 243 gallons per capita per day (gpcd) by 2020 and 190 gpcd by 2035, by adopting conservation standards and implementing a program of incentives, design and operation standards, and user fees.

- Support programs that result in decreased water demand, such as landscaping standards that require drought-tolerant plants, rebates for water conserving devices and systems, turf replacement, xeriscape landscape for new homes, irrigation controllers, commercial/industrial/ institutional water conserving programs, prioritized leak detection program, complete water system audit, landscape water audit and budget program, and retrofit upon resale ordinance.
- Implement the U.S. Bureau of Reclamation Best Management Practices for water conservation as necessary to maintain the City's surface water entitlements.
- Adopt and implement policies in the event an artificial lake is proposed for development.
- Work cooperatively toward effective uniform water conservation measures that would apply throughout the Planning Area.
- Expand efforts to educate the public about water supply issues and water conservation techniques.

Policy RC-7-d **Update Standards for New Development.** Continue to refine water saving and conservation standards for new development.

Policy RC-7-f **Implementation and Update Conservation Program.** Continue to implement the City of Fresno Water Conservation Program, as may be updated, and periodically update restrictions on water uses, such as lawn and landscape watering and the filling of fountains and swimming pools, and penalties for violations. Evaluate the feasibility of a 2035 conservation target of 190 gpcd in the next comprehensive update of the City of Fresno Water Conservation Program.

Policy RC-7-h **Landscape Water Conservation Standards.** Refine landscape water conservation standards that will apply to new development installed landscapes, building on the State Model Water Efficient Landscape Ordinance and other State regulations.

- Evaluate and apply, as appropriate, augmented xeriscape, "water-wise," and "green gardening" practices to be implemented in public and private landscaping design and maintenance.

- Facilitate implementation of the State's Water Efficient Landscape Ordinance by developing alternative compliance measures that are easy to understand and observe.

Key GHG Plan Indicators.

- Track per capita water use with collected meter data and normal reporting.
- Progress in updating the Water Conservation Program.

5.1.6 Waste Diversion and Recycling and Energy Recovery

Programs and actions that promote recycling and diversion of waste from landfills can reduce energy consumed in the transport and handling of the waste material and can reduce the greenhouse gases that are emitted during the decomposition of organic waste.

The State of California has adopted increasingly stringent mandates for the percentage of solid waste that can be disposed in landfills. Programs that require or encourage further reductions in waste beyond mandates will result in greenhouse gas reductions from this source. Certain landfills are mandated to install methane capture systems. Methane is a powerful greenhouse gas that is 21 times more effective than carbon dioxide in retaining heat in the atmosphere. The methane can be flared, producing mainly carbon dioxide or used in combustion devices to generate heat or power that can be used for productive purposes displacing the use of fossil fuels.

Relevant General Plan Policies.

Policy PU-9-a **New Techniques.** Continue to collaborate affected stakeholders and partners to identify and support programs and new techniques of solid waste disposal, such as recycling, composting, waste to energy technology, and waste separation, to reduce the volume and toxicity of solid wastes that must be sent to landfill facilities.

Policy PU-9-b **Compliance with State Law.** Continue to pursue programs to maintain conformance with the Solid Waste Management Act of 1989 or as otherwise required by law and mandated diversion goals.

Policy RC-11-a **Waste Reduction Strategies**. Maintain current targets for recycling and re-use of all types of waste material in the city and enhance waste and wastewater management practices to reduce natural resource consumption, including the following measures:

- Continue to require recyclable material collection and storage areas in all residential development.

- Establish recycling collection and storage area standards for commercial and industrial facilities to size the recycling areas according to the anticipated types and amounts of recyclable material generated.
- Provide educational materials to residents on how and what to recycle and how to dispose of hazardous waste.
- Provide recycling canisters and collection in public areas where trash cans are also provided.
- Institute a program to evaluate major waste generators and identify recycling opportunities for their facilities and operations.
- Continue to partner with the California Integrated Waste Management Board on waste diversion and recycling programs and the CalMax (California Materials Exchange) program.
- Evaluate the feasibility of a residential, restaurant and institutional food waste segregation and recycling program, to reduce the amount of organic material sent to landfill and minimize the emissions generated by decomposing organic material.
- Evaluate the feasibility of "carbon footprinting" for the City's wastewater treatment facilities, biomass and composting operations, solid waste collection and recycling programs.
- Expand yard waste collection to divert compostable waste from landfills.
- Study the feasibility and cost-benefit analysis of a municipal composting program to collect and compost food and yard waste, including institutional food and yard waste, using the resulting compost matter for City park and median maintenance.

Policy RC-11-b **Zero Waste Strategy.** Create a strategic and operations plan for fulfilling the City Council resolution committing the City to a Zero Waste goal.

Policy RC-4-i **Methane Capture.** Continue to pursue opportunities to reduce air pollution by using methane gas from the old City landfill and the City's wastewater treatment process.

Key GHG Plan Indicators.

- Progress reports on achieving State mandated waste reduction and diversion goals.
- Adoption of commercial and industrial recycling area and storage standards.
- Adoption of the Zero Waste Strategy.

5.1.6.2 Wastewater

Fresno/Clovis RWRF

Wastewater treatment can produce methane emissions that are a powerful greenhouse gas, but it also provides a valuable renewable energy source when scrubbed of harmful components. Fresno currently operates a major regional secondary treatment plant and reuses water primarily for agricultural purposes. The City has one tertiary treatment facility at the Copper River development in north Fresno that provides water for a golf course and shared landscaped areas. Tertiary treatment of wastewater can allow its use for safely watering landscaped areas such as highway medians, parks, and golf courses using so-called "purple pipe" systems. Tertiary treatment systems can use substantial amounts of energy, so energy savings from less water pumping must be balanced with the energy costs of treating the water and pumping to where it is used. Wastewater treatment plants such as the Fresno/Clovis Regional Wastewater Reclamation Facility (RWRF) with anaerobic digesters capture the methane produced during the treatment process for productive use such as generation of electricity or process heat to offset some of the plant's power consumption.

Relevant General Plan Policies.

Objective PU-7 Promote reduction in wastewater flows and develop facilities for beneficial reuse of reclaimed water and biosolids for management and distribution of treated wastewater.

Policy PU-7-a **Reduce Wastewater.** Identify and consider implementing water conservation standards and other programs and policies, as determined appropriate, to reduce wastewater flows.

Policy PU-7-d **Wastewater Recycling**. Pursue the development of a recycled water system and the expansion of beneficial wastewater recycling opportunities, including a timely technical, practicable, and institutional evaluation of treatment, facility siting, and water exchange elements.

Key GHG Plan Indicators.

- Progress in adopting wastewater reduction programs.
- Feasibility studies regarding future tertiary treatment/recycling options.

5.1.6.3 Community Involvement and Outreach

Many of the strategies listed above will be more effective if there is community involvement and outreach to engage the citizens. This strategy requires public awareness of the measures available for them to take effective action at reducing their energy use and carbon footprint.

Measures and programs that reduce greenhouse gas emissions are often operated at the regional level. Many modes of transportation operate at the regional level, because people travel throughout the region. Regional cooperation provides a venue for sharing knowledge and resources to help address a variety of issues, including climate change and greenhouse gas emissions.

Relevant General Plan Policies.

Policy RC-7-g **Educate on State Requirements.** Educate the residents and businesses of Fresno on the requirements of the California Water Conservation Act of 2009.

Policy RC-8-h **Solar Assistance.** Identify and publicize information about financial mechanisms for private solar installations and provide over-the-counter permitting for solar installations meeting specified standards, which may include maximum size (in kV) of units that can be so approved.

Policy RC-8-k **Energy Efficiency Education.** Provide long-term and ongoing education of homeowners and businesses as to the value of energy efficiency and the need to upgrade existing structures on the regular basis as technology improves and structures age.

Key GHG Plan Indicators.

- Progress reports on education and outreach programs.
- Number of solar panel installation permits issued.

5.1.7 Municipal Strategies

The City of Fresno has a comprehensive set of strategies specifically targeted at greenhouse gas emissions generated at City-owned facilities and from City operations. The strategies identified by the City include the following measures intended to improve energy efficiency in buildings and equipment owned by the City, alternative fuels for City vehicles and equipment, and water conservation:

- Improve energy efficiency in City operations.
- New City buildings exceed Title 24 energy efficiency standards.
- Install renewable energy systems on City facilities.
- City operated transportation demand management for City employees.
- Purchase green vehicles for City fleets.
- Enhance reduction, recycling, and reuse efforts at City facilities.
- Implement water efficient landscaping in city parks and facilities.

Relevant General Plan Policies.

Policy RC-7-c **Best Practices for Conservation.** Require all City facilities and all new private development to follow U.S. Bureau of Reclamation Best Management Practices for water conservation, as warranted and appropriate.

Policy RC-7-e **Retrofit City Facilities, and Consider Incentives Programs to Encourage Retrofitting of Other Existing Public and Private Residential and Non-Residential Facilities and Sites.** Reduce water use in municipal buildings and City operations by developing a schedule and budget for the retrofit of existing municipal buildings with water conservation features, such as auto shut-off faucets and water saving irrigation systems. Prepare a comprehensive incentive program for other existing public and private residential and non-residential buildings and irrigation systems.

Policy RC-8-f **City Heating and Cooling.** Reduce energy use at City facilities by updating heating and cooling equipment and installing "smart lighting" where feasible and economically viable.

Policy RC-8-g **Revolving Energy Fund.** Create a City Energy Fund which uses first year savings and rebates from completed City-owned energy efficiency projects to provide resources for additional energy projects. Dedicate this revolving fund to the sole use of energy efficiency projects that will pay back into the fund.

Key GHG Plan Indicators.

- Progress reports from responsible departments on conservation efforts.
- Progress on creating a City Energy Fund.
- Identification and recognition of major individual conservation projects.

5.1.7.2 Regional Urban Forestry Program

Trees provide shade that can reduce the urban heat island effect caused when pavement and other open surfaces absorb solar radiation and re-radiate heat to the surrounding environment. The shade can reduce energy required for cooling. Trees also store carbon as they grow, in a process referred to as sequestration. Emission reductions from urban forestry projects must consider the life cycle emissions such as tree maintenance and the ultimate disposition of trees at the end of their lives to ensure that they produce a net decrease in greenhouse gas emissions.

The City maintains trees in parks and other publicly owned landscaped areas. These areas may provide an opportunity for new tree planting or replacement of tree species that possess a low potential to store carbon, with tree species that possess higher carbon storage potential. Guidance for managing urban forests is available from a number of sources. The Climate Action Reserve, Urban Forest Project Reporting Protocol (CAR 2019) provides criteria for generating greenhouse gas emission offsets with tree planting along with procedures for project monitoring. ICLEI's Urban Forestry Toolkit for Local Governments provides a series of fact sheets and case studies that communities can use to design an effective urban forestry program (ICLEI 2006).

Relevant General Plan Policies.

Policy POSS-1-g **Regional Urban Forest.** Maintain and implement incrementally, through new development projects, additions to Fresno's regional urban forest to delineate

corridors and the boundaries of urban areas, and to provide tree canopy for bike lanes, sidewalks, parking lots, and trails.

Key GHG Plan Indicators.

- Track change in urban tree cover over time.

5.1.7.3 Other Municipal Strategies

Energy Savings from Traffic and Street Lighting. The City plans to replace lighting fixtures with more efficient LED or other technology whenever possible. According to a report prepared by PG&E, Phase II LED luminaires provided power savings of 36 percent compared with high-pressure sodium luminaires, and the newer Phase III LED luminaires provided 52 percent savings (PG&E 2008).

Low-Emission City Fleet Vehicles. The City operates vehicles used by the FAX bus fleet, the Solid Waste Division, the Police Department and for maintenance and other purposes. The City has already converted all buses to compressed natural gas (CNG). FAX currently operates 110 alternatively fueled CNG buses. In 2014, the CARB approved a regulation setting a Statewide goal for public transit agencies to transition to 100 percent zero-emission bus fleets by 2040, and requiring that all new bus procurements be carbon-free by 2029. FAX's most recent bus order included two Proterra all-electric battery 40-foot buses, anticipated to arrive in mid-2020 with an additional order of seven scheduled for revenue service in 2020. Through these investments, FAX continues to showcase its commitment to cleaner vehicles and a cleaner environment.

Green Purchasing. The City makes purchases typical for city government operations such as vehicles, computers, paper, and materials required to maintain the City's infrastructure. The City's compressed natural gas (CNG) fleet vehicles provide good examples of its past green purchasing practices.

Municipal Water Conservation. The City has implemented water saving measures at most public parks, and other landscaped areas maintained by the City. The General Plan Policies listed in the Water Conservation Strategies section apply to municipally operated facilities.

5.1.8 Strategies for Existing Development

The GHG Plan Update strategies described above are implemented in two ways. New development projects would be constructed consistent with the General Plan and GHG Plan Update. Existing residents and businesses would comply with regulations that apply to everyone and participate in new and existing programs and measures. People living in existing residential development also share the benefits of the land use strategies applied at work places and commercial areas that are walkable and transit oriented. The strategies that apply directly and indirectly to existing development are shown in Table 5-B.

Table 5-B: Strategies for Existing Development

Strategy	How it Applies
Transportation Demand Management (TDM)	TDM is implemented at existing and new businesses and can also reduce trips from new and existing housing where employees live.
Expanded Transit Service	Improved transit service will encourage increased ridership from new and existing development.
Improved Connections to Transit Stations	Transit stations service a wider community area that includes connections to new and existing development through sidewalks and bike lanes.
Traffic Calming Retrofits	Traffic calming designs can be retrofitted on existing roads or built in new development.
Complete Streets Program	Complete streets connect existing and new areas.
Parking Management	Parking management at new and existing employment centers encourages trip reductions from all residential development
Energy Retrofits	Educational and incentive programs encourage existing residents and business owners to install energy retrofits providing large benefits in older structures.
Bicycle and Pedestrian Improvements on Existing Roads and near transit stations	Bicycle paths and lanes can be retrofitted on existing roads, near transit stations. Sidewalks and pedestrian paths can connect existing neighborhoods with appropriate destinations including transit stations.
Bicycle Parking Facilities	Bicycle parking can be added to existing businesses if needed to satisfy demand by employees and customers.
Water Conservation Programs	Educational and incentive programs encourage existing residents and businesses to conserve water.
Recycled Water Use in Existing Parks	Recycled water can be piped to any area retrofitted or initially developed with a “purple pipe” system to distribute recycled water.
Energy Retrofits	Educational and incentive programs encourage existing residents and business owners to install energy retrofits providing large benefits in older structures.
Bicycle Parking Facilities	Bicycle parking can be added to existing businesses if needed to satisfy demand by employees and customers.
Recycling Programs	Operational programs such as recycling apply to all residents and businesses in the city.
Electric Vehicle Charging	Charging stations can be installed in existing development as a retrofit or in new development.
Measures That Apply to New Development but Indirectly Benefit Existing Development	
Transit and Pedestrian Oriented Development	Transit and pedestrian oriented development provides destinations that encourage transit use from existing development and walking once people arrive.
Mixed Use Development	Mixed-use development creates a more walkable environment conducive to transit use for trips from existing development.
Compact Development	Making the city more compact shortens average trip lengths for residents and creates more opportunities for transit.
Traffic Flow Improvements	Transportation improvements that reduce congestion and improve flow can reduce emissions from both existing and new development.
Recycling Programs	Operational programs such as recycling apply to all residents and businesses in the city.
Electric Vehicle Charging	Charging stations can be installed in existing development as a retrofit or in new development.

5.2 REDUCTION POTENTIAL FROM LOCAL MEASURES

Reductions beyond State regulations will be achieved through the development of the land use pattern and transportation system envisioned by the General Plan, enforcement of City ordinances and design standards, and direct reductions from energy conservation projects, and alternative fuels use.

The effectiveness of the GHG land use strategy is dependent on several factors. The first factor is the rate of population growth. Rapid population growth has two contradictory effects. First, the overall growth in emissions will increase substantially in high growth areas; however, the per capita emissions in high growth areas will be lower. This is because a larger percentage of the population will live in areas of the city with energy efficient homes and businesses, and better transportation options than the slow growing or built out counterparts. On a citywide basis, faster-growing cities will build out neighborhoods and shopping centers more rapidly, providing more work and shopping opportunities close to home and shorter travel distances.

The second factor is economic. The type and scale of development projects will vary depending on market forces and the state of the economy in future years. Market forces affect the amount of single-family development compared to multi-family development. A vibrant economy will tend to create more jobs and increase in migration.

The amount of trips and miles traveled varies substantially between highly urban areas and suburban and rural areas. Frequent bus, light rail, or commuter train service requires high development densities to provide adequate ridership to support the service. The reductions that can be achieved by pedestrian orientated development and transit oriented development vary widely based the density and design at both ends of the trip.

5.2.1 Mobile Source Reductions

5.2.1.1 Land Use Strategy

SB 375 required the CARB to set regional targets for reductions from light duty passenger vehicle emission. After a lengthy review process and input from the regional transportation planning agencies, the CARB adopted a Fresno County target reduction in passenger vehicle CO_2e per capita of 4.7 percent by 2020 and 7.6 percent by 2035. The key strategies envisioned include:

- Combination of density increase, mixed uses, and infill
- Growth along major transit corridors and activity centers

The land use strategies are expected to reduce trip generation and vehicle miles traveled to achieve the percentage reductions based on modeling results from the regional transportation model for the General Plan land use scenario. The City of Fresno is participating in the SB 375 SCS process to more closely define the growth areas that would be part of the SCS and qualify for CEQA streamlining provisions.

Emission reductions at the individual project level would be substantially larger than the amounts estimated for as the overall reduction for SB 375 compliance. CAPCOA estimates that land use and

transportation measures in a suburban setting can reduce emissions by a global maximum of 15 percent and 20 percent in a suburban center. Projects approaching the maximum reductions would be in locations served by frequent transit with complete pedestrian and bicycle infrastructure and multiple destinations such as retail and commercial service within walking distance.

5.2.1.2 Transportation Demand Management

The General Plan encourages transportation demand management (TDM) at projects that are large employers. The SJVAPCD Rule 9410 – Employer Trip Reduction would provide at 1.6 percent emission reduction in 2020 and 2035 through reduced trips and vehicle miles traveled.

The land use strategy and transportation demand management would provide a combined 45,184 MT CO_2e/year in emission reductions by 2020, a 66,191 MT CO_2e/year reduction by 2030, and a 80,114 MT CO_2e/year reduction by 2035. The assumptions used for these calculations are based on the 2014 GHG Plan with the adoption of General Plan land use strategy and compliance with SJVAPCD Rule 9410.

5.2.1.3 Implement Support for Electric Vehicles

Hybrid EVs, plug-in hybrid EVs, and all-EVs produce lower emissions than conventional vehicles. Any type of electrified vehicle emits less GHG than conventional vehicles by at least 40 percent. The City could promote EVs by establishing EV incentive programs, installing EV chargers within residential units and commercial building parking lots and providing streamlined permitting ordinance for EV charging stations. Based upon the historic trends in EV ownership and the CARB Zero-Emission Vehicles (ZEV) Action Plan, it is assumed that by 2030 EV ownership in the city would reach 8.7 percent, and by 2035, 13 percent of the vehicle trips would be made by EVs.

CALGreen, the State green building code (California Code of Regulations [CCR], Title 24, Part 11), sets requirements for installing EV-capable infrastructure in new residential and nonresidential buildings. CALGreen contains minimum requirements that apply statewide as well as reach codes that can be adopted by local governments. Starting January 1, 2020, CALGreen requires that new construction of single-family residences, duplexes, and townhouses with private garages must have raceway and panel capacity to support the future installation of level 2 charging stations (CEC 2019, ICC 2019). The City supports increased EVs within the city by encouraging the installation of EV chargers within new and existing multi-family residential and commercial parking areas within the city.

5.2.1.4 Implementation Support for Zero Emission Buses

To implement the State of California's Innovative Clean Transit regulation[10] of 100 percent zero-emission buses by 2040 (CARB 2019), FAX needs regulatory and financial support to determine the

[10] To transition successfully to an all zero-emission bus fleet by 2040, each transit agency will submit a rollout plan under the regulation demonstrating how it plans to purchase clean buses, build out necessary infrastructure and train the required workforce. The rollout plans are due in 2020 for large transit agencies and in 2023 for small agencies. Agencies will then follow a phased schedule from 2023 until 2029, by which date 100 percent of annual new bus purchases will be zero-emission.

most viable options for transitioning its fleet to zero emission buses (ZEBs). FAX should consider potential funding mechanisms for this program. Some potential strategies are as follows:

- Traditional financing methods, such as municipal bonds and local option transportation taxes to finance the purchase and/or operation of new ZEBs.
- Collaboration with local utilities to obtain beneficial rate structures to reduce charging costs and work with utilities to secure charging infrastructure investments.
- Federal, State, regional, and local grant and incentive programs to reduce the initial purchase price of ZEBs.

In addition to funding, building the infrastructure necessary to deploy the ZEBs, and procuring electricity, hydrogen, or other alternative fuel sources to operate them pose challenges for FAX that will require innovative approaches and best practices to operate a full fleet of ZEBs in the City by 2040. FAX is currently working on its rollout plan to meet all requirements by 2040.

5.2.2 Energy Efficiency Reductions

5.2.2.1 Building Energy Efficiency

The City supports the State's efforts to achieve net zero energy consumption in new residential and non-residential buildings. Achieving net zero is currently possible in some buildings with the use of onsite solar to offset the electricity consumption from the grid. The 2019 Title 24 standards that will go into effect in January 2020 are substantially more stringent than the 2016 Title 24 standards and focus on achieving zero net energy homes.

The City encourages developers to achieve the voluntary tier levels from the CPUC Energy Efficiency Strategic Plan, which ultimately lead to net zero energy consumption for residential development by 2020 and non-residential development by 2030. GHG emission reductions from net zero energy homes have been accounted for under State regulations in Chapter 4 as the 2019 Title 24 standards include this requirement. By achieving net zero energy consumption for non-residential development by 2030, the City would reduce GHG emissions by 70,230 MT CO_2e/year by 2030, and 100,237 MT CO_2e/year by 2035. Once Title 24 mandates net zero energy consumption, no further reductions beyond regulation can be achieved by projects.

5.2.3 Water Conservation

The California Water Conservation Act mandates a 20 percent reduction in water usage by 2020. The City has a reduction target of per capita water usage in the City's water service area to 230 gallons per day per capita (25 percent below the current consumption rate) in 2035. The City will meet the reduction target with measures applicable to new and existing development. Reductions beyond the state mandated 20 percent are possible with the use of building and landscaping water conservation features. The reductions from buildings can be achieved with high-efficiency toilets, low-flow showers and faucets, and water-efficient appliances such as clothes washers and dishwashers. Water savings from landscaping would be achieved primarily through the use of synthetic ('turf') lawns, drought-tolerant landscaping or xeriscaping. The City is also proposing

General Plan Policy RC-7-b that requires a tiered water cost structure to cover the true cost of the water supply. Example measures and water savings estimates are provided below.

Indoor Water Conservation Measures.

- **Hot Water Pipe Insulation:** Insulate hot-water pipes, and separation of hot and cold piping to avoid heat exchange. Water savings: 2,400 gallons per residential unit per year. Cost: $50/unit.

- **Pressure Reducing Valves.** Pressure reducing valves maintain pressure below 60 psi reducing volume of any leakage present and preventing excessive flow from all appliances and fixtures. Water savings: 30,000 gallons approximately per residential unit per year. Cost: $100-$150 per unit[11].

- **Water-Efficient Dishwashers.** Install Energy Star-certified units. Water savings: 5000 gallons per residential unit per year[12].

- **Dual Flush Toilets:** Provides option to flush with partial (0.8 gallon) flow of water or with a full (1.6 gallons) flow depending on need. Water savings: 13,000 gallons per year per toilet[13]. Cost: $200 per toilet; however, retrofit kits are available for under $20.

- **High-Efficiency Washing Machines:** Use front loading and top loading Energy Star-qualified clothes washers that use 35 to 50 percent less water than conventional washing machines. Water savings: 7,000 gallons per year[14]. Cost: $800 for a high-efficiency washing machine.

- **Point-of-Use or Tankless Water Heaters:** Install small water heaters close to the point of use, such as bathrooms, kitchen, and laundry area. Water savings: 5,300 gallons per residential unit per year[15]. Cost: $700 for point of use water heaters. However, the cost is approximately the same for one large unit or three smaller ones.

Outdoor Water Conservation Measures.

- **Evapotranspiration (ET) Controllers:** Irrigation scheduled by actual plant ET rates. Water savings: 20,000 gallons per single-family unit per year. Cost: $175 per controller and $48 per year in maintenance.

---

11 Water Pressure Reducing Valves: Frequently Asked Questions. Website: www.watts.com/resources/references-tools/waterpressurereducingvalvesfaq (accessed August 10, 2019).

12 Energy Star Appliances: Dishwashers Vs. Handwashing Dishes. Website: www.energystar.gov/products/appliances/dishwashers/dishwasher_hand_washing (accessed August 10, 2019).

13 Energy Efficient Toilets Comparison: Constellation Energy. Website: www.blog.constellation.com/2017/09/25/energy-efficient-toilets-comparison/ (accessed August 10, 2019).

14 Energy Star High Efficiency Clothes Washers. Website: www.energystar.gov/products/appliances/clothes_washers (accessed August 10, 2019).

15 Energy Star Point of Contact Heaters. Website: www.energystar.gov/products/water_heaters/point_use_pou_water_heaters (accessed August 10, 2019).

- **Water-Efficient Landscaping:** Use drought tolerant plants and compliant irrigation systems and controllers. Water Savings: Up to 50 percent of outdoor use (12,000 gallons/year from a 2,100-square foot landscaped area. Cost: similar to conventional landscaping.

- **Xeriscape:** Xeriscaping is a combination of seven principles, planning and design, practical turf areas, efficient irrigation, soil analysis and improvement, mulching, low-water-use plants, and appropriate maintenance. Water savings: 30 percent reduction in irrigation demand or about 16,000 gallons per year on a typical single-family lot. Cost: similar to conventional landscaping.

Estimates of water savings and costs are from the City of Chula Vista Water Conservation Plan Guidelines adopted in 2003.

5.2.3.2 Energy Savings from Water Conservation

The combined benefits of indoor and outdoor water conservation program are estimated at 20 percent in 2020 to achieve compliance with state-mandated reductions and 25 percent by 2035 to meet the General Plan target, which are consistent with the assumptions in 2014 GHG Plan. Reductions in water use reduce electricity consumed for pumping, treatment, and transport of water by proportional amounts. Reductions in water use by these amounts would provide emission reductions of 5,975 MT CO_2e/year by 2020 and 8,891 MT CO_2e/year by 2035. Assuming a constant reduction rate, the emission reductions in 2030 would be 7,840 MT CO_2e/year.

5.2.4 Waste Diversion and Recycling Reductions

The City of Fresno will meet or exceed the state-mandated 75 percent diversion target in the future. The CARB estimates that statewide reductions of 20 to 30 MMT CO_2e will be achieved through this strategy. The City of Fresno has achieved substantial progress to date. The city per capita baseline based on the 2002 to 2004 average is 6.6 pounds per day per person. The 2018 per capita rate was 4.8 pounds per day per person, which was assumed to be consistent through 2020. The 75 percent diversion target would require a per capita rate of 1.65 pounds per person per day. Achieving net zero waste would provide additional reductions from this sector; however, no reductions are estimated pending adoption of a state mandate. The estimated emission reductions from achieving the 75 percent mandated diversion target are 84,677 MT CO_2e/year in 2030, and 90,043 MT CO_2e/year in 2035.

5.2.5 Summary of Reductions from Local Measures

Table 5-C summarizes the local reductions from the measures described above.

Table 5-D summarizes the baseline 2010 and updated 2016 GHG emissions, the projected 2020, 2030, and 2035 emission inventories, as well as the reduced 2020, 2030, and 2035 inventories after implementation of the State and local reduction measures.

By 2020, the Statewide and local measures together would reduce the city's GHG emissions from the 2020 BAU level to 2,081,167MT CO_2e, which would exceed the 15 percent below baseline levels reduction target of 3,183,348 MT CO_2e for 2020. By 2030, the Statewide and local measures together would reduce emissions to 1,710,386 MT CO_2e, which would exceed the 49 percent below

Table 5-C: Emissions Reductions from Local Measures

Sector	Local Measures	Emissions Reductions (MT CO_2e/year)		
		2020	2030	2035
Transportation	Land Use Strategy and Transportation Demand Management	45,184	66,191	80,114
Commercial Energy	Net Zero Energy Commercial Building	-	70,230	100,237
Industrial Energy (Water)	Water Conservation	5,975	7,840	8,981
Solid Waste	Waste Diversion and Recycling	-	84,677	90,043
	Total	**51,159**	**228,938**	**279,375**

Source: Compiled by LSA Associates, Inc. (2019).

Table 5-D: GHG Emissions and Targets Comparison

	2010 (MT CO_2e)[1]	2016 (MT CO_2e)	2020 (MT CO_2e)	2030 (MT CO_2e)	2035 (MT CO_2e)
BAU Emissions	3,745,115	2,923,633	3,092,486	3,500,204	3,697,738
State Reductions	-	-	*960,160*	*1,560,880*	*1,896,602*
ABAU Emissions	3,745,115	2,923,633	2,132,326	1,939,325	1,801,137
Local Measures Reductions	-	-	*51,159*	*228,938*	*279,375*
Total Adjusted Emissions	-	-	2,081,167	1,710,386	1,521,761
Reduction Target	-	-	3,183,348	1,910,009	1,591,674
Additional Reductions Needed	-	-	Target Met	Target Met	Target Met

Source: Compiled by LSA Associates, Inc. (2019).

[1] Baseline (2010) emissions are from the City's 2014 GHG Reduction Plan.

GHG = greenhouse gas
ABAU = Adjusted Business-as-Usual
BAU = Business-as-Usual
MT CO_2e = metric tons of carbon dioxide equivalent

baseline levels reduction target of 1,910,009 MT CO_2e for 2030. In 2035, implementation of Statewide and local measures together would reduce emissions from the 2035 BAU level to 1,521,761 MT CO_2e, which would exceed the 58 percent below baseline levels reduction target of 1,591,674 MT CO_2e for 2035.

This page intentionally left blank

6.0 DEVELOPMENT PROJECT REQUIREMENTS

This section describes the actions that individual development projects would be required to implement in order to qualify for California Environmental Quality Act (CEQA streamlining) and to demonstrate that the project would not result in significant GHG impacts. Projects that have completed all environmental review prior to adoption of the GHG Plan Update must comply with regulations in effect at the time of construction and with conditions of approval that were required during review of the tract map, development permit, or conditional use permit approved by the City. This means that all development will help meet the City's GHG reduction targets.

6.1 PROJECTS EXEMPT FROM CEQA

Projects that have already completed the CEQA process and only require building permits have no requirements beyond applicable regulations such as the California Building Code, Title 24 Energy Efficiency Standards, the City Development Code, and other City Ordinances.

6.1.1 City Development Code

Consult the Development Code for requirements for each type of project. Examples include:

- Street Design (complete streets and bus stops) (applies if project involves street improvements)
- Pedestrian Improvements (sidewalks, paths, connections, etc.)
- Bicycle Lanes and Paths (consistent with the Active Transportation Plan)
- Bicycle Parking (Commercial)
- Enforce Building Code Requirements (Green Building Code)

6.1.2 State Regulations

Project buildings must meet the California Energy Code and the California Green Building Standard Code.

6.2 PROJECTS REQUIRING A DISCRETIONARY APPROVAL

Projects requiring a discretionary approval from the City must comply with CEQA provisions related to GHG emissions. Projects that are consistent with the GHG Plan Update by demonstrating consistency with the GHG Plan Update Consistency Checklist (checklist) are considered CEQA-compliant for GHG impacts. The following review process is proposed:

6.2.1 New Discretionary Development Approval Process to Determine Consistency with GHG Reduction Plan Update

1. Review the GHG Reduction Plan Project Update CEQA Consistency Checklist (Appendix B) that lists the local GHG reduction strategies identified in the GHG Plan Update to determine applicability to the project.

2. Incorporate design features or mitigation measures into the project as needed to demonstrate consistency.

3. Implement project design features suitable for the development type and location.

Proposed development projects that are consistent with the GHG Plan Update as determined through the use GHG Plan Update CEQA Consistency Checklist may rely on the GHG Plan Update for the cumulative impacts analysis of GHG emissions. Projects that are not consistent with the GHG Plan Update must prepare a comprehensive project-specific analysis of GHG emissions, including quantification of existing and projected GHG emissions and apply appropriate GHG reduction mitigation measures based on the GHG reduction strategies identified in the GHG Plan Update and listed in the checklist.

6.2.2 New Discretionary Development requiring a General Plan Amendment

1. Comply with all of the applicable measures listed above for ministerial and discretionary projects.

2. Ensure that change in land use designation would not result in a significant increase in GHG emissions compared to the existing designation (would require a GHG technical study to quantify GHG emissions and benefits of project design features).

3. Projects currently designated for residential or commercial development that increase development densities and intensities and comply with the relevant GHG reduction strategies in the General Plan, or provide quantified GHG emission reduction calculations which demonstrates that the project would mitigate the cumulative GHG emissions, are considered to have a less than significant GHG impact.

4. Emissions from stationary sources for new industrial projects are not considered in the significance determination; however, emissions from motor vehicles trips generated by the project and energy efficiency of the building are considered.

5. Projects that propose decreases in development densities or intensities requiring a General Plan amendment will require analysis of GHG emissions to determine the impacts on the General Plan land use strategy and must identify mitigation measures to reduce greenhouse gas emissions beyond those required by regulation if needed.

This page intentionally left blank

7.0 GHG PLAN UPDATE IMPLEMENTATION MONITORING

This chapter describes the steps for implementing the GHG Plan Update to support achievement of GHG reduction goals for the community at large. Success in meeting the City's GHG emission reduction goals will depend on cooperation, innovation, and participation by the City, residents, businesses, and local government entities. This section outlines key steps that the City could follow for the implementation of this GHG Plan Update. The GHG Plan Update is designed so that it can be monitored, updated, and its effectiveness measured on an annual basis towards meeting a target for reduction of greenhouse gas emissions in 2020 and 2030 to measure further progress through horizon of the General Plan in 2035. The reporting required for the General Plan provides a good venue for monitoring the GHG Plan. California Government Code Section 65400 requires the City to prepare and submit an annual report on the status of the General Plan and progress in its implementation to the City Council, the Governor's Office of Planning and Research, and the Department of Housing and Community Development. This section provides a guide the City could use to implement the GHG Plan.

7.1 GHG PLAN UPDATE IMPLEMENTATION

Successful implementation of the GHG Plan Update will require implementation and monitoring which could incorporate the following components, which are described in more detail in the sections below:

- Administration and staffing;
- Financing and budgeting;
- Timelines for GHG reduction strategies implementation;
- Community outreach and education; and
- Monitoring, reporting, and adaptive management.

These are basic steps that any City might take or that other California communities have taken to implement a GHG reduction plan. These are suggested—not required—and are intended to guide a City in its implementation planning.

7.1.1 Administration and Staffing

Implementation of the GHG Plan Update will involve coordination with other regional agencies. The City may designate staff to oversee the successful implementation and the tracking of all selected GHG reduction strategies. The City could coordinate with contacts across departments to gather data, to report on progress, to track completed projects, and to ensure that scheduling and funding of upcoming projects is discussed at key City meetings. The City may identify one or more staff to act as the Plan Implementation Administrator(s) to guide monitoring, reporting, and dissemination of information to the public. Where possible, the City may use assistants from programs such as CivicSpark, an AmeriCorps program designed to build capacity for local governments to address climate change.

The Administrator could have the following responsibilities:

- Serve as the external communication hub to local and regional agencies in coordinating the implementation of the GHG Reduction Plan
- Investigate methods to use existing resources and harness community support to better streamline implementation of the Plan
- Monitor implementation of reduction strategies and success of the GHG Plan Update
- Establish guidelines for reporting and documenting emission-reduction progress.
- Track State and federal legislation and its applicability to the City

In general, the goal in implementing the GHG Plan Update is not to create new administrative tasks or new staff positions necessarily, but rather to leverage existing programs and staff to the maximum extent feasible. Cities may seek to fold GHG planning and long-term reduction into their existing procedures, institutional organization, reporting, and long-term planning.

7.1.2 Financing and Budgeting

Implementation of the local GHG reduction strategies may require investment for the capital improvements and other investments, and increased operations and maintenance costs. However, in some cases operating costs are anticipated to decrease, resulting in offset savings. Table C-1 in Appendix C, Potential Funding Sources to Support GHG Reduction Strategies, presents a summary of potential funding and financing options available at the time of writing this document. Some funding sources are not necessarily directed towards a city, but to a larger regional agency such as the SJVAPCD. The City could monitor private and public funding sources for new grant and rebate opportunities and to better understand how larger agencies are accessing funds that can be used for GHG reductions in their areas. Leveraging financing sources is one of the most important roles a local government can play in helping the community to implement many of the GHG reduction strategies. A study commissioned by the City,[16] Energize Fresno Funding Market Study, March 2017, provides a detailed analysis of potential funding mechanisms that could also support the implementation of the GHG reduction strategies identified in the GHG Plan Update.

7.1.3 Timelines for GHG reduction strategies Implementation

After taking into account the reductions in energy and water usage and the GHG emissions resulting from statewide measures, presently it would appear that without future State action the City would need to implement the local reduction strategies to reach its reduction targets for 2035. The City could prioritize the implementation of GHG reduction strategies based on following criteria:

- Cost effectiveness
- GHG reduction efficiency
- Availability of funding
- Level of City Control

[16] Energize Fresno Funding Market Study. 2017. Website: www.lgc.org/wordpress/wp-content/uploads/2018/02/Energize-Fresno-Funding-Market-Study.pdf (accessed August 14, 2019).

- Ease of implementation
- Time to implement

To encourage implementation of all reduction strategies, City staff could develop a GHG Plan Update Implementation Timeline. GHG reduction Strategy prioritization could be based on the factors shown in Appendix C.

7.2 MONITORING THE GHG PLAN UPDATE

Regular monitoring is important to ensure programs function as they were originally intended. Early identification of effective strategies and potential issues would enable the City to make informed decisions on future priorities, funding, and scheduling. Moreover, monitoring provides concrete data to document the City's progress in reducing GHG emissions. The City would be responsible for developing a protocol for monitoring the effectiveness of emission reduction programs as well as for undertaking emission inventory updates. Below are some of the key components of a GHG Plan monitoring program.

- **Update GHG Inventory:** The City could update the inventory emissions prior to 2030 to ensure they meet their GHG reduction goals. This includes regular data collection in each of the primary inventory sectors (utility, regional VMT, waste, wastewater, and water), and comparing the inventory to the City's baseline GHG emissions in 2010 and 2016. The City would consolidate information in a database or spreadsheet that could be used to evaluate the effectiveness of individual reduction strategies.

- **Track State Progress:** The GHG Plan Update relies heavily on Statewide measures. The City should track the State's progress on implementing Statewide programs. Close monitoring of the reductions achieved by State programs would allow the City to adjust its GHG Plan Update, if needed.

- **Track Completion of GHG Reduction Strategies:** The City could keep track of strategies implemented as scheduled in the GHG Plan Update, including progress reports on each strategy, funding, and savings. This would allow at least a rough attribution of gains when combined with regular GHG inventory updates.

- **Regular Progress Reports:** The City may report on the GHG Plan Update implementation progress annually to the City Council as a part of the annual report on progress in implementing General Plan. If annual reports, periodic inventories, or other information indicates that the GHG reduction strategies are not as effective as originally anticipated, the GHG Plan Update may need to be adjusted, amended, or supplemented.

7.3 GHG PLAN UPDATE TRACKING TOOL

The City GHG Plan Update Project Consistency Checklist (checklist) (Appendix B), provides a platform and framework to track the GHG reduction strategy implementation. The City could compile the data obtained from the checklist annually to monitor and track the progress on GHG reductions

achieved through the implementation of the GHG reduction strategies identified in the GHG Plan Update.

The City is currently using an online Accela-based system to track permit applications for development projects. This permit tracking system could be transformed into a GHG reduction monitoring tool, where the City would be able to track GHG reductions achieved through implementation of the GHG reduction strategies within the GHG Plan Update. This would help the City to monitor the GHG Plan Update's implementation progress without added administrative burden, and to share findings with stakeholders, partners, and the community.

8.0 REFERENCES

Applied Development Economics. 2017. Fresno County 2050 Growth Projections. Prepared for Fresno County Council of Governments. Website: www.fresnocog.org/wp-content/uploads/publications/Demographics/Fresno_COG_2050_Projections_Final_Report_050417.pdf (accessed March 4, 2019).

California Air Resources Board (CARB). 2008. Scoping Plan. Website: https://ww3.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm (accessed June 21, 2012).

California Air Resources Board (CARB). 2010. Staff Report: Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375. Website: https://ww3.arb.ca.gov/cc/sb375/staffreport_sb375080910.pdf?_ga=2.89934491.1048265486.1571767987-1056020676.1542733892.

California Air Resources Board (CARB). 2011. LEV III Staff Report and Initial Statement of Reasons. December 7.

California Air Resources Board (CARB). 2013. Staff Report: Update on Senate Bill 375 Implementation in the San Joaquin Valley. Date of Release January 15, 2013. Website: http://www.arb.ca.gov/cc/sb375/finalstaffreport_011513.pdf (accessed May 22, 2013).

California Air Resources Board (CARB). 2014. Proposed First Update to the Climate Changes Scoping Plan: Building on the Framework. February 2014.

California Air Resources Board (CARB). 2017. California's 2017 Climate Change Scoping Plan. Website: https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf (accessed on August 6, 2019).

California Air Resources Board (CARB). 2019. Innovative Clean Transit (ICT) Regulation Fact Sheet. Website: https://ww2.arb.ca.gov/resources/fact-sheets/innovative-clean-transit-ict-regulation-fact-sheet (accessed on December 19, 2019).

California Air Resources Board (CARB). 2019 California Greenhouse Gas Emissions Inventory Data: 2000-2017. Website: https://ww2.arb.ca.gov/ghg-inventory-data (accessed December 19, 2019).

California Air Resources Board (CARB). 2010 Tire Inflation Regulation. Website: https://ww3.arb.ca.gov/cc/tire-pressure/tire-pressure.htm (accessed on July 10, 2019).

California Green Building Standards Commission (CGBSC). 2010. California Green Building Standards Code, January 2010.

California Department of Water Resources (DWR). 2008. Managing an Uncertain Future: Climate Change Adaptation Strategies for California Water.

California Department of Water Resources (DWR). 2014. Final Report of the Flood Emergency Action Team.

California Energy Commission (CEC). 2007. Full Fuel Cycle Assessment: Well-to-Wheels Energy Inputs, Emissions, and Water Impacts. Website: https://ww2.energy.ca.gov/2007publications/CEC-600-2007-004/CEC-600-2007-004-REV.PDF.

California Energy Commission (CEC). 2018. California Energy Commission: Tracking Progress. Website: https://ww2.energy.ca.gov/renewables/tracking_progress/documents/renewable.pdf.(accessed August 10, 2019).

California Energy Commission. (CEC) 2019. Building Energy Efficiency Standards for Residential and Non Residential Buildings for the 2019 Building Energy Efficiency Standards, Title 24, Part 6 and Associated Administrative Regulations. Website: https://ww2.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf (accessed August 8, 2019).

California Natural Resources Agency (CNRA). 2009. California Climate Adaptation Strategy. Website: http://resources.ca.gov/docs/climate/Statewide_Adaptation_Strategy.pdf.

City of Fresno Greenhouse Gas Reduction Plan 2014. Website: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2016/11/F-2-Greenhouse-Gas-Reduction-Plan.pdf (accessed March-December 2019)

Climate Action Reserve. 2019. Urban Forest Management Project Protocol. Website: http://www.climateactionreserve.org/wp-content/uploads/2019/04/Urban_Forest_Management_Project_Protocol_V1.1.pdf.(accessed August 10, 2019).

Constellation. Home Energy Savings: High Efficiency Toilets vs. Regular Toilets. Website: https://blog.constellation.com/2017/09/25/energy-efficient-toilets-comparison/ (accessed August 10, 2019).

Energy Star. Energy Efficient Appliances: Dishwashers Vs. Handwashing Dishes. Website: https://www.energystar.gov/products/appliances/dishwashers/dishwasher_hand_washing (accessed August 10, 2019).

Energy Star. Energy Efficient Clothes Washers. Website: www.energystar.gov/products/appliances/clothes_washers (accessed August 10, 2019).

Energy Star. Point of Use (POU) Water Heaters. Website: https://www.energystar.gov/products/water_heaters/point_use_pou_water_heaters (accessed August 10, 2019).

FirstCarbon Solutions. 2014. Fresno General Plan Update, Greenhouse Gas Reduction Plan, prepared for the City of Fresno. July. Website: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2016/11/F-2-Greenhouse-Gas-Reduction-Plan.pdf (accessed December 2019).

Fresno, City of. 2008. City of Fresno-Zero Waste Strategic Action Plan. Website: https://swalco.org/DocumentCenter/View/955/Zero-Waste-and-Sustainability---Fresno-CA---Zero-Waste-PDF?bidId= (accessed February 26, 2019).

Fresno, City of. 2011. Working Paper 2: Urban Form and Land Use.

Fresno, City of. 2016. 2015 Urban Water Management Plan. Website: www.fresno.gov/publicutilities/wp-content/uploads/sites/16/2016/11/CityofFresno2015UWMP_adopted.pdf (accessed February 26, 2019).

Fresno, City of. 2019. General Plan Land Use and Circulation Map. Website: https://www.fresno.gov/publicworks/wp-content/uploads/sites/17/2017/10/5-City-of-Fresno-General-Plan-Land-Use-and-Circulation-Map.pdf (accessed August 11, 2019).

Fresno, City of. Fresno's Strategy for Achieving Sustainability Website: https://www.fresnocog.org/project/san-joaquin-valley-blueprint/ (accessed June 15, 2019).

Fresno Council of Governments. 2009. San Joaquin Valley Blueprint, Fresno County Progress Report. Prepared for Council of Fresno County Governments. Website: www.fresnocog.org/wp-content/uploads/files/Blueprint/ProgressReport/Fresno%20County%20BP%20Document%20Revised%20Final%2007_27_09.pdf.

Fresno Council of Governments. 2017. Fresno County 2050 Growth Projections. Prepared for Fresno County Council of Governments. Website: www.fresnocog.org/wp-content/uploads/publications/Demographics/Fresno_COG_2050_Projections_Final_Report_050417.pdf (accessed March 4, 2019).

Fresno Council of Governments. Sustainable Community Strategy. RTP/SCS 2018. Website: https://www.fresnocog.org/project/regional-transportation-plan-rtp/ (accessed March 6, 2019).

Governor's Interagency Working Group on Zero Emission Vehicles. 2018. ZEV Action Plan Priorities Update. Website: http://business.ca.gov/Portals/0/ZEV/2018-ZEV-Action-Plan-Priorities-Update.pdf (accessed on January 7, 2019).

ICLEI. 2006. Talking trees: An Urban Forestry Toolkit for Local Governments. Website: https://www.milliontreesnyc.org/downloads/pdf/talking_trees_urban_forestry_toolkit.pdf.

Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor, and H.L. Miller [eds.]). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Website: www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html (accessed June 23, 2012).

International Code Council (ICC). 2019. 2019 California Green Building Standards Code, Title 24, Part 11. Chapter 4. Residential Mandatory Measures. Website: https://codes.iccsafe.org/content/CAGBSC2019/chapter-4-residential-mandatory-measures (accessed February 24, 2020).

Local Government Commission. 2017. Energize Fresno Funding Market Study. Website: www.lgc.org/wordpress/wp-content/uploads/2018/02/Energize-Fresno-Funding-Market-Study.pdf (accessed August 14, 2019).

National Oceanic and Atmospheric Administration (NOAA). 2019. National Centers for Environmental Information. Website: www.ncdc.noaa.gov/data-access/paleoclimatology-data/datasets/ice-core (accessed, July 6 2019).

Nature. 2018. IPCC Says limiting global warming to 1.5°C will require drastic action. Nature International Journal of Science. 8 October 2018. Website: https://www.nature.com/articles/d41586-018-06876-2 (accessed, October 10, 2019).

Pacific Gas and Electric (PG&E). 2008. Street Light Replacement Program.

PBL Netherlands Environmental Assessment Agency. 2017. Trends in Global CO_2 and Total Greenhouse Gas Emissions: 2017 Report. Website: https://www.pbl.nl/en/publications/trends-in-global-co2-and-total-greenhouse-gas-emissions-2017-report (accessed December 20, 2019).

Recharge Fresno. 2018. Recycled Water System. Website: http://rechargefresno.wpengine.com/water-recycling-facilities/ (accessed January 24, 2020)

San Joaquin Valley Air Pollution Control District (SJVAPCD 2009). Rule 9410 Employer Based Trip Reduction. Adopted December 17, 2009. Website: https://www.valleyair.org/rules/currntrules/r9410.pdf (accessed December 2019).

United States Environmental Protection Agency (EPA). 2018. Global Greenhouse Gas Emissions Data. Website: https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data (accessed October 21, 2019).

Water Pressure Reducing Valves: Frequently Asked Questions. Website: https://www.watts.com/resources/references-tools/waterpressurereducingvalvesfaq (accessed August 10, 2019).

APPENDIX A

GENERAL PLAN POLICY LIST

The General Plan is the foundation of the City of Fresno's strategy to reduce development related greenhouse gas emissions. The City's land use authority provides its most effective means of limiting the impact of growth predicted for the City. The Greenhouse Gas Reduction Plan (GHG Plan) relates the benefits of the General Plan and the City's strategy for achieving greenhouse gas (GHG) reduction targets. Table A-1 is a list of General Plan Policies that provide GHG reductions or support GHG Reduction Plan Update (GHG Plan Update) strategies.

Table A-1: General Plan Objectives and Policies

Urban Form Element	
Policy UF-1-c	**Identifiable City Structure.** Focus integrated and ongoing planning efforts to achieve an identifiable city structure, comprised of a concentration of buildings, people, and pedestrian-oriented activity in Downtown; along a small number of transit-oriented, mixed-use corridors and strategically located Activity Centers; and in existing and new neighborhoods augmented with parks and connected by multi-purpose trails and tree lined bike lanes and streets.
Objective UF-12	Locate roughly one-half of future residential development in infill areas — defined as being within the City on December 31, 2012—including the Downtown core area and surrounding neighborhoods, mixed-use centers and transit-oriented development along major BRT corridors, and other non-corridor infill areas, and vacant land.
Policy UF-12-a	**BRT Corridors.** Design land uses and integrate development site plans along BRT corridors, with transit-oriented development that supports transit ridership and convenient pedestrian access to bus stops and BRT station stops.
Policy UF-12-b	**Activity Centers.** Mixed-use designated areas along BRT and/or transit corridors are appropriate for more intensive concentrations of urban uses. Typical uses could include commercial areas; employment centers; schools; compact residential development; religious institutions; parks; and other gathering points where residents may interact, work, and obtain goods and services in the same place.
Policy UF-12-d	**Appropriate Mixed-Use.** Facilitate the development of vertical and horizontal mixed-uses to blend residential, commercial, and public land uses on one or adjacent sites. Ensure land use compatibility between mixed-use districts in Activity Centers and the surrounding residential neighborhoods.
Policy UF-12-e	**Access to Activity Centers.** Promote adoption and implementation of standards supporting pedestrian activities and bicycle linkages from surrounding land uses and neighborhoods into Activity Centers and to transit stops. Provide for priority transit routes and facilities to serve the Activity Centers.
Policy UF-12-f	**Mixed-Use in Activity Centers.** Adopt a new Development Code which includes use regulations and standards to allow for mixed uses and shared parking facilities.
Objective UF-14	Create an urban form to facilitate multi-modal connectivity.
Policy UF-14-a	**Design Guidelines for Walkability.** Develop and use design guidelines and standards for a walkable and pedestrian-scaled environment with a network of streets and connections for pedestrians and bicyclists, as well as transit and autos.
Policy UF-14-b	**Local Street Connectivity.** Design local roadways to connect throughout neighborhoods and large private developments with adjacent major roadways and pathways of existing adjacent development. Create access for pedestrians and bicycles where a local street must dead end or be designed as a cul-de-sac to adjoining uses that provide services, shopping, and connecting pathways for access to the greater community area.

Table A-1: General Plan Objectives and Policies

Urban Form Element (Continued)	
Policy UF-14-c	**Block Length.** Create development standards that provide desired and maximum block lengths in residential, retail, and mixed-use districts order to enhanced walkability.
Land Use Element	
Objective LU-2	Plan for infill development that includes a range of housing types, building forms, and land uses to meet the needs of both current and future residents.
Policy LU-2-a	**Infill Development and Redevelopment.** Promote development of vacant, underdeveloped, and redevelopable land within the City Limits where urban services are available by considering the establishment and implementation of supportive regulations and programs.
Policy LU-2-b	**Infill Development for Affordable Housing.** Establish a priority infill incentive program for residential infill development of existing vacant lots and underutilized sites within the City as a strategy to help to meet the affordable housing needs of the community.
Policy LU-3-b	**Mixed-Use Urban Corridors that Connect the Downtown Planning Area.** Support the development of mixed-use urban corridors that connect the Downtown Planning Area with the greater Fresno-Clovis Metropolitan Area with functional, enduring, and desirable urban qualities along the Blackstone Avenue, Shaw Avenue, California Avenue, and Ventura Avenue/Kings Canyon corridors, as shown on Figure LU-1: General Plan Land Use Diagram.
Policy LU-3-c	**Zoning for High Density on Major BRT Corridors.** Encourage adoption of supportive zoning regulations for compact development along BRT corridors leading to the Downtown Core that will not diminish long-term growth and development potential for Downtown.
Policy LU-5-f	**High Density Residential Uses.** Promote high-density residential uses to support Activity Centers and BRT corridors, and walkable access to transit stops.
Design Element	
Policy D-3-c	**Local Streets as Urban Parkways.** Develop local streets as "urban parkways", where appropriate, with landscaping and pedestrian spaces.
Policy D-4-b	**Incentives for Pedestrian-Oriented Anchor Retail.** Consider adopting and implementing incentives for new pedestrian-friendly anchor retail at intersections within Activity Centers and along corridors to attract retail clientele and maximize foot traffic.
Transportation Element	
Policy MT-1-h	**Update Standards for Complete Streets.** Update the City's Engineering and Street Design Standards to ensure that roadway and streetscape design specifications reflect the Complete Streets concept, while also addressing the needs of through traffic, transit stops, bus turnouts, passenger loading needs, bike lanes, pedestrian accommodation, and short- and long-term parking.
Policy MT-1-i	**Local Street Standards.** Establish and implement local roadway standards addressing characteristics such as alignment, width, continuity and traffic calming, to provide efficient neighborhood circulation; to allow convenient access by residents, visitors, and public service and safety providers; and to promote neighborhood integrity and desired quality of life by limiting intrusive pass-through traffic.
Policy MT-1-j	Transportation Improvements Consistent with Community Character. Prioritize transportation improvements that are consistent with the character of surrounding neighborhoods and supportive of safe, functional and Complete Neighborhoods; minimize negative impacts upon sensitive land uses such as residences, hospitals, schools, natural habitats, open space areas, and historic and cultural resources. In implementing this policy, the City will design improvements to: ● Facilitate provision of multi-modal transportation opportunities; ● Provide added safety, including appropriate traffic calming measures; ● Promote achievement of air quality standards; ● Provide capacity in a cost effective manner; and ● Create improved and equitable access with increased efficiency and connectivity.
Objective MT-4	Establish and maintain a continuous, safe, and easily accessible bikeways system throughout the metropolitan area to reduce vehicle use, improve air quality and the quality of life, and provide public health benefits.
Policy MT-4-a	**Active Transportation Plan.** To the extent consistent with this General Plan, continue to implement and periodically update the Active Transportation Plan to meet State standards and requirements for recommended improvements and funding proposals as determined appropriate and feasible

Table A-1: General Plan Objectives and Policies

Transportation Element (Continued)	
Policy MT-4-b	**Bikeway Improvements.** Establish and implement property development standards to assure that projects adjacent to designated bikeways provide adequate right-of-way and that necessary improvements are constructed to implement the planned bikeway system shown on Figure MT-2 to provide for bikeways, to the extent feasible, when existing roadways are reconstructed; and alternative bikeway alignments or routes where inadequate right-of-way is available
Policy MT-4-c	**Bikeway Linkages.** Provide linkages between bikeways, trails and paths, and other regional networks such as the San Joaquin River Trail and adjacent jurisdiction bicycle systems wherever possible.
Objective MT-5	Establish a well-integrated network of pedestrian facilities to accommodate safe, convenient, practical, and inviting travel by walking, including for those with physical mobility and vision impairments.
Policy MT-5-a	**Sidewalk Development.** Pursue funding and implement standards for development of sidewalks on public streets, with priority given to meeting the needs of persons with physical and vision limitations; providing safe routes to school; completing pedestrian improvements in established neighborhoods with lower vehicle ownership rates; or providing pedestrian access to public transportation routes.
Policy MT-5-e	**Traffic Management in Established Neighborhoods.** Establish acceptable design and improvement standards and provide traffic planning assistance to established neighborhoods to identify practical traffic management and calming methods to enhance the pedestrian environment with costs equitably assigned to properties receiving the benefits or generating excessive vehicle traffic.
Objective MT-6	Establish a network of multi-purpose pedestrian and bicycle paths, as well as limited access trails, to link residential areas to local and regional open spaces and recreational areas and urban Activity Centers in order to enhance Fresno's recreational amenities and alternative transportation options.
Policy MT-6-a	**Link Residences to Destinations.** Design a pedestrian and bicycle path network that links residential areas with Activity Centers, such as parks and recreational facilities, educational institutions, employment centers, cultural sites, and other focal points of the city environment.
Policy MT-6-g	**Path and Trail Development.** Require all projects to incorporate planned multi-purpose path and trail development standards and corridor linkages consistent with the General Plan, applicable law and case-by-case determinations as a condition of project approval.
Objective MT-8	Provide public transit options that serve existing and future concentrations of residences, employment, recreation and civic uses and are feasible, efficient, safe, and minimize environmental impacts.
Policy MT-8-a	**Street Design Coordinated with Transit.** Coordinate the planning, design, and construction of the major roadway network with transit operators to facilitate efficient direct transit routing throughout the Planning Area.
Policy MT-8-b	**Transit Serving Residential and Employment Nodes.** Identify the location of current and future residential and employment concentrations and Activity Centers throughout the transit service area in order to facilitate planning and implementation of optimal transit service area in order to facilitate planning and implementation of optimal transit services for these uses. Work with California State University, Fresno to determine locations within the campus core for bus stops.
Policy MT-8-g	**High Speed Train.** If the State moves forward with HST, ensure it is constructed through Fresno in a manner that minimizes impacts to surrounding property owners and creates the most opportunity for redevelopment around the HST station.
Objective MT-9	Provide public transit opportunities to the maximum number and diversity of people practicable in balance with providing service that is high in quality, convenient, frequent, reliable, cost-effective and financially feasible.
Policy MT-10-a	**Updating Parking Standards.** Update off-street parking standards to reflect the context and location within activity areas of multiple uses and reductions appropriate for mixed residential and non-residential uses and proximity to existing or planned transit service.
Policy MT-10-b	**Shared Parking.** Establish a strategy to promote the sharing of excess parking between uses within Activity Centers and BRT corridors, including specific provisions for this in the Development Code.
Policy MT-10-c	**Transportation Demand Management Guidelines.** Establish transportation demand management guidelines to allow for reduced off-street parking requirements.

Table A-1: General Plan Objectives and Policies

Transportation Element (Continued)	
Policy MT-10-d	**Parking Maximums.** Explore maximum off-street parking limits within Activity Centers proximate to BRT corridors, if such an Activity Center is determined compatible with promotion of a healthy and vigorous business environment.
Policy MT-10-f	**Parking Benefit Districts.** Establish parking benefit districts to fund consolidated public parking where supported by local businesses.
Park and Open Space	
Policy POSS-1-g	**Regional Urban Forest.** Maintain and implement incrementally, through new development projects, additions to Fresno's regional urban forest to delineate corridors and the boundaries of urban areas, and to provide tree canopy for bike lanes, sidewalks, parking lots, and trails.
Policy POSS-7-h	**Interlink City and San Joaquin River Parkway Trail Networks.** Strive to connect the parkway trail network to other trails in the vicinity, in order to create a community and regional trail system that offers a variety of different route combinations and enhances public access to the parkway.
Public Utilities	
Objective PU-7	Promote reduction in wastewater flows and develop facilities for beneficial reuse of reclaimed water and biosolids for management and distribution of treated wastewater.
Policy PU-7-a	**Reduce Wastewater.** Identify and consider implementing water conservation standards and other programs and policies, as determined and appropriate, to reduce wastewater flows.
Policy PU-7-d	**Wastewater Recycling.** Pursue the development of a recycled water system and the expansion of beneficial wastewater recycling opportunities, including a timely technical, practicable, and institutional evaluation of treatment, facility siting, and water exchange elements.
Policy PU-9-a	**New Techniques.** Continue to collaborate affected stakeholders and partners to identify and support programs and new techniques of solid waste disposal, such as recycling, composting, waste to energy technology, and waste separation, to reduce the volume and toxicity of solid wastes that must be sent to landfill facilities.
Policy PU-9-b	**Compliance with State Law.** Continue to pursue programs to maintain conformance with the Solid Waste Management Act of 1989 or as otherwise required by law and mandated diversion goals.
Resource Conservation and Resilience	
Objective RC-2	Promote land uses that conserve resources
Policy RC-2-a	**Link Land Use to Transportation.** Promote mixed-use, higher density infill development in multi-modal corridors. Support land use patterns that make more efficient use of the transportation system and plan future transportation investments in areas of higher-intensity development. Discourage investment in infrastructure that would not meet these criteria.
Policy RC-2-b	**Provide Infrastructure for Mixed-Use and Infill**. Promote investment in the public infrastructure needed to allow mixed-use and denser infill development to occur in targeted locations, such as expanded water and wastewater conveyance systems, complete streetscapes, parks and open space amenities, and trails. Discourage investment in infrastructure that would not meet these criteria.
Policy RC-4-i	**Methane Capture.** Continue to pursue opportunities to reduce air pollution by using methane gas from the old City landfill and the City's wastewater treatment process.
Objective RC-5	In cooperation with other jurisdictions and agencies in the San Joaquin Valley Air Basin, take timely, necessary, and the most cost-effective actions to achieve and maintain reductions in greenhouse gas emissions and all strategies that reduce the causes of climate change in order to limit and prevent the related potential detrimental effects upon public health and welfare of present and future residents of the Fresno community.
Policy RC-5-a	**Support State Goal to Reduce Statewide GHG Emissions.** As is consistent with State law, strive to meet AB 32 goal to reduce greenhouse gas emissions to 1990 levels by 2020 and strive to meet a reduction of 80 percent below 1990 levels by 2050 as stated in Executive Order S-03-05. As new statewide GHG reduction targets and dates are set by the State update the City's Greenhouse Gas Reduction Plan to include a comprehensive strategy to achieve consistency with those targets by the dates established.

Table A-1: General Plan Objectives and Policies

Resource Conservation and Resilience (Continued)	
Policy RC-5-b	**Greenhouse Gas Reduction Plan.** As is consistent with State law, prepare and adopt a Greenhouse Gas Reduction Plan as part of the Master Environmental Impact Report to be concurrently approved with the Fresno General Plan in order to achieve compliance with State mandates, assist development by streamlining the approval process, and focus on feasible actions the City can take to minimize the adverse impacts of growth and development on global climate change. The Greenhouse Gas Reduction Plan shall include, but not be limited to: ● A baseline inventory of all known or reasonably discoverable sources of GHGs that currently exist in the city and sources that existed in 1990. ● A projected inventory of the GHGs that can reasonably be expected to be emitted from those sources in the year 2035 with implementation of this General Plan and foreseeable communitywide and municipal operations. ● A target for the reduction of emissions from those identified sources. ● A list of feasible GHG reduction measures to meet the reduction target, including energy conservation and "green building" requirements in municipal buildings and private development. ● Periodically update municipal and community-wide GHG emissions inventories to determine the efficacy of adopted measures and to guide future policy formulation needed to achieve and maintain GHG emissions reduction targets.
Policy RC-5-c	GHG Reduction through Design and Operations. Increase efforts to incorporate requirements for GHG emission reductions in land use entitlement decisions, facility design, and operational measures subject to City regulation through the following measures and strategies: ● Promote the expansion of incentive-based programs that involve certification of projects for energy and water efficiency and resiliency. These certification programs and scoring systems may include public agency "Green" and conservation criteria, Energy Star™ certification, CALGreen Tier 1 or Tier 2, Leadership in Energy Efficient Design (LEED™) certification, etc. ● Promote appropriate energy and water conservation standards and facilitate mixed-use projects, new incentives for infill development, and the incorporation of mass transit, bicycle and pedestrian amenities into public and private projects. ● Require energy and water audits and upgrades for water conservation, energy efficiency, and mass transit, pedestrian, and bicycle amenities at the time of renovation, change in use, change in occupancy, and change in ownership for major projects meeting review thresholds specified in an implementing ordinance. ● Incorporate the City's "Guidelines for Ponding Basin/Pond Construction and Management to Control Mosquito Breeding" as conditions of approval for any project using an on-site stormwater basin to prevent possible increases in vector-borne illnesses associated with global climate change. ● Periodically evaluate the City's facility maintenance practices to determine whether there are additional opportunities to reduce GHGs through facility cleaning and painting, parks maintenance, road maintenance, and utility system maintenance. ● Periodically evaluate standards and mitigation strategies for highly vehicle-dependent land uses and facilities, such as drive-through facilities and auto-oriented development.
Policy RC-5-d	**SCS and CAP Conformity Analysis.** Ensure that the City includes analysis of a project's conformity to an adopted regional Sustainable Community Strategy or Alternative Planning Strategy (APS), an adopted Climate Action Plan (CAP), and any other applicable City and regional greenhouse gas reduction strategies in affect at the time of project review.
Policy RC-5-e	**Ensure Compliance.** Ensure ongoing compliance with GHG emissions reduction plans and programs by requiring that air quality measures are incorporated into projects' design, conditions of approval, and mitigation measures.
Policy RC-5-f	**Toolkit.** Provide residents and project applicants with a "toolkit" of generally feasible measures that can be used to reduce GHG emissions, including educational materials on energy-efficient and "climate-friendly" products.
Policy RC-5-g	**Evaluate Impacts with Models.** Continue to use computer models such as those used by SJVAPCD to evaluate greenhouse gas impacts of plans and projects that require such review.
Policy RC-6-d	**Recycled Water.** Prepare, adopt, and implement a City of Fresno Recycled Water Master Plan.

Table A-1: General Plan Objectives and Policies

Resource Conservation and Resilience (Continued)	
Objective RC-7	Promote water conservation through standards, incentives and capital investments.
Policy RC-7-a	**Water Conservation Program Target.** Maintain a comprehensive conservation program that reduces per capita water usage in the city's water service area to 243 gallons per capita per day (gpcd) by 2020 and 190 gpcd by 2035, by adopting conservation standards and implementing a program of incentives, design and operation standards, and user fees. ● Support programs that result in decreased water demand, such as landscaping standards that require drought-tolerant plants, rebates for water conserving devices and systems, turf replacement, xeriscape landscape for new homes, irrigation controllers, commercial/industrial/institutional water conserving programs, prioritized leak detection program, complete water system audit, landscape water audit and budget program, and retrofit upon resale ordinance. ● Implement the U.S. Bureau of Reclamation Best Management Practices for water conservation as necessary to maintain the City's surface water entitlements. ● Adopt and implement policies in the event an artificial lake is proposed for development. ● Work cooperatively toward effective uniform water conservation measures that would apply throughout the Planning Area. ● Expand efforts to educate the public about water supply issues and water conservation techniques.
Policy RC-7-c	**Best Practices for Conservation.** Require all City facilities and all new private development to follow U.S. Bureau of Reclamation Best Management Practices for water conservation, as warranted and appropriate
Policy RC-7-d	**Update Standards for New Development.** Continue to refine water saving and conservation standards for new development
Policy RC-7-e	**Retrofit City Facilities, and Consider Incentives Programs to Encourage Retrofitting of Other Existing Public and Private Residential and Non-Residential Facilities and Sites.** Reduce water use in municipal buildings and City operations by developing a schedule and budget for the retrofit of existing municipal buildings with water conservation features, such as auto shut-off faucets and water saving irrigation systems. Prepare a comprehensive incentive program for other existing public and private residential and non-residential buildings and irrigation systems.
Policy RC-7-f	**Implementation and Update Conservation Program.** Continue to implement the City of Fresno Water Conservation Program, as may be updated, and periodically update restrictions on water uses, such as lawn and landscape watering and the filling of fountains and swimming pools, and penalties for violations. Evaluate the feasibility of a 2035 conservation target of 190 gpcd in the next comprehensive update of the City of Fresno Water Conservation Program.
Policy RC-7-g	**Educate on State Requirements.** Educate the residents and businesses of Fresno on the requirements of the California Water Conservation Act of 2009.
Policy RC-7-h	**Landscape Water Conservation Standards.** Refine landscape water conservation standards that will apply to new development installed landscapes, building on the State Model Water Efficient Landscape Ordinance and other State regulations. ● Evaluate and apply, as appropriate, augmented xeriscape, "water- wise," and "green gardening" practices to be implemented in public and private landscaping design and maintenance. ● Facilitate implementation of the State's Water Efficient Landscape Ordinance by developing alternative compliance measures that are easy to understand and observe.
Policy RC-7-i	**PACE Financing.** Develop a residential Property Assessed Clean Energy (PACE) program, if it is determined to be a feasible option, to help finance water efficiency and energy efficiency upgrades for property owners.
Objective RC-8	Reduce the consumption of non-renewable energy resources by requiring and encouraging conservation measures and the use of alternative energy sources.
Policy RC-8-a	**Existing Standards and Programs.** Continue existing beneficial energy conservation programs, including adhering to the California Energy Code in new construction and major renovations.
Policy RC-8-b	**Energy Reduction Targets.** Strive to reduce per capita residential electricity use to 1,800 kWh per year and nonresidential electricity use to 2,700 kWh per year per capita by developing and implementing incentives, design and operation standards, promoting alternative energy sources, and cost-effective savings.

Table A-1: General Plan Objectives and Policies

Resource Conservation and Resilience (Continued)	
Policy RC-8-c	**Energy Conservation in New Development.** Consider providing an incentive program for new buildings that exceed California Energy Code requirements by fifteen percent.
Policy RC-8-d	**Incentives.** Establish an incentive program for residential developers who commit to building all of their homes to ENERGY STAR performance guidelines.
Policy RC-8-e	**Energy Use Disclosure.** Promote compliance with State law mandating disclosure of a building's energy data and rating of the previous year to prospective buyers and lessees of the entire building or lenders financing the entire building.
Policy RC-8-f	**City Heating and Cooling.** Reduce energy use at City facilities by updating heating and cooling equipment and installing "smart lighting" where feasible and economically viable.
Policy RC-8-g	**Revolving Energy Fund.** Create a City Energy Fund which uses first year savings and rebates from completed City-owned energy efficiency projects to provide resources for additional energy projects. Dedicate this revolving fund to the sole use of energy efficiency projects that will pay back into the fund.
Policy RC-8-h	**Solar Assistance.** Identify and publicize information about financial mechanisms for private solar installations and provide over-the-counter permitting for solar installations meeting specified standards, which may include maximum size (in kV) of units that can be so approved.
Policy RC-8-j	**Alternative Fuel Network.** Support the development of a network of integrated charging and alternate fuel station for both public and private vehicles, and if feasible, open up municipal stations to the public as part of network development.
Policy RC-8-k	**Energy Efficiency Education.** Provide long-term and ongoing education of homeowners and businesses as to the value of energy efficiency and the need to upgrade existing structures on the regular basis as technology improves and structures age.
Policy RC-11-a	**Waste Reduction Strategies.** Maintain current targets for recycling and re- use of all types of waste material in the city and enhance waste and wastewater management practices to reduce natural resource consumption, including the following measures: ● Continue to require recyclable material collection and storage areas in all residential development. ● Establish recycling collection and storage area standards for commercial and industrial facilities to size the recycling areas according to the anticipated types and amounts of recyclable material generated. ● Provide educational materials to residents on how and what to recycle and how to dispose of hazardous waste. ● Provide recycling canisters and collection in public areas where trash cans are also provided. ● Institute a program to evaluate major waste generators and identify recycling opportunities for their facilities and operations. ● Continue to partner with the California Integrated Waste Management Board on waste diversion and recycling programs and the CalMax (California Materials Exchange) program. ● Evaluate the feasibility of a residential, restaurant and institutional food waste segregation and recycling program, to reduce the amount of organic material sent to landfill and minimize the emissions generated by decomposing organic material. ● Evaluate the feasibility of "carbon footprinting" for the City's wastewater treatment facilities, biomass and composting operations, solid waste collection and recycling programs. ● Expand yard waste collection to divert compostable waste from landfills. ● Study the feasibility and cost-benefit analysis of a municipal composting program to collect and compost food and yard waste, including institutional food and yard waste, using the resulting compost matter for City park and median maintenance.
Policy RC-11-b	**Zero Waste Strategy.** Create a strategic and operations plan for fulfilling the City Council resolution committing the City to a Zero Waste goal.

This page intentionally left blank

APPENDIX B

GHG REDUCTION PLAN UPDATE: PROJECT CONSISTENCY CHECKLIST

This page intentionally left blank

FRESNO GREENHOUSE GAS (GHG) REDUCTION PLAN UPDATE

CEQA PROJECT CONSISTENCY CHECKLIST

March 2020

City of FRESNO

Fresno Greenhouse Gas (GHG) Reduction Plan Update – CEQA Project Consistency Checklist

INTRODUCTION

The City of Fresno updated its 2014 Greenhouse Gas (GHG) Reduction Plan (the Plan) in the year 2020 to conform with existing applicable State climate change policies and regulations. The GHG Plan Update outlines strategies that the City will undertake to achieve its proportional share of GHG emission reductions. The purpose of this GHG Reduction Plan Update Consistency Checklist (Checklist) is to help the City provide a streamlined review process for new development projects that are subject to discretionary review pursuant to the California Environmental Quality Act (CEQA) Guidelines Section 15183.5.

This Checklist has been developed as part of the GHG Plan Update implementation and monitoring process and will support the achievement of individual GHG reduction strategies as well as the City's overall GHG reduction goals. In addition, this Checklist will further the City's sustainability goals and policies that encourage sustainable development and aim to conserve and reduce the consumption of resources, such as energy and water. Projects that meet the requirements of this Checklist will be deemed to be consistent with the Fresno GHG Reduction Plan Update and will be found to have a less than significant contribution to cumulative GHG (i.e., the project's incremental contribution to cumulative GHG effects is not cumulatively considerable), pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b). Projects that do not meet the requirements in this Checklist will be deemed to be inconsistent with the Fresno GHG Reduction Plan Update and must prepare a project-specific analysis of GHG emissions, including quantification of existing and projected GHG emissions and incorporation of the measures in this Checklist to the extent feasible. This GHG Checklist can be updated to reflect adoption of new GHG reduction strategies or to comply with any changes and updates in the Plan or local, State or federal regulations. Note that not all the measures in the checklist are applicable to all projects. The projects should comply with applicable measures from the checklist.

1. Project Information	
Contact Information	
Project No./Name:	
Address:	
Applicant Name/Co:	
Contact Information:	
Project Information	
1. What is the Site acreage of the Project?	
2. Identify all Applicable Proposed Land uses:	
a. Residential (Indicate number of single-family units)	
b. Residential (Indicate number of multi-family units)	
c. Commercial (total square footage)	
d. Industrial (total square footage)	
e. Other (describe)	
3. Is the project or a portion of the project located in a transit priority area? (Y/N)	
4. Provide a brief description of the project proposed:	

2. Determining Land Use Consistency		
Checklist Item		
As the first step in determining the consistency with the GHG Reduction Plan for discretionary development projects, this section allows the City to determine the project's consistency with the land use assumptions used in the GHG Reduction Plan.		
	Yes	**No**
1. Is the proposed project consistent with the approved General Plan, Specific Plan, and Community Plan planned land use and zoning designations? If the answer is **Yes**, then proceed to the GHG Plan Update Consistency Checklist. If the answer is **No**, then proceed to question 2.		
2. If the proposed project is not consistent with the approved planned land use and zoning designation(s), then provide estimated GHG project emissions under both existing and proposed designation(s) for comparison. Compare the maximum buildout of the existing designation with the maximum buildout of the proposed designation. If the estimated project emissions at maximum buildout of the proposed designation(s) **is equivalent to or less than** the estimated project emissions at maximum buildout of the existing designation(s), then in accordance with the City's Significance Determination Thresholds, the project's GHG impact is less than significant. If there is a proposed development project associated with this plan amendment and or rezone then complete the GHG Plan Update Consistency Checklist and incorporate applicable measures, otherwise there is no further step required. If the estimated project emission at maximum buildout of the proposed designation(s) is **greater than** the estimated project emissions at maximum buildout of the existing designation(s), then in accordance with the City's Significance Determination Thresholds, the project's GHG impact is significant. The project must either show consistency with applicable GP objectives and policies (provide applicable GP objectives and policies here) or provide analysis and measures to incorporate into the project to bring the GHG emissions to a level that is less than or equal to the estimated project emission at maximum buildout of the existing designation(s) unless the decision-maker finds that a measure is infeasible in accordance with CEQA Guidelines Section 15091. If there is a proposed development project associated with this plan amendment and or rezone then complete the GHG Plan Update Consistency Checklist and incorporate applicable measures, otherwise there is no further step required.		

3. Greenhouse Gas (GHG) Reduction Plan Update - CEQA Project Consistency Checklist

GHG Plan Update consistency review involves the evaluation of project consistency with the applicable strategies of the GHG Plan Update. This checklist was developed based on the key local GHG reduction strategies and actions identified in the GHG Plan Update that are applicable to new development projects.

Checklist Item (Check the appropriate box and provide an explanation for your answer)	Yes	No	Not Applicable (NA)	Explanation
Strategy 1: Land Use and Transportation Demand Management				
Does the project provide complete streets for all roadway improvements? (Complete streets are roadways that include curb, gutter, and sidewalks on both sides of the street. For local and collector streets, adequate roadway width is provided to accommodate two-way vehicle traffic and bicycles and arterial streets include striping for bike lanes.)				
Is the project a large employer (over 100 employees) and if so will the project comply with SJVAPCD Rule 9410 and provide an Employer Trip Reduction Implementation Plan that will include trip reduction methods such as increasing transit use, carpooling, vanpooling, bicycling, or other measures? See the SJVAPCD website link for details: https://www.valleyair.org/rules/currntrules/r9410.pdf				
Strategy 2: Energy Conservation and Renewable Energy				
Does the project meet the mandatory energy efficiency measures of the California Green Building Standards Code (CalGreen)? If the Project exceeds mandatory CalGreen measures then provide the tier number that the project will meet in the explanation.	X			
For commercial projects, does it achieve net zero electricity? Mark NA if project will be permitted before 2030. Mark Yes if voluntary. Add source and capacity in explanation.				
Does the project include onsite energy generation using renewable energy? If no, mark NA. If yes, provide source and capacity in the explanation.				
Strategy 3: Water Conservation				
Does the project meet the mandatory indoor water use measures of the CalGreen Code? If the project exceeds CalGreen Code mandatory measures provide methods in excess of requirements in the explanation. Examples may include water pipe insulation, pressure reducing valves, energy efficient appliances such as Energy Star Certified dishwashers, washing machines, dual flush toilets, point of use and/or tankless water heaters. Provide the measures, devices, or systems that the project will include in the explanation.	X			
Does the project meet the mandatory outdoor water use measures of the CalGreen Code? If the project exceeds CalGreen Code mandatory measures provide methods in excess of requirements in the explanation? Examples may include any outdoor water conservation measures such as; drought tolerant landscaping plants, compliant irrigation systems, xeriscapes etc. Provide the conservation measure that the project will include in the explanation.	X			
Strategy 4: Solid Waste Diversion and Recycling				
When completed will the project implement techniques for solid waste diversion and reduction (i.e., recycling, composting, waste to energy technology, waste separation)?	X			
During construction will the project recycle construction and demolition waste?	X			

APPENDIX C

GHG REDUCTION MEASURES FUNDING SOURCES

Implementation of the local GHG reduction strategies may require investment for the capital improvements and other investments, and increased operations and maintenance costs. However, in some cases, operating costs are anticipated to decrease, resulting in offset savings. Table C-1 presents a summary of potential funding and financing options available at the time of writing this document.

Table C-1: Potential Funding Sources to Support GHG Reduction Strategies

Funding Source	Description
State and Federal Funds	
Federal Tax Credits for Energy Efficiency	● Tax credits for energy efficiency can be promoted to residents.
Energy Efficient Mortgages (EEM)	● An EEM is a mortgage that credits a home's energy efficiency in the mortgage itself. ● Residents can finance energy-saving strategies as part of a single mortgage. ● To verify a home's energy efficiency, an EEM typically requires a home energy rating of the house by a home energy rater before financing is approved. ● EEMs are typically used to purchase a new home that is already energy efficient, such as an ENERGY STAR®-qualified home.
California Department of Resources Recycling and Recovery (CalRecycle)	● CalRecycle grant programs allow jurisdictions to assist public and private entities in management of waste streams. ● Incorporated cities and counties in California are eligible for funds. ● Program funds are intended to: ● Reduce, reuse, and recycle all waste ● Encourage development of recycled-content products and markets ● Protect public health and safety and foster environmental sustainability
California Energy Commission (CEC)	● CEC has energy efficiency financing options for projects with proven energy savings. These options include 0% interest rate loans for K–12 school districts, county offices of education, State special schools, community colleges, and 1% interest rate loans for cities, counties, special districts, public colleges or universities, public care institutions/public hospitals, University of California campuses, and California State University campuses. ● Projects eligible for the CEC energy efficiency financing low interest loans include: ● Lighting system upgrades ● Pumps and motors ● Streetlights and light-emitting diode (LED) traffic signals ● Building insulation ● Heating, ventilation and air conditioning equipment ● Water and waste water treatment equipment
California Air Resources Board (CARB)	● CARB offers several grants, incentives, and credits programs to reduce on-road and off-road transportation emissions. Residents, businesses, and fleet operators can receive funds or incentives depending on the program. ● The following programs can be utilized to fund local strategies: ● Air Quality Improvement Program (Assembly Bill 118) ● Carl Moyer Program – Voucher Incentive Program ● Goods Movement Emission Reduction Program (Proposition 1B Incentives) ● Loan Incentives Program ● Lower-Emission School Bus Program/School Bus Retrofit and Replacement Account (Proposition 1B and United States Environmental Protection Agency Incentives)

Table C-1: Potential Funding Sources to Support GHG Reduction Strategies

Funding Source	Description
Existing Capital Improvement Program	● State and federal funds would most likely continue to local governments, builders, and homeowners in the following forms: ● Grants ● Transportation and transit funding ● Tax credit and rebate programs ● The Capital Improvement Program can be used for strategies relating to traffic or transit.
State Funding for Infrastructure	● The State's Infill Infrastructure Grant Program may potentially be used to help fund strategies that promote infill housing development. ● Grants can be used for gap funding for infrastructure improvements necessary for specific residential or mixed-use infill development projects.
Transportation-Related Federal and State Funding	● For funding strategies related to transit, bicycle, or pedestrian improvements, the following funding sources from SCAG may be used: o Sustainability Planning Grant o California Active Transportation Program o Caltrans Transportation Planning Grant Program provides funding that would lead to programming and implementation of transportation improvement projects. o Sustainable Communities Grants o Strategic Partnerships Grants o Adaptation Planning Grants
Utility Rebates	● Department of Water and Power offers a variety of residential and commercial rebate programs: o Residential and Commercial Turf Replacement Program o Pool/Spa Cover Rebates o Rebates for Water-Efficient Devices o Recirculating Pump Rebate o Free Urinal Flush Valve Upgrades and Installation o Pacific Gas and Electric Company (PG&E) is one of the utilities participating in the California Solar Initiative. o A variety of rebates are available for existing and new homes. o Photovoltaics, thermal technologies, and solar hot water projects are eligible. o Single-family homes, commercial development, and affordable housing are eligible.
Energy Upgrade California	● The program is intended for home energy upgrades. ● Funding comes from the American Recovery and Reinvestment Act, California utility ratepayers, and private contributions. ● Utilities administer the program, offering homeowners the choice of one of two upgrade packages—basic or advanced. ● Homeowners are connected to home energy professionals. ● Rebates, incentives, and financing are available. ● Homeowners can receive up to $4,000 back on an upgrade through the local utility.
Private Funding	
Private Funding	● Private equity can be used to finance energy improvements, with returns realized as future cost savings. ● Rent increases can fund retrofits in commercial buildings. ● Net energy cost savings can fund retrofits in households. ● Power Purchase Agreements involve a private company that purchases, installs, and maintains a renewable energy technology through a contract that typically lasts 15 years. After 15 years, the company would uninstall the technology or sign a new contract. ● On-Bill Financing (OBF) can be promoted to businesses for energy-efficiency retrofits. OBF funding is a no-interest loan that is paid back through monthly utility bills. Lighting, refrigeration, HVAC, and LED streetlights are all eligible projects.

Table C-1: Potential Funding Sources to Support GHG Reduction Strategies

Funding Source	Description
Other Funding Mechanisms for Implementation	
Other Funding	● Increased operating costs can be supported by grants from the Strategic Growth Council or the State Department of Conservation to fund sustainable community planning, natural resource conservation and development, and adoption.
Future Funding Options: Funding Mechanisms for Capital and/or Implementation Costs	
New Development Impact Fees	● These types of fees may have some potential to provide funding, but such fees are best implemented when the real estate market and overall regional economic conditions are strong.
General Obligation Bond	● A general obligation bond is a form of long-term borrowing and could be used to fund municipal improvements.

Source: Compiled by LSA Associates, Inc. (2019).
HVAC = heating, ventilation, and air conditioning

In addition to pursuing the funding options above and monitoring the availability of others, the City should take the following steps to best inform decisions related to the cost of GHG reduction strategies:

- **Perform and Refine Cost Estimates:** Cost estimates for local reduction strategies should be performed to identify the cost-effectiveness of each strategy to inform and to guide the implementation process. This analysis will likely be based on a variety of participation, per-unit, and other assumptions. As programs are developed, cost estimates should be refined and updated over time with more precise implementation-level data.
- **Integrate GHG Reduction into Existing City Budget and Capital Improvements Program:** Certain capital improvements may need to be added to the City's Capital Improvements Program (CIP) and facility master plan programs, as well as those of the City utility enterprises and other public agencies that have control for project implementation. For CIPs completely under the City's control, new projects would need to be assessed for consistency with the GHG Plan Update.
- **Adopt or Update Ordinances and/or Codes:** Some local reduction strategies may require new or revised ordinances. Staff would need to coordinate these efforts in conjunction with planning departments, planning commissions, and City councils.
- **Pursue Outside Funding Sources:** A range of funding from State and federal agencies has been identified. The City would need to pursue these (and other emerging) funding sources as a part of implementation efforts.
- **Implement and Direct Preferred City Funding Sources:** While City funding sources are limited, the City, when financially able, as a part of its budget process, could appropriate funding from general sources or make changes in its fee schedules, utility rates, and other sources as needed to support funding the implementation of the GHG reduction strategies.
- **Create Monitoring/Tracking Processes:** Local reduction strategies would require program development, tracking, and/or monitoring.

Identify Economic Indicators to Consider Future Funding Options: Economic recovery may occur rapidly or slowly. Whatever the timeframe, the City would need to determine the point at which

certain additional funding sources may become feasible and/or favorable. Identification and monitoring of economic indicators and trends, such as home prices, energy prices, cost per kWh on solar installations, unemployment rates, or real wage increases, can help the City decide when to further explore the potential for funding local reduction strategies through different financing mechanisms.

To encourage implementation of all reduction strategies, City staff could develop a GHG Plan Update Implementation Timeline. GHG reduction Strategy prioritization could be based on the following factors:

- **Cost/Funding:** How much does the strategy cost? Is funding already in place for the strategy?
- **Greenhouse Gas Reductions:** How effective is the strategy at reducing greenhouse gases?
- **Other Benefits:** For example, does the strategy improve water quality or conserve resources? Would it create jobs or enhance community well-being?
- **Consistency with Existing Programs:** Does the strategy complement or extend existing programs?
- **Impact on the Community:** What are the advantages and disadvantages of the strategy to the community as a whole?
- **Speed of Implementation:** How quickly can the strategy be implemented and when would the City begin to see benefits?
- **Implementation Effort:** How difficult will it be to develop and implement the program?

A qualitative appraisal of implementation effort for the City is also provided. Strategies can be categorized based on the convention of low, medium, or high, with low-level strategies requiring the least level of effort by the City and being the most likely to be pursued immediately (i.e., the low-hanging fruit). Sample criteria are shown in Table C-2.

Table C-2: Implementation Matrix

Implementation Effort Level	Sample Criteria
Low	● Requires limited staff resources to develop. ● Existing programs in place to support implementation. ● Required internal and external coordination is limited. ● Required revisions to policy or code are limited.
Medium	● Requires staff resources beyond the typical daily level. ● Policy or code revisions become necessary. ● Internal and external coordination (e.g., with stakeholders, other cities or agencies, or general public) is necessary.
High	● Requires extensive staff time and resources. ● Requires the development of completely new policies or programs and potential changes to the general plan. ● Requires a robust outreach program to alert residents and businesses of program requirements and eligibility. ● Requires regional cooperation and securing long-term funding.

EPIDEMIOLOGIC SUMMARY OF VALLEY FEVER (COCCIDIOIDOMYCOSIS) IN CALIFORNIA, 2020-2021

Surveillance and Statistics Section
Infectious Diseases Branch
Division of Communicable Disease Control
Center for Infectious Diseases
California Department of Public Health

Gavin Newsom
Governor
State of California

An accessible Excel data file of the 2020-2021 Epidemiologic Summary of Valley Fever (Coccidioidomycosis) in California is available for download

Mark Ghaly, Secretary
Health and Human Services Agency

Tomás J. Aragón, MD, DrPH, Director
Department of Public Health

Epidemiologic Summary of Valley Fever (Coccidioidomycosis) in California, 2020 - 2021

Key Findings

Valley fever (also known as coccidioidomycosis or “cocci”) is a disease caused by a fungus that grows in the soil and dirt in some areas of California and the southwestern United States. People and animals can get sick when they breathe in dust that contains the Valley fever fungus. Valley fever can be serious and even fatal. Each year in California, there are around 80 deaths from Valley fever and more than 1,000 people are hospitalized with it.

Valley Fever in California in 2020-2021

Total Cases: A total of 7,252 and 8,030 new Valley fever cases were reported in 2020 and 2021, respectively.

Rate: The rate of Valley fever in 2020 was about 18 cases per 100,000 people, and the rate in 2021 was about 20 cases per 100,000 people.

- **By County**: The number of new Valley fever cases was highest in Kern County, with a total of 2,626 cases (about 288 cases per 100,000 people) in 2020 and 2,819 cases (about 306 cases per 100,000 people) in 2021. Counties with the next highest rates of Valley fever in 2021 included Kings, Tulare, San Luis Obispo, Fresno, Merced, and Monterey. Overall, most cases of Valley fever in California are reported in people who live in the Central Valley and Central Coast regions, which include the counties listed above.
- **By Sex**: Similar to previous years, the rates of Valley fever in both 2020 and 2021 were higher in males (2020: about 21 cases per 100,000 males; 2021: about 23 cases per 100,000 males) than in females (2020: about 16 cases per 100,000 females; 2021: about 17 cases per 100,000 females).
- **By Age Group**: In both 2020 and 2021, the rates of Valley fever were highest in people aged 55-64 and 75-84 years (2020: both about 28 cases per 100,000 people; 2021: both about 32 cases per 100,000 people) than in any other age group. The lowest rates of Valley fever were reported in children.
- **By Race/Ethnicity**: For cases where race and ethnicity information were available, there was a higher percentage of Valley fever cases in people who reported Hispanic/Latino ethnicity (47%) and Black, non-Hispanic race (8%) than would be expected compared to the percentage of those groups living in California.

To decrease the risk of Valley fever, people who live, work, or travel in areas where Valley fever has been reported should avoid spending time outside in dusty areas as much as possible. Avoiding outdoor dust can help reduce the risk of breathing in the Valley fever fungus from dust in the air. On windy and dusty days, people should stay inside and keep windows and doors closed, especially if they live in the Central Valley or Central Coast of California where Valley fever is more common.

For more information about Valley fever, please visit www.CouldBeValleyFever.org. For additional data on Valley fever, please visit the CDPH Valley Fever Data and Publications webpage.

Background

Coccidioidomycosis (also known as Valley fever) results from inhaling spores of the dimorphic fungus *Coccidioides* spp. (*Coccidioides immitis* and *Coccidioides posadasii*) from soil or airborne dust in areas where this fungus grows. Coccidioidomycosis is not transmitted directly from person to person. The fungus *Coccidioides* spp. grows throughout much of the southwestern United States, and, in California, most cases of Valley fever are reported among people residing in counties of the southern Central Valley and Central Coast.

Following an incubation period of 1 to 3 weeks, clinical manifestations occur in 40 percent of persons infected with coccidioidomycosis and range from a relatively mild illness with symptoms such as cough, fever, or difficulty breathing, to severe pneumonia, and rarely, disseminated disease.

Disseminated infection, which can be fatal, most commonly involves skin and soft tissues, bones, and the central nervous system. Persons at increased risk for severe disease include persons who are Black or Filipino, pregnant women, adults of older age groups, and people with weakened immune systems.[1]

This report describes the epidemiology of reported coccidioidomycosis in California in 2020-2021 and present surveillance and demographic data for years 2015 through 2021. Because some persons with coccidioidomycosis experience chronic infection and may be reported more than once, only the first report of coccidioidomycosis per person was included using a probabilistic de-duplication method spanning multiple surveillance reporting years. For a complete discussion of the definitions, methods, and limitations associated with this report, please refer to the Technical Notes at the end of this report.

California Reporting Requirements and Surveillance Case Definition

California Code of Regulations (CCR), Title 17, Section 2500 requires health care providers to report suspected cases of coccidioidomycosis to their local health department (LHD) within 7 days or immediately by telephone if an outbreak is suspected. Since 2010, CCR, Title 17, Section 2505 has also mandated laboratories to report to the local health jurisdiction.[2]

California regulations require local health officers to report cases of coccidioidomycosis to the California Department of Public Health (CDPH). During this surveillance period, CDPH defined a confirmed coccidioidomycosis case per the Council of State and Territorial Epidemiologists (CSTE) as a person with clinically compatible illness and at least one of the following: culture, histopathologic, or molecular evidence of *Coccidioides* species; positive serologic test for coccidioidal antibodies in serum, cerebrospinal fluid, or other body fluids by detection of coccidioidal immunoglobulin M (IgM) by immunodiffusion, enzyme immunoassay (EIA), latex agglutination, or tube precipitin; detection of coccidioidal immunoglobulin G (IgG) by immunodiffusion, EIA, or complement fixation; or coccidioidal skin-test conversion from negative to positive after onset of clinical signs and symptoms. Clinically compatible illness includes one or more of the following: influenza-like signs and symptoms, pneumonia or other pulmonary lesion, erythema nodosum or multiforme rash, involvement of the bones, joints, or skin by dissemination, meningitis, or involvement of viscera or lymph nodes.[3] Since January 2019, confirmed cases need only laboratory evidence to be reported. Cases included in this report were confirmed by LHDs by either meeting the clinical and laboratory criteria of the CSTE case definition or just the laboratory criteria if clinical confirmation was not feasible; CDPH accepts all cases confirmed by LHDs.

Epidemiology of Coccidioidomycosis in California

Incidence of coccidioidomycosis in 2020 was 18.2 per 100,000 population (7,252 case-patients) and 20.1 per 100,000 population in 2021 (8,030 case-patients). The incidence decreased by 20.5 percent from 2019 to 2020 and increased by 10.4 percent from 2020 to 2021. For most years prior to 2020, monthly case counts were lowest at the beginning of the year and gradually increased to peak in October or November. However, in 2020 from March to April, monthly case counts decreased by 28.4 percent. In 2021, monthly case counts were fairly consistent throughout the year (Table 2).

In 2020, incidence among males was 20.7 per 100,000 population (4,102 case-patients) and was higher than incidence among females of 15.7 per 100,000 (3,136 case-patients). Similarly in 2021, incidence among males was 23.4 per 100,000 (4,673 case-patients) and was higher than incidence among females of 16.7 per 100,000 (3,347 case-patients) (Table 3). By age group in both 2020 and 2021, incidence was highest and equal among people aged 55-64 and 75-84 years (2020: about 28 cases per 100,000 people; 2021: about 32 cases per 100,000 people) (Table 4 and Figure 2). Among children ages 17 years and younger, incidence was 3.8 per 100,000 in both 2020 (334 case-patients) and 2021 (336 case-patients). Among adults ages 18 years and older, incidence was 22.4 per 100,000 in 2020 (6,898 case-patients) and 24.8 per 100,000 in 2021 (7,681 case-patients).

Statewide in both 2020 and 2021, the incidence was highest in Kern County (2020: 287.6 per 100,000; 2626 case-patients, 2021: 306.2 per 100,000; 2819 case-patients), followed by Kings County (2020: 101.5 per 100,000; 157 case-patients, 2021: 108.3 per 100,000; 168 case-patients). Other counties with high incidence included Tulare (2020: 64.3 per 100,000; 309 case-patients), 2021: 65.8 per 100,000; 317 case-patients), San Luis Obispo (2020: 64.5 per 100,000; 178 case-patients, 2021: 61.0 per 100,000; 170 case-patients), Fresno (2020: 43.6 per 100,000; 448 case-patients, 2021: 39.8 per 100,000; 407 case-patients), Merced (2020: 27.4 per 100,000; 78 case-patients, 2021: 28.3 per 100,000; 81 case-patients), and Monterey (2020: 25.2 per 100,000; 111 case-patients, 2021: 27.0 per 100,000; 120 case-patients) (Table 1 and Figure 3). Approximately 56.5 and 52.1 percent of all California case-patients in 2020 and 2021, respectively, resided in these counties at the time of illness onset.

Incidence by race/ethnicity was not calculated due to missing race/ethnicity data for 34.9% of reported cases in 2015 through 2021. However, for cases with complete race/ethnicity data, a higher percentage of cases reported Hispanic ethnicity (46.5%) and Black non-Hispanic race (7.8%) than would be expected based on the overall demographic profile of California (39.1% Hispanic, 5.7% Black non-Hispanic) (Table 5 and Figure 4).

Comments

Since 2019, the number and incidence of new Valley fever cases have decreased in 2020 and increased slightly in 2021 although still lower than in 2019. In 2020, case counts began to decrease in April, which coincided with the beginning of the COVID-19 pandemic in California. Some additional cases for 2020 and 2021 may be reported after this summary report due to delays in diagnosis and reporting; future coccidioidomycosis summary reports will have updated case numbers and incidence.

Age group, race/ethnicity, gender, and county epidemiologic profiles of incident cases with estimated illness onset dates in 2020 and 2021 are similar to those reported in

coccidioidomycosis epidemiologic summaries from earlier years as described previously.[4]

The causes of the increase of coccidioidomycosis in recent years are not well understood but contributing factors may include climatic and environmental factors favorable to *Coccidioides* proliferation and airborne release, increase in endemic areas of susceptible residents, and increase in disease recognition, testing, and reporting. In particular, reporting completeness likely improved following the initiation of automatic electronic laboratory reporting in 2014.

Coccidioidomycosis is most commonly reported among residents of the counties of the southern Central Valley and Central Coast of California and remains an important public health problem in the state. There is currently no vaccine to prevent coccidioidomycosis, but antifungal medications are available for treatment, particularly for severe disease. To decrease the risk of infection, persons living, working, or traveling in areas where coccidioidomycosis is common, especially those at increased risk for disseminated disease, should limit their exposure to outdoor dust as much as possible, including by staying inside and keeping windows and doors closed when it is windy and the air is dusty. Employers should inform outdoor workers about symptoms of coccidioidomycosis and take steps to limit workers' exposure to dust, such as watering down the soil before digging. It is important that health care providers be alert for coccidioidomycosis among patients who live in or have traveled to areas where the *Coccidioides* fungus may be present, especially those who work or participated in activities where soil is disturbed.[1, 5]

For more information on coccidioidomycosis, including education materials and data from previous years, please visit the CDPH Coccidioidomycosis webpage (https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Coccidioidomycosis.aspx).

Prepared by Alyssa Nguyen, Gail Sondermeyer Cooksey, Yanyi Djamba, Allyx Nicolici, and Duc Vugia — Infectious Diseases Branch, Division of Communicable Disease Control, Center for Infectious Diseases, California Department of Public Health.

Coccidioidomycosis

Table 1. Coccidioidomycosis, Cases and Rates by Health Jurisdiction, California, 2015-2021

	YEAR OF ESTIMATED ILLNESS ONSET													
	2015		2016		2017		2018		2019		2020		2021	
JURISDICTION	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
CALIFORNIA TOTAL	3,183	8.2	5,571	14.2	7,704	19.5	7,636	19.2	9,090	22.9	7,252	18.2	8,030	20.1
ALAMEDA COUNTY TOTAL	39	2.4	48	2.9	66	4.0	76	4.6	97	5.8	68	4.1	99	5.9
ALAMEDA	38	2.5	48	3.2	66	4.3	75	4.9	96	6.2	67	4.3	98	6.4
BERKELEY	1	0.8*	0	-	0	-	1	0.8*	1	0.8*	1	0.8*	1	0.8*
ALPINE	0	-	0	-	0	-	0	-	0	-	0	-	0	-
AMADOR	4	11.1*	0	-	1	2.7*	7	18.5*	5	13.3*	7	18.6*	3	7.9*
BUTTE	0	-	3	1.3*	4	1.8*	1	0.4*	6	2.8*	11	5.3*	13	5.7*
CALAVERAS	1	2.2*	1	2.2*	0	-	1	2.2*	3	6.8*	8	18.1*	1	2.3*
COLUSA	1	4.6*	1	4.6*	0	-	2	9.1*	3	13.6*	1	4.5*	0	-
CONTRA COSTA	50	4.5	68	6.0	89	7.8	109	9.5	134	11.7	144	12.5	134	11.6
DEL NORTE	0	-	1	3.7*	1	3.8*	0	-	0	-	0	-	0	-
EL DORADO	1	0.5*	2	1.1*	5	2.7*	2	1.1*	5	2.6*	3	1.6*	1	0.5*
FRESNO	280	28.6	614	62.1	832	83.4	643	63.7	625	61.4	448	43.6	407	39.8
GLENN	0	-	0	-	2	7.0*	0	-	2	6.9*	1	3.4*	3	10.3*
HUMBOLDT	1	0.7*	0	-	2	1.5*	0	-	2	1.5*	2	1.5*	2	1.5*
IMPERIAL	2	1.1*	11	5.9*	15	8.0*	19	10.1	17	9.0*	5	2.7*	1	0.5*
INYO	0	-	0	-	0	-	0	-	0	-	1	5.4*	3	16.5*
KERN	1,083	122.9	2,258	255.3	2,793	312.8	2,949	327.2	3,384	372.0	2,626	287.6	2,819	306.2
KINGS	104	69.6	235	158.0	273	181.6	173	113.3	220	143.3	157	101.5	168	108.3
LAKE	0	-	2	3.1*	2	3.1*	1	1.5*	2	3.1*	2	3.1*	0	-
LASSEN	9	29.8*	6	20.2*	0	-	1	3.4*	0	-	1	3.5*	0	-
LOS ANGELES COUNTY TOTAL	558	5.5	730	7.2	932	9.1	1,013	9.9	1,154	11.3	1,081	10.6	1,447	14.2
LOS ANGELES	521	5.5	713	7.5	904	9.5	996	10.4	1,093	11.5	1,023	10.7	1,378	14.8
LONG BEACH	36	7.6	15	3.2*	19	4.0	12	2.5*	57	12.1	55	11.7	52	11.3
PASADENA	1	0.7*	2	1.4*	9	6.3*	5	3.5*	4	2.8*	3	2.1*	17	12.2*
MADERA	54	35.0	49	31.7	64	41.0	58	36.8	64	40.6	22	13.9	38	23.6
MARIN	1	0.4*	2	0.8*	4	1.5*	5	1.9*	5	1.9*	6	2.3*	4	1.5*
MARIPOSA	2	11.1*	3	16.6*	3	16.7*	1	5.6*	2	11.2*	1	5.6*	1	5.7*
MENDOCINO	1	1.1*	0	-	1	1.1*	0	-	3	3.4*	2	2.3*	1	1.1*
MERCED	91	33.8	78	28.8	105	38.2	137	49.3	105	37.3	78	27.4	81	28.3
MODOC	0	-	0	-	0	-	0	-	0	-	0	-	0	-
MONO	0	-	0	-	0	-	1	7.4*	0	-	0	-	2	14.5*
MONTEREY	38	8.7	79	18.0	191	43.4	238	53.9	186	41.9	111	25.2	120	27.0
NAPA	0	-	2	1.4*	1	0.7*	1	0.7*	4	2.9*	1	0.7*	5	3.6*
NEVADA	0	-	0	-	0	-	1	1.0*	0	-	4	4.1*	1	1.0*
ORANGE	172	5.5	109	3.4	231	7.2	195	6.1	287	9.0	240	7.5	284	8.8
PLACER	5	1.3*	3	0.8*	2	0.5*	3	0.8*	12	3.0*	10	2.5*	9	2.3*
PLUMAS	0	-	0	-	0	-	2	10.9*	0	-	0	-	0	-
RIVERSIDE	57	2.4	64	2.7	134	5.6	142	5.9	290	11.9	311	12.7	455	18.4
SACRAMENTO	23	1.5	27	1.8	40	2.6	43	2.8	103	6.7	57	3.6	81	5.2
SAN BENITO	0	-	3	5.1*	4	6.7*	3	4.9*	5	8.1*	2	3.2*	8	13.0*
SAN BERNARDINO	29	1.4	38	1.8	88	4.1	97	4.5	229	10.5	233	10.7	250	11.4
SAN DIEGO	113	3.5	132	4.0	274	8.3	276	8.3	417	12.5	461	13.8	450	13.5
SAN FRANCISCO	13	1.5*	7	0.8*	14	1.6*	12	1.3*	25	2.8	18	2.0*	29	3.2
SAN JOAQUIN	97	13.3	191	25.9	204	27.3	242	32.0	281	36.6	134	17.3	117	15.1
SAN LUIS OBISPO	65	23.5	259	93.2	438	157.7	346	124.4	268	96.7	178	64.5	170	61.0
SAN MATEO	5	0.7*	4	0.5*	18	2.3*	16	2.1*	27	3.5	17	2.2*	22	2.8
SANTA BARBARA	25	5.6	62	13.9	115	25.7	107	23.8	75	16.6	62	13.7	66	14.6
SANTA CLARA	17	0.9*	39	2.0	39	2.0	76	3.9	78	4.0	44	2.2	65	3.3
SANTA CRUZ	1	0.4*	9	3.3*	9	3.3*	14	5.1*	21	7.7	3	1.1*	17	6.2*
SHASTA	0	-	2	1.1*	0	-	0	-	0	-	1	0.6*	0	-
SIERRA	0	-	0	-	0	-	0	-	0	-	0	-	0	-
SISKIYOU	0	-	2	4.5*	2	4.5*	0	-	1	2.3*	2	4.6*	0	-
SOLANO	19	4.4	16	3.7*	18	4.1*	17	3.9*	34	7.7	22	5.0	35	7.9
SONOMA	1	0.2*	2	0.4*	3	0.6*	3	0.6*	12	2.4*	7	1.4*	20	4.0
STANISLAUS	48	8.9	81	14.9	122	22.3	76	13.8	80	14.4	67	12.1	86	15.3
SUTTER	0	-	1	1.0*	3	3.0*	0	-	4	3.9*	1	1.0*	1	1.0*
TEHAMA	0	-	1	1.6*	0	-	1	1.6*	2	3.1*	3	4.6*	2	3.1*
TRINITY	0	-	0	-	0	-	1	7.5*	0	-	0	-	0	-
TULARE	120	25.9	249	53.3	290	61.6	287	60.6	418	87.5	309	64.3	317	65.8
TUOLUMNE	1	1.9*	6	11.3*	6	11.4*	2	3.8*	1	1.9*	2	3.8*	1	1.9*
VENTURA	48	5.7	65	7.7	257	30.3	231	27.2	371	43.9	266	31.6	181	21.3
YOLO	4	1.9*	6	2.8*	4	1.8*	3	1.4*	16	7.2*	9	4.1*	8	3.5*
YUBA	0	-	0	-	3	3.9*	2	2.6*	5	6.4*	2	2.5*	2	2.6*

Rates are expressed as cases per 100,000 jurisdiction population per year.
***Potentially unreliable rate: relative standard error 23 percent or more.**
For inclusion/exclusion criteria, please refer to the Technical Notes.

Coccidioidomycosis

Table 2. Coccidioidomycosis, Cases by Month of Estimated Illness Onset, California, 2015-2021

	YEAR OF ESTIMATED ILLNESS ONSET						
MONTH	2015	2016	2017	2018	2019	2020	2021
TOTAL	3,183	5,571	7,704	7,636	9,090	7,252	8,030
JANUARY	217	290	371	1,034	743	715	768
FEBRUARY	182	276	288	619	684	730	682
MARCH	202	235	304	569	789	669	710
APRIL	231	276	281	485	656	479	582
MAY	175	211	337	545	692	440	601
JUNE	215	309	454	492	601	511	624
JULY	295	388	503	595	629	478	713
AUGUST	259	615	744	636	753	584	649
SEPTEMBER	328	733	838	586	745	595	665
OCTOBER	407	958	1,221	709	993	728	680
NOVEMBER	351	734	1,242	724	968	669	703
DECEMBER	321	546	1,121	642	837	654	653

For inclusion/exclusion criteria, please refer to the Technical Notes.

Table 3. Coccidioidomycosis, Cases and Rates by Sex, California, 2015-2021

	YEAR OF ESTIMATED ILLNESS ONSET													
	2015		2016		2017		2018		2019		2020		2021	
SEX	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
TOTAL	3,183	8.2	5,571	14.2	7,704	19.5	7,636	19.2	9,090	22.9	7,252	18.2	8,030	20.1
FEMALE	1,171	6.0	2,066	10.5	2,749	13.9	2,933	14.8	3,723	18.7	3,136	15.7	3,347	16.7
MALE	2,009	10.3	3,501	17.9	4,947	25.1	4,696	23.7	5,354	27.0	4,102	20.7	4,673	23.4
UNKNOWN	3	-	4	-	8	-	7	-	13	-	14	-	10	-

Rates are expressed as cases per 100,000 jurisdiction population per year.
For inclusion/exclusion criteria, please refer to the Technical Notes.

Table 4. Coccidioidomycosis, Cases and Rates by Age Group, California, 2015-2021

	YEAR OF ESTIMATED ILLNESS ONSET													
	2015		2016		2017		2018		2019		2020		2021	
AGE GROUP	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
TOTAL	3,183	8.2	5,571	14.2	7,704	19.5	7,636	19.2	9,090	22.9	7,252	18.2	8,030	20.1
0	3	0.6*	3	0.6*	5	1.0*	8	1.7*	9	2.0*	9	2.0*	3	0.7*
1-4	15	0.7*	29	1.5	55	2.8	50	2.5	39	2.0	27	1.4	13	0.7*
5-14	105	2.0	303	5.9	393	7.6	336	6.5	285	5.6	172	3.4	187	3.7
15-24	314	5.4	608	10.4	818	14.1	745	12.9	847	14.8	603	10.6	604	10.6
25-34	448	8.5	827	15.8	1,175	22.6	1,156	22.2	1,316	25.4	958	18.6	1,046	20.1
35-44	536	10.4	942	18.3	1,257	24.2	1,260	24.1	1,455	27.7	1,256	23.9	1,229	23.4
45-54	578	11.0	1,070	20.4	1,446	27.7	1,426	27.6	1,612	31.6	1,212	24.0	1,369	27.2
55-64	559	12.0	897	18.9	1,317	27.3	1,268	25.9	1,608	32.7	1,349	27.5	1,569	32.0
65-74	356	11.8	538	17.0	783	23.8	843	24.7	1,169	33.0	967	26.4	1,162	30.7
75-84	192	12.5	263	16.7	337	20.6	419	24.6	548	30.9	508	27.5	620	32.1
85+	65	9.5	84	12.0	114	16.0	116	16.0	188	25.0	181	23.2	215	26.6
UNKNOWN	12	-	7	-	4	-	9	-	14	-	10	-	13	-

Rates are expressed as cases per 100,000 jurisdiction population per year.
For inclusion/exclusion criteria, please refer to the Technical Notes.
*Potentially unreliable rate: relative standard error 23 percent or more.

Table 5. Coccidioidomycosis, Cases by Race/Ethnicity, California, 2015-2021

	YEAR OF ESTIMATED ILLNESS ONSET						
RACE/ETHNICITY	2015	2016	2017	2018	2019	2020	2021
TOTAL	3,183	5,571	7,704	7,636	9,090	7,252	8,030
WHITE, NON-HISPANIC	803	1,249	1,736	1,724	1,719	1,534	1,666
HISPANIC/LATINO	870	1,769	2,268	2,249	2,055	1,822	2,103
ASIAN/PACIFIC ISLANDER, NON-HISPANIC	163	273	402	384	370	264	371
BLACK, NON-HISPANIC, NON-HISPANIC	198	273	354	383	340	286	381
AMERICAN INDIAN/ALASKA NATIVE, NON-HISPANIC	12	17	38	18	46	19	26
MULTIPLE RACE, NON-HISPANIC	5	22	16	10	19	8	10
OTHER, NON-HISPANIC	106	165	559	501	736	617	569
UNKNOWN	1,026	1,803	2,331	2,367	3,805	2,702	2,904

For inclusion/exclusion criteria, please refer to the Technical Notes.

Coccidioidomycosis

Figure 1. Coccidioidomycosis Cases and Incidence Rates by Year of Estimated Illness Onset, California, 2015-2021

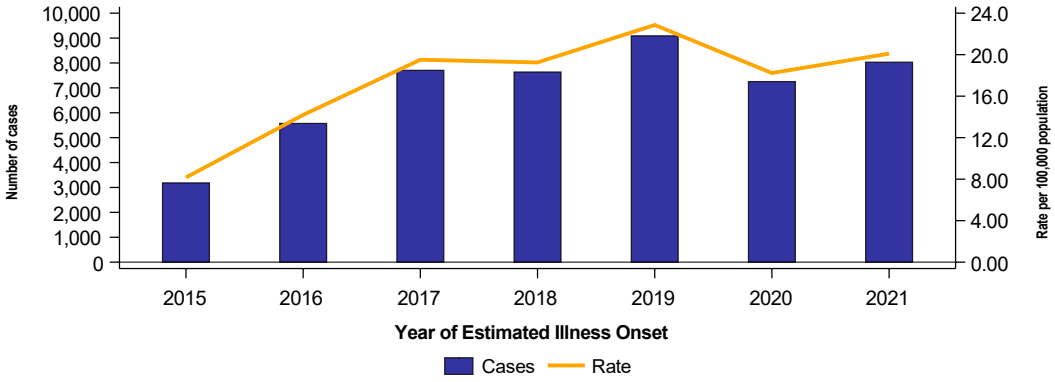


Figure 2. Coccidioidomycosis Incidence Rates by Age Group and Year of Estimated Illness Onset, California, 2015-2021

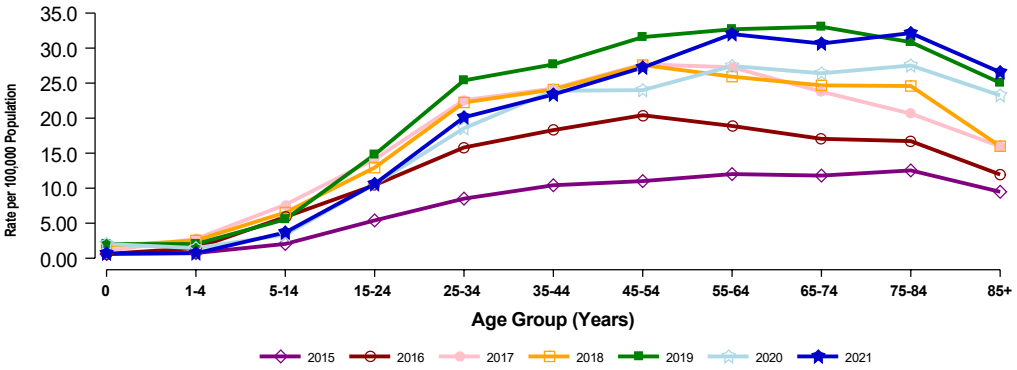


Figure 3. Coccidioidomycosis, Annual Incidence by County, California, 2019—2021

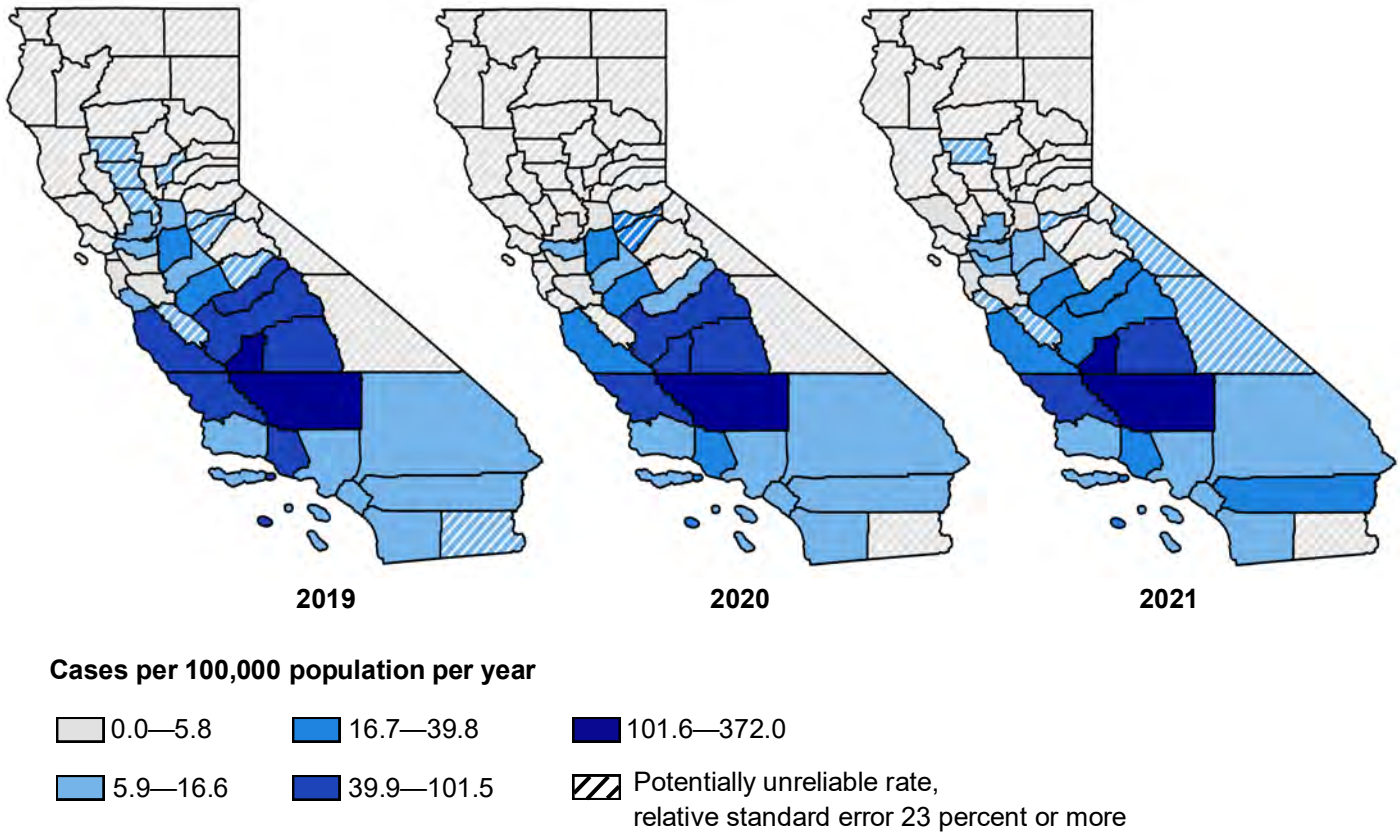
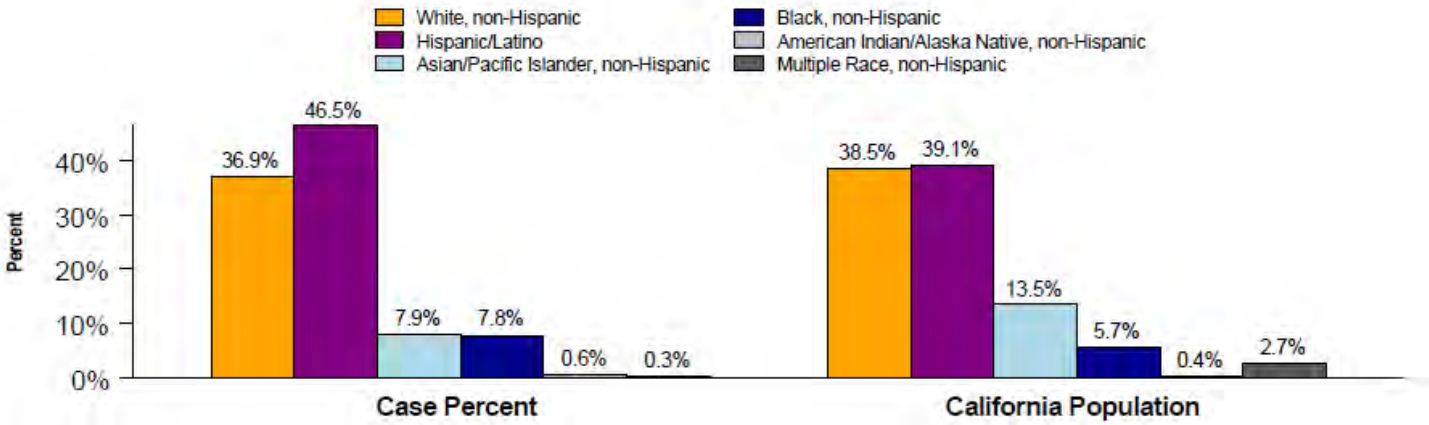


Figure 4. Coccidioidomycosis, Cases and Population by Race/Ethnicity, California, 2015—2021



34.9% (n=16938) of reported incidents of Coccidioidomycosis did not identify race/ethnicity and 6.7% (n=3253) of reported incidents identified as 'Other' race/ethnicity and are not included in the Case Percent calculation. Information presented with a large percentage of missing data should be interpreted with caution.

Technical Notes

Background

The California Department of Public Health (CDPH) Infectious Diseases Branch maintains a passive reporting system for a list of communicable disease cases and outbreaks, including coccidioidomycosis, mandated by state law and regulation.[2] Healthcare providers and laboratories are required to report known or suspected cases of these communicable diseases to their local health department (LHD). LHDs in turn report these cases to CDPH.

The collection and distribution of information on the health of the community is a core function and essential service of public health. The data in this epidemiologic summary provide important health information on the magnitude and burden of coccidioidomycosis in California. Bearing in mind their limitations, these surveillance data can contribute to the identification of risk groups to whom intervention strategies and actions can be targeted, and aid in assessing the effectiveness of these control and prevention measures.

Materials and methods

Case data sources and inclusion criteria

Included in this document-- Epidemiologic Summary of Coccidioidomycosis in California, 2020-2021-- are incident cases of coccidioidomycosis with estimated illness onset dates from January 1, 2015 through December 31, 2021. These data were extracted from California Confidential Morbidity Reports that LHDs submitted to CDPH by July 20, 2022. The Council of State and Territorial Epidemiologists (CSTE) surveillance case definition requires both clinical and laboratory criteria for reporting cases as confirmed.[3] However, some LHDs used laboratory results only due to resource constraints; CDPH accepts all cases closed by LHDs as confirmed. Due to delays in provider reporting and time required for LHDs to complete clinical, laboratory, and epidemiologic investigation of reported cases, LHDs may continue to add and rescind cases with eligible illness onset dates after the closeout date of this summary. Data used in this report were quality checked and duplicate records were removed based on a data matching algorithm. Because coccidioidomycosis may occur as a chronic condition and be reported more than once, only the first report of coccidioidomycosis per person was included based on estimated illness onset using a probabilistic de-duplication method spanning multiple surveillance reporting years.

Population data source

For the 2020-2021 Epidemiologic Summary of Coccidioidomycosis in California, State of California, Department of Finance projections and estimations population data were used.[6, 7, 8, 9]

Definitions

A case was defined as a person who had laboratory and/or clinical evidence of infection that satisfied the most recent surveillance case definition published by the CSTE. Coccidioidomycosis cases included in the report were closed by the LHDs either after having met case definition criteria for a confirmed case or using laboratory results only; CDPH accepts all cases closed by LHDs as confirmed.

Estimated date of illness onset was defined as the date closest to the time when symptoms first appeared. For cases for which an illness onset date was not explicitly reported, estimated date of illness onset was selected as the earliest of: date of diagnosis, date the case was reported to or received by CDPH, date of laboratory specimen collection, or date of patient death. Because illness onset of coccidioidomycosis is often insidious, estimated illness onset was frequently drawn from the diagnosis date.

Cases were classified to local health jurisdiction according to the case-patient's county of residence. This classification may not correspond to the county where the case-patient was exposed, sought medical care, or was diagnosed.

Sex categories were defined as follows: Female (including Male to Female transgender) and Male (including Female to Male transgender). Cases that did not report a sex were listed as Unknown.

Mutually exclusive race/ethnicity categories were defined as follows: Hispanic/Latino (of any, including unknown, race), and non-Hispanic White, Black, Asian/Pacific Islander, American Indian/Alaska Native, Multiple Race, and Other. Cases for which race and ethnicity were not reported were categorized as Unknown.

Data analyses

Within this epidemiologic summary, incidence rates (or the number of cases per 100,000 people per year) are used to convey how common a disease is in a place (such as a county) or a group (such as sex or age) compared to the number of people in that place or group (the population). Different places and groups have different population sizes, and the number of new cases in those places or groups can mean different things based on the size of the population. To understand which place or group has a higher risk of disease, it is better to compare their incidence rates than the number of cases.

Case totals and incidence rates per 100,000 population were reported and stratified by local health jurisdiction, year of estimated illness onset, sex, and age group.

Incidence rate (IR) = (Number of cases in specified year(s)/population) x 100,000

Standard error (SE) = IR/√number of cases

Relative standard error = SE/IR x 100

An incidence estimate was defined as unreliable if the relative standard error was 23 percent or more (a threshold recommended by the National Center for Health Statistics).[10] A substantial portion of race/ethnicity data were missing, thus incidence rates by race/ethnicity were not calculated. However, for comparison we depicted case totals and California population totals by race/ethnicity.

Tables and figures

The following tables and figures are included in this report; please note that the tables and figures may be altered or suppressed to minimize depiction of unreliable IRs:

Tables:

1. *Coccidioidomycosis, Cases and Incidence Rates by Health Jurisdiction, California, 2015-2021*
2. *Coccidioidomycosis, Cases by Month of Estimated Illness Onset, California, 2015-2021*
3. *Coccidioidomycosis, Cases and Incidence Rates by Sex, California, 2015-2021*
4. *Coccidioidomycosis, Cases and Incidence Rates by Age Group, California, 2015-2021*
5. *Coccidioidomycosis, Cases by Race/Ethnicity, California, 2015-2021*

Figures:

1. *Coccidioidomycosis, Cases and Incidence Rates by Year of Estimated Illness Onset, California, 2015-2021*
2. *Coccidioidomycosis, Incidence Rates by Age Group and Year of Estimated Illness Onset, California, 2015-2021*
3. *Coccidioidomycosis, Annual Incidence Rate by County, California, 2015-2021*
4. *Coccidioidomycosis, Cases and Population by Race/Ethnicity, California, 2015-2021*

Limitations

Completeness of reporting

The number of reported cases of coccidioidomycosis summarized in this report are likely to underestimate the true magnitude of the disease. Factors that may contribute to under-reporting include ill persons not seeking health care, misdiagnoses, not ordering diagnostic tests, and limited reporting by clinicians and laboratories. Factors that may enhance disease reporting include increased exposure and disease severity, recent media or public attention, and active surveillance activities.

Because race/ethnicity information was missing or incomplete for 34.5 percent of all 2015-2021 cases included in this report, IRs by race/ethnicity were not calculated. However, the proportion of cases representing race/ethnicity categories are presented alongside statewide averages for these categories during the seven-year surveillance period. Nonetheless, race/ethnicity information based on a high percentage of missing data should be interpreted with caution.

Data presented in this report may differ from previously published data due to delays inherent to case reporting, laboratory reporting, and epidemiologic investigation.

Small numbers and rate variability

All IRs are subject to random variation. Random variation may be substantial when the number of cases is small (e.g., less than 20) and can obscure distinguishing random statistical fluctuations from true changes in the incidence of disease. Rates and proportions based on small numbers of cases should be interpreted with caution.

Rate comparisons

Incidence rate comparisons between local health jurisdictions and surveillance years should be done with caution.

References

[1] Brown J, Benedict K, Park BJ, Thompson GR 3rd. Coccidioidomycosis: epidemiology. Clinical Epidemiology 2013:5; 185-197.

[2] California Code of Regulations, Title 17, Sections 2500. https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/ReportableDiseases.pdf

[3] Council of State and Territorial Epidemiologists. Coccidioidomycosis (Valley fever) (*Coccidioides* spp.) position statement 10-ID-04, 2011 [cited 29 Jun 2020]. https://wwwn.cdc.gov/nndss/conditions/coccidioidomycosis/case-definition/2011/

[4] State of California, Department of Public Health. Epidemiological Summaries of Selected General Communicable Diseases in California, 2001-2008, 2009-2012, and Epidemiologic Summary of Valley Fever in California, 2019. Sacramento, California, November 2009; January 2014; September 2020. https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/CocciEpiSummary2019.pdf; https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/CocciEpiSummary09-12.pdf; and https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/EpiSummariesofSelectedCommDiseasesinCA2001-2008.pdf#page=17

[5] Preventing Work-Related Valley Fever (Coccidioidomycosis). California Department of Public Health. https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/Pages/Cocci.aspx

[6] State of California, Department of Finance, Race/Hispanics Population with Age and Gender Detail, 2000–2010. Sacramento, California, March 2013.

[7] State of California, Department of Finance. P-3 State and County Total Population Projections by Race/Ethnicity and Detailed Age, 2010–2060. Sacramento, California, January 2022.

[8] State of California, Department of Finance, *E-4 Population Estimates for Cities, Counties, and the State, 2011-2020, with 2010 Census Benchmark*. Sacramento, California, May 2022.

[9] State of California, Department of Finance, *E-4 Population Estimates for Cities, Counties, and the State, 2021-2022, with 2020 Census Benchmark*. Sacramento, California, May 2022.

[10] Xu JQ, Murphy SL, Kochanek KD, Bastian B, Arias E. Deaths: Final data for 2016. National Vital Statistics Reports; vol 67 no 5. Hyattsville, MD: National Center for Health Statistics. 2018.

Report published on the Surveillance and Statistics Section website

December 2022

Surveillance and Statistics Section
Infectious Diseases Branch
Division of Communicable Disease Control
Center for Infectious Diseases
California Department of Public Health

1616 Capitol Avenue, MS 7306
P.O. Box 997377, Sacramento, CA 95899-7377
(916) 552-9720

Emission Impact: Additional Generator Usage Associated with Power Outage

January 30, 2020

This report has been reviewed by the staff of the California Air Resources Board. The contents do not necessarily reflect the views and policies of the California Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Summary

For public safety, it may be necessary for utilities to turn off electricity when gusty winds and dry conditions, combined with a heightened fire risk, are forecasted. This is called a "Public Safety Power Shutoff" or "PSPS". According to CPUC de-energization report[1], in October 2019, there have been almost 806 PSPS events that have impacted almost 973,000 customers (~7.5% of households in California) of which ~854,000 of them were residential customers, and the rest were commercial/industrial/medical baseline/other customers. Data also indicates that on average each of these customers had about 43 hours of power outage in October 2019.

Following the PSPS events, many households and businesses in California started operating their back-up generators to provide power for their day-to-day operations. Generators used during power outage will increase emissions as compared to an average day. Staff assessment indicated that with 973,000 customers impacted by PSPS events in October 2019, approximately 125,000 back-up generators were used by customers to provide electricity during power outage. Assuming 50 hours of operation per generator during month of October 2019, staff estimated excess emissions from the use of generators which are summarized in Table 1.

Table 1: Population and excess emissions from the use of electricity power generators during October 2019 PSPS events.

Generator Type		NOx (tons)	PM (tons)	Diesel PM (tons)	Additional Generators Running in PSPS
Portable	Gasoline Less than 25 hp	24.3	10.6		122,000
	Diesel above 25 hp *Non-Rental Generator*	7.3	0.30	0.30	381
	Diesel above 25 hp *Rental Generator*	9.1	0.30	0.30	582
Permitted Stationary Back-Up Generators (Assuming 30% Load Factor)		125.7	8.3	8.3	1,810
Non-permitted generators[2]		N/A	N/A	N/A	N/A
Total		***166.4***	***19.4***	***8.9***	***124,774***

[1] https://www.cpuc.ca.gov/deenergization/

[2] This analysis does not include emissions estimates from non-permitted generators such as the residential standby natural gas powered generators with power rating of less than 50 hp (e.g, a 22 kW Guardian Series home standby generator by Generac). At this point there is no information available on their population and sales. According to discussion with industry, it is assumed that most of these generator are powered by natural gas.

To put these numbers into context, 9 tons of diesel PM is equivalent to emissions from almost 29,000 heavy duty diesel trucks (above 14,000 lbs.) driving on California roadways for the period of one month (on average each truck drives around 3,000 miles per month).

The calculations described in the rest of the document outlines the assumptions used to estimate potential emissions impact from the use of gasoline and diesel generators during PSPS events.

Small Gasoline Powered Generators (less than 25 hp)

Population

Based on 2018 California State University Fullerton (CSUF) Survey[3] for small off-road (SORE) equipment, about one out of 8 households own a generator in California. For a population of 973,000 households, about 122,000 generators will likely to be used to provide additional power during the power shut-off period.

Emission Factors

According to data provided by manufacturers as part of the SORE Evaporative Reporting Requirement[4], generators have an average horsepower of 3.5 hp of which when combined with a load factor of 0.68, derived from OFFROAD2007[5], results in an effective power of 2.4 hp. To determine emission factors, we used emissions data from SORE exhaust certification database. Table 2 shows the derived emission factors along with weighted average emission factors across all horsepower bins.

Table 2: Exhaust emission factors (g/bhp-hr) for gasoline powered generator less than 25 hp

Equipment	Tech Type	Horsepower	Percent Population	HC (g/bhp-hr)	NOX (g/bhp-hr)	PM (g/bhp-hr)
Generator Sets	G2-CARB	0 – 2	5%	27.860	0.900	0.600
	G4-CARB	2 – 5	82%	5.634	1.484	0.740
		5 – 15	9%	2.885	1.975	0.140
		15 – 25	3%	3.390	1.422	0.140
	G4-FI	15 – 25	1%	1.074	2.125	0.140
	Population Weighted Average			**6.296**	**1.505**	**0.655**

Using the effective power and emission factors described earlier, staff estimated excess emissions as well emissions during 50 hours of generators operation (5 days with 10 hours a day operation). For example, with 122,000 generators operating for 50 hours during power shutoff, staff estimated excess emissions of 24.3 tons of NOx, 101.5 tons of THC, and 10.6 tons of PM. The calculation below outlines the assumptions used for this emissions impact assessment. Obviously, a more refined estimate can be made with additional information.

[3] Survey of Small Off-Road Engines (SORE) Operating within California: Results from Surveys with Four Statewide Populations, Submitted May 15, 2019, Prepared by the Social Science Research Center (SSRC) at CSU, Fullerton.
[4] https://ww3.arb.ca.gov/msprog/mailouts/ecars1805/ecars1805.pdf?_ga=2.15158582.1846785299.1570743950-1632999103.1458687259
[5] https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-road-archives

DRAFT

Portable Diesel Generators (above 25 hp)

Portable diesel generators are generally much larger and supply more power than gasoline generators, and could be used during PSPS events to supply power to larger facilities (such as schools, industrial facilities, or buildings). Table 3 provides CARB's latest population, activity, and emissions associated diesel portable generators registered under CARB's PERP program[6].

Table 3: Emissions and Population of Diesel portable generators registered under CARB's PERP program

	Population (statewide)	Annual Activity (hours)	NOx (tons/yr)	PM (tons/yr)	PM25 (tons/yr)
Portable Equipment - Non-Rental Generator	5,081	1,299	2,537	99	91
Portable Equipment - Rental Generator	7,764	1,392	3,363	123	113

For assessing the emissions impact associated with this event, this analysis will assume that the percent of businesses that use generators and backup generators that are impacted by the PSPS is roughly proportional to the percent of households impacted (about 973,000 households out of 13,000,000 in California, or about 7.5 percent of the population of generators in the state). Table 4 shows the excess emissions from the use of portable diesel power generators during PSPS events assuming 50 hours of operations.

Table 4: Population and excess emissions from the use of portable diesel powered generators during October 2019 PSPS events

	Additional Generators Running in PSPS	NOx (tons)	PM (tons)	PM2.5 (tons)
Portable Equipment - Non-Rental Generator	381	7.3	0.30	0.30
Portable Equipment - Rental Generator	582	9.1	0.30	0.30
Total	**964**	**16.45**	**0.61**	**0.61**

Permitted Stationary Back-Up Generators (BUG)

Population

Data on permitted stationary back-up generators were provided to CARB by several air districts. Staff used the facility ID from the districts permit data to find the address of the facility that the stationary BUGs are operating and determined whether those BUGs were impacted by the PSPS events or not. Using this process, staff determined that almost 1,810 stationary BUGs across California were impacted by the October 2019 PSPS events.

Emission Factors

Additionally, using actual emission factors for each diesel BUG engines provided in the districts' stationary BUGs database (i.e., stationary BUGs permit database), staff assumed a work based emission factors of 0.44 g/bhp-hr for PM and 6.7 g/bhp-hr for NOx, based on averaging of a

[6] https://ww2.arb.ca.gov/our-work/programs/portable-equipment-registration-program-perp

sample of permitted diesel powered backup generators in the state. The analysis also indicated that an average permitted back-up generator has a power rating of ~ 627 hp and they can go up as high as 4,400 hp which when combined with a load factor assumption of 30% resulted in an effective power of 188 hp. Table 5 provides a summary of excess emissions associated with the stationary BUGs impacted by the PSPS events.

Table 5: Population and excess emissions from the use of diesel powered stationary back-up generators (BUG) during October 2019 PSPS events

	Additional Generators Running in PSPS	NOx (tons)	PM (tons)	Diesel PM (tons)
Permitted Stationary Back-Up Generators	1,810	126	8.3	8.3

DRAFT

EXECUTIVE DEPARTMENT
STATE OF CALIFORNIA

EXECUTIVE ORDER N-11-21

WHEREAS on July 9, 2021, I proclaimed a State of Emergency to exist in California as a result of a significant heat wave that struck California beginning July 8, 2021, bringing widespread near-record temperatures well in excess of 100 degrees throughout the State (the "Extreme Heat Event"), and as a result of the impacts of the Bootleg Fire in Southern-Central Oregon on California's electricity supply from the Pacific Northwest; and

WHEREAS the Extreme Heat Event continues to bring temperatures that put significant demand and strain on California's energy grid; and

WHEREAS the Bootleg Fire continues to threaten the California Oregon Intertie, causing ongoing impacts to delivery of electricity to California from the Pacific Northwest; and

WHEREAS the Extreme Heat Event is expected to last through at least July 12, 2021; and

WHEREAS it is necessary to take further action to reduce the strain on the energy infrastructure and increase energy capacity during the Extreme Heat Event; and

WHEREAS under the provisions of Government Code section 8571, I find that strict compliance with various statutes and regulations specified in this Order would prevent, hinder, or delay appropriate actions to prevent and mitigate the effects of the Extreme Heat Event.

NOW, THEREFORE, I, GAVIN NEWSOM, Governor of the State of California, in accordance with the authority vested in me by the State Constitution and statutes of the State of California, and in particular, Government Code sections 8567, 8571, and 8627, do hereby issue the following Order to become effective immediately:

IT IS HEREBY ORDERED THAT:

1. In regulations concerning the use of auxiliary engines by ocean-going vessels berthed in California ports, the Extreme Heat Event shall be deemed an "emergency event" under CCR, title 17, section 93118.3, subd. (c)(14).

2. This Order shall be deemed to provide notice to reduce use of grid-based electrical power under CCR, title 17, section 93118.3, subd. (c)(14)(C), and notice under that same section that reduction is no longer necessary at 11:59 p.m. on July 13, 2021. Ships that are berthed at California ports between July 10, 2021 and July 13, 2021 shall not be required to use shore power until after 11:59 pm on July 16, 2021.

3. A ship operating on auxiliary engines pursuant to an "emergency event" under Paragraph 1 of this Order shall be deemed to qualify for an exemption under CCR, title 17, section 93118.3, subd. (d)(1)(E)(1)(a), and any visit occurring during the period described in Paragraph 2 of this Order shall be counted towards compliance under CCR, title 17, section 93118.3, subd. (d)(1)(F)(1).

4. Any permit, regulation or law prohibiting, restricting, or penalizing the use of auxiliary ship engines or other conduct allowed by this Order during the Extreme Heat Event is suspended.

5. This Order shall expire at 11:59 p.m. on July 17, 2021.

IT IS FURTHER ORDERED that, as soon as hereafter possible, this Order be filed in the Office of the Secretary of State and that widespread publicity and notice be given of this Order.

This Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, officers, employees, or any other person.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 10th day of July 2021.

GAVIN NEWSOM
Governor of California

ATTEST:

SHIRLEY N. WEBER, PH.D.
Secretary of State

Exhibit D
CEQA Guidelines for Vehicle Miles Traveled Thresholds

City of FRESNO

LSA

CEQA GUIDELINES FOR VEHICLE MILES TRAVELED THRESHOLDS

for the

CITY OF FRESNO

June 18, 2020

This page intentionally left blank

DRAFT

CEQA GUIDELINES FOR VEHICLE MILES TRAVELED THRESHOLDS

Submitted to:

City of Fresno
2600 Fresno Street
Fresno, California 93721

Prepared by:

LSA Associates, Inc.
20 Executive Park, Suite 200
Irvine, California 92614
(949) 553-0666

Project No. CFO1802

June 18, 2020

DRAFT

This page intentionally left blank

DRAFT

EXECUTIVE SUMMARY

Senate Bill (SB) 743, signed in 2013, changes the way transportation studies are conducted in California Environmental Quality Act (CEQA) documents. Vehicle miles traveled (VMT) replaces motorist delay and level of service (LOS) as the metric for impact determination. As a result of the final rulemaking surrounding SB 743 and the implementation deadline of July 1, 2020, the City of Fresno is adopting the new VMT thresholds and guidelines to address the shift from delay-based LOS CEQA traffic analyses to VMT CEQA traffic analyses.

This document discusses in further detail the following:

- Definition of region for VMT analysis
- Standardized screening methods for VMT threshold compliance data
- Recommendations for appropriate VMT significance thresholds for development projects, transportation projects, and plans
- Feasible mitigation strategies applicable for development projects, transportation projects, and plans
- For purposes of this analysis, the Fresno Council of Governments (COG) Activity-Based Model (ABM)[1] was used to develop screening maps. The Fresno COG ABM base year was updated from 2014 to 2019 based on consultation with Fresno COG staff. The appropriate use of the ABM for VMT calculations has been further elaborated in subsequent chapters of this document.

This document will serve as a detailed guideline for preparing VMT analysis consistent with SB 743 requirements for development projects, transportation projects, and plans. Project applicants will be required to follow the guidance provided in this document for preparation of CEQA VMT analysis.

DRAFT

[1] Fresno COG ABM Update Report: https://www.fresnocog.org/wp-content/uploads/2017/06/Fresno-COG-ABM-Report.pdf

This page intentionally left blank

DRAFT

TABLE OF CONTENTS

EXECUTIVE SUMMARY i
TABLE OF CONTENTS iii
FIGURES AND TABLES v
LIST OF ABBREVIATIONS AND ACRONYMS vii
1.0 INTRODUCTION 1
2.0 DEFINITION OF REGION: VEHICLE MILES TRAVELED CONTEXT 5
3.0 PROJECT SCREENING 9
3.1 DEVELOPMENT PROJECTS 9
3.2 TRANSPORTATION PROJECTS 19
4.0 SIGNIFICANCE THRESHOLDS FOR DEVELOPMENT PROJECTS 23
4.1 GENERAL TRANSPORTATION ANALYSIS PROCEDURE 25
4.2 PROJECT SCREENING 26
4.3 PROJECT VEHICLE MILES TRAVELED ANALYSIS 26
4.3.1 Small Project Vehicle Miles Traveled Analysis 26
4.3.2 Large Project Vehicle Miles Traveled Analysis 26
4.4 MITIGATION MEASURES 27
5.0 SIGNIFICANCE THRESHOLDS FOR TRANSPORTATION PROJECTS 31
6.0 SIGNIFICANCE THRESHOLDS FOR LAND USE PLANS 37
7.0 MITIGATION STRATEGIES 39
7.1 DEFINITION OF MITIGATION 39
7.2 MITIGATION MEASURES AND PROJECT ALTERNATIVES 41
7.2.1 Development Projects and Community/General Plans 41
7.2.2 Transportation Projects 42
7.3 FUNDING MECHANISMS 43

APPENDICES

A: VEHICLE MILES TRAVELED MITIGATION MEASURES FOR DEVELOPMENT PROJECTS (CAPCOA)
B: VEHICLE MILES TRAVELED MITIGATION MEASURES FOR DEVELOPMENT PROJECTS (CARB PAPERS)
C: VEHICLE MILES TRAVELED MITIGATION MEASURES FOR COMMUNITY PLANS AND GENERAL PLANS

DRAFT

This page intentionally left blank

DRAFT

FIGURES AND TABLES

FIGURES

Figure 1: VMT Per Capita Compared to Population in California 2
Figure 2: 2017 GHG Emissions in California by Scoping Plan Sector and Sub-Sector Category 3
Figure 3: Percentage of Total Tours Having Origins/Destinations within the City of Fresno and Terminating within the City of Fresno, within Fresno County, or outside the County 6
Figure 4: High-Quality Transit Area Within Fresno County 11
Figure 5: Average VMT per Capita (Population) and VMT per Employee for City of Fresno and Fresno County 14
Figure 6: City of Fresno - Existing VMT per Capita 15
Figure 7: City of Fresno - Existing VMT per Employee 17
Figure 8: SB 375 Regional Plan Climate Targets for the 18 California MPOs 24
Figure 9: VMT Analysis Process for Development Projects 29
Figure 10: Induced Travel – VMT Attributable to Project 32
Figure 11: Caltrans Induced Travel Calculator 33
Figure 12: Conceptual Methodology for Calculating Induced Demand for Transportation Projects 36
Figure 13: VMT per Capita and VMT per Employee Comparisons – City of Fresno General Plan versus Fresno County under Existing Conditions 38

TABLE

Table A: Representative VMT and GHG Emissions from CalEEMod 13

DRAFT

This page intentionally left blank

DRAFT

LIST OF ABBREVIATIONS AND ACRONYMS

ABM	Activity-Based Model
ADT	average daily trips
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
City	City of Fresno
CO_2e	carbon dioxide equivalent
COG	Council of Governments
EIR	Environmental Impact Report
EO	Executive Order
FAR	floor-to-area ratio
GHG	greenhouse gas
GPA	General Plan Amendment
GWP	global warming potential
HOT	high-occupancy toll
HOV	high-occupancy vehicle
ITE	Institute of Transportation Engineers
LOS	level of service
mi	mile
MT	metric ton

DRAFT

MPO	Metropolitan Planning Organizations
OPR	Governor's Office of Planning and Research
PRC	Public Resources Code
RTP	Regional Transportation Plan
RTPA	Regional Transportation Planning Agency
SB	Senate Bill
SCS	Sustainable Communities Strategy
sf	Square foot/feet
SOC	Statement of Overriding Considerations
TA	Technical Advisory
TDM	transportation demand management
VMT	vehicle miles traveled
ZC	Zone Change

DRAFT

1.0 INTRODUCTION

Senate Bill (SB) 743, signed in 2013, changes the way transportation studies are conducted in California Environmental Quality Act (CEQA) documents. Vehicle miles traveled (VMT) replaces motorist delay and level of service (LOS) as the metric for impact determination. For development projects, VMT is simply the product of the daily trips generated by a new development and the distance those trips travel to their destinations. For capital projects, impacts are identified as the new VMT attributable to the added capital project, both from the installation of the facility and the induced growth—a new term in the CEQA lexicon—generated as a result of induced land use.

In January 2019, the Natural Resources Agency and the Governor's Office of Planning and Research (OPR) codified SB 743 into the Public Resources Code (PRC) and the *State CEQA Guidelines*. *State CEQA Guidelines* Section 15064.3 subdivision (b) states:

1. **Land Use Projects.** Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

2. **Transportation Projects.** Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

3. **Qualitative Analysis.** If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

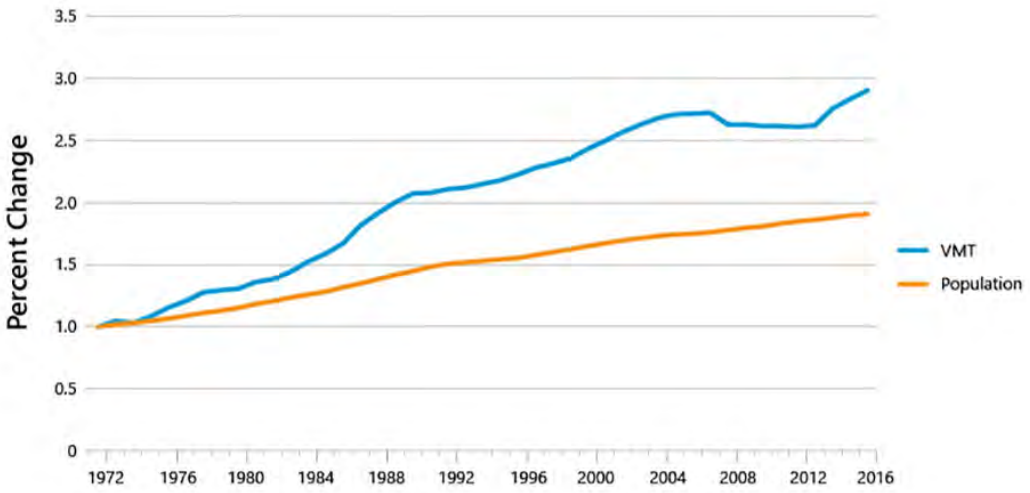
4. **Methodology.** A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled, and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

The OPR provides a Technical Advisory (TA) as a guidance document to establish thresholds for this new VMT metric. The laws and rules governing the CEQA process are contained in the CEQA statute

DRAFT

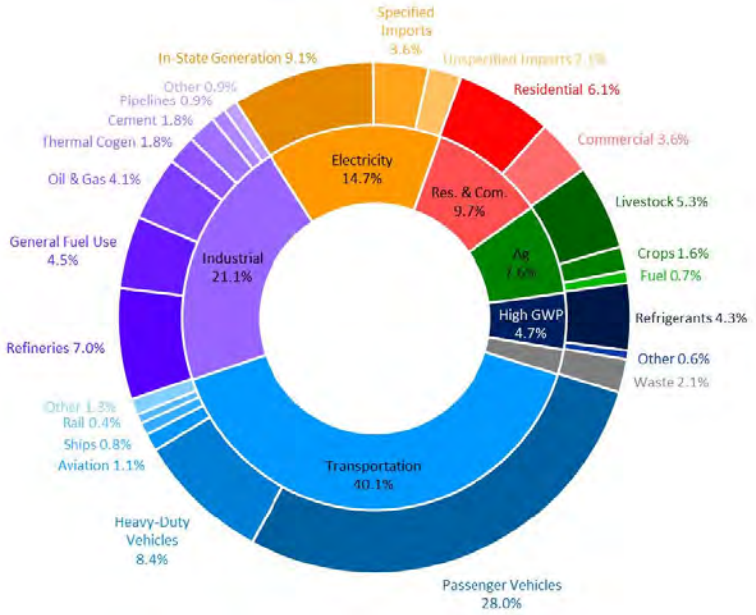
(PRC Section 21000 and following), the *State CEQA Guidelines* (California Code of Regulations, Title 14, Section 15000 and following), published court decisions interpreting CEQA, and locally adopted CEQA procedures. The TA is intended as a reference document; it does not have the weight of law. Yet, deviating from the TA is best undertaken with substantial evidence to support the agency action.

The State of California is committed to reducing greenhouse gas (GHG) emissions and achieving long-term climate change goals. To achieve these climate change goals, California needs to reduce VMT. As illustrated in Figure 1, over the last 40 years, with increase in statewide population, the overall VMT has also increased. As illustrated in Figure 2, transportation is the single largest sector contributing to the State's GHG emissions. More than 40 percent of the GHG emissions come from the transportation sector, primarily passenger cars and light-duty trucks. Reducing the number of vehicle trips and reducing the length of trips are expected to result in reduced VMT and reduced GHG emissions. The new *State CEQA Guidelines* and the establishment of VMT thresholds for CEQA analyses is linked to GHG reduction strategies and overall statewide climate change goals.



Source: https://ca50million.ca.gov/transportation/

Figure 1: VMT Per Capita Compared to Population in California



Source: California Greenhouse Gas Emissions for 2000 to 2017 Trends of Emissions and Other Indicators (California Air Resources Board Report)

Figure 2: 2017 GHG Emissions in California by Scoping Plan Sector and Sub-Sector Category

This document establishes the City of Fresno's (City) threshold of significance for CEQA transportation studies and provides substantial evidence as appropriate. It is divided into chapters, including:

- **Chapter 2 – Definition of Region:** Here the document describes what the comparative is for analysis purposes. Each project will be compared to an existing regional average. The geographical area that defines the region is defined and described.

- **Chapter 3 – Project Screening:** OPR acknowledges that certain projects are either low VMT generators, or by virtue of their location would have a less than significant impact. The City should use these screening criteria and should offer substantial evidence for other circumstances that would lead to a less than significant impact.

- **Chapter 4 – Significance Thresholds for Development Projects:** In this chapter, the threshold that would define a significant CEQA impact is identified. This threshold is linked to a specific travel mode and a set of trip purposes. The actual VMT metric (either an efficiency rate or total VMT) is described.

- **Chapter 5 – Significant Thresholds for Transportation Projects:** This chapter describes the method to evaluate significant CEQA impacts associated with transportation projects. Many non-vehicular capital projects are presumed to have a less than significant impact. Capacity enhancing projects may have significant impacts and may be subject to a detailed analysis that will include measuring induced travel.

- **Chapter 6 – Significance Thresholds for Land Use Plans:** This chapter provides guidance and substantial evidence to support the City's treatment of land use plans and their CEQA transportation analysis.

- **Chapter 7 – Mitigation Strategies:** Potential mitigation strategies are indicated in this chapter. It is noted that this discussion is not intended as a full list of measures the City sanctions as feasible. As in previous CEQA practice, it is generally the practitioner who identifies mitigation measures to offset the specific project related impacts identified in individual environmental document. The discussion here is intended as a reference and guide for possible strategy for applicants who may wish to investigate to offset their specific project-related significant impacts.

DRAFT

2.0 DEFINITION OF REGION: VEHICLE MILES TRAVELED CONTEXT

The question of context is the definition of the scope of the VMT analysis. The common term for this in previous delay-based LOS analyses is ***project study area***. In the delay-based LOS analyses, a project study area is generally determined based on the incremental increase in traffic from the project and its potential to create a significant LOS impact. This generally includes intersections and roadway segments where the project would add a prescribed number of peak-hour trips. Many times, lead agencies stop study area boundaries at their jurisdictional borders.

Unlike delay-based LOS analyses, VMT is a regional effect not defined by roadway, intersection, or pathway. The OPR acknowledges this in its TA (page 6), which states,

> *Lead agencies should not truncate any VMT analysis because of jurisdictional or other boundaries….*

Furthermore, the recommendations for thresholds for the primary land use types (residential and office) are based on a comparison to a ***regional average.*** Region is not defined further in the TA. Instead, the OPR offers the following suggestions:

1. *In cases where the region is substantially larger than the geography over which most workers would be expected to live, it might be appropriate to refer to a smaller geography, such as **county**, that includes the area over which nearly all workers would be expected to live (page 16).*

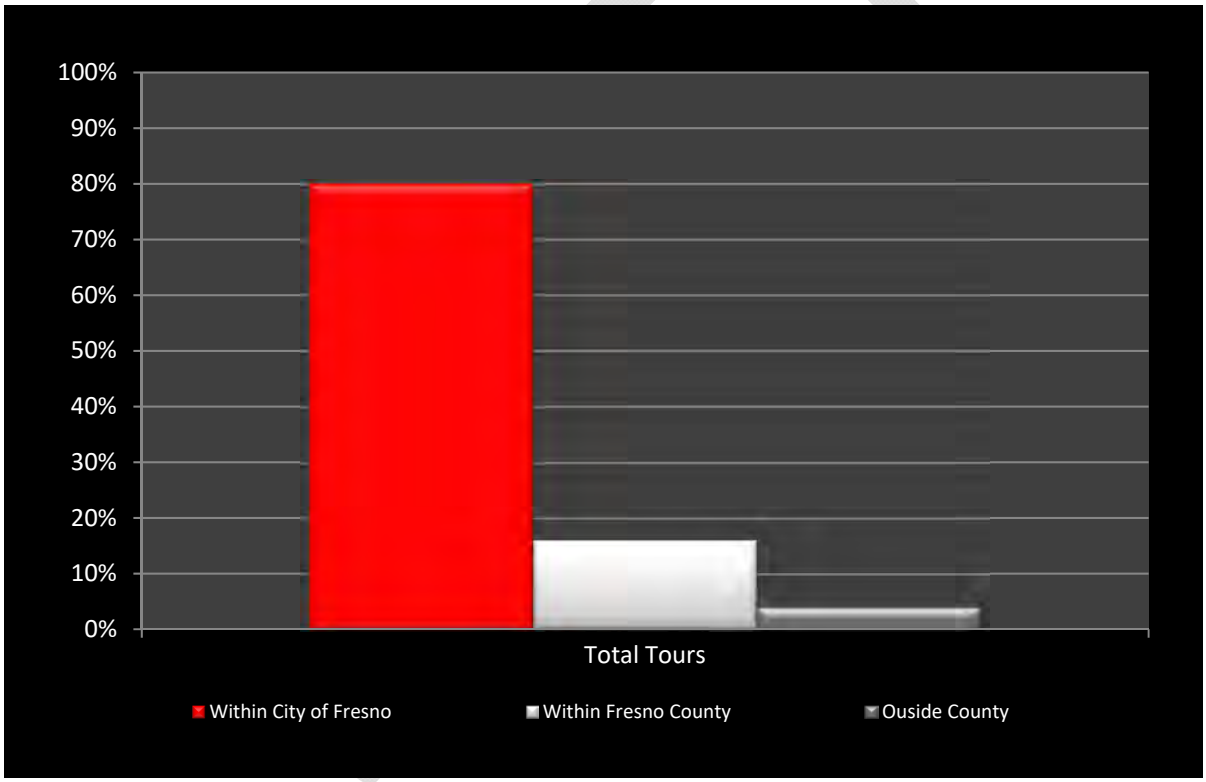
2. *For residential projects in unincorporated county areas, the local agency can compare a residential project's VMT to (1) the region's VMT per capita, or (2) the aggregate population weighted VMT per capita of all cities in the region (page 15).*

LSA surveyed other large urbanized areas around the State to identify what region has been established for VMT thresholds. In most cases, the county boundary has been identified as the region selected for VMT analysis. Mobility can be studied using a trip-based approach or a tour-based approach. The OPR TA states that "where available, tour-based assessment is ideal because it captures travel behavior more comprehensively." Since Fresno COG's model is an ABM, a tour-based approach has been followed. LSA used the Fresno COG ABM to examine the tours into and out of Fresno. As such, consistent with the OPR TA, only tours having origins or destinations or both within the City were considered. External pass-through trips were not considered. As illustrated in Figure 3, out of the total tours, about 80 percent originate and are destined within the city. Another 16 percent of tours originate or are destined within other jurisdictions in Fresno County. The remaining 4 percent home-based tours originate and are destined outside Fresno County.

Because the majority of the tours are contained within Fresno County, the county may be used to define the region. For residential projects, the TA states that "Existing VMT per capita may be measured as regional VMT per capita or as city VMT per capita. Proposed development referencing a threshold based on city VMT per capita (rather than regional VMT per capita) should not

cumulatively exceed the number of units specified in the [Sustainable Communities Strategy] SCS for that city, and should be consistent with the SCS." As such, this analysis evaluated residential VMT per capita for the City using the county as the region as well as the city boundary as the region. As illustrated in Figure 3, 85 percent of the residential trips having origins/destinations within Fresno terminate within Fresno County. Hence, based on this analysis, the City has determined to use the county as the region for all residential projects. Additionally, as illustrated in Figure 3, 90 percent of the employee trips having origins/destinations within Fresno terminate within Fresno County. Therefore, for office, retail, and all other non-residential projects, consistent with the TA, the county will be used as the region. The other OPR guidance recommends consistency in approach; once a region is established, that region should be used for all subsequent traffic analyses.

In some cases, this county boundary has other names, such as the Council of Governments boundary. Nonetheless, county is a common and reoccurring context for CEQA VMT analyses throughout the State.



Source: Fresno COG Activity Based Model

Figure 3: Percentage of Total Tours Having Origins/Destinations within the City of Fresno and Terminating within the City of Fresno, within Fresno County, or outside the County

It should be recognized the use of the county as the region defines the comparative, or the denominator, in the identification of project-related impact. The numerator is the project's VMT contribution. This project-related VMT profile may go beyond the county boundary and not be truncated by a jurisdictional boundary. For example, a new, large employment generating

development proposed near the city's northern boundary may include VMT from as far away as Madera, Tulare, or Kings Counties or other communities in the San Joaquin Valley. In that case, it would be the responsibility of the applicant and their traffic study preparer to include the project VMT regardless of geographical limit to the satisfaction of City staff. This project-related VMT profile would be compared against the County of Fresno regional average.

DRAFT

This page intentionally left blank

DRAFT

3.0 PROJECT SCREENING

The TA does acknowledge that certain activities and projects may result in a reduction in VMT and GHG emissions and therefore a less-than-significant impact to transportation and circulation. A variety of projects may be screened out of a complicated VMT analysis due to the presumption described in the TA regarding the occurrence of less-than-significant impacts.

3.1 DEVELOPMENT PROJECTS

The TA acknowledges that conditions may exist that would presume that a development project has a less than significant impact. These may be size, location, proximity to transit, or trip-making potential. For example, development projects that have one or more of the following attributes may be presumed to create a less than significant impact:

- The project is within 0.5 mile (mi) of a Transit Priority Area or a High-Quality Transit Area unless the project is inconsistent with the Regional Transportation Plan (RTP)/SCS, has a floor area ratio (FAR) less than 0.75, provides an excessive amount of parking, or reduces the number of affordable residential units. In accordance with SB 743, "Transit priority areas" are defined as "an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Transportation Improvement Program. A Major Transit Stop means: "a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service of 15 minutes or less during the morning and afternoon peak commute periods." A High-Quality Transit Area or Corridor is a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

  Figure 4 depicts transit priority areas within Fresno including high-quality transit areas (within 0.5 mile of a major transit stop) served by the Fresno Area Express (FAX) with service intervals of 15 minutes or less. Projects proposed in these areas may be presumed to have a less-than-significant transportation impact unless the project is inconsistent with the RTP/SCS, has an FAR less than 0.75, provides an excessive amount of parking, or reduces the number of affordable residential units.

- The project involves local-serving retail space of less than 50,000 square feet (sf).

- The project has a high level of affordable housing units. The afforable-housing requirement to meet the screening criteria is to be determined by City staff.

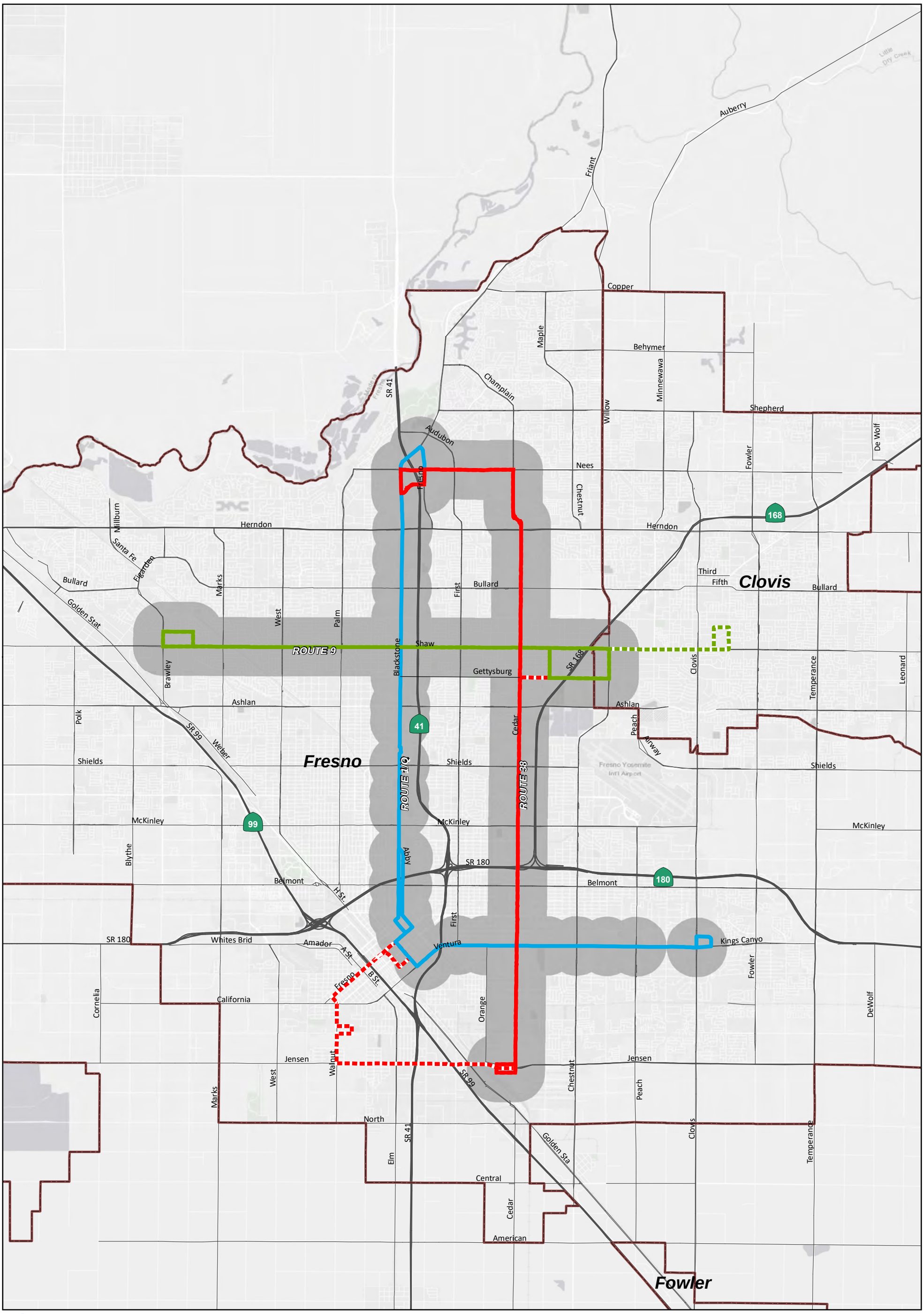
- The project generates a low volume of daily traffic.

  The TA recommends a volume of 110 average daily trips (ADT). This recommendation is not based on any analysis of GHG reduction but, rather, on a CEQA categorical exemption. This exemption criterion states that for existing facilities, including additions to existing structures of up to 10,000 sf, the project is exempted from CEQA as long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not located in an environmentally sensible area (*State CEQA Guidelines* Section 15301,

DRAFT

This page intentionally left blank

DRAFT



LSA

LEGEND

- Cities with Sphere of Influence
- Route 1/Q (Bus Rapid Transit)
- Route 9
- Route 38
- Half-Mile Buffer
- Route 9 (Headway more than 15 Mins.)
- Route 38 (Headway more than 15 Mins.)

N

0 4000 8000
FEET

FIGURE 4

CEQA Guidelines for Vehicle Miles Traveled Thresholds

High-Quality Transit Area Within Fresno County

SOURCE: Fresno Area Express (FAX) (03/20), City of Fresno (04/20), ESRI

R:\FCG1901 FresnoCOG VMT\GIS\VMT_Maps_04-20-2020\fig_X_HQ Transit.mxd (4/28/2020)

This page intentionally left blank

DRAFT

subdivision (e)(2). As stated in the OPR TA, for projects that have a linear increase in trip generation with respect to the building footprint, the daily trip generation is anticipated to be between 110 and 124 trips per 10,000 sf. Therefore, based on this assumption, the OPR recommends 110 ADT as the screening threshold. However, the California Emissions Estimator Model (CalEEMod) was used to characterize the effect of changes in project-related ADT to the resulting GHG emissions. This model was selected because it is provided by the CARB to be used statewide for developing project-level GHG emissions. CalEEMod was used with the built-in default trip lengths and types to show the vehicular GHG emissions from incremental amounts of ADT. Table A shows the resulting annual VMT and GHG emissions from the incremental ADT.

Table A: Representative VMT and GHG Emissions from CalEEMod

Average Daily Trips (ADT)	Annual Vehicle Miles Traveled (VMT)	GHG Emissions (Metric Tons CO_2e per year)
200	683,430	258
300	1,021,812	386
400	1,386,416	514
500	1.703,020	643
600	2,043,623	771

Source: CalEEMod version 2016.3.2.
CalEEMod = California Emissions Estimator Model GHG = Greenhouse Gas
CO_2e = carbon dioxide equivalent

A common GHG emissions threshold is 3,000 metric tons (MT) of carbon dioxide equivalent[2] (CO_2e) per year.[3] The vehicle emissions are typically more than 50 percent of the total project GHG emissions. Thus, a project with 500 ADT would generally have total project emissions that could be less than 1,300 MT CO_2e/year (i.e., 50 percent or 643 MT CO_2e/year coming from vehicle emissions and the other 50 percent coming from other project activities). As this level of GHG emissions would be less than 3,000 MT CO_2e/year, the emissions of GHG from a project up to 500 ADT would typically be less than significant. Therefore, the City will allow screening out projects if the project would generate less than 500 ADT.

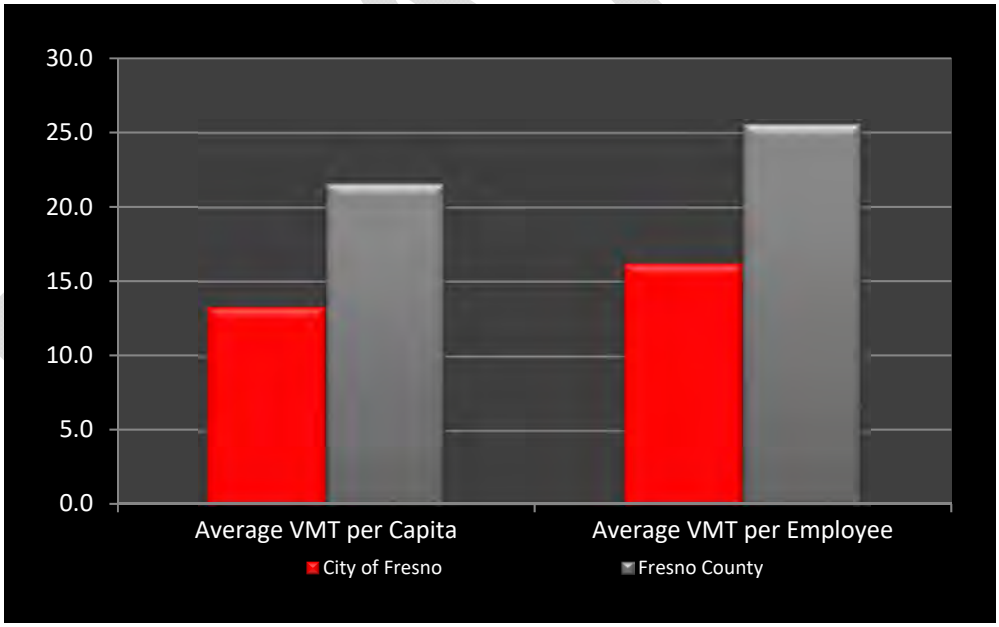
- The development of institutional/government and public service uses that support community health, safety and welfare may also be screened from subsequent CEQA VMT analysis. These facilities (e.g. police stations, fire stations, community centers, refuse stations) are already part of the community and, as a public service, the VMT is accounted for in the existing regional average. Many of these facilities generate fewer than 500 ADT and/or use vehicles other than passenger-cars or light duty trucks. These other vehicle fleets are subject to regulation outside

[2] Carbon dioxide equivalent (CO_2e) is a concept developed to provide one metric that includes the effects of numerous GHGs. The global warming potential (GWP) of each GHG characterizes the ability of each GHG to trap heat in the atmosphere relative to another GHG. The GWPs of all GHGs are combined to derive the CO_2e.

[3] Source: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/ghg-significance-thresholds

of CEQA, such as the California Air Resources Board (CARB) and the San Joaquin Valley Air Pollution Control District.

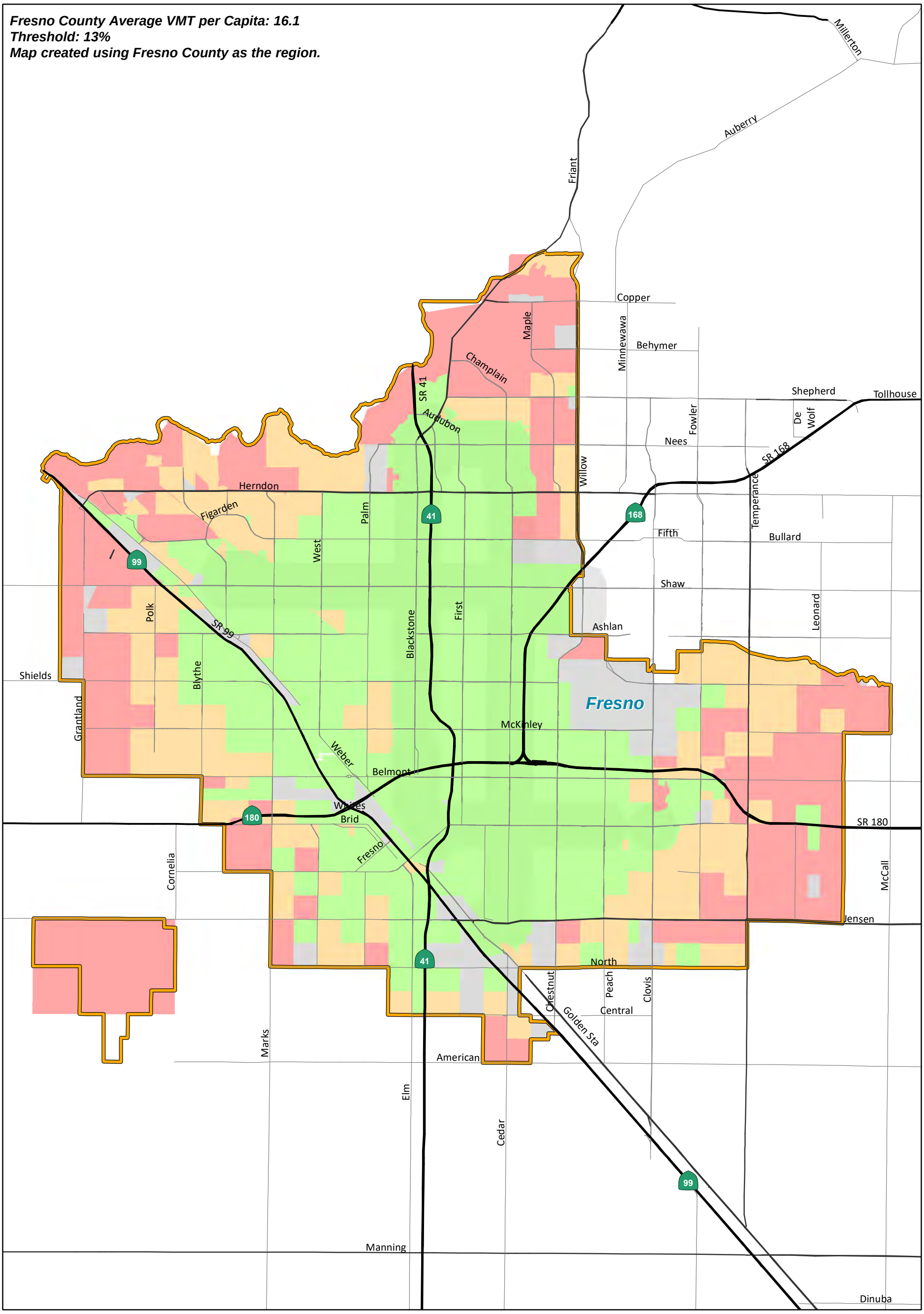
- The TA states "Residential and office projects that are located in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. Maps created with VMT data, for example from a travel survey or a travel demand model, can illustrate areas that are currently below threshold VMT. Because new development in such locations would likely result in a similar level of VMT, such maps may be used to screen out residential and office projects from needing to prepare a detailed VMT analysis." LSA calculated VMT per capita and VMT per employee for the City of Fresno as well as the entire Fresno County. Figure 5 illustrates the comparison of these VMTs. LSA also created screening maps that residential and office projects within the city can use to screen projects. As described earlier, the City will use Fresno County as the region. Therefore, the screening maps have been created using the county as the region. Figure 6 illustrates Fresno's VMT per capita screening map. Figure 7 illustrates the City's VMT per employee screening map. As illustrated in Figures 6 and 7, most of the low VMT zones are in the central part of Fresno, where the City's vision is to promote infill development. Therefore, the VMT thresholds and IDs of these zones will effectively screen out or exempt from further VMT analysis the desired development types the City wishes to see as part of the General Plan process.



Source: Fresno COG Activity Based Model

Figure 5: Average VMT per Capita (Population) and VMT per Employee for City of Fresno and Fresno County

Fresno County Average VMT per Capita: 16.1
Threshold: 13%
Map created using Fresno County as the region.



LSA

FIGURE 6

LEGEND

City with Sphere of Influence

VMT per Capita

- No Population
- Less than 14.0
- 14.0 - 18.2
- Greater than 18.2

0 5000 10000
FEET

SOURCE: Fresno COG Activity Based Travel Demand Model (2019)

R:\FCG1901 FresnoCOG VMT\GIS\VMT_Maps_04-20-2020\fig6_Fresno_COGAVG.mxd (4/28/2020)

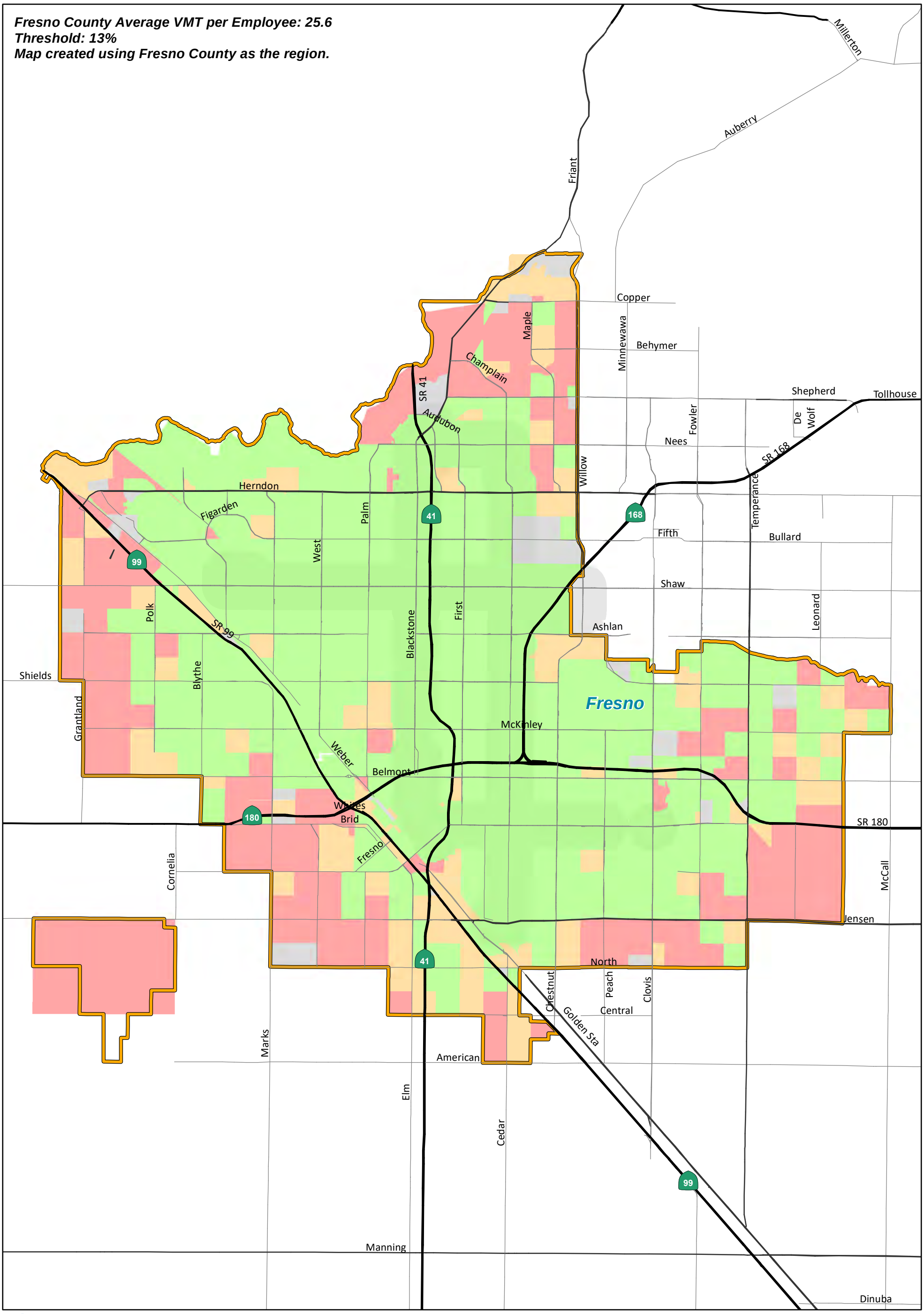
CEQA Guidelines for Vehicle Miles Traveled Thresholds

City of Fresno - Existing VMT per Capita

This page intentionally left blank

DRAFT

Fresno County Average VMT per Employee: 25.6
Threshold: 13%
Map created using Fresno County as the region.



LSA

FIGURE 7

CEQA Guidelines for Vehicle Miles Traveled Thresholds

City of Fresno - Existing VMT per Employee

SOURCE: Fresno COG Activity Based Travel Demand Model (2019)

R:\FCG1901 FresnoCOG VMT\GIS\VMT_Maps_04-20-2020\fig6_Fresno_EMP.mxd (4/28/2020)

This page intentionally left blank

DRAFT

- Based on the City's traffic study guidelines or existing CEQA guidelines, other conditions may apply to screen out projects. Consistency with other plans to reduce GHG emissions may also reflect substantial evidence supporting a screening out. Or, the City may adopt the TA recommendations in total.

The Fresno COG VMT Screening Tool[4] can be used to determine whether a development project may be screened from a detailed VMT analysis. It should be noted that if a project constitutes a General Plan Amendment (GPA) or a Zone Change (ZC), none of the above screening criteria may apply. The City will be required to evaluate such projects on a case-by-case basis to determine whether a VMT analysis would be required.

3.2 TRANSPORTATION PROJECTS

The primary attribute to consider with transportation projects is the potential to increase vehicle travel, sometimes referred to as "induced travel." Based on the OPR TA, while the City has discretion to continue to use a delay-based LOS analysis for CEQA disclosure of transportation projects, changes in vehicle travel must also be quantified. The City of Fresno will solely use VMT analysis for CEQA disclosure of transportation projects, but will also require a LOS analysis for design, traffic operations, and safety purposes. The TA lists a series of projects that would not likely lead to a substantial or measurable increase in vehicle travel and which would, therefore, not require an induced travel analysis. These include the following:

- Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets (e.g., highways; roadways; bridges; culverts; Transportation Management System field elements such as cameras, message signs, detection, or signals; tunnels; transit systems; and assets that serve bicycle and pedestrian facilities) and that do not add additional motor vehicle capacity
- Roadside safety devices or hardware installation such median barriers and guardrails
- Roadway shoulder enhancements to provide "breakdown space," dedicated space for use only by transit vehicles, to provide bicycle access, or to otherwise improve safety, but which will not be used as automobile vehicle travel lanes
- Addition of an auxiliary lane of less than 1 mi in length designed to improve roadway safety
- Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left-, right-, and U-turn pockets, two-way left-turn lanes, or emergency breakdown lanes that are not utilized as through lanes
- Addition of roadway capacity on local or collector streets, provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit
- Conversion of existing general-purpose lanes (including ramps) to managed lanes or transit lanes, or changing lane management in a manner that would not substantially increase vehicle travel

[4] Fresno COG VMT Screening Tool Link: http://gis.lsa-assoc.com/FCOGVMT/

- Addition of a new lane that is permanently restricted to use only by transit vehicles
- Reduction in the number of through lanes
- Grade separation to separate vehicles from rail, transit, pedestrians, or bicycles, or to replace a lane in order to separate preferential vehicles (e.g., high-occupancy vehicles [HOVs], high-occupancy toll [HOT] lane traffic, or trucks) from general vehicles
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority features
- Installation of traffic metering systems, detection systems, cameras, changeable message signs, and other electronics designed to optimize vehicle, bicycle, or pedestrian flow
- Timing of signals to optimize vehicle, bicycle, or pedestrian flow
- Installation of roundabouts or traffic circles
- Installation or reconfiguration of traffic calming devices
- Adoption of or increase in tolls
- Addition of tolled lanes, where tolls are sufficient to mitigate VMT increase
- Initiation of a new transit service
- Conversion of streets from one-way to two-way operation with no net increase in the number of traffic lanes
- Removal or relocation of off-street or on-street parking spaces
- Adoption or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs)
- Addition of traffic wayfinding signage
- Rehabilitation and maintenance projects that do not add motor vehicle capacity
- Addition of new or enhanced bike or pedestrian facilities on existing streets/highways or within existing public rights-of-way
- Addition of Class I bike paths, trails, multi-use paths, or other off-road facilities that serve nonmotorized travel
- Installation of publicly available alternative fuel/charging infrastructure
- Addition of passing lanes, truck climbing lanes, or truck brake-check lanes in rural areas that do not increase overall vehicle capacity along the corridor

DRAFT

Additionally, transit and active transportation projects generally reduce VMT and, therefore, may be presumed to cause a less than significant impact on transportation. This presumption may apply to all passenger rail projects, bus and bus rapid-transit projects, and bicycle and pedestrian infrastructure projects. The City may use this CEQA presumption of less than significant impact to aid in the prioritization of capital projects, as the CEQA process for any of these project types would be more streamlined than other capacity-enhancing capital projects.

DRAFT

This page intentionally left blank

DRAFT

4.0 SIGNIFICANCE THRESHOLDS FOR DEVELOPMENT PROJECTS

The TA states that SB 743 and all CEQA VMT transportation analyses refer to automobiles. Here, the term automobile refers to on-road passenger vehicles, specifically cars and light duty trucks (page. 4). Heavy-duty trucks can be addressed in other CEQA sections (air quality, greenhouse gas, noise, and health risk assessment analysis) and are subject to regulation in a separate collection of rules under CARB jurisdiction. This approach was amplified by Chris Ganson, Senior Advisor for Transportation at OPR, in a recent presentation at the Fresno COG (October 23, 2019) and by Ellen Greenberg, the California Department of Transportation (Caltrans) Deputy Director for Sustainability, at the San Joaquin Valley Regional Planning Agencies' Directors' Committee meeting (January 9, 2020).

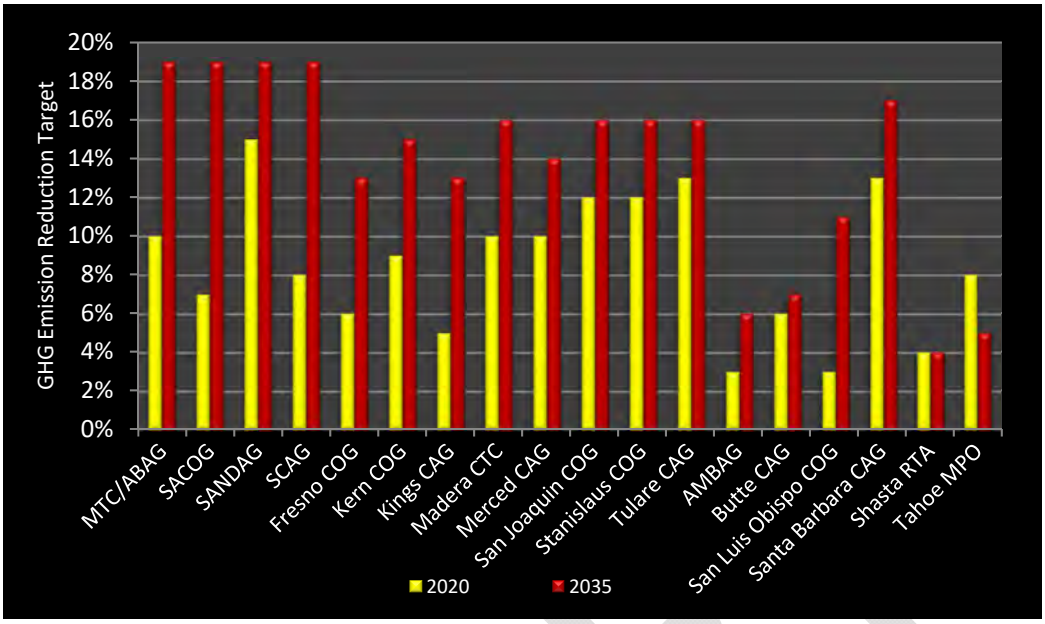
The OPR has identified the subject of the thresholds as the primary trips in the home-based typology: specifically, home-based work tours. This includes residential uses, office uses, and retail uses. The home-based work tour type is the primary tourmaking during the peak hours of commuter traffic in the morning and evening periods.

The impact of transportation has shifted from congestion to climate change, and the purpose of the CEQA analysis is to disclose and ultimately reduce GHG emissions by reducing the number and length of automobile trips. As part of the SB 375 land use/transportation integration process and the GHG goal setting, the State and Regional Transportation Planning Agencies (RTPA) have agreed to reduce GHG through integrated land use and transportation planning by a statewide average of approximately 15 percent by 2035. Figure 8 illustrates the SB 375 regional GHG emission reduction targets for all the 18 Metropolitan Planning Organizations (MPOs) in California that was established by the CARB in 2018. Furthermore, in its 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals, the CARB recommends total VMT per capita rates approximately 15 percent below existing conditions.

The TA therefore recommends:

> *A proposed (residential) project exceeding a level of 15 percent below existing regional average VMT per capita may indicate a significant transportation impact.*
>
> *A similar threshold would apply to office projects (15 percent below existing regional average VMT per employee).*
>
> *VMT generated by retail projects would indicate a significant impact for any net increase in total VMT.*

DRAFT



Source: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets

Figure 8: SB 375 Regional Plan Climate Targets for the 18 California MPOs

It is noted that the aggregate GHG emission reduction sought after by CARB in the SB 375 protocols is 15 percent statewide. This is one reason OPR believes the 15 percent reduction in VMT is appropriate. The aggregate 15 percent GHG emission reduction applies across all land use and transportation activities and would indicate that the State and its individual MPOs are compliant with the SB 375 goals, the overall State climate change strategy, and Scoping Plan objectives.

CARB establishes GHG targets for each of the 18 MPOs in the State, reviews the SCSs and makes a determination whether the SCS would be able to achieve GHG reduction targets if implemented. Fresno COG's 2018 RTP/SCS demonstrated a GHG reduction of 10 percent by 2035 through the integrated land use and transportation initiatives and capital projects listing, which meets targets set by the CARB. Fresno COG's 2018 RTP/SCS was approved by all reviewing Federal and State authorities, including the CARB. In the spring of 2018, CARB adopted new GHG targets for all the 18 MPOs in the State based on the 2017 Scoping Plan and other new data. CARB established a 13 percent GHG reduction target for 2035 for the Fresno region's third RTP/SCS. The State of California recognizes Fresno County's contribution to the aggregate 15 percent statewide GHG emission reduction is 13 percent. Other regions may achieve greater reductions to achieve the aggregate statewide goal.[5] As such, reduction in GHG directly corresponds to reduction in VMT. In order to reach the statewide GHG reduction goal of 15 percent, the City must reduce GHG by 13 percent. The method of reducing GHG by 13 percent is to reduce VMT by 13 percent as well.

[5] The latest GHG targets by region can be found at: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets.

Therefore, the City has established a threshold for land use developments, specifically residential and office, of 13 percent or more than the existing regional VMT per capita as indicative of a significant environmental impact.

No other discrete land use types are identified for threshold development. Mixed-use projects should be evaluated for each component of the project independently, or the City may use the predominant land use type for the analysis. The City will make a determination of the predominant land use type on a case-by-case basis based on the project description. Credit for internal trip capture should be made. Internal trip capture may be calculated using the latest edition of the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* (for smaller projects), the Fresno COG ABM (for larger projects), or other applicable sources approved by the City. The TA suggests that City may, but is not required to, develop thresholds for any other use.

One approach is to review the City's General Plan and/or the Fresno COG RTP/SCS and identify whether the implementation of the plan would result in a reduction of VMT and GHGs. If it does, the City may conclude the implementation of the plan, including all the other land use types will achieve the regional climate change goals. Therefore, consistency with the plan and no net change in VMT per employee for the other land use types is a rational threshold. However, for projects seeking a GPA, a project exceeding a level of 13 percent than the existing County average VMT per employee would indicate a significant transportation impact.

This approach would require disclosure of substantial evidence, including the General Plan findings, and other supporting traffic and air quality forecasting support. Additionally, if the City wishes to establish some other threshold less stringent than the 13 percent recommended for residential and office projects, a body of substantial evidence would be necessary.

Figure 9 demonstrates the potential development entitlement process to comply with the *State CEQA Guidelines* related to VMT and transportation impacts. It provides the path from application filing through determination of impacts. It is presented as the standard process; each development application is considered unique and may create alternative or modified steps through the process. Each step that diverges from this standard process should be accompanied with substantial evidence demonstrating compliance with other climate change and GHG emission reduction laws and regulations.

4.1 GENERAL TRANSPORTATION ANALYSIS PROCEDURE

This process will be refined as the new VMT analysis process is implemented. At the outset of the project development process, the applicant should seek a meeting with City staff to discuss the project description, the transportation study content, and the analysis methodology. Key elements to address include a description of the project in sufficient detail to generate trips and identify the potential catchment area (i.e., trip lengths if no modeling is undertaken), estimate project VMT, discuss project design features that may reduce the VMT from the project development, and discuss the project location and associated existing regional VMT percentages. As a result of the meeting, the applicant or their consultant shall prepare a transportation analysis scope of work for review and approval by the City.

DRAFT

Projects that will influence Caltrans facilities may be subject to the Caltrans Local Development-Intergovernmental Review program. As part of the program, Caltrans may review the VMT analysis methodology, findings, and mitigation measures, with an eye toward statewide consistency.

4.2 PROJECT SCREENING

Once a development application is filed and the meeting is held, project screening is conducted as the initial step. If the project meets any one of the screening criteria, the project may be presumed to create a less than significant impact. No further VMT analysis is necessary. The CEQA document should enumerate the screening criteria and how the project meets or exceeds that threshold. If project screening does not apply, a VMT analysis may be required. The extent of this analysis may be a simple algebraic demonstration or a more sophisticated traffic modeling exercise. This distinction is addressed later.

4.3 PROJECT VEHICLE MILES TRAVELED ANALYSIS

The first step is to identify the project land use type and the appropriate metric to use, i.e., VMT per capita, VMT per employee, or total VMT. The metric should be VMT per capita for residential projects, VMT per employee for office projects, and total VMT for retail projects. For mixed-use projects, after taking credit for internal trip capture, the project VMT can be estimated based on each component of the project independently, or the City may use the predominant land use type for the analysis. For all other uses, the metric used should be VMT per employee.

4.3.1 Small Project Vehicle Miles Traveled Analysis

Project VMT may be calculated using the Fresno COG VMT Calculation Tool[6] for residential projects having less than or equal to 500 dwelling units or office projects having less than or equal to 375 employees. For all other projects, trip lengths can be determined using the Fresno COG ABM.

4.3.2 Large Project Vehicle Miles Traveled Analysis

For large or multi-use projects, use of the Fresno COG ABM is required. For purposes of City review, all projects, other than residential uses with less than or equal to 500 dwelling units or offices with less than or equal to 375 employees, should use the Fresno COG ABM. At this level of trip generation, the probability of trip fulfilment expands to an area greater than the immediate project location and may include a greater regional attraction. The Fresno COG ABM can more accurately define the select links used and the total VMT generated by the project.

Next, the project generated VMT per capita/VMT per employee/total VMT is compared to the appropriate significance threshold. This is either equal to or more than 13 percent of the existing regional average per capita or employment for specific uses, or no net increase in total VMT for retail or other uses that are consistent with the General Plan. For those projects that require a GPA, a threshold of 13 percent or more than existing regional average is appropriate as the project has yet to be evaluated as part of the City's ultimate development vision.

[6] Fresno COG VMT Calculation Tool Link: Link Forthcoming

If the project VMT metric is less than the significance threshold, the project is presumed to create a less than significant impact. No further VMT analysis is required. If the project is greater than the significance threshold, mitigation measures are required.

4.4 MITIGATION MEASURES

The applicant is required, per CEQA, to identify feasible offsets to completely mitigate the impact created by the project. These can come from the mitigation strategies provided by the City (Appendices A and B), or selected based on the applicant and their CEQA team experience. The City must approve and accept the ultimate mitigation ascribed to the project and the related VMT percentage reduction.

If the mitigation measures mitigate the project impact to less than the jurisdictional threshold, the project is presumed to have an impact mitigated to a less than significant level. No further VMT analysis is required. If the project's VMT impact cannot be mitigated, the City may 1) request the project be redesigned, relocated or realigned to reduce the VMT impact, or 2) require the preparation of an Environmental Impact Report (EIR) with a Statement of Overriding Considerations (SOC) for the transportation impacts associated with the project. All feasible mitigation measures must be assigned to and carried out by the project even if an EIR/SOC is prepared.

DRAFT

This page intentionally left blank

DRAFT

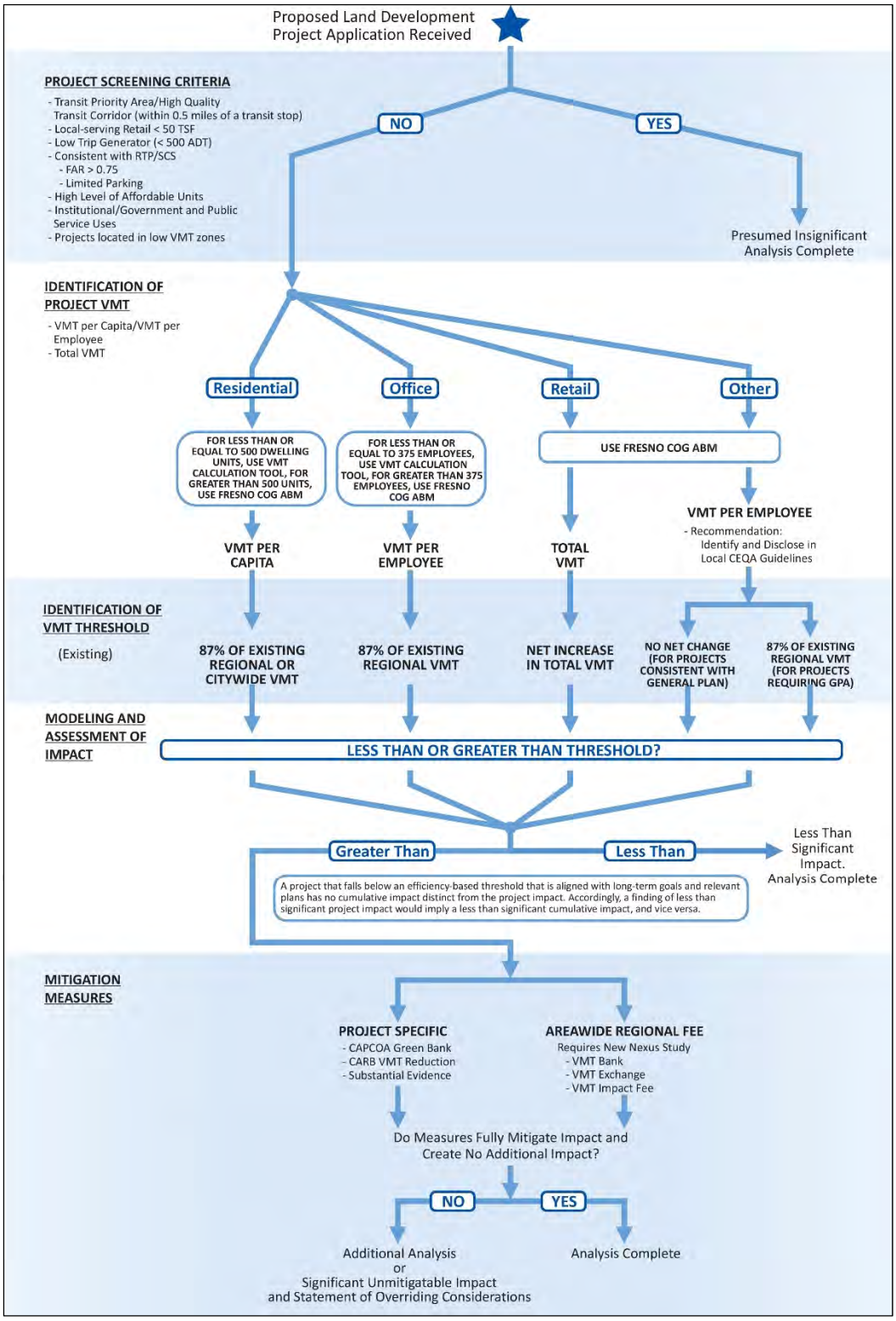


Figure 9: VMT Analysis Process for Development Projects

This page intentionally left blank

DRAFT

5.0 SIGNIFICANCE THRESHOLDS FOR TRANSPORTATION PROJECTS

The 2020 CEQA Guidelines include Section 15064.3.b.(2) to address transportation projects. It reads:

> *For roadway capacity projects, agencies have the discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements.*

The City may continue to use delay and LOS for transportation projects for design and traffic operation purposes as long as impacts related to "other applicable requirements" are disclosed. This has generally been interpreted as VMT impacts and other State climate change objectives. These other applicable requirements may be found in other parts of an environmental document (i.e., air quality, GHG), or may be provided in greater detail in the transportation section.

For projects on the State highway system, the Caltrans will use and will require sponsoring agencies to use VMT as the CEQA metric, and Caltrans will evaluate the VMT "attributable to the project" (Caltrans Draft VMT-Focused Transportation Impact Study Guide 2020). Caltrans may review environmental documents for capacity-enhancing projects for the City's analysis of VMT change.

The assessment of a transportation project's VMT should disclose the VMT without the project and the difference in VMT with the project. Any growth in VMT attributable to the transportation project would result in a significant impact.

The primary difference in these two scenarios to OPR is related to induced growth. Current traffic models have limited abilities to forecast induced growth, as their land use or socioeconomic databases are fixed to a horizon date. OPR refers to a limited set of reports that would indicate elasticities.

The most recent major study (Duranton & Turner 2011, p. 24), estimates an elasticity of 1.0, meaning that every 1 percent change in lane miles results in a 1 percent increase in VMT.

The TA presents one method to identify the induced growth, as follows.

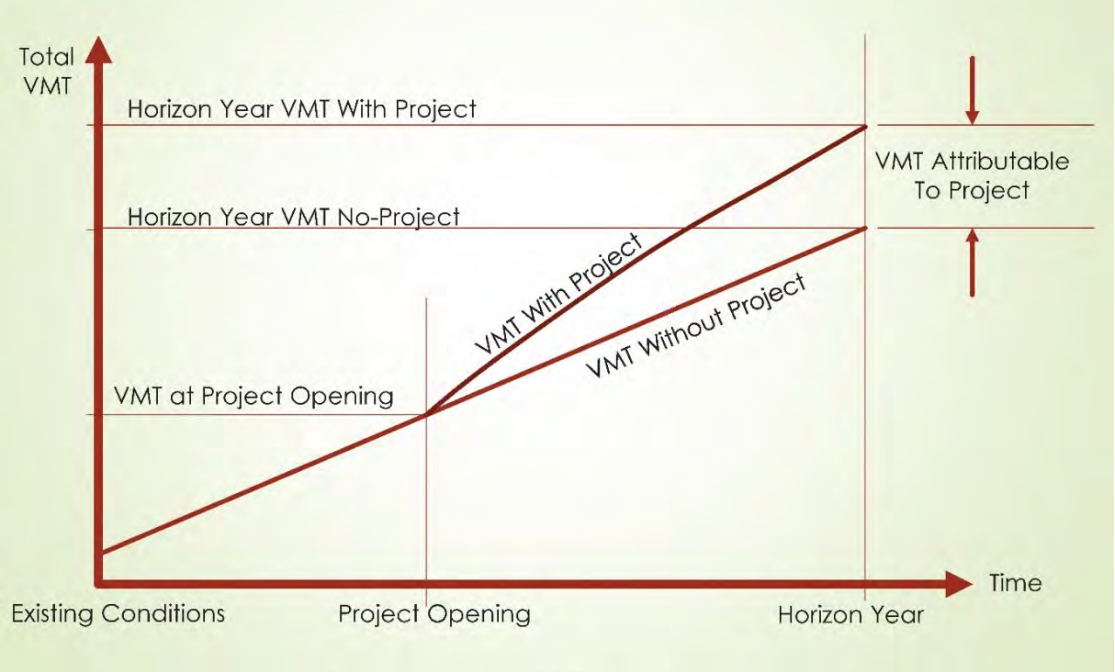
> *To estimate VMT impacts from roadway expansion projects:*
>
> 1. *Determine the total lane-miles over an area that fully captures travel behavior changes resulting from the project (generally the region, but for projects affecting interregional travel look at all affected regions).*
>
> 2. *Determine the percentage change in total lane miles that will result from the project.*
>
> 3. *Determine the total existing VMT over that same area.*

DRAFT

4. *Multiply the percentage increase in lane miles by the existing VMT, and then multiply that by the elasticity from the induced travel literature:*

[% increase in lane miles] x [existing VMT] x [elasticity] =
[VMT resulting from the project]

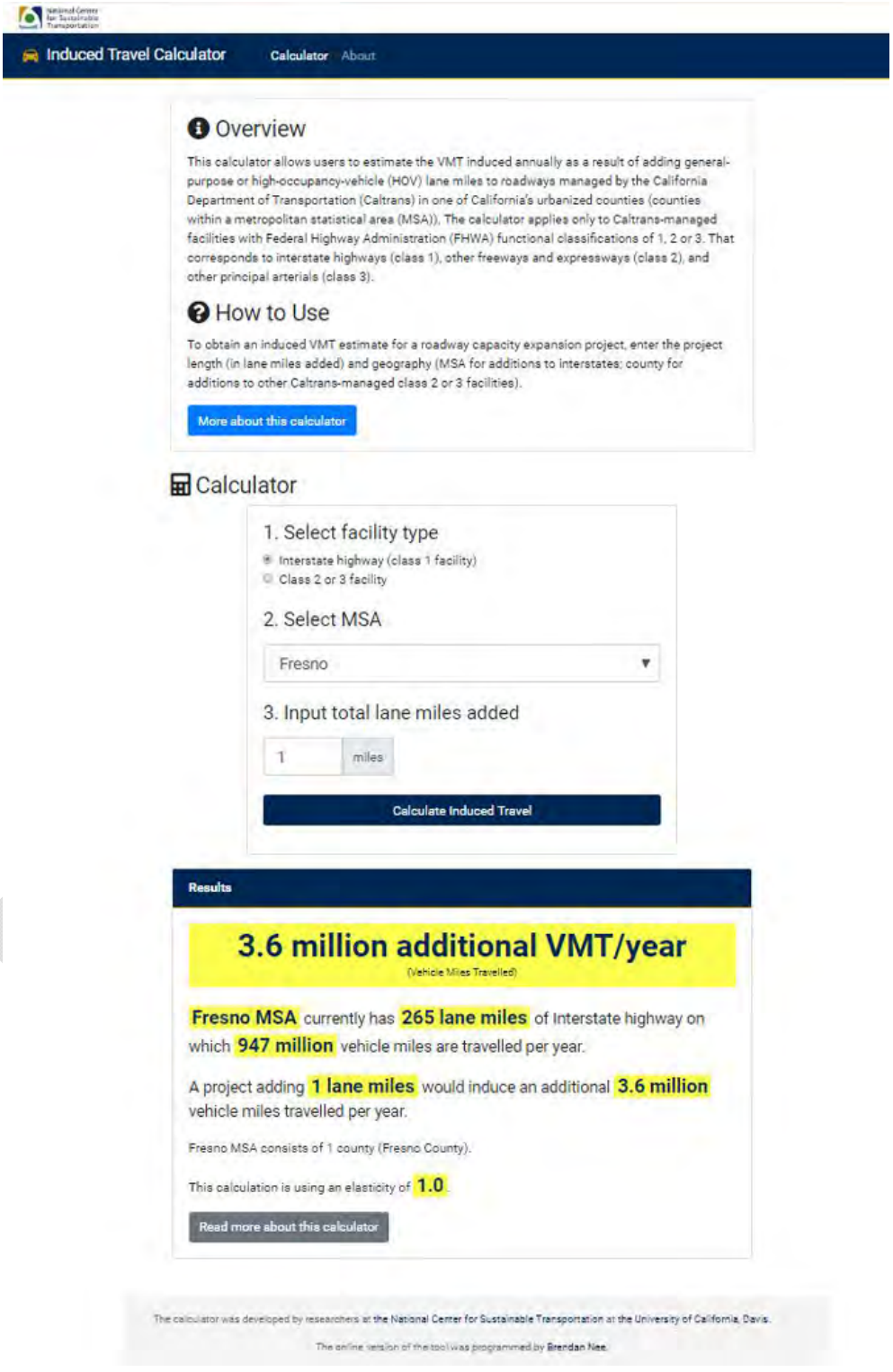
Figure 10 provides a representative illustration of induced VMT attributable to a project.



Source: Presentation: Caltrans Transportation Analysis under CEQA or TAC: Significance Determinations for Induced Travel Analysis (SHCC Pre-Release Session 2 Jeremy Ketchum, Division of Environmental Analysis, Caltrans; March 2, 2020)

Figure 10: Induced Travel – VMT Attributable to Project

Caltrans has identified a computerized tool that estimates VMT generation from transportation projects. It was developed at University of California, Davis and is based on elasticities and the relationship of lane mile additions and growth in VMT. It uses Federal Highways Administration definitions of facility type and ascribes VMT increases to each facility. Output includes increases on million miles of VMT per year. Caltrans is investigating its use for all its VMT analyses of capital projects on the State Highway System. Figure 11 provides an illustration of that tool.



Source: https://blinktag.com/induced-travel-calculator/index.html

Figure 11: Caltrans Induced Travel Calculator

The TA provides other options to identify induced growth- and project-related VMT. These include:

1. Employ an expert panel. *An expert panel could assess changes to land use development that would likely result from the project. This assessment could then be analyzed by the travel demand model to assess effects on vehicle travel. Induced vehicle travel assessed via this approach should be verified using elasticities found in the academic literature.*

2. Adjust model results to align with the empirical research. *If the travel demand model analysis is performed without incorporating projected land use changes resulting from the project, the assessed vehicle travel should be adjusted upward to account for those land use changes. The assessed VMT after adjustment should fall within the range found in the academic literature.*

3. Employ a land use model, running it iteratively with a travel demand model. *A land use model can be used to estimate the land use effects of a roadway capacity increase, and the traffic patterns that result from the land use change can then be fed back into the travel demand model. The land use model and travel demand model can be iterated to produce an accurate result.*

The TA provides a final warning:

> *Whenever employing a travel demand model to assess induced vehicle travel, any limitation or known lack of sensitivity in the analysis that might cause substantial errors in the VMT estimate (for example, model insensitivity to one of the components of induced VMT described above) should be disclosed and characterized, and a description should be provided on how it could influence the analysis results. A discussion of the potential error or bias should be carried into analyses that rely on the VMT analysis, such as greenhouse gas emissions, air quality, energy, and noise.*

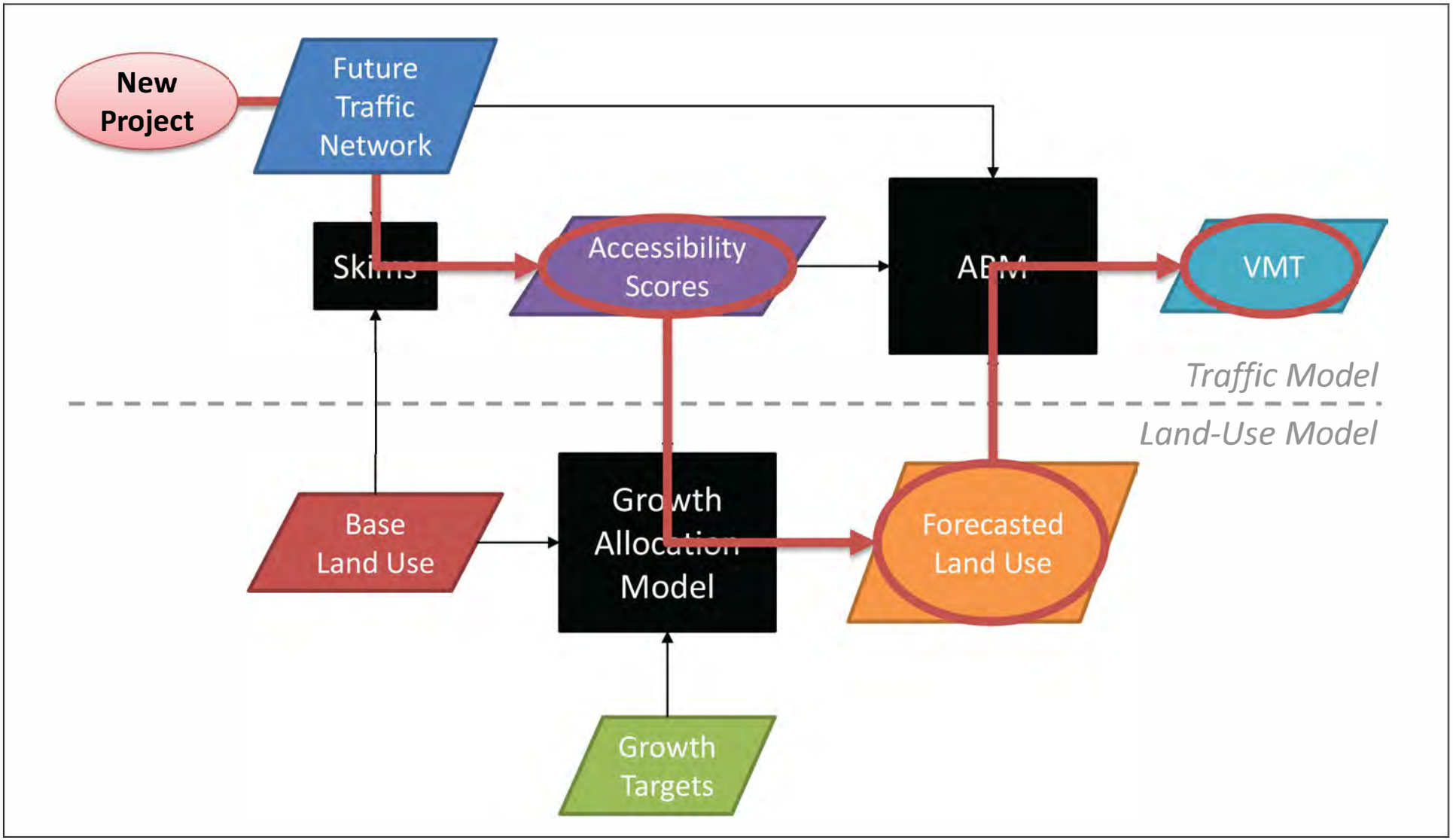
Fresno COG ran a few test scenarios of roadway widening projects using the Fresno COG ABM. These results were compared with the results from the Caltrans Induced Travel Calculator. The comparison demonstrated substantial difference in results. As such, it was identified that the ABM was more sensitive to project location, roadway type, surrounding land uses, and localized trip characteristics. Therefore, for most transportation projects that are not under Caltrans jurisdiction, it is recommended that the Fresno COG ABM be utilized to calculate project related induced VMT. As illustrated in Figure 10, VMT attributable to the project must be calculated by evaluating no project and with project conditions under the horizon year scenario using Fresno COG ABM. Net increase in induced VMT will result in a significant impact for the proposed project.

The concept of induced demand and the methodology to be followed is explained in greater detail in the Technical Appendices. Figure 12 illustrates a conceptual overview of the methodology to be followed to calculate induced demand. As illustrated in Figure 12, the effect of induced VMT will be required to be evaluated from both a land use and a travel demand modeling perspective. Fresno COG staff and the Resource Systems Group, Inc. (RSG) have prepared a detailed process that needs

DRAFT

to be conducted for this analysis. The methodology looks at induced VMT from new land uses generated by transportation capacity improvement projects by providing iterative and incremental feedback between the Fresno COG ABM and the land-use growth allocation model such that changes in the traffic network are incorporated into land-use allocation, and vice-versa. The methodology then looks at the impact of increased roadway capacity on increased traffic volumes and congestion using DaySim, the activity-based model component of the Fresno COG ABM. The methodology concludes that roadway capacity increase may lead to increased volumes, which results in increased congestion, which could be close to or the same as the congestion before the roadway capacity increase, albeit with more vehicles and an overall increase in utility.

DRAFT



LSA

FIGURE 12

CEQA Guidelines for Vehicle Miles Traveled Thresholds

Conceptual Methodology for Calculating Induced Demand for Transportation Projects

SOURCE: Fresno Council of Governments

I:\FCG1901\Reports\Traffic\fig13_InducedVMTMethodology_05-28-2020.ai (05/28/2020)

6.0 SIGNIFICANCE THRESHOLDS FOR LAND USE PLANS

The OPR guidance has provided guidance on the treatment of CEQA traffic analyses for land use plans in the TA. The TA reiterates previous direction regarding individual land use assessments:

- Analyze the VMT outcomes over the full area over which the plan may substantively affect travel patterns (the definition of region).

- VMT should be counted in full rather than split between origins and destinations (the full impact of the project VMT).

The TA provides a single sentence as consideration for land use plans. It states, "A general plan, area plan, or community plan may have a significant impact on transportation if proposed new residential, office or retail land uses would in aggregate exceed the respective thresholds recommended above." This recommendation refers to a threshold of 13 percent or more than the existing regional average for residential and office uses and no net gain for retail land uses.

To assess a land use plan, use of a traffic-forecasting tool is recommended. Therefore, the City should use the ABM to assess VMT for land use plans. The total VMT for the plan should be identified for all tour types and all potential VMT contributors within the plan area. Model runs should be conducted for the existing base year and the horizon year with project (plan).

The SB 375 process establishes ambitious and achievable GHG reduction targets for the 18 MPOs in the State. The achievements of the targets are provided through the integration of land use planning and transportation planning, not solely through the imposition of regulation on passenger cars and light-duty trucks. The CARB reviews the SCS and the strategies and programs that the regional agencies put in place in the SCS to achieve the GHG reduction. The CARB approved the new GHG reduction targets for all the 18 MPOs in the State in the spring of 2018. The 2018 targets are applicable to the third SCSes for the MPOs.

Other legislative mandates and State policies speak to GHG reduction targets. A sample of these include:

- Assembly Bill 32 (2006) requires statewide GHG emissions reductions to 1990 levels by 2020 and continued reductions beyond 2020.

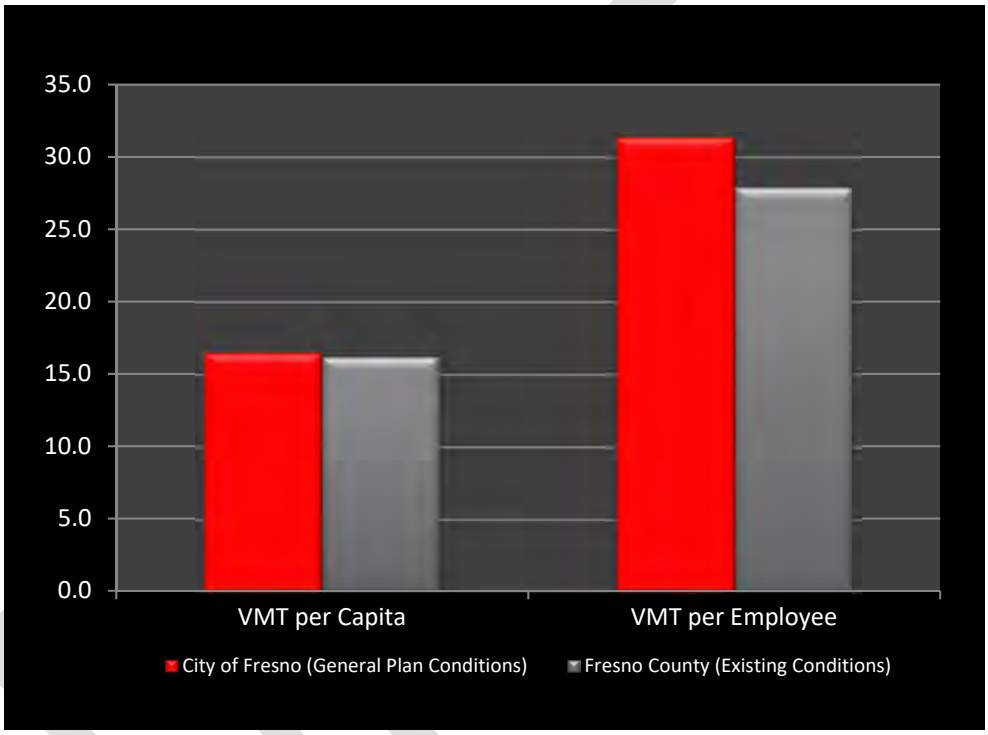
- SB 32 (2016) requires at least a 40 percent reduction in GHG emissions from 1990 levels by 2030.

- Executive Order (EO) B-30-15 (2015) sets a GHG emissions reduction target of 40 percent below 1990 levels by 2030.

- EO S-3-05 (2005) sets a GHG emissions reduction target of 80 percent below 1990 levels by 2050.

- EO B-16-12 (2012) specifies a GHG emissions reduction target of 80 percent below 1990 levels by 2050 specifically for transportation.

Therefore, the recommended methodology for conducting VMT assessments for land use plans is to compare the existing VMT per capita and/or VMT per employee for the region with the expected horizon year VMT per capita and/or VMT per employee for the land use plan. If there is a net increase in the VMT metric under horizon year conditions, then the project will have a significant impact. Figure 13 illustrates the comparison of VMT per capita and VMT per employee under the horizon year for the City of Fresno General Plan compared to the existing regional VMT per capita and existing VMT per employee, respectively.



Source: Fresno COG Activity Based Model

Figure 13: VMT per Capita and VMT per Employee Comparisons – City of Fresno General Plan versus Fresno County under Existing Conditions

7.0 MITIGATION STRATEGIES

When a lead agency identifies a significant CEQA impact according to the thresholds described above, the agency must identify feasible mitigation measures in order to avoid or substantially reduce that impact. Although previous LOS impacts could be mitigated with location-specific LOS improvements, VMT impacts will require mitigation of regional impacts through more behavioral changes. Enforcement of mitigation measures will be still be subject to the mitigation monitoring requirements of CEQA, as well as the regular police powers of the agency. These measures can also be incorporated as a part of plans, policies, regulations, or project designs.

7.1 DEFINITION OF MITIGATION

Section 15370 of the *2020 State CEQA Guidelines* defines mitigations as follows:

> *"Mitigation" includes:*
>
> *a. Avoiding the impact altogether by not taking a certain action or parts of an action.*
>
> *b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.*
>
> *c. Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.*
>
> *d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.*
>
> *e. Compensating for the impact by replacing or providing substitute resources or environments, including through permanent protection of such resources in the form of conservation easements.*

Section 15097 of the *State CEQA Guidelines* states that "the public agency shall adopt a program for monitoring or reporting on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects."

VMT mitigations may not be physical improvements; rather, they are complex in nature and will significantly depend on changes in human behavior. Therefore, it will be important that the City develop a proper monitoring program to ensure the implementation of these mitigation measures, throughout the life of a project, in compliance with CEQA. The City must also coordinate with other responsible agencies as part of this monitoring program to determine the feasibility of the mitigations and whether they would last in perpetuity.

Historically, mitigation measures for LOS based transportation impacts have addressed either trip generation reductions or traffic-flow-capacity enhancements. LOS mitigation measures include adding capacity to intersections, roadways, ramps, and freeways. However, transportation demand

DRAFT

management (TDM) actions, active transportation amenities, and other measures to reduce the number of trips creating an impact are also possible mitigation strategies.

LOS based mitigations are mostly physical improvements whose benefits are observable, measurable, and virtually perpetual. The addition of a left-turn lane at an intersection will behave similarly regardless of location and will continue to perform as intended until the lane is removed or modified. A lane mile of roadway will carry a similar volume of traffic if designed consistently across most jurisdictions in California, and it will continue to do so as long as the lane exists.

The definition of VMT mitigation measures is somewhat different. Most VMT mitigations may seem feasible from a theoretical perspective, but practical implementation of these strategies as formal CEQA mitigation measures in perpetuity is yet to be tested. Several of these mitigations are contextual and behavioral in nature. Their success will depend on the size and location of the project as well as expected changes in human behavior. For example, a project providing a bike share program does not necessarily guarantee a behavioral change within the project's population; the level of improvement may be uncertain and subject to the whim of the population affected.

LOS mitigations (such as addition of turn lanes) focus more on rectifying a physical CEQA impact (strategy "c" of *State CEQA Guidelines* Section 15370). On the contrary, the majority of VMT mitigations (such as commute trip-reduction programs) will aim at reducing or eliminating an impact over time through preservation and monitoring over the life of the project (strategy "d" of *State CEQA Guidelines* Section 15370). Additionally, some VMT mitigations (such as those focused on land use/location-based policies) will aim at minimizing impacts by reducing the number of trips generated by the projects (strategy "b" of *State CEQA Guidelines* Section 15370).

Furthermore, it may be that identified VMT impacts cannot be mitigated at the project-specific level. Most VMT impacts are in the context of the region of analysis. The incremental change in VMT associated with a project in the particular setting in which it may be located would suggest a greater VMT deficit than individual strategies can offset. Only a regional solution (e.g., completion of a transit system, purchase of more transit buses, or gap closure of an entire bicycle master plan system) may offer the incremental change necessary to reduce the VMT impact to a level of insignificance. Also, VMT, as a proxy for GHG emissions, may not require locational specificity. A project does not necessarily need to diminish the VMT at the project site to gain benefit in VMT and GHG reduction in the State. Offsets in an area where the benefit would be greater will have a more effective reduction in VMT and GHG and contribute to the State's ultimate climate goals. This is the basis for the cap-and-trade strategies.

These issues of regional scale, partial participation, and geographic ambiguity confound the certainty of the City's identification of VMT mitigation measures. Section 15126.4 of the *State CEQA Guidelines* states, "Where several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified. **Formulation of mitigation measures shall not be deferred until some future time** [emphasis added]." Certainty does not yet exist that partial participation in VMT mitigation measures is permissible. Regional VMT mitigation is considered the most effective method for large-scale VMT reduction, yet the cost and implementation barriers are greater in most cases than one project can undertake. The only

DRAFT

exception may be where VMT mitigation strategies are provided at a regional level in the form of mitigation banks, fees, and exchanges and the projects are subject to contribute to these fee programs consistent with applicable provision to ensure compliance and consistency with CEQA and other legal requirements.

Section 21099 (b) (4) of the PRC states, "This subdivision [requiring a new transportation metric under CEQA] does not preclude the application of local general plan policies, zoning codes, conditions of approval, thresholds, or any other planning requirements pursuant to the police power or any other authority." Hence, despite the fact that automobile delay will no longer be considered a significant impact under CEQA, the City can still require projects to meet the LOS standards designated in its zoning code or general plan. Therefore, in that case, the project might still be required to propose LOS improvements for congestion relief in addition to VMT strategies as CEQA mitigation measures.

7.2 MITIGATION MEASURES AND PROJECT ALTERNATIVES

7.2.1 Development Projects and Community/General Plans

Mitigations and project alternatives for VMT impacts have been suggested by the OPR and are included in the TA. VMT mitigations can be extremely diverse and can be classified under several categories such as land use/location, road pricing, transit improvements, commute trip reduction strategies, and parking pricing/policy. However, the issue with VMT mitigations is the quantitative measurement of the relief provided by the strategies. How much VMT reduction does a TDM program, a bike share program, a transit route, or 1 mile of sidewalk provide? Improvements related to VMT reduction strategies have been quantified in sources such as the California Air Pollution Control Officers Association (CAPCOA) report *Quantifying Greenhouse Gas Mitigation Measures* (CAPCOA Green Book) and CARB sources, and are generally presented in wide ranges of potential VMT reduction percentages.

Source: https://abc30.com/3126364/

Bus Rapid Transit in the City of Fresno

Appendix A is a summary of the different VMT mitigation measures and project alternatives stated in the CAPCOA Green Book (only those strategies directly attributed to transportation) and the OPR TA for development projects. It also refers to mitigation measures listed in other sources such as the VMT Measurement Calculator for the City of Los Angeles, the transportation analysis guidelines for the City of San Jose and the San Diego Region, and the memorandum Analysis of VMT Mitigation Measures Pursuant to SB 743, prepared by Iteris, Inc., for the Los Angeles County Metropolitan Transportation Authority.

DRAFT

Appendix B provides a list of mitigations for development projects based on the research work performed by Deborah Salon, Marlon G. Boarnet, Susan Handy, Steven Spears, and Gil Tal with the support of CARB. For a few mitigation measures, Fresno COG staff conducted additional research as applicable to the Fresno COG region using the Fresno COG ABM and locally available empirical data. Based on that analysis, specific VMT reduction percentages were developed for these mitigation measures. A detailed description of this analysis is provided in the *Fresno County SB 743 Implementation Regional Guidelines.* The City recommends applying these values to provide project-related mitigations. For all other mitigation measures, the project applicant will be required to provide substantial evidence while identifying a project-specific value. In case that information is not available, consistent with the Fresno COG's recommendations, the project should apply the low point of provided ranges for VMT reduction. Where a mitigation strategy does not have an identified VMT reduction range, the project applicant would be required to provide a reduction estimate supported by evidence.

Source: https://www.fresno.gov/publicworks/wp-content/uploads/sites/17/2016/09/170022FresnoATPFinal012017.pdf

Bike Routes in the City of Fresno

As for land use plans, the potential mitigation measures for community/general plans would be similar to those for development projects, with certain modifications. The OPR TA does not specifically state any VMT mitigations for land use plans. However, the transportation impact study guidelines for the San Diego Region list potential mitigation measures. These measures have been summarized in Appendix C along with corresponding VMT reduction percentages obtained from CAPCOA.

It must be noted that Appendices A–C provide only summaries of the mitigations stated in the sources mentioned above. The reader should refer to the original source for further details and for subsequent updates to the mitigation measures. Also, Appendices A–C do not provide an exhaustive list of mitigation measures to offset the CEQA impacts. Other measures can also be accepted by the City based on provision of substantial evidence.

As additional mitigation measures are developed to offset VMT impacts in the future for the *State CEQA Guidelines* process, linkages between the strategy and the incremental effect and quantified offset must be made. This can be based on other sources' observations and measurements or the City's experience in these practices. The key to mitigation is to base its efficacy on real and substantial evidence.

7.2.2 Transportation Projects

Although OPR provides detailed guidance on how to assess induced-growth impacts associated with transportation projects, it leaves the subject of mitigation measures vague. Only four strategies are suggested as mitigation measures:

- Tolling new lanes to encourage carpools and fund transit improvements
- Converting existing general-purpose lanes to HOV or HOT lanes
- Implementing or funding off-site travel demand management
- Implementing Intelligent Transportation Systems strategies to improve passenger throughput on existing lanes

Source: https://medium.com/@davidcanepa/toll-lanes-good-for-the-rich-bad-for-the-environment-4f1ec24105d3

Toll Lanes

No quantified reduction percentage is allocated to these strategies, and LSA could find no substantial evidence that would provide guidance to levels of significance after implementation of these strategies. Review of the four recommended strategies suggests that OPR is directing strategies away from general-purpose mixed-flow lanes on expressways, freeways, and arterial highways. Inasmuch as these are the project descriptions and Purpose and Need, the project intent and the project mitigation may be at odds. The City would be subject to an SOC for the capital project VMT impact.

7.3 FUNDING MECHANISMS

The change in the metric for transportation impacts from LOS to VMT will lead to a shift in impacts and mitigation measures from being local and project-specific to being more regional in nature. OPR acknowledges the regional nature of VMT impacts and states that regional VMT reduction programs and fee programs (in-lieu fees and development impact fees) may be appropriate forms of mitigation. Fee programs are particularly useful to address cumulative impacts. It is very important for the City to coordinate with the RTPA or Fresno COG to develop such mitigation programs that would fund transit, develop active transportation plans, etc. These programs are regional in nature and best suited for administration by the regional agency. Regional agencies may also wish to coordinate with appropriate stakeholders, including participating local jurisdictions, developers, and other interests while conducting nexus studies and checking for rough proportionality and compliance with CEQA.

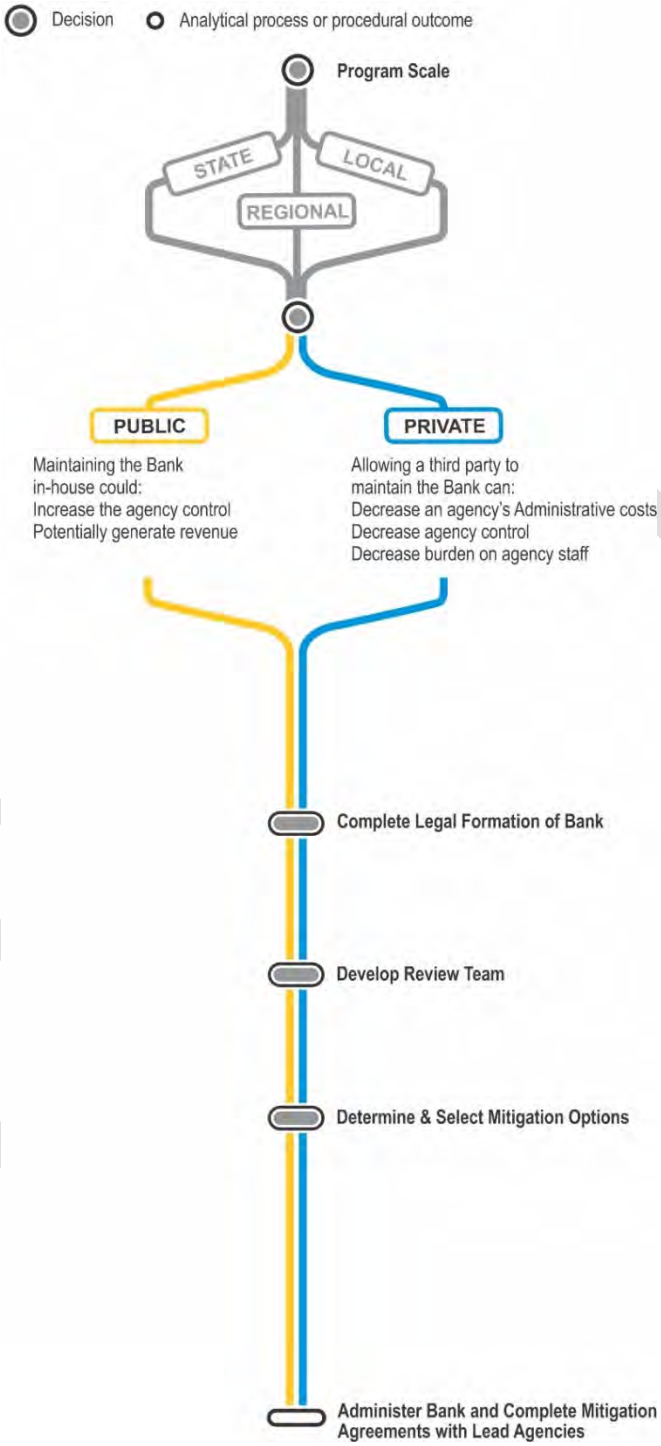
Most of the VMT mitigations included in Appendix A are applicable in urban areas. They are less effective in suburban and rural contexts, where TDM strategies may become diluted or are not applicable. Thus, site-specific strategies are more suitable in urban areas, whereas program-level strategies are more suitable for projects in suburban/rural areas. In the latter approach, cumulative contributions for development mitigations can pay for VMT reduction strategies that would not be feasible for the individual projects to implement themselves. Apart from fee programs, program-based mitigation approaches may include mitigation exchanges and mitigation banks. The mitigation exchange concept requires a developer to implement a predetermined project that would reduce VMT in order to propose a new one. On the other hand, the concept of mitigation banks seeks to establish monetary values for VMT reductions so that developers can purchase VMT reduction credits.

DRAFT

As previously stated, VMT impacts are more regional in nature. Hence, there might be requirements for mitigations outside the control of the City, and without consent from the agency controlling the mitigations, the impacts might remain significant and unavoidable. Additionally, identification of regional improvements where projects can contribute their fair share to mitigate impacts might prove to be difficult. Therefore, LSA recommends that the City work collaboratively within its regions to ultimately establish fee programs, mitigation banks, and exchanges as the most efficient way to establish a regional mitigation pathway where the projects can contribute. Procedural flow charts for VMT banks, exchanges, and impact fees are illustrated at the end of this chapter.

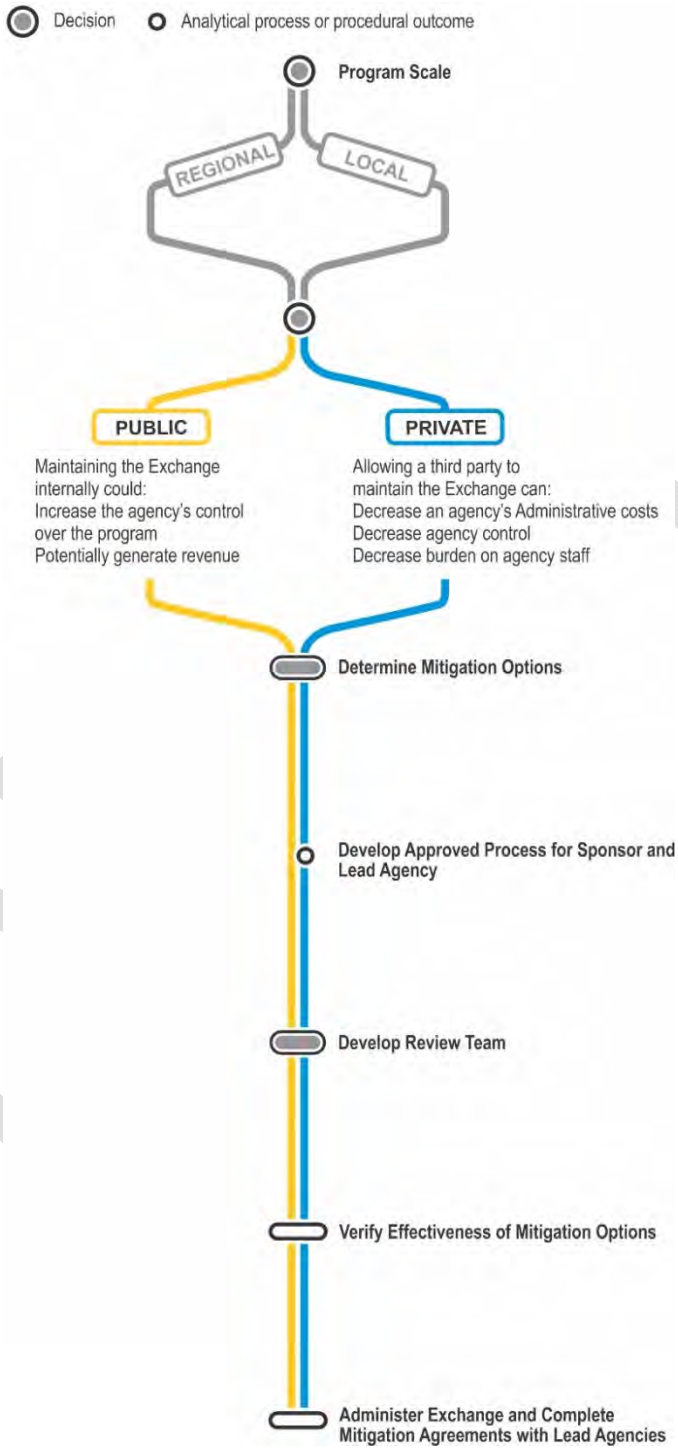
DRAFT

Procedural Flow Chart – VMT Bank



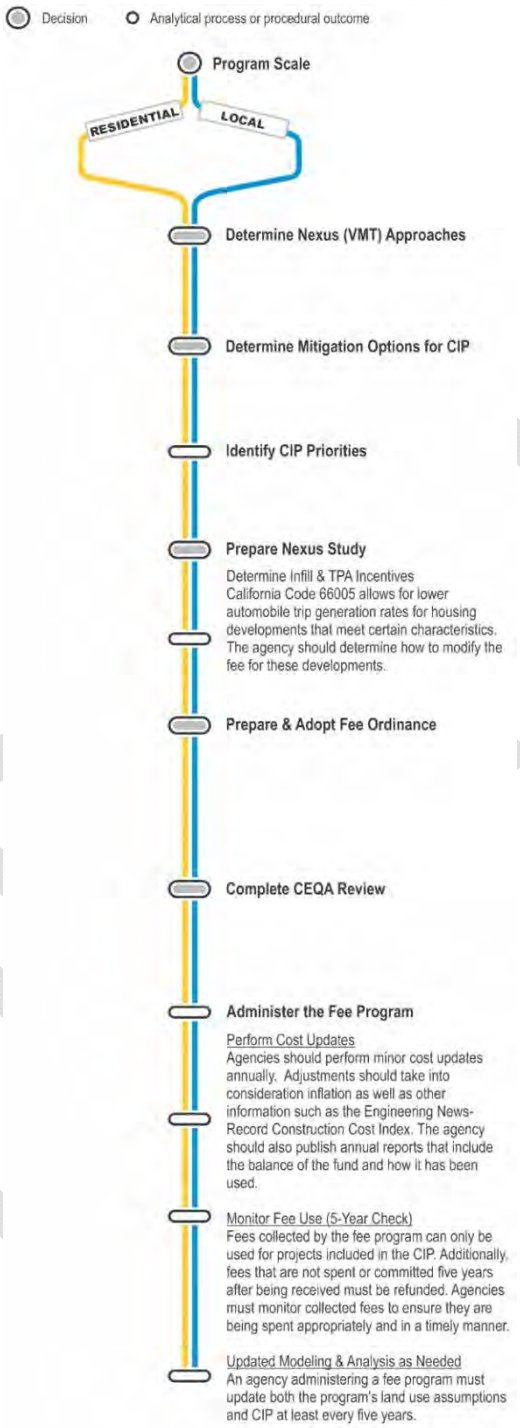
Source: VMT Mitigation Through Banks and Exchanges: Understanding New Mitigation Approaches. A White Paper by Fehr & Peers (January 2020).

Procedural Flow Chart – VMT Exchange



Source: VMT Mitigation Through Banks and Exchanges: Understanding New Mitigation Approaches. A White Paper by Fehr & Peers (January 2020).

Procedural Flow Chart – VMT Impact Fee



Source: Understanding New Mitigation Approaches. A White Paper by Fehr & Peers (January 2020).

This page intentionally left blank

DRAFT

APPENDIX A

VEHICLE MILES TRAVELED MITIGATION MEASURES FOR DEVELOPMENT PROJECTS (CAPCOA)

DRAFT

Table A - Vehicle Miles Traveled Mitigation Measures for Development Projects (CAPCOA)

#	Mitigation Measure	VMT Reduction[1]	Local VMT Reduction Calculations (Local Data/Fresno COG ABM)[2]	CAPCOA[3]	OPR TA[4]	Los Angeles Metro[5]	City of San Jose[6]	City of Los Angeles[7]	San Diego Region[8]	Notes
1	Provide a Bus Rapid Transit System (Addition of a New Route)	0.02% – 3.20%	0.33% VMT reduction per 100 miles	Y	Y	Y	N	N	Y	Notes: CAPCOA TST-1 (Applicable in urban and suburban context; negligible in rural context; appropriate for specific or general plans). This can be considered under Technical Advisory Measure 'Improve pedestrian or bicycle networks, or transit service.'
2	Provide a Bus Rapid Transit System (Substitution of an Existing Bus Route with a BRT Route)	0.02% – 3.20%	0.20% VMT reduction per 100 miles	Y	Y	Y	N	N	Y	Notes: CAPCOA TST-1 (Applicable in urban and suburban context; negligible in rural context; appropriate for specific or general plans). This can be considered under Technical Advisory Measure 'Improve pedestrian or bicycle networks, or transit service.'
3	Subsidize vanpool	0.30% - 13.40% commute VMT	0.60%	Y	Y	N	Y	N	Y	Notes: Similar to CAPCOA TRT-11 (Provide Employer-Sponsored Vanpool/Shuttle: applicable in urban, suburban, and rural context; appropriate for office, industrial, and mixed-use projects). The measure is included under the Technical Advisory Measure 'Provide incentives or subsidies that increase the use of modes other than single-occupancy vehicle.'; City of San Jose [Applicable for employment uses only]
4	Shifting single occupancy vehicle trips to carpooling or vanpooling, for example providing ride-matching or shuttle services	0.30% - 13.40% commute VMT reduction (for CAPCOA TRT-11: Provide Employer-Sponsored Vanpool/Shuttle); 7.20% - 15.80% school VMT reduction (for CAPCOA TRT-10: Implement a School Pool Program)	0.60% (for vanpool); x% (for carpool)	Y	Y	Y	Y	Y	Y	Notes: Similar to CAPCOA TRT-11 (Provide employer-sponsored vanpool/shuttle) - the measure is applicable for urban, suburban, and rural context, and is appropriate for office, industrial, and mixed-use projects; Similar measure is CAPCOA TRT-10 (Implement a School Pool Program: Applicable for urban, suburban, and rural context and appropriate for residential and mixed-use projects); City of San Jose [School carpool program - residential uses only)]; City of LA [School carpool program - level of implementation (low, medium, high); Employer sponsored vanpool or shuttle (Degree of implementation (low, medium, high), employees eligible (%), employer size (small, medium, large)]
5	Expand transit network	0.10% – 8.20%	0.07% VMT reduction per 100 miles (for addition of a new transit line)	Y	Y	Y	Y	Y	Y	Notes: CAPCOA TST-3; Measure applicable in urban and suburban context, maybe applicable in rural context but no literature documentation available, appropriate for specific or general plans. This can be considered under Technical Advisory Measure 'Improve pedestrian or bicycle networks, or transit service'; City of San Jose [Increase transit accessibility to improve last-mile transit connections; Improve network connectivity/design to make destinations and low-carbon travel modes accessible; both applicable for both residential and employment uses]; City of LA [Existing transit mode share (as a percent of total daily trips) (%), Lines within project site improved (<50%, >=50%)]
6	Incorporate bike lane street design (on-site)	1% increase in share of workers commuting by bicycle (for each additional mile of bike lanes per square mile) (*Bicycle Commuting and Facilities in Major U.S. Cities: If You Build Them, Commuters Will Use Them – Another Look* by Dill and Carr (2003)); 0.075% increase in bicycle commuting with each mile of bikeway per 100,000 residents (*If You Build Them, Commuters Will Use Them; Cross-Sectional Analysis of Commuters and Bicycle Facilities* by Nelson and Allen (1997))	0.30% VMT reduction per 100 miles (for addition of new bike lane)	Y	Y	Y	Y	Y	Y	Notes: CAPCOA SDT-5 [Grouped strategy, benefits of Bike Lane Street Design are small and should be grouped with the LUT-9 (Improve Design of Development) strategy to strengthen street network characteristics and enhance multi-modal environments], the measure is applicable in urban and suburban contexts and is appropriate for residential, retail, office, industrial, and mixed-use projects. This can be considered under Technical Advisory Measure 'Improve pedestrian or bicycle networks, or transit service'; City of San Jose [Expand the reach of bike access with investment in infrastructure: applicable for both residential and employment uses]; City of LA [Provide bicycle facility along site (Yes/No)]
7	Improve or increase access to transit	CAPCOA TST-2: Not quantified alone, grouped strategy with TST-3 'Expand transit network' and TST-4 'Increase transit service frequency/speed'; CAPCOA LUT-5: 0.50% - 24.60%	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA TST-2: Implement Transit Access Improvements (applicable in urban and suburban context, and appropriate for residential, retail, office, mixed use, and industrial projects); CAPCOA LUT-5: Increase Transit Accessibility [May be grouped with CAPCOA measures LUT-3 (mixed use development), SDT-2 (traffic calmed streets with good connectivity), and PPT-1 through PPT-7 (parking management strategies); measures are applicable in urban and suburban contexts; appropriate in rural context if development site is adjacent to a commuter rail station with convenient rail service to a major employment center; appropriate for residential, retail, office, industrial, and mixed-use projects]; City of San Jose [Increase transit accessibility to improve last-mile transit connections; Improve network connectivity/design to make destinations and low-carbon travel modes accessible; both applicable for both residential and employment uses]; City of LA [Existing transit mode share (as a percent of total daily trips) (%), Lines within project site improved (<50%, >=50%)]
8	Increase access to common goods and services, such as groceries, schools, and daycare	Similar to CAPCOA LUT-3 (Increase Diversity of Urban and Suburban Developments (Mixed Use)): 9.00% - 30.00% VMT reduction and CAPCOA LUT-4 (Increase Destination Accessibility): 6.70% - 20.00% VMT reduction	N/A	Y	Y	Y	Y	N	Y	Notes: Similar to CAPCOA LUT-3 (Increase Diversity of Urban and Suburban Developments (Mixed Use) - Applicable in urban and suburban context; negligible in rural context (unless the project is a master-planned community; appropriate for mixed-use projects) and CAPCOA LUT-4 (Applicable in urban and suburban context, negligible in rural context, appropriate for residential, retail, office, industrial, and mixed-use projects); City of San Jose [Access to Neighborhood Schools: Applicable for residential uses only]; City of San Jose [Very similar to measure 'Increase diversity of uses' - Applicable for residential and employment uses]
9	Incorporate affordable housing into the project	0.04% - 1.20%	N/A	Y	Y	Y	Y	N	Y	Notes: Similar measure is CAPCOA LUT-6 [Integrate Affordable and Below Market Rate Housing] - [Applicable in urban and suburban contexts; negligible impact in a rural context unless transit availability and proximity to jobs/services are existing characteristics; appropriate for residential and mixed-use projects]; City of San Jose [Similar to measure 'Integrate affordable and market rate housing] - Measure is applicable for residential uses only

LSA

Table A - Vehicle Miles Traveled Mitigation Measures for Development Projects (CAPCOA)

#	Mitigation Measure	VMT Reduction[1]	Local VMT Reduction Calculations (Local Data/Fresno COG ABM)[2]	CAPCOA[3]	OPR TA[4]	Los Angeles Metro[5]	City of San Jose[6]	City of Los Angeles[7]	San Diego Region[8]	Notes
10	Incorporate neighborhood electric vehicle network	0.50% - 12.70%	N/A	Y	Y	Y	N	N	Y	Notes: CAPCOA SDT-3 [Neighborhood electric vehicles (NEV) would result in a mode shift and therefore reduce the traditional vehicle VMT and GHG emissions. Range depends on the available NEV network and support facilities, NEV ownership levels, and the degree of shift from traditional; measure is applicable in urban, suburban, and rural context, for small citywide or large multi-use developments, and appropriate for mixed-use projects]
11	Orient project towards transit, bicycle, and pedestrian facilities	`1) 0.25% - 0.5% (0.25% reduction is attributed for a project oriented towards a planned corridor and 0.5% reduction is attributed for a project oriented towards an existing corridor) (as per the Sacramento Metropolitan Air Quality Management District (SMAQMD) *Recommended Guidance for Land Use Emission Reductions*), 2) 0.5% reduction in VMT per 1% increase in transit frequency and per 10% increase in transit ridership (as per the Center for Clean Air Policy (CCAP) *Transportation Emission Guidebook*)	N/A	Y	Y	Y	N	N	Y	Notes: CAPCOA LUT-7 [Orient project toward non-auto corridor]; Grouped strategy with LUT-3 (Increase Diversity of Urban and Suburban Developments (Mixed Use) ; there is no sufficient evidence that the measures results in non-negotiable trip reduction unless combined with other measures, including neighborhood design, density and diversity of development, transit accessibility and pedestrian and bicycle network improvements; the measure is applicable for urban or suburban context (may be applicable in a master-planned rural community) and is appropriate for residential, retail, office, industrial, and mixed use projects
12	Provide pedestrian network improvements	0.00% - 2.00%	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA SDT-1 [applicable in urban, suburban, and rural context; appropriate for residential, retail, office, industrial, and mixed-use projects; reduction benefit only occurs if the project has both pedestrian network improvements on site and connections to the larger off-site network]. This can be considered under Technical Advisory Measure 'Improve pedestrian or bicycle networks, or transit service'; City of San Jose [Provide pedestrian network improvements for active transportation: applicable for both residential and employment uses]; City of LA [Included (within project and connecting off-site/within project only)]
13	Increase transit service frequency/speed	0.02% – 2.50%	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA TST-4, applicable in urban and suburban context, maybe applicable in rural context but no literature documentation available, appropriate for specific or general plans. This can be considered under Technical Advisory Measure 'Improve pedestrian or bicycle networks, or transit service'; City of San Jose [Similar to measure 'Subsidize public transit service upgrades']; City of LA [Reduction in headways (increase in frequency) (%)]
14	Required project contributions to transportation infrastructure improvement projects	Not Quantified: Grouped strategy (with RPT-2 and TST-1 through 7)	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA RPT-3 (Applicable in urban, suburban and rural context; appropriate for residential, retail, office, mixed use, and industrial projects); measure similar to some of the measures discussed above. This can be considered under Technical Advisory Measure 'Improve pedestrian or bicycle networks, or transit service.'
15	Increase destination accessibility	6.70% – 20.00%	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA LUT-4 [Destination accessibility measured in terms of the number of jobs or other attractions reachable within a given travel time, which tends to be the highest at central locations and lowest at peripheral ones; the location of the project also increases the potential for pedestrians to walk and bike to these destinations and therefore reduces VMT; applicable for urban and suburban contexts, negligible impact in a rural context; appropriate for residential, retail, office, industrial, and mixed-use projects]. This can be considered under Technical Advisory Measure 'Improve pedestrian or bicycle networks, or transit service'; City of San Jose [Increase transit availability to improve last-mile transit connections; Improve network connectivity/design to make destinations and low-carbon travel modes accessible; both applicable for both residential and employment uses]; City of LA [Lines within project site improved (<50%, >=50%)]
16	Provide traffic calming measures	0.25% – 1.00%	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA SDT-2 [applicable in urban, suburban, and rural contexts; appropriate for residential, retail, office, industrial, and mixed-use projects]; City of San Jose [Applicable for both residential and employment uses]; City of LA [Streets with traffic calming improvements (%), intersections with traffic calming improvements (%)]
17	Provide bike parking in non-residential projects	0.625% (as per the Center for Clean Air Policy (CCAP) *Transportation Emission Guidebook*)	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA SDT-6 [Bike Parking in Non-Residential projects has minimal impacts as a standalone strategy and should be grouped with the LUT-9 (Improve Design of Development) strategy to encourage bicycling by providing strengthened street network characteristics and bicycle facilities]; the measure is applicable in urban, suburban, and rural contexts; appropriate for retail, office, industrial, and mixed-use projects; City of San Jose [Provide bike parking and end-of-trip facilities such as bike parking, bicycle lockers, showers, and personal lockers (Applicable for both residential and employment uses)]; City of LA [Include bike parking/lockers, showers, & repair station (Y/N)]
18	Provide bike parking with multi-unit residential projects	Not Quantified	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA SDT-7 [Grouped Strategy; the benefits of Bike Parking with Multi-Unit Residential Projects have no quantified impacts and should be grouped with the LUT-9 (Improve Design of Development) strategy to encourage bicycling by providing strengthened street network characteristics and bicycle facilities. The measure is applicable in urban, suburban, or rural contexts. It is appropriate for residential projects.]; City of San Jose [Provide bike parking and end-of-trip facilities such as bike parking, bicycle lockers, showers, and personal lockers (Applicable for both residential and employment uses)]; City of LA [Include bike parking/lockers, showers, & repair station (Y/N)]

Table A - Vehicle Miles Traveled Mitigation Measures for Development Projects (CAPCOA)

#	Mitigation Measure	VMT Reduction[1]	Local VMT Reduction Calculations (Local Data/Fresno COG ABM)[2]	CAPCOA[3]	OPR TA[4]	Los Angeles Metro[5]	City of San Jose[6]	City of Los Angeles[7]	San Diego Region[8]	Notes
19	Limit or eliminate parking supply	5.00% - 12.50%	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA PDT-1 (applicable in urban and suburban context, negligible in rural context, appropriate for residential, retail, office, industrial, and mixed-use projects); reduction can be counted only if spillover parking is controlled (via residential permits and on-street market parking); follow multi-faceted strategy including 1) elimination/reduction of minimum parking requirements, 2) creation of maximum parking requirements, and 3) provision of shared parking; City of San Jose [Decrease project parking supply at the project site to rates lower than the standard parking minimums where allowable in the San Jose Municipal Code (applicable for employment uses)]; City of LA [City code parking provision (spaces), actual parking provision (spaces)]
20	Unbundle parking costs from property costs	2.60% - 13.00%	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA PDT-2 (applicable in urban and suburban context, negligible in rural context, appropriate for residential, retail, office, industrial and mixed-use projects; complimentary strategies include workplace parking pricing); City of San Jose [Unbundle On-Site Parking Costs: Application for Residential Uses Only]; City of LA [Monthly cost for parking ($)]
21	Provide parking cash-out programs	0.60% – 7.70% commute VMT	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA TRT-15 [Implement employee parking "cash-out"; the term “cash out” is used to describe the employer providing employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to the cost of the parking space to the employer. The measure is applicable in urban and suburban context; it is not applicable in rural context; it is appropriate for retail, office, industrial, and mixed-use projects. Restrictions are applied only if complementary strategies are in place: a) Residential parking permits and market rate public on-street parking to prevent spill over parking; b) Unbundled parking - is not required but provides a market signal to employers to forgo paying for parking spaces and “cash-out” the employee instead. In addition, unbundling parking provides a price with which employers can utilize as a means of establishing “cash-out” prices; City of San Jose [Parking cash-out: Employment uses only]; City of LA [Parking cash-out: Employees eligible (%)]
22	Implement or provide access to a commute reduction program - Voluntary	1.00% - 6.20% commute VMT	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA TRT-1: Commute Trip Reduction Program – Voluntary, is a multi-strategy program that encompasses a combination of individual measures described CAPCOA measures TRT-3 through TRT-9. It is presented as a means of preventing double-counting of reductions for individual measures that are included in this strategy. It does so by setting a maximum level of reductions that should be permitted for a combined set of strategies within a voluntary program. The main difference between a voluntary and a required program is: A) Monitoring and reporting is not required B) No established performance standards (i.e. no trip reduction requirements). The measure is applicable in urban and suburban contexts, negligible in a rural context, unless large employers exist and suite of strategies implemented are relevant in rural settings. The measure is appropriate for retail, office, industrial, and mixed-use projects; City of San Jose [Applicable for employment uses only]; City of LA [Employees and residents participating (%)]
23	Provide ride-sharing program	1.00% – 15.00% commute VMT	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA TRT-3 [Provide Ride-Sharing Programs: applicable in urban and suburban context; Negligible impact in many rural contexts, but can be effective when a large employer in a rural area draws from a workforce in an urban or suburban area, such as when a major employer moves from an urban location to a rural location; appropriate for residential, retail, office, industrial, and mixed-use projects]; City of San Jose [Ride share for employment uses only]; City of LA [Measured in terms of employees eligible (%)]
24	Implement car-sharing program	0.40% – 0.70%	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA TRT-9 [urban and suburban context, negligible in rural context, and appropriate for residential, retail, office, industrial, and mixed-use projects]; City of San Jose [Applicable for both residential and employment uses]; City of LA [Car share project setting (urban, suburban, all other)]
25	Implement bike-sharing program	Taking evidence from the literature, a 135-300% increase in bicycling (of which roughly 7% are shifting from vehicle travel) results in a negligible impact (around 0.03% VMT reduction)	N/A	Y	Y	N	Y	Y	Y	Notes: CAPCOA TRT-12 [This measure has minimal impacts when implemented alone. The strategy's effectiveness is heavily dependent on the location and context. Bike-sharing programs have worked well in densely populated areas (examples in Barcelona, London, Lyon, and Paris) with existing infrastructure for bicycling. Bike sharing programs should be combined with Bike Lane Street Design (SDT-5) and Improve Design of Development (LUT-9). The measure is applicable in urban and suburban-center context only; it is negligible in a rural context; appropriate for residential, retail, office, industrial, and mixed-use projects; City of San Jose [Bike share for employment and residential uses]; City of LA [bike share - within 600 feet of existing bike share station - OR -implementing new bike share station (Y/N)]
26	Provide transit passes	Similar to CAPCOA TRT-4 [Implement Subsidized or Discounted Transit Program]; for TRT-4, commute VMT reduction is 0.30% - 20.00%	N/A	Y	Y	Y	Y	Y	Y	Notes: Similar to CAPCOA TRT-4 [Implement Subsidized or Discounted Transit Program]; City of San Jose [Implement Subsidized or Discounted Transit Program]; City of LA [Employees and residents eligible (%), amount of transit subsidy per daily passenger (daily equivalent) ($)]

Table A - Vehicle Miles Traveled Mitigation Measures for Development Projects (CAPCOA)

#	Mitigation Measure	VMT Reduction[1]	Local VMT Reduction Calculations (Local Data/Fresno COG ABM)[2]	CAPCOA[3]	OPR TA[4]	Los Angeles Metro[5]	City of San Jose[6]	City of Los Angeles[7]	San Diego Region[8]	Notes
27	Implement a school pool program	7.20% - 15.80% school VMT reduction	N/A	Y	Y	N	Y	Y	Y	Notes: CAPCOA TRT-10 [This project will create a ridesharing program for school children. Most school districts provide bussing services to public schools only. School Pool helps match parents to transport students to private schools, or to schools where students cannot walk or bike but do not meet the requirements for bussing. The measure is applicable in urban, suburban, and rural context and is appropriate for residential and mixed-use projects.]; City of San Jose [School carpool program - residential uses only)]. This measure can be considered under the Technical Advisory Measure 'Shifting single occupancy vehicle trips to carpooling or vanpooling, for example providing ride matching services.'; City of LA [School carpool program - level of implementation (low, medium, high)
28	Operate free direct shuttle service	CAPCOA TST-6 (Provide Local Shuttles): Not Quantified; 0.30% - 13.40% commute VMT reduction (for CAPCOA TRT-11: Provide Employer-Sponsored Vanpool/Shuttle)	N/A	Y	Y	N	Y	Y	Y	Notes: CAPCOA TST-6 (Provide Local Shuttles - grouped strategy with TST-5 'Provide Bike Parking Near Transit' and TST-4 'Increase Transit Service Frequency/Speed') - Applicable in urban/suburban context; appropriate for large residential, retail, office, mixed use, and industrial projects; solves the "first mile/last mile" problem; CAPCOA TRT-11 (Provide employer-sponsored vanpool/shuttle) - the measure is applicable for urban, suburban, and rural context, and is appropriate for office, industrial, and mixed-use projects. This measure can be considered under the Technical Advisory Measure 'Shifting single occupancy vehicle trips to carpooling or vanpooling, for example providing ride matching services.'; City of San Jose [Employment uses only]; City of LA [Employer sponsored vanpool or shuttle (Degree of implementation (low, medium, high), employees eligible (%), employer size (small, medium, large)]
29	Provide teleworking options	0.07% - 5.50% commute VMT	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA TRT-6 [Applicable in urban, rural, and suburban contexts; appropriate for retail, office, industrial, and mixed-use projects]; City of San Jose [Alternative work schedules and telecommute (employment land uses only)]; City of LA [Alternative work schedules and telecommute (employees participating (%), type of program)]
30	Subsidize public transit service upgrades	Not Quantified	N/A	Y	Y	N	Y	N	Y	Notes: Similar to CAPCOA TST-2 through TST-4; City of San Jose [Subsidize transit service through contributions to the transit provider to improve transit service to the project (e.g. frequency and number of routes); applicable for both residential and employment uses]. The measure is included under the Technical Advisory Measure 'Provide incentives or subsidies that increase the use of modes other than single-occupancy vehicle.'
31	Implement subsidized or discounted transit program	0.30% – 20.00% commute VMT	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA TRT-4 [Implement subsidized or discounted transit program (the measure is applicable in urban and suburban context, negligible in a rural context, appropriate for residential, retail, office, industrial, and mixed-use projects); The project will provide subsidized/discounted daily or monthly public transit passes. The project may also provide free transfers between all shuttles and transit to participants. These passes can be partially or wholly subsidized by the employer, school, or development. Many entities use revenue from parking to offset the cost of such a project. The measure is included under the Technical Advisory Measure 'Provide incentives or subsidies that increase the use of modes other than single-occupancy vehicle.'; City of San Jose [Implement Subsidized or Discounted Transit Program]; City of LA [Transit subsidies measured by employees and residents eligible (%), and amount of transit subsidy per passenger (daily equivalent) ($)]
32	Providing on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms	22% increase in bicycle mode share (UK National Travel Survey)/2%-5% reduction in commute vehicle trips (*Transportation Demand Management Encyclopedia*)/0.625% reduction in VMT (*Center for Clean Air Policy (CCAP) Emission Guidebook*)	N/A	Y	Y	Y	Y	Y	Y	Notes: CAPCOA TRT-5 [Provide End of Trip Facilities]: End-of-trip facilities have minimal impacts when implemented alone. This strategy's effectiveness in reducing vehicle miles traveled (VMT) depends heavily on the suite of other transit, pedestrian/bicycle, and demand management measures offered. End-of trip facilities should be grouped with Commute Trip Reduction (CTR) Programs (TRT-1: Implement Commute Trip Reduction Program - Voluntary through TRT-2: Implement Commute Trip Reduction Program – Required Implementation/Monitoring) and TRT-3 (Provide Ride-Sharing Programs); City of San Jose [Similar measures include 'Provide bike parking/end of trip bike facilities', 'Implement car sharing programs']; City of LA [Include bike parking/lockers, showers, & repair station (Y/N)]
33	Provide employee transportation coordinators at employment sites	Not Quantified	N/A	Y	Y	Y	N	N	Y	Included as part of CAPCOA TRT-1 (Implement Commute Trip Reduction Program - Voluntary)
34	Provide a guaranteed ride home service to users of non-auto modes	Not Quantified	N/A	N	Y	Y	N	N	Y	
35	Locate project in an area of the region that already exhibits low VMT	10.00% - 65.00%	N/A	Y	Y	Y	N	N	Y	Notes: CAPCOA LUT-2 (Applicable in urban and suburban contexts; negligible in rural contexts; appropriate for residential, retail, office, industrial, and mixed-use projects)
36	Locate project near transit	0.50% - 24.60%	N/A	Y	Y	Y	N	N	Y	Notes: CAPCOA LUT-5 [May be grouped with CAPCOA measures LUT-3 (mixed use development), SDT-2 (traffic calmed streets with good connectivity), and PPT-1 through PPT-7 (parking management strategies); measures are applicable in urban and suburban contexts; appropriate in rural context if development site is adjacent to a commuter rail station with convenient rail service to a major employment center; appropriate for residential, retail, office, industrial, and mixed-use projects]
37	Increase project/development density	1.50% - 30.00%	N/A	Y	Y	Y	Y	N	Y	Notes: CAPCOA LUT-1 (Applicable in urban and suburban contexts only; negligible in rural context; appropriate for residential, retail, office, industrial, and mixed-use projects); City of San Jose [Applicable for both residential and employment uses]
38	Increase the mix of uses within the project or within the project's surroundings	9.00% - 30.00%	N/A	Y	Y	Y	Y	N	Y	Notes: CAPCOA LUT-3: Increase Diversity of Urban and Suburban Developments (Mixed Use) [Applicable in urban and suburban context, negligible in rural context, and appropriate for mixed-use projects]; City of San Jose [Applicable for both residential and employment uses]

Table A - Vehicle Miles Traveled Mitigation Measures for Development Projects (CAPCOA)

#	Mitigation Measure	VMT Reduction[1]	Local VMT Reduction Calculations (Local Data/Fresno COG ABM)[2]	CAPCOA[3]	OPR TA[4]	Los Angeles Metro[5]	City of San Jose[6]	City of Los Angeles[7]	San Diego Region[8]	Notes
39	Improve network connectivity and/or increase intersection density on the project site	Similar measure is CAPCOA LUT-9 [Improve Design of Development]: 3.0% - 21.3% reduction in VMT	N/A	Y	Y	Y	Y	N	Y	Notes: Similar measure to CAPCOA LUT-9 (Improve Design of Development); City of San Jose [Build new street connections and/or connect cul-de-sacs to provide pedestrian and bicycle access: applicable for both residential and employment uses]
40	Price workplace parking	0.10% - 19.70% commute VMT	N/A	Y	N	N	Y	Y	N	Notes: CAPCOA TRT-14 [Urban and suburban context; Negligible impact in a rural context; Appropriate for retail, office, industrial, and mixed-use projects; Reductions applied only if complementary strategies are in place: o Residential parking permits and market rate public on-street parking - to prevent spill-over parking o Unbundled parking - is not required but provides a market signal to employers to transfer over the, now explicit, cost of parking to the employees. In addition, unbundling parking provides a price with which employers can utilize as a means of establishing workplace parking prices; City of San Jose [Price On-Site Workplace Parking (for employment uses only)]; City of LA [Daily parking charge ($), Employees subject to priced parking (%)]
41	Locate project near bike path/bike lane	0.625%	N/A	Y	N	Y	N	N	N	Notes: CAPCOA LUT-8 (Grouped strategy with 'Increase Destination Accessibility'; the measure is most effective when applied in combination of multiple design elements that encourage this use; strategy should be grouped with 'Increase Destination Accessibility' strategy to increase the opportunities for multi-modal travel; measure is applicable in urban or suburban context, may be applicable in a rural master planned community; appropriate for residential, retail, office, industrial, and mixed-use projects
42	Implement Commute Trip Reduction Marketing	0.80% - 4.00% commute VMT	N/A	Y	N	Y	Y	N	N	Notes: CAPCOA TRT-7 (applicable in urban and suburban context; negligible in rural context; appropriate for residential, retail, office, industrial, and mixed-use projects); City of San Jose [Employment uses only]
43	Education and encouragement - Voluntary travel behavior change program	1.00% - 6.20% commute VMT	N/A	Y	N	N	Y	Y	N	Notes: Similar to CAPCOA TRT-1 (Implement Commute Reduction Program - Voluntary); City of San Jose [For both residential and employment uses]; City of LA [Employees and residents participating (%)]
44	Education and encouragement - Promotions and marketing	0.80% - 4.00% commute VMT	N/A	Y	N	N	Y	Y	N	Notes: Similar to CAPCOA TRT-7 [Implement Commute Reduction Marketing]; City of San Jose [Similar measure might be 'Implement commute trip reduction marketing/educational campaign' (applicable for employment uses)]; City of LA [Employees and residents participating (%)]
45	Implement neighborhood shuttle	Not Quantified	N/A	Y	N	N	Y	Y	N	Notes: CAPCOA TST-6 (Provide Local Shuttles - grouped strategy with TST-5 'Provide Bike Parking Near Transit' and TST-4 'Increase Transit Service Frequency/Speed') - Applicable in urban/suburban context; appropriate for large residential, retail, office, mixed use, and industrial projects; solves the "first mile/last mile" problem; City of San Jose [Similar measure: 'Operate a free direct shuttle service' (applicable for employment uses only)]; City of LA [Degree of Implementation (low/medium/high), employees and residents eligible (%)]
46	Install park-and-ride lots	Two sources: 0.10% - 0.50% VMT reduction (as per 2005 Federal Highway Administration (FHWA) study) and 0.50% VMT reduction per day (as per Washington State Department of Transportation (WSDOT))	N/A	Y	N	N	N	N	N	Notes: CAPCOA RPT-4 (Applicable in suburban and rural context; appropriate for residential, retail, office, mixed use, and industrial projects); Grouped strategy with RPT-1, TRT-11, TRT-3, and TRT-1 through 6
47	Electrify loading docks and/or require idling-reduction systems	26% - 71% reduction in Truck refrigeration units (TRU) idling GHG emissions	N/A	Y	N	N	N	N	N	Notes: CAPCOA VT-1 (Measure applicability: Truck refrigeration units (TRU))
48	Utilize alternative fueled vehicles	Reduction in GHG emissions varies depending on vehicle type, year, and associated fuel economy	N/A	Y	N	N	N	N	N	Notes: CAPCOA VT-2 (Measure applicability: vehicles)
49	Utilize electric or hybrid vehicles	0.40% - 20.30% reduction in GHG emissions	N/A	Y	N	N	N	N	N	Notes: CAPCOA VT-3 (Measure applicability: vehicles)
50	Provide bike parking near transit	Not Quantified	N/A	Y	N	N	N	N	N	Notes: CAPCOA TST-5 (should be implemented with other two measures as mentioned to encourage multi-modal use in the area and provide ease of access to nearby transit for bicyclists (measure applicable in urban and suburban context; appropriate for residential, retail, office, mixed use, and industrial projects); Grouped strategy (with measures TST-3 'Expand transit network' and TST-4 'Increase transit service frequency/speed')
51	Improve design of development	3.00% - 21.30%	N/A	Y	N	N	N	N	N	Notes: CAPCOA LUT-9 (Include design elements to enhance walkability and connectivity; improved street network characteristics within a neighborhood such as street accessibility; design also measured in terms of sidewalk coverage, building setbacks, street widths, pedestrians crossings, presence of street trees, and a host of other physical variables that differentiate pedestrian-oriented environments from auto-oriented environments); measure is applicable in the urban and suburban contexts, negligible impact in rural context; appropriate for residential, retail, office, industrial, and mixed-use projects
52	Provide electric vehicle parking	Not Quantified	N/A	Y	N	N	N	N	N	Notes: CAPCOA SDT-8 [This is a grouped strategy and the benefits of electric vehicle parking may be quantified when grouped with the use of electric vehicles and or SDT-3 (Implement a Neighborhood Electric Vehicle (NEV) Network). This measure is applicable in urban or suburban contexts and is appropriate for residential, retail, office, mixed use, and industrial projects.]

LSA

Table A - Vehicle Miles Traveled Mitigation Measures for Development Projects (CAPCOA)

#	Mitigation Measure	VMT Reduction[1]	Local VMT Reduction Calculations (Local Data/Fresno COG ABM)[2]	CAPCOA[3]	OPR TA[4]	Los Angeles Metro[5]	City of San Jose[6]	City of Los Angeles[7]	San Diego Region[8]	Notes
53	Dedicated land for bike trails	Not Quantified	N/A	Y	N	N	N	N	N	Notes: CAPCOA SDT-9 [Larger projects may be required to provide for, contribute to, or dedicate land for the provision of off-site bicycle trails linking the project to designated bicycle commuting routes in accordance with an adopted citywide or countywide bikeway plan. The benefits of Land Dedication for Bike Trails have not been quantified and should be grouped with the LUT-9 (Improve Design of Development) strategy to strengthen street network characteristics and improve connectivity to off-site bicycle networks. The measure is applicable in urban, suburban, or rural contexts and is appropriate for large residential, retail, office, mixed use, and industrial projects.]
54	Implement school bus program	38.00% - 63.00% school VMT reduction	N/A	Y	N	N	N	N	N	Notes: CAPCOA TRT-13 [Applicable in urban, suburban, and rural context; appropriate for residential and mixed-use projects]
55	Implement preferential parking permit program	Not Quantified	N/A	Y	N	N	N	N	N	Notes: CAPCOA TRT-8 [The project will provide preferential parking in convenient locations (such as near public transportation or building front doors) in terms of free or reduced parking fees, priority parking, or reserved parking for commuters who carpool, vanpool, ride-share or use alternatively fueled vehicles. The project will provide wide parking spaces to accommodate vanpool vehicles. The impact of preferential parking permit programs has not been quantified by the literature and is likely to have negligible impacts when implemented alone. This strategy should be grouped with Commute Trip Reduction (CTR) Programs (TRT-1 and TRT-2) and TRT-3 (Provide Ride-Sharing Programs) as a complementary strategy for encouraging non-single occupant vehicle travel. This measure is applicable in urban and suburban contexts and is appropriate for residential, retail, office, mixed use, and industrial projects.]

Notes:

VMT = Vehicle Miles Traveled; CAPCOA = California Air Pollution Control Officers Association; ; Fresno COG = Fresno Council of Governments; OPR = Office of Planning and Research; TA = Technical Advisory; HOV = High Occupancy Vehicle; HOT = High Occupancy Toll; ITS = Intelligent Transportation System

CAPCOA Transportation Mitigation Categories (LU = Land Use/Location, SD = Neighborhood/Site Enhancements, PD = Parking Policy/Pricing, TR = Commute Trip Reduction Programs, TS = Transit System Improvements, RP = Road Pricing/Management; V = Vehicles)

[1] VMT reduction numbers obtained from *Quantifying Greenhouse Gas Mitigation Measures* published by the California Air Pollution Control Officers Association in August 2010.

[2] Fresno COG VMT reduction recommendation for this measure obtained based on analysis conducted by Fresno COG staff and LSA using local data and/or the COG's Activity Based Model.

[3] *Quantifying Greenhouse Gas Mitigation Measures* published by the California Air Pollution Control Officers Association in August 2010.

[4] *Technical Advisory on Evaluating Transportation Impacts in CEQA* published by the Governor's Office of Planning and Research State of California in December 2018.

[5] *Analysis of VMT Mitigation Measures Pursuant to SB 743* prepared by Iteris, Inc. in February 2018.

[6] *City of San Jose Transportation Analysis Handbook* (dated April 2018).

[7] *City of Los Angeles VMT Calculator Version 1.2*

[8] *Guidelines for Transportation Impact Studies in the San Diego Region* developed by San Diego Section of the Institute of Transportation Engineers (ITE) and the San Diego Traffic Engineers Council (SANTEC) in January 2019.

****Highlighted VMT Reduction Numbers are yet to be Finalized****

This page intentionally left blank

DRAFT

APPENDIX B

VEHICLE MILES TRAVELED MITIGATION MEASURES FOR DEVELOPMENT PROJECTS (CARB PAPERS)

DRAFT

LSA

Table B - Vehicle Miles Traveled Mitigation Measures for Development Projects (CARB Papers)[1]

#	Mitigation Measure	VMT Reduction[2]	Local VMT Reduction Calculations (Local Data/Fresno COG ABM)[3]	Notes
1	Provide Bicycling Network Improvements	No effect on VMT	0.30% VMT reduction per 100 miles (for addition of new bike lane)	
2	Implement Transit Improvements	No effect on VMT	0.07% VMT reduction per 100 miles (for addition of a new transit line)	
3	Improve or increase access to transit	1.3% - 5.8%	N/A	Variable: Various factors associated with proximity to transit stop (please refer to *How do Local Actions Affect CMT? A Critical Review of the Empirical Evidence* (Salon, D., Boarnet, M.G., Handy, S., Spears, S., and Tal, G.)
4	Land Use Mix	Elasticity: 0.02 - 0.10	N/A	Variable: Entropy - variety and balance of land-use types within a neighborhood
5	Regional Accessibility	Elasticity: 0.05 - 0.25	N/A	Variable: Various factors associated with job accessibility and distance to CBD (please refer to *How do Local Actions Affect CMT? A Critical Review of the Empirical Evidence* (Salon, D., Boarnet, M.G., Handy, S., Spears, S., and Tal, G.)
6	Job-Housing Balance	Elasticity: 0.06 - 0.31 for commute VMT	N/A	Variable: Various factors associated with job accessibility (please refer to *How do Local Actions Affect CMT? A Critical Review of the Empirical Evidence* (Salon, D., Boarnet, M.G., Handy, S., Spears, S., and Tal, G.)
7	Provide Pedestrian Network Improvements	Elasticity: 0.00 - 0.02 for sidewalk length, 0.19 for Pedestrian Environment Factor	N/A	
8	Voluntary Travel Behavior Change (VTBC) Program	5% - 12%	N/A	
9	Implement Employer-Based Trip Reduction (EBTR) Program	1.33% - 6% of commute VMT	N/A	
10	Provide telecommuting options	Home-based telecommuting: 48.1% for household VMT, 66.5% - 76.6% for all personal VMT, and 90.3% for commute VMT only; Center-based telecommuting: 53.7% - 64.8% for all personal VMT and 62.0% - 77.2% for commute VMT only	N/A	
11	Increase Project/Development Density	Elasticity: <=0.07 - 0.19	N/A	Variable: residential density
12	Improve network connectivity and/or increase intersection density on the project site	Elasticity: -0.46 - 0.59	N/A	Variable: Various factors associated with intersection or street density (please refer to *How do Local Actions Affect CMT? A Critical Review of the Empirical Evidence* (Salon, D., Boarnet, M.G., Handy, S., Spears, S., and Tal, G.)
13	Implement Parking Cash-out Programs or Workplace Parking Pricing	12% of commute VMT (parking cash out); 2.3% - 2.9% for $3 per day workplace parking price; 2.8% for price increase equivalent to 60% hourly value of commuter travel time cost	N/A	

Notes:

VMT = Vehicle Miles Traveled

[1] All mitigation measures have been obtained from *How do Local Actions Affect CMT? A Critical Review of the Empirical Evidence* (Salon, D., Boarnet, M.G., Handy, S., Spears, S., and Tal, G.).

[2] All VMT reduction numbers have been obtained from *How do Local Actions Affect CMT? A Critical Review of the Empirical Evidence* (Salon, D., Boarnet, M.G., Handy, S., Spears, S., and Tal, G.).

[3] Fresno COG VMT reduction recommendation for this measure obtained based on analysis conducted by Fresno COG staff and LSA using local data and/or the COG's Activity Based Model.

This page intentionally left blank

DRAFT

APPENDIX C

VEHICLE MILES TRAVELED MITIGATION MEASURES FOR COMMUNITY PLANS AND GENERAL PLANS

DRAFT

LSA

Table C - Vehicle Miles Traveled Mitigation Measures for Community Plans and General Plans[1]

#	Mitigation Measure	CAPCOA VMT Reduction	Local VMT Reduction Calculations (Local Data/Fresno COG ABM)[2]
1	Shift single occupancy vehicle trips to carpooling or vanpooling by providing ride-matching services or shuttle services	0.30% - 13.40% commute VMT reduction (for CAPCOA TRT-11: (Provide Employer-Sponsored Vanpool/Shuttle)); Grouped strategy (for CAPCOA TST-6 (Provide Local Shuttles))	0.60% (for vanpool); x% (for carpool)
2	Provide enhanced bicycle and/or pedestrian facilities	0.00% - 2.00% (for pedestrian network improvements); Multiple measures for bike facilities, refer to Table A for VMT reduction percentages	0.30% VMT reduction per 100 miles (for addition of new bike lane)
3	Provide incentives or subsidies that increase the use of modes other than a single-occupancy vehicle	0.30% - 13.40% commute VMT reduction (for CAPCOA TRT-11: (Provide Employer-Sponsored Vanpool/Shuttle)); Grouped strategy (for CAPCOA TST-6 (Provide Local Shuttles)); 0.30% - 20.00% commute VMT reduction (for CAPCOA TRT-4 (Implement Subsidized or Discounted Transit Program))	0.60% (for vanpool); x% (for carpool)
4	Modify land use plan to increase development in areas with low VMT/capita characteristics and/or decrease development in areas with high VMT/capita characteristics	Not quantified in CAPCOA	N/A
5	Add roadways to the street network if those roadways would provide shorter travel paths for existing and/or future trips	Not quantified in CAPCOA	N/A
6	Improve or increase access to transit	CAPCOA TST-2 (Implement transit access improvements): Not quantified alone, grouped strategy with TST-3 (Expand transit network) and TST-4 (Increase transit service frequency/speed); CAPCOA LUT-5 (Increase transit accessibility): 0.50% - 24.60%	N/A
7	Increase access to common goods and services, such as groceries, schools, and daycare	Similar to CAPCOA LUT-3 (Increase Diversity of Urban and Suburban Developments (Mixed Use)): 9.00% - 30.00% VMT reduction and CAPCOA LUT-4 (Increase Destination Accessibility): 6.70% - 20.00% VMT reduction	N/A
8	Incorporate a neighborhood electric vehicle network	0.50% - 12.70%	N/A
9	Provide traffic calming	0.25% – 1.00%	N/A
10	Limit or eliminate parking supply	5.00% - 12.50%	N/A

LSA

Table C - Vehicle Miles Traveled Mitigation Measures for Community Plans and General Plans[1]

#	Mitigation Measure	CAPCOA VMT Reduction	Local VMT Reduction Calculations (Local Data/Fresno COG ABM)[2]
11	Implement or provide access to a commute reduction program - Voluntary	1.00% - 6.20% commute VMT	N/A
12	Provide car-sharing, bike sharing, and ride-sharing programs	0.40% - 0.70% VMT reduction (for car sharing); 1.00% - 15.00% commute VMT reduction (for ride-sharing); a 135% - 300% increase in biking (of which roughly 7% are shifting from vehicle travel) results in a negligible impact (around 0.03% VMT reduction)	N/A
13	Provide partially or fully subsidized transit passes	Similar to CAPCOA TRT-4 [Implement Subsidized or Discounted Transit Program]; for TRT-4, commute VMT reduction is 0.30% - 20.00%	N/A
14	Provide telework options	0.07% - 5.50% commute VMT	N/A
15	Provide employee transportation coordinators at employment sites	Not quantified in CAPCOA	N/A
16	Provide a guaranteed ride home service to users of non-auto modes	Not quantified in CAPCOA	N/A

Notes:

VMT = Vehicle Miles Traveled; Fresno COG = Fresno Council of Governments; CAPCOA = California Air Pollution Control Officers Association

CAPCOA Transportation Mitigation Categories (LU = Land Use/Location, SD = Neighborhood/Site Enhancements, PD = Parking Policy/Pricing, TR = Commute Trip Reduction Programs, TS = Transit System Improvements, RP = Road Pricing/Management; V = Vehicles)

[1] All mitigation measures have been obtained from the *Guidelines for Transportation Impact Studies in the San Diego Region* developed by San Diego Section of the Institute of Transportation Engineers (ITE) and the San Diego Traffic Engineers Council (SANTEC) in January 2019.

[2] Fresno COG VMT reduction recommendation for this measure obtained based on analysis conducted by Fresno COG staff and LSA using local data and/or the COG's Activity Based Model.

****Highlighted VMT Reduction Numbers are yet to be Finalized****

This page intentionally left blank

DRAFT

City of FRESNO

LSA

California Air Pollution Control Officers Association

Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity

Designed for Local Governments, Communities, and Project Developers

California Air Pollution Control Officers Association

Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity

Designed for Local Governments, Communities, and Project Developers

Final Draft

December 2021

©2021 California Air Pollution Control Officers Association. All Rights Reserved.

B3 Attach #1 of 3

Acknowledgements

This Handbook benefited from the hard work and creative insights of many people. The California Air Pollution Control Officers Association (CAPCOA) appreciates the efforts of all who contributed their time and energy to the project. In particular, CAPCOA thanks the following organizations and agencies.

Project Management and Coordination

Sacramento Metropolitan Air Quality Management District

Authors

ICF with contributions from Fehr & Peers, Sacramento Metropolitan Air Quality Management District, and STI

Technical Advisory Committee

Bay Area Air Quality Management District
California Polytechnic State University
California Strategic Growth Council
California Air Resources Board
California Department of Public Health
California Department of Transportation
City of Los Angeles
City of Mt. Shasta
City of Roseville
City of Sacramento
City of Watsonville
County of Sacramento
County of Santa Barbara
EcoAdapt
Governor's Office of Planning and Research
ICLEI – Local Governments for Sustainability
Metropolitan Transportation Commission
Placer County
Placer County Air Pollution Control District
Sacramento Area Council of Governments
Sacramento Tree Foundation
Sacramento Water Forum
Santa Clara Valley Water District
San Diego Association of Governments
San Diego Regional Climate Collaborative
San Joaquin Valley Air Pollution Control District
Santa Barbara County Air Pollution Control District
San Luis Obispo Air Pollution Control District
South Coast Air Quality Management District
The Climate Registry
University of California, Davis

Special Thanks

Many people have generously provided guidance, insights, and expertise to our project. We would like to warmly thank staff at the California Environmental Justice Alliance; the Center on Race, Poverty & the Environment; City of Bakersfield; California Energy Commission; California Department of Water Resources; California State Water Resources Control Board; and many others for their time and assistance.

B3 Attach #1 of 3

Funding Partners

California Department of Transportation (via Senate Bill 1 Adaptation Planning Grants)

Bay Area Air Quality Management District

Sacramento Metropolitan Air Quality Management District

California Department of Public Health's Office of Health Equity, and Centers for Disease Control and Prevention (CDC) of the U.S. Department of Health and Human Services (HHS) as part of a financial assistance award totaling $147,000 with 100 percent funded by CDC/HHS. The contents are those of the authors and do not necessarily represent the official views of, nor an endorsement, by CDC/HHS, or the U.S. Government.

Dedication

This Handbook is intended to provide tools and methods to people who are doing the hard work on the ground. The hard work of reducing our impact on climate change, making communities more resilient to the effects of climate change, and promoting health and equity among communities that bear disproportionate environmental burdens. The hard work to include everyone in what Dr. Martin Luther King Jr. referred to as "an inescapable network of mutuality" in his 1967 *Christmas Sermon on Peace*.

What we do today will either remedy or perpetuate past environmental injustices. What we do today will shape our climate tomorrow. Our communities are being changed by climate and will change more.

When we understand the tons of carbon emitted, the feet of sea level rise, and the degrees of temperature change, we will know better the consequences of our actions. When we listen, respect, engage, involve, and empower all people affected by our actions, we will know better the diverse concerns, needs, and hopes of all our communities.

With this understanding, we can and must take action to reduce our contributions to climate change, to make our communities more resilient, and to implement solutions that are informed by and responsive to the people most affected by new plans, projects, and programs. We need to do this with and for the people left out too often in the past to mold a better future for this generation and the generations to come. We need to do this for a state, a country, and a planet that is changing rapidly due our actions and inactions.

This Handbook is dedicated to all Californians—whose health, wellbeing, and safety are at the heart of all our efforts. We build and design communities for people, yet often the human perspective is lost amidst discussions around emissions, thresholds of significance, vehicle miles traveled, and site plans. We aim to re-center people in this conversation—especially the people whose voices have been marginalized and excluded from participating in the planning that shapes all our lives. At its core, the Handbook is designed and developed by people, for people, and for the sake of creating livable, prosperous, resilient communities in which all can thrive, now and into the future.

B3 Attach #1 of 3

An Important Consideration

CAPCOA prepared this Handbook to provide a common platform of information and tools for evaluating greenhouse gas reduction measures, climate vulnerabilities and promoting equity to support sustainable, resilient, and equitable land use planning and project design. It was prepared in collaboration with academia, agencies, community organizations and leaders, local governments, nongovernmental organizations, and technical experts. The quantification methods, tools, and recommendations provided in this Handbook were developed based on the latest science and literature available at the time of publication.

Our understanding of climate science and accepted practice for how equity and environmental justice can and should be addressed in land use planning continues to evolve. Regulations, policies, and government programs to reduce greenhouse gas emissions are likewise dynamic. Future legislation, litigation, public opinion, and scientific research may influence how climate change, emissions reduction, and health and equity are reviewed and addressed in our community.

In light of these considerations, this Handbook should be viewed as a *planning resource*. It provides strategies, tools, and analytical methods to facilitate integrated and resilient decision making, despite potential future planning uncertainty. The Handbook should not be used to dictate public policy or provide legal advice.

B3 Attach #1 of 3

Table of Contents

Acronyms and Abbreviations vi

Chapter 1: Introduction 1

Chapter 2: Integrated and Resilient Planning 7

Chapter 3: Measures to Reduce GHG Emissions 29

Transportation 62
Energy 210
Water 305
Lawn and Landscaping 332
Solid Waste 336
Natural and Working Lands 346
Construction 361
Refrigerants 375
Miscellaneous 397

Chapter 4: Assessing Climate Exposures and Measures to Reduce Vulnerabilities 404

Chapter 5: Measures for Advancing Health and Equity 450

Chapter 6: Resources to Support Resilient and Equitable Emission Reduction Planning 592

Appendix A: Key Terms and Definitions A-1

Appendix B: Federal and State Planning Framework B-1

Appendix C: Emission Factors and Data Tables ..... C-i

Appendix D: Climate Vulnerability Worksheets D-1

Appendix E: Measure Index E-1

B3 Attach #1 of 3

Acronyms and Abbreviations

°F	degrees Fahrenheit
A/C	air conditioning
AADT	annual average daily traffic
AB	Assembly Bill
ACS	American Community Survey
ACT	Advanced Clean Truck
AF	acre-feet
AFUE	annual fuel utilization efficiency
AMMP tool	CARB's Benefits Calculator Tool for the Alternative Manure Management Program
APEN	Asian Pacific Environmental Network
APG	California Adaptation Planning Guide
AQI	air quality index
ARCCA	Alliance of Regional Collaboratives for Climate Adaptation
Bayview CBTP	Bayview Community Based Transportation Plan
BCZ	building climate zones (as defined by the CEC)
BEV	battery electric vehicle
BIPOC	Black, Indigenous, and People of Color
BMR	below market rate
BRACE	Building Resilience Against Climate Effects
BRT	bus rapid transit
Btu	British Thermal Unit
C.F.R.	Code of Federal Regulations
CA Code	California Plumbing Code
CAA	Clean Air Act
CAFE	Corporate Average Fuel Economy
CalBRACE	California Building Resilience Against Climate Effects
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALFIRE	California Department of Forestry and Fire Protection

B3 Attach #1 of 3

CALGreen	2019 California Green Building Standards
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CAPP	Community Air Protection Program
CARB	California Air Resources Board
CAS	Climate Adaptation Strategy
CBO	community-based organization
CBSA	core-based statistical area
CBSC	California Building Standards Commission
CBTP	community-based travel planning
CCA	Community Choice Aggregation
CCR	California Code of Regulations
CDC	U.S. Centers for Disease Control and Prevention
CDPH	California Department of Public Health
CE	combustion efficiency
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CEUS	California Commercial End-Use Survey
CH_4	methane
CHP Tool	Combined Heat and Power Energy and Emission Calculator
CHP	combined heat and power
CLT	community land trust
CNG	compressed natural gas
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COMET	COMET-Planner Tool
Commercial Forecast	Uncalibrated Commercial Sector Forecast
CoSMoS	Coastal Storm Modeling System
CPUC	California Public Utilities Commission

B3 Attach #1 of 3

CSTDM	California Statewide Travel Demand Model
CTR	commute trip reduction
DBE	disadvantaged business enterprise
DGS	Department of General Services
DOC	dissolved organic carbon
DR	demand response
Du	dwelling units
DVBE	disabled veteran-owned business enterprise
DWR	California Department of Water Resources
EA	environmental assessment
EBT	Electronic Benefit Transfer
ECAP	Equitable Climate Action Plan
EDFZ	Electricity Demand Forecast Zone
EDG	Community Resilience Economic Decision Guide and Online Tool
EER	energy efficiency ratio
EGC	Enterprise Green Communities
EIR	environmental impact report
EIS	environmental impact statement
ESP	energy service provider
ETWU per the MWELO	estimated total water use
eVMT	electric mode vehicle miles traveled
Explorer	Cool Surface Savings Explorer
FCEV	fuel cell electric vehicle
FCZ	Forecast Climate Zone (as defined by the CEC)
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FVS	Forest Vegetation Simulator
g	grams
gal	gallon
GHCN-Daily	Global Historical Climatology Network–Daily
GHG	greenhouse gas

B3 Attach #1 of 3

GMP	gross metropolitan product
GSP	groundwater sustainability plan
GWP	global warming potential
ha	hectare
HDPE	high-density polyethylene
HERS	Home Energy Rating System
HFCs	hydrofluorocarbons
HPI	The California Healthy Places Index
HUD	U.S. Department of Housing and Urban Development
HVAC	heating ventilation and air conditioning
IBHS	Insurance Institute for Business & Home Safety
ICARP	Integrated Climate Adaptation and Resiliency Program
ICT	Innovative Clean Transit
LDA	light-duty automobiles
LDT1	light-duty truck class 1
LDT2	light-duty truck class 2
ILSR	Institute for Local Self-Reliance
IOUs	investor-owned utilities
IPCC	Intergovernmental Panel on Climate Change
ITE	Institute of Transportation Engineers
ITHIM	Integrated Transport and Health Impact Model
KSF	1,000 gross square feet
kWh	kilowatt-hours
lb	pound
LBNL	Lawrence Berkeley National Laboratory
LCFS	Low Carbon Fuel Standard
LED	light-emitting diode
LFG	landfill gas
LGBTBE	LGBTQIA+-owned business enterprise
LHC	Little Hoover Commission
LOS	level of service
MAWA per the MWELO	maximum allowable water use

B3 Attach #1 of 3

MBE	minority-owned business enterprise
MCHX	microchannel heat exchanger
MHSA	Mental Health Services Act
MJ	megajoule
MMBtu	1 million British thermal units
mpg	miles per gallon
MPO	metropolitan planning organization
MSW	municipal solid waste
MT	metric ton
MTC	Metropolitan Transportation Commission
MTV	maximum transfer value
MWELO	Model Water Efficient Landscape Ordinance
MWh	megawatt-hour
N_2O	nitrous oxide
NAACP	National Association for the Advancement of Colored People
NAAQS	national ambient air quality standards
NDC	Nationally Determined Contribution
NEPA	National Environmental Policy Act
NGO	non-governmental organization
NH_3	ammonia
NHTSA	National Highway Traffic and Safety Administration
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOx	nitrogen oxides
NREL	National Renewable Energy Laboratory
NWL	natural and working lands
NYLSRJP	New York Law School Racial Justice Project
ODS	ozone-depleting substances
OEHHA	Office of Environmental Health Hazard Assessment
OPC	Ocean Protection Council
OPR	California Office of Planning and Research
PBID	property business improvement district

B3 Attach #1 of 3

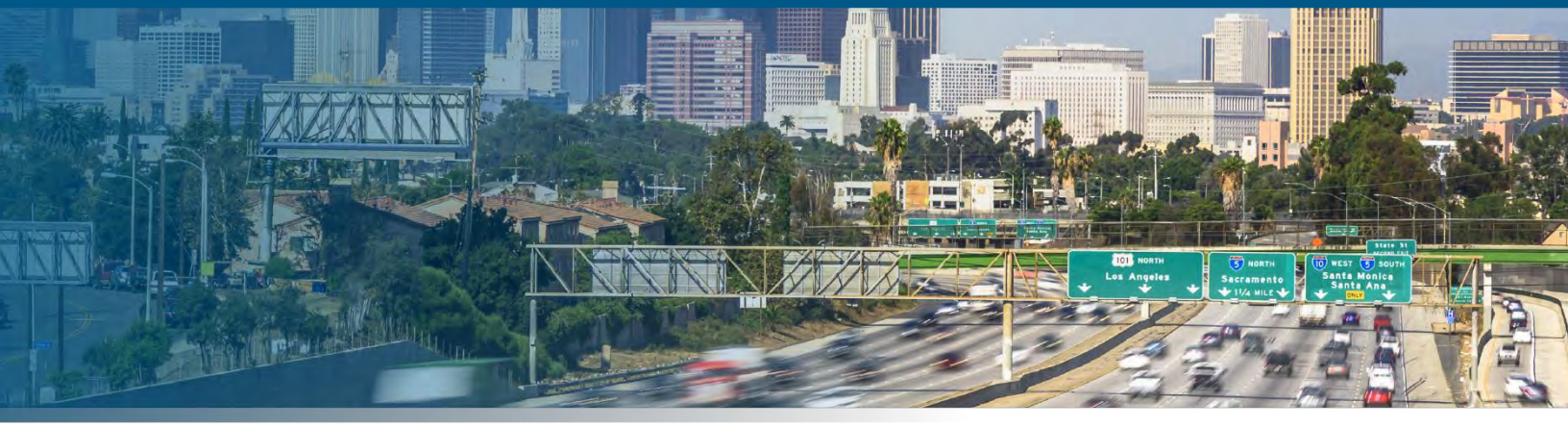
PBOT	Portland Bureau of Transportation
PFCs	perfluorinated carbons
PHEV	plug-in hybrid electric vehicle
PM2.5, PM10	particulate matter
PV	photovoltaic
PVC	polyvinyl chloride
RAD	Responsible Appliance Disposal
RASS	Residential Appliance Saturation Study
REC	renewable energy credit
REIA	Racial Equity Impact Assessment and Implementation Guide
Reporting Rule	Greenhouse Gas Reporting Rule
ROG	reactive organic gases
RPS	Renewable Portfolio Standard
RSM	Regional Sediment Management
RTP	regional transportation plan
SAF	solar availability factor
SAFE	Safer Affordable Fuel-Efficient
SAJE	Strategic Actions for a Just Economy
SANDAG	San Diego Association of Governments
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
scf	standard cubic foot
sf	square feet
SF_6	sulfur hexafluoride
SFMTA	San Francisco Municipal Transportation Agency
SFPD	San Francisco Planning Department
SHP	separate heat and power
SHRA	Sacramento Housing and Redevelopment Agency
SIP	State Implementation Plan
SLCPs	Short-Lived Climate Pollutants
SMUD	Sacramento Municipal Utility District
SOx	sulfur dioxide

B3 Attach #1 of 3

State Water Board	State Water Resources Control Board
TAC	technical advisory committee
TCR	The Climate Registry
TDV	Time Dependent Valuation
TE	thermal efficiency
TOD	transit-oriented development
TRB	Transportation Research Board
TRUs	Transport Refrigeration Units
U.S. DOE	U.S. Department of Energy
U.S. EPA	U.S. Environmental Protection Agency
U.S.C.	United States Code
UC Davis	University of California, Davis
UHI	urban heat island
UNIDAD	United Neighbors in Defense Against Displacement
USDN	Urban Sustainability Directors Network
USFS	United States Forest Service
USGS	United States Geological Survey
VMT	vehicle miles traveled
VOC	volatile organic compounds
VTA	Valley Transportation Authority
WARM	Waste Reduction Model
WBE	women-owned business enterprise
WMO	World Meteorological Organization
WUCOLS	Water Use Classification of Landscape Species
WUI	wildland-urban interface
ZEBs	zero-emission buses
ZNE	zero net energy

Introduction

CHAPTER 1



Background

Climate change is already having profound impacts on people and planning in California. Local governments, institutions, project developers, and communities across the state must prepare for growing climate impacts while working to reduce their greenhouse gas (GHG) emissions. These are real challenges, but they also represent new opportunities. We can design and build healthier neighborhoods, develop solutions for clean air, and create more equitable, resilient communities and economies. This Handbook offers data and methods to help effectively achieve these objectives.

Local governments and communities are increasingly experiencing the effects of climate change and, in response, are developing measures and plans to mitigate and adapt to those effects. Climate change is principally driven by human actions, particularly burning fossil fuels like coal, oil, and natural gas that emit GHGs. GHGs trap heat in the atmosphere, which slowly increases global average temperatures, causing additional cascading effects such as extreme heat and heat waves, melting polar ice, disappearing snowpack, rising sea levels, changing precipitation patterns, ocean acidification, and more extreme or more frequent weather events.

To slow the pace of climate change and prevent its worst effects from materializing, local, state, and national governments must design measures that mitigate (i.e., lessen the severity or even eliminate) the root cause of the issue: GHG emissions from human

activities. To do so, they need tools and resources to accurately assess and quantify GHG emissions, and to design effective methods to reduce emissions.

In response to this need, the California Air Pollution Control Officers Association (CAPCOA) prepared this report, *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity: Designed for Local Governments, Communities, and Project Developers* (hereafter referred to as the "Handbook"). The Handbook provides methods to quantify GHG emission reductions from a specified list of measures, primarily focused on project-level actions. The Handbook also includes a method to assess potential benefits of different climate vulnerability reduction measures, as well as measures that can be implemented to improve health and equity, again at the project level.

CAPCOA included a wide range of measures in the Handbook that are frequently used to reduce GHG emissions, bolster communities against expected climate impacts, and enhance community health and equity. To focus on the most effective measures, they were screened using the following factors:

- Feasibility of quantifying emissions reductions or benefits.
- Availability of robust and meaningful data, including peer reviewed studies.
- Ability of measures (alone or in combination with other measures) to appreciably reduce GHG emissions, reduce climate vulnerabilities, and improve health and equity.

This does not mean that other measures should not be considered or may not be effective or quantifiable; on the contrary, there are many ways to reduce emissions of GHGs, reduce climate vulnerabilities, and improve health and equity. CAPCOA seeks to provide a high-quality quantification tool to local governments, communities, and stakeholders with the broadest applicability possible. CAPCOA encourages users to be bold and creative as they approach the challenges of climate change and equity and does not intend for the Handbook to limit the scope of measures considered.

In addition to CAPCOA, other organizations that helped to prepare this Handbook include the Sacramento Metropolitan Air Quality Management District, with contract support from ICF, Fehr & Peers, and STI, who performed the technical analysis.

Process and Approach for Handbook Development

The Handbook builds on CAPCOA's previous efforts to provide accurate and reliable quantification measures. In 2010, CAPCOA published *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emissions Reductions from Greenhouse Gas Mitigation Measures* (hereafter referred to as the "2010 Handbook"). Since that time, climate science has evolved and GHG reduction practices have advanced in sophistication. New priorities have also arisen, such as strengthening climate resilience and infusing health and equity into integrated planning efforts. Therefore, CAPCOA decided it was time to develop an updated and expanded resource to provide the latest data and

methods to quantify GHG emissions reductions, climate change vulnerability reductions, and equity improvements in a single resource: The Handbook.

The Handbook development process involved five key tasks.

1. Identifying and evaluating new and emerging GHG reduction measures and removing outdated measures from the 2010 Handbook.
2. Evaluating and selecting climate risk reduction and health and equity measures.
3. Developing methods to quantify GHG emissions reduction measures and identify associated co-benefits.
4. Developing methods to assess climate change vulnerability and a framework to quantify reductions in climate vulnerabilities.
5. Developing health and equity measures.

WHAT'S NEW IN THIS HANDBOOK?

This Handbook is an updated and expanded resource from the 2010 Handbook. It provides the following.

- Updated data and new measures to quantify GHG emission reductions.
- Method to identify and score future potential climate hazards.
- Measures to quantify reduced vulnerability to climate change.
- Measures to improve health and equity.

The development process was a collaborative and methodical effort that involved careful review and input from experts in agencies, academia, public organizations, non-governmental organizations (NGOs), and other stakeholder groups. A technical advisory committee (TAC) was formed to provide ongoing guidance, peer review, and quality control assurance at each step of the process. The Handbook was drafted and finalized through an iterative process that incorporated comments and suggestions from the Sacramento Metropolitan Air Quality Management District, the TAC, and the public.

The Handbook was primarily funded by a California Department of Transportation (Caltrans) Senate Bill (SB) 1 Adaptation Planning Grant. Additional funding was provided by the Sacramento Metropolitan Air Quality Management District, the California Department of Public Health, and the Bay Area Air Quality Management District.

Intent and Audience

The purpose of the Handbook is to provide local governments with accurate, reliable, and standardized emission reduction quantification methods for land use, climate action, and long-term planning. It also aims to support and enhance the consideration of climate vulnerabilities, health, and equity during the planning process. The Handbook is intended to support the efforts of local governments to address GHG emissions and vulnerabilities to climate change in their planning efforts and environmental review of new projects, and to achieve more equitable outcomes when addressing these impacts. The Handbook will

B3 Attach #1 of 3

also be useful for project proponents and other parties interested in enhancing resiliency, sustainability, and equitable development.

The guidance provided in the Handbook specifically addresses appropriate procedures to apply quantification methods to achieve accurate and reliable results. The Handbook includes background information on programs and concepts associated with the quantification of GHG emissions and climate change vulnerability. The Handbook does not provide policy guidance on any of these issues, nor does it dictate how a jurisdiction should address questions of policy. Policy considerations are left to individual agencies and their governing boards. The Handbook is intended to create a standardized approach to quantifying GHG reduction and climate change resilience measures so the effectiveness of these measures can be considered and compared on a common basis.

Using the Handbook

The Handbook is organized as follows.

- *Chapter 1: Introduction* – provides an overview of the Handbook and its contents.
- *Chapter 2: Integrated and Resilient Planning* – discusses the changing climate, its impacts on society and public health, federal and state planning efforts to address the problem, and how equity and resilience can be improved.
- *Chapter 3: Measures to Reduce GHG Emissions* – provides details on measures and methods to quantify and reduce GHG emissions, accompanied by measure factsheets.
- *Chapter 4: Assessing Climate Exposures and Measures to Reduce Vulnerabilities* – outlines a method to assess climate change vulnerability and the potential benefits of different climate risk reduction measures at the project level.
- *Chapter 5: Measures for Advancing Health and Equity* – describes measures to improve public health and social equity.
- *Chapter 6: Resources to Support Resilient and Equitable Emission Reduction Planning* – presents additional resources that can help resilient and equitable planning efforts.
- *Appendix A: Key Terms and Definitions* – defines the key terms used in the Handbook.
- *Appendix B: Federal and State Planning Framework* – describes federal and state regulations and policies related to reducing GHG emissions, increasing climate resilience, and improving public health and social equity.
- *Appendix C: Emission Factors and Data Tables* – provides the emission factors and data used to estimate GHG emission reductions.

B3 Attach #1 of 3

- *Appendix D: Climate Vulnerability Worksheets* – contains worksheets planners can use to assess climate vulnerability.
- *Appendix E: Measure Index* – crosswalks the Handbook measures to cross-cutting themes across all chapters (e.g., active transportation).

Because the quantification and analysis methods in the Handbook were developed to meet the highest standards for accuracy and reliability, CAPCOA believes they will be generally accepted for most purposes, though the decision to accept any quantification method rests with the reviewing agency and Handbook user. The methods contained in the Handbook include generalized information about the measures, including considerations and best practices for successful implementation and assumptions that influence the expected measure outcome. These assumptions include emissions factors, energy usage rates, climate exposures for a specific location, and other data from various sources (most commonly from published data from public agencies). The data were carefully reviewed to ensure they represent the best information available. The use of generalized information allows the quantification methods to be applied across a range of circumstances, including variations in location, climate, and population density, among others.

For instances in which high quality, project-specific data are available, those data should be used instead of the more generalized data presented in the Handbook. The quantification and analysis methods provided in this Handbook allow for such substitutions. Handbook users should confirm any substituted data meets quality standards and will not result in an inappropriate or under- or overestimation of measure benefits. CAPCOA will not be able to provide case-by-case review of adjustments or project-specific data inputs. More information on the measures and analysis data are provided in Chapter 3, *Measures to Reduce GHG Emissions*, Chapter 4, *Assessing Climate Exposures and Measures to Reduce Vulnerabilities*, and Chapter 5, *Measures for Advancing Health and Equity*.

APPROPRIATE USES OF THE HANDBOOK

- Explore emissions reduction measures and identify methods to quantify GHG reductions for a program or plan.
- Learn about co-benefits of reducing GHG emissions.
- Conduct a preliminary assessment of climate vulnerability for a project or a plan.
- Explore ways to make a project or plan more climate resilient.
- Identify ways to include and empower underserved and marginalized communities and address their concerns.

Equally important to understanding how to effectively use the Handbook is knowing its limitations and potential *misuses*. This will help safeguard against inappropriate application of the Handbook in certain contexts. The Handbook should not be used to dictate public policy or provide legal advice. While the list of measures presented in the Handbook is comprehensive, it should not be used to exclude or reject other strategies from

B3 Attach #1 of 3

consideration. As discussed above, there are many ways to reduce emissions, reduce climate vulnerabilities, and improve health and equity, some of which may not be captured in this Handbook or may be developed after its publication. Conversely, the Handbook measures and quantitative methods (including available defaults) should not be automatically applied to a project without thoughtful consideration of project-specific circumstances. Finally, the Handbook should not be used to complete an environmental justice analysis pursuant to Executive Order 12898 or the National Environmental Policy Act (NEPA). The Handbook may be used as a starting point for these types of analyses, but it does not constitute guidance for compliance with the executive order or NEPA requirements.

References

California Air Pollution Control Officers Association (CAPCOA). 2010. *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*. August. Prepared by CAPCOA in association with Northeast States for Coordinated Air Use Management, National Association of Clean Air Agencies, Environ, and Fehr & Peers.

Integrated and Resilient Planning

CHAPTER 2

The Changing Climate

The Earth's climate is dynamic and has shifted over time. However, changes in the global climate have accelerated over the past 50 years due to human activities. Underserved and low-income communities are disproportionately impacted by the effects of climate change, as well as other environmental burdens, including air pollution. Various federal and state regulations have been adopted to reduce greenhouse gas (GHG) emissions, improve environmental justice and social equity, and help communities plan for and adapt to anticipated changes in our climate. Beyond regulation, developers and decisionmakers can build future equity and resilience through informed and holistic project planning.

California is already seeing the effects of climate change on its natural resources, populations, and infrastructure. Major environmental indicators have shifted; since the start of the twentieth century, peak runoff in the Sacramento River now occurs nearly a month earlier, and glaciers in the Sierra Nevada have lost about 70 percent of their area. The state has experienced major climate events in recent years, including a drought from 2012–2016 that heavily affected the agricultural sector and resulted in statewide water conservation efforts, followed by an extremely wet winter in 2016–2017 that caused significant loss of life and damage to infrastructure. The frequency, size, and devastation of wildfires have also

increased: 12 of the 20 largest wildfires (in terms of acres burned) in the state's recorded history occurred between December 2017 and the writing of this Handbook, including five in 2020 and four in 2021 alone (Cal Fire 2021).

As human activities and natural processes continue to increase GHG emissions across the globe, the impacts of climate change are likely to continue and worsen in the future. Specifically, the following climate hazards are projected to occur in California over the next century (Bedsworth, et al. 2018).

- Increase in annual average maximum daily temperature of up to 5.8°F by 2050 and up to 8.8°F by 2100.
- Increase in intensity of atmospheric river events, with northern California experiencing more wet extremes and southern California becoming drier.
- Increase in frequency and intensity of drought.
- Increase in the amount of precipitation falling as rain (instead of snow) and a corresponding decrease in accumulated snowpack.
- Increase in high wildfire risk conditions and projected increase in number of acres burned by wildfire.
- Increase in sea level rise along the coast, ranging from about 0.7 to 2.3 feet, by 2050.

These and other climate hazards will negatively impact public health and infrastructure. Increased temperatures, increased humidity, and a higher frequency of extreme heat events will lead to worsening air quality and increased risk of dehydration, respiratory problems (e.g., asthma), and cardiovascular problems (e.g., heart attacks) among individuals. Cumulative deterioration of public health from heat-related ailments and other climate stressors are projected to increase emergency room visits and hospitalizations (Ziegler, Morelli, and Fawibe 2017). Extreme events like heat waves, flooding, and wildfires can cause loss of life and directly damage buildings and infrastructure. Extreme weather events can shutdown critical services and inhibit individuals from reaching healthcare and other critical supports. Power infrastructure and supply chains can also be disrupted (No Harm Canada n.d.). Climate hazards can also have significant indirect impacts, such as increased water prices during drought conditions and reduced recreational opportunities along coastal communities from sea level rise.

Certain populations will be more vulnerable to climate change and its associated direct and indirect impacts. For example, children, seniors, and persons with underlying medical conditions (e.g., chronic heart disease) may be more susceptible to developing negative health outcomes from exposure to worsening air quality (CARB 2021). As discussed further below, the adverse impacts of climate change are also expected to disproportionately affect communities of color and underserved and low-income communities, which may have fewer resources to respond to changing conditions (Milanes et al. 2018).

To adapt to an uncertain future, California planners will need to anticipate climate change risks and build communities that remain resilient in the face of a changing

B3 Attach #1 of 3

climate. The resources and guidance presented in the Handbook provide tools to support resilient planning.

Social Environment and Public Health

Exposure to Environmental Burdens

Underserved and low-income communities have historically suffered from disproportionately higher rates of pollution and other environmental hazards compared to more affluent communities. Socioeconomic determinants of public health—like educational attainment, housing costs, linguistic isolation, poverty, and unemployment rates—are shaped by public policy and planning. Past exclusionary housing and planning practices segregated and redlined certain populations. These policies made it more difficult for communities of color and low-income and immigrant populations to access critical resources necessary to support healthy, thriving, and prosperous lives.

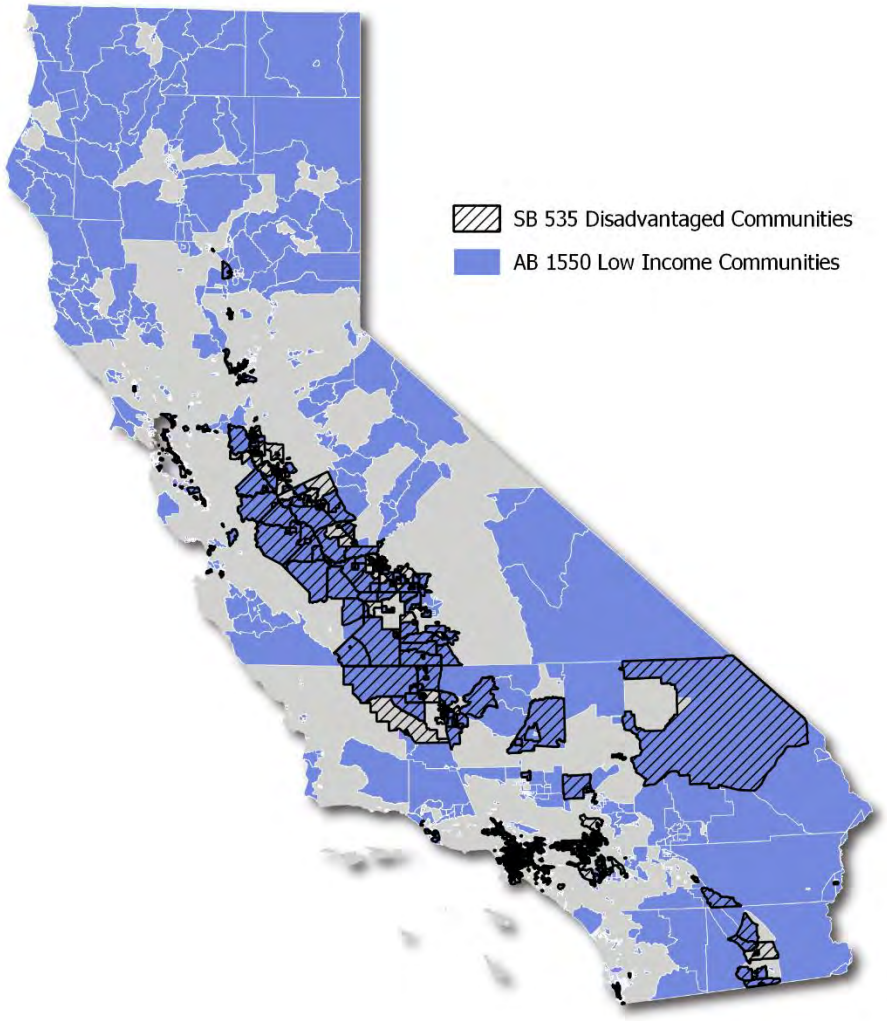
CalEPA designates *disadvantaged communities* as the 25 percent highest scoring census tracts using results of CalEnviroScreen. *Low-income communities* are census tracts with median household incomes at or below 80 percent of the statewide median income or at or below the state income limit threshold.

Structural and institutional racism continue to persist and shape California communities. Nearly one-quarter of children under 5 years old in California are currently living in poverty (August et al. 2021). Low-income populations often reside in neighborhoods that score among the lowest for key environmental and social indicators, such as access to clean water (Urban Environment & Social Inclusion Index 2021).The California Environmental Protection Agency (CalEPA) designates communities in California as disadvantaged or low-income for the purposes of allocating climate investments. Figure 2-1 shows these communities and highlights the considerable number of locations currently designated as disadvantaged, low-income, or both (CalEPA 2021).

The impacts of disproportionate exposure to environmental burdens are often felt at the individual, household, and community level (Gochfeld and Burger 2011; Katz 2012). For example, studies have found that low-income individuals have higher rates of hospitalization and greater risk of mortality when exposed to air pollution (Cakmak, Dales, and Judek 2006; Finkelstein et al. 2003). Communities with lower levels of education have higher rates of respiratory illnesses, such as childhood asthma, because of greater exposure to air pollution (August et al. 2021). Unemployment and poverty may also force individuals to live in areas with greater levels of environmental degradation (August et al. 2021). These disparities can magnify and exacerbate the spread and impact of disease and environmental disasters, as evidenced most recently by COVID-19: individuals of color have been hospitalized with COVID-19 at 3 to 4 times the rate of white

persons and have fatality rates about 2 to 2.5 times greater, according to the Centers for Disease Control and Prevention (CDC) (2021).

Figure 2-1. CalEPA Designated Disadvantaged and Low-Income Communities in California[1]



Improving conditions in communities over-burdened by pollution and other environmental hazards will require targeted and systematic changes in funding and policy priorities. The resources and guidance presented in this Handbook provide tools to support more equitable planning.

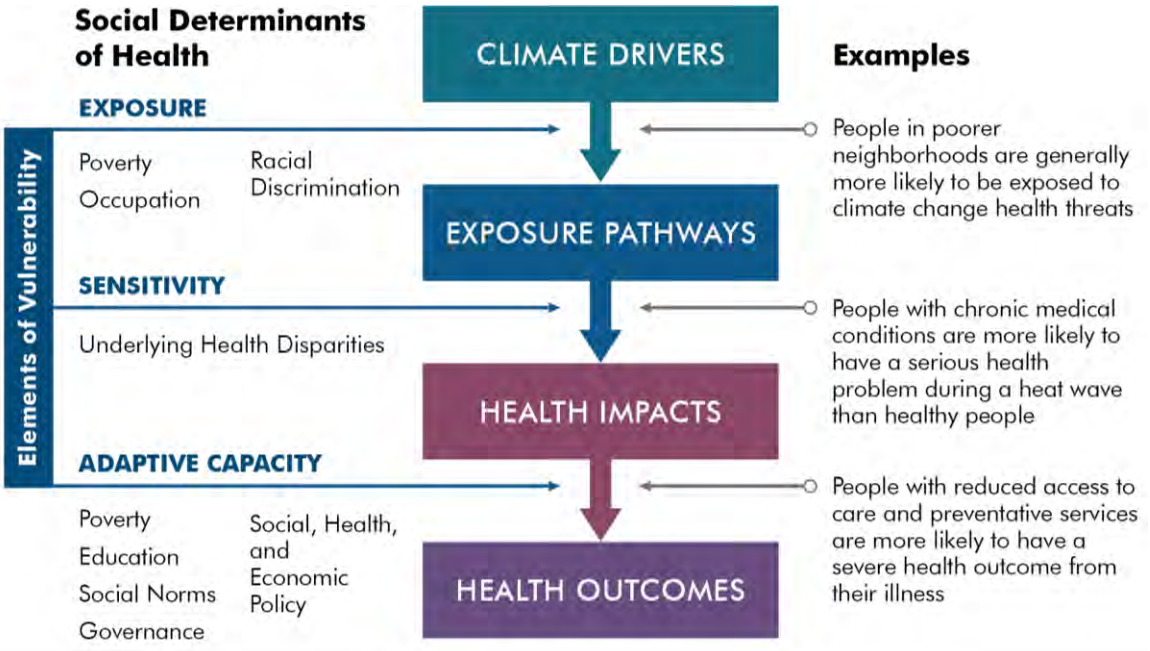
[1] Senate Bill 535-designated disadvantaged communities represent the 25% highest scoring census tracts in CalEnviroScreen, version 3.0.

Vulnerability to Climate Change

Underserved communities are expected to be disproportionally affected by the health, economic, and physical consequences of climate change. Individuals in these communities are likely to face a double threat from climate change to their health: they have higher exposure to climate hazards and have higher sensitivity to environmental stressors (August et al. 2021). Factors that contribute to higher exposure include occupation, time spent in risk-prone locations, ability to respond to extreme events, socioeconomic status, and the condition of community infrastructure (Gamble et al. 2016). Communities of color, low-income communities, outdoor workers, those with limited English language skills, children, the elderly, and people who are unhoused are all groups with higher vulnerability to climate hazards (Ebi et al. 2018; Gamble et al. 2016). These populations already experience higher rates of chronic medical conditions that can be worsened by climate change (Gamble et al. 2016).

Figure 2-2, which has been adapted from Gamble et al. (2016), illustrates the intersection of various social determinants on health and vulnerability to climate change. Implementing policies and processes to address underlying social factors that exacerbate health outcomes from climate exposures will improve the overall resilience and wellbeing of our communities.

Figure 2-2. Intersections of Social Determinants on Health and Vulnerability



Various tools and resources are available to help decisionmakers prioritize people and places for investments based on combined climate and health vulnerability. The California Department of Public Health's (2020) *Climate Change and Health Vulnerability Indicators for California* identifies the following three categories of indicators.

B3 Attach #1 of 3

- Exposure indicators: heat, air quality, drought, wildfires, and sea level rise
- Population sensitivity indicators: children and elderly, poverty, education, race and ethnicity, outdoor workers, vehicle ownership, linguistic isolation, disability, health insurance, and violent crime rate
- Adaptive capacity indicators: air conditioning ownership, tree canopy, impervious surfaces, and public transit access.

CCHVIz is an online platform that allows users to visualize the indicator data across California (CDPH n.d.). Indicators are available at the census tract level or the next smallest scale available, such as the county or regional level.

The California Healthy Places Index (HPI) developed by the Public Health Alliance of Southern California (2021) showcases community conditions that predict life expectancy and can be used to compare and explore factors influencing health by census tract across California. The HPI reflects a combination of 25 community characteristics that are weighted and validated against life expectancy. Climate change exposures, social vulnerability, and adaptive capacity indicators are included as separate "decision support" layers that can be overlaid with the HPI map and scores. The indicators are grouped into eight policy action areas (economic, education, transportation, social, neighborhood, housing, clean environment, and healthcare access). Detailed policy guides offer specific solutions for healthier communities.

Federal and State Planning Efforts

Regulations are essential to helping economies and societies prosper. They provide structure and limits for government agencies, businesses, civil society organizations, and citizens. They also help realize public benefits like increased safety, improved health, economic opportunities, and fairness. Regulations often set goals to guide future planning and development efforts and create strategies and mechanisms to achieve those goals.

This section describes important federal and state regulations, policies, and legislation related to GHG emissions reductions, climate change vulnerability and adaptation, and social equity. These various requirements directly influence and inform planning efforts across California and are important to consider when reviewing measures in later chapters. Appendix B, *Federal and State Planning Framework*, provides greater detail on these efforts and resources for further reading.

The regulatory landscape is constantly shifting as amendments, revocations, and new requirements are adopted. The text in this section was drafted in 2021 and reflects the regulatory landscape as of this date. Readers may need to conduct additional research to ensure they have the latest information. Potential resources that may be consulted to provide updated information include the State's Adaptation Clearinghouse, the Alliance of Regional Collaboratives for Climate Adaptation legislative tracking site, and the Berkeley Law California Climate Policy Dashboard.

Federal Regulations and Requirements

There is no comprehensive federal law specific to climate change, societal equity, or the reduction of GHG emissions. However, in 2021, the United States rejoined the Paris Agreement to reduce national GHG emissions and the federal government submitted the United States' *Nationally Determined Contribution (NDC)*, which aims to reduce national GHG emissions by 50 to 52 percent by 2030 from 2005 levels. The NDC, executive orders, and other goals and efforts of the Biden Administration make up a new "whole-of-government" approach to reduce GHG emissions, increase climate resilience, improve equity, and boost economic growth (White House 2021a).

Clean Air Act and Greenhouse Gases

The federal *Clean Air Act (CAA)* was enacted in 1963 and has been amended numerous times since, most recently in 1990. The CAA established federal national ambient air quality standards (NAAQS) for six criteria pollutants and specifies future dates for achieving compliance. These standards were set to improve air quality and public health outcomes. For local areas not meeting those standards, states must submit and implement a State Implementation Plan that demonstrates how the standards will be met (U.S. EPA 2021).

In 2009, the U.S. Environmental Protection Agency (U.S. EPA) released its final *Greenhouse Gas Reporting Rule (Reporting Rule)*. The Reporting Rule is a response to the 2008 Consolidated Appropriations Act, which required U.S. EPA to develop mandatory reporting of GHGs above appropriate thresholds. The rule applies to most entities that emit 25,000 metric tons of carbon dioxide equivalent or more per year. Starting in 2010, facility owners were required to annually report their GHG emissions (U.S. EPA 2016).

U.S. EPA signed the *Endangerment Finding* and *Cause or Contribute Finding for Greenhouse Gases* under Section 202(a) of the CAA in 2009. Under the Endangerment Finding, EPA found that the current and projected concentrations of the six key GHGs—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorinated carbons (PFCs), sulfur hexafluoride (SF_6), and hydrofluorocarbons (HFCs)—in the atmosphere threaten the public health and welfare of current and future generations (U.S. EPA 2020).

Fuel Efficiency Standards

The *Corporate Average Fuel Economy (CAFE)* standards were first enacted in 1975 to reduce energy consumption by improving the fuel economy of vehicles. The standards set fleet-wide averages that each automaker must meet. By improving the fuel efficiency of

vehicles, the standards improve national energy security, save consumers money, and reduce GHG emissions.

In 2011, the U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) issued a *Final Rule for Phase 2 GHG Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-duty Engines and Vehicles*. This rule includes three regulatory categories of heavy-duty vehicles—combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles—and applies to model years 2014–2018. Phase 2 of these standards were established in 2016 for model years 2019–2027 (U.S. EPA 2020b).

The passenger vehicle standards were updated in 2012 CAFE for model years 2017–2025 to incorporate stricter fuel economy requirements that required new passenger cars and light trucks to reach 54.5 miles per gallon by 2025. The program also included incentives to encourage adoption of new technologies to improve vehicle performance, such as electric vehicles (U.S DOT 2014).

In 2018, the *Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule* was proposed, which would amend prior CAFE and GHG emissions standards and create new standards for model year 2021–2026 vehicles and reduce fuel economy requirements. In September 2019, NHTSA and U.S. EPA established "The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program," which withdrew California's ability to create its own fuel economy standards under the CAA. The rule was finalized in 2020.[2] The SAFE rule has been legally challenged by California and many other states (NHTSA 2020). On April 22, 2021, NTHSA issued a notice of proposed rulemaking to repeal the SAFE Vehicles Rule (49 Code of Federal Regulations Parts 531 and 533). The public comment period for this repeal concluded on June 11, 2021.

Environmental Planning

Signed in 1970, the *National Environmental Policy Act (NEPA)* was enacted to minimize the negative environmental impacts of new development. It requires federal agencies to incorporate environmental considerations (including related social and economic effects) into planning and decision-making processes through a systematic interdisciplinary approach (U.S. EPA 2020).

Environmental Justice and Equity

Title VI of the Civil Rights Act of 1964 specifically prohibits discrimination based on race, color, or national origin by any program or activity that receives federal funds. All federal agencies help execute the provisions of Title VI. Violators of the act may lose federal funding for projects or programs.

Executive Order 12898, signed in 1994, directs all federal agencies to make achieving environmental justice part of their mission. Agencies are directed to identify and address

[2] CARB's EMFAC2021 accounts for future fuel economy and emissions impacts of the SAFE Vehicles Rule. While prior versions of EMFAC, including EMFAC2014 and EMFAC2017, do not account for the rule, CARB (2019a, 2020) has published off-model adjustment factors that can be used to adjust emissions output from EMFAC2014 and EMFAC2017.

disproportionately high and adverse human health or environmental effects of agency programs, policies, and activities on minority and low-income populations.

Pursuant to Executive Order 12898, the Council on Environmental Quality (CEQ) issued *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* to help agencies carry out the order. The guidance includes six principles for environmental justice analyses and provides guidance for how to assess human health or environmental effects on low-income, minority, and tribal communities (CEQ 1997). Following this guidance, federal agencies have developed plans and strategies to address environmental justice through agency actions.

In 2021, President Biden signed *Executive Order 13985*, which advances racial equity by addressing issues that have historically created inequity and advances civil rights, social justice, and equal opportunity. It declares that the government will address historic failures to invest sufficiently, justly, and equally in underserved communities, and will increase investment in underserved communities by promoting equitable delivery of government benefits and opportunities (White House 2021b).

The Soul Consoling Tower was built by Ryozo Kado in 1943 to remember the lives lost at the Manzanar War Relocation Center, where over 11,000 Japanese Americans were imprisoned during World War II by Executive Order 9066.

Also signed in 2021, *Executive Order 13990* recommits the executive branch to using scientific evidence in decision-making processes to advance public health and environment outcomes. More specifically, it states the administration's intent to ensure clean air and water, limit pollution and hold polluters responsible, reduce exposure to toxic chemicals, enhance environmental justice, and create well-paying union jobs. It also requires federal agencies to review federal regulations and actions that conflict with these objectives, with input from environmental justice organizations and other stakeholders (White House 2021c).

State Regulations and Rules

California has adopted numerous statewide laws, regulations, and policies to address GHG emissions reductions, climate adaptation, and equity. California has been a trailblazer and standard setter for climate-related regulations and programs. For example, California passed the Pavley 1 rule in 2002, which set the nation's first GHG standards for automobiles, and the state's GHG cap-and-trade program was the first multi-sector cap-and-trade program for GHG emissions in North America.

GHG Reduction Goals and Strategies

Executive Order S-3-05, signed in 2005, states that California is vulnerable to the effects of climate change and to help mitigate it, establishes GHG emissions reduction targets for

state agencies and requires the CalEPA to report the impacts of global warming on California and progress be made toward reducing GHG emissions through 2050 (Office of Governor 2005).

In 2006, *Assembly Bill 32, the California Global Warming Solutions Act of 2006*, established a cap on statewide GHG emissions and created a regulatory framework to reduce emissions to 1990 levels by 2020, which has been achieved. The California Air Resources Board (CARB) adopted a *GHG cap-and-trade program* in 2011 as a key mechanism to reduce GHG emissions and achieve California's GHG reduction goal. The cap-and-trade program created a market-based system that set an overall emissions limit (a "cap") for specific sectors, which is reduced annually. Revenues from the program are appropriated to state agencies to implement programs that reduce GHG emissions (C2ES n.d.). The cap-and-trade program was initially slated to sunset in 2020 but the passage of *Senate Bill (SB) 398* in 2017 extended the program through 2030.

Executive Order B-30-15, signed in 2015, established the connection between reducing GHG emissions to limit future climate change and adapting to current and future climate change impacts. It set a statewide interim GHG reduction target to reduce GHG emissions by 40 percent below 1990 levels by 2030 (Office of the Governor 2015). *SB 32* (passed in 2016) legislatively adopted this 2030 target. CARB adopted the *2017 Climate Change Scoping Plan* in November 2017 to meet the GHG reduction requirement set forth in SB 32. CARB is currently working on the *2022 Scoping Plan Update* that will assess progress toward achieving the 2030 target and outline a path to achieving carbon neutrality by midcentury.

Executive Order B-55-18 set a new state goal to achieve carbon neutrality as soon as possible (and no later than 2045) and to achieve and maintain net negative emissions thereafter. It also states that all policies and programs undertaken to achieve the goal should support climate adaptation, resource conservation, biodiversity, and improve public health in urban and rural communities, particularly low-income and underserved communities (Office of Governor 2018).

Complementary to the state's larger GHG reduction goals, *SB 605* (2014) directed CARB, in coordination with other State agencies and local air districts, to develop a comprehensive *Short-Lived Climate Pollutants (SLCP) Reduction Strategy*. SLCPs include CH_4, HFC, and anthropogenic black carbon. These pollutants have relatively short atmospheric lifetimes but much greater influence on the climate, compared to CO_2. *SB 1383* directed CARB to approve and implement the SLCP Reduction Strategy to achieve specific SLCP reduction targets. CARB adopted the SLCP Reduction Strategy in March 2017 as a framework for achieving the reduction targets set by SB 1383 (BAAQMD 2020).

Clean Energy and Conservation

SB 1078 (2002) and SB 107 (2006), California's *Renewables Portfolio Standard (RPS)* obligates investor-owned utilities (IOUs), energy service providers (ESPs), and Community Choice Aggregations (CCAs) to increase the proportion of energy generated from renewable energy sources. The most recent RPS target was established by SB 100 in 2018, which set a target to source 60 percent of energy from renewables by 2030 and

mandated 100 percent of electricity come from carbon-free energy sources by 2045 (California Legislative Information 2018).

The California Green Building Standards Code (Part 11, Title 24), known as *CALGreen*, was adopted in 2007 as part of the California Building Standards Code. The code includes voluntary and mandatory standards related to sustainable site development, energy efficiency, water conservation, material conservation, and reducing internal air contaminants (California Building Standards Commission 2019). *SB 350*, which was signed in 2015, requires a doubling of energy efficiency (electrical and natural gas) by 2030, including improvements to the efficiency of existing buildings. As of the writing of this Handbook, the 2019 standards are the latest CALGreen standards. The 2022 standards are in development and will take effect on January 1, 2023.

The State has made water conservation a priority. The *California Water Action Plan* was developed by CNRA in 2016 and sets forth a collection of actions to improve reliable water supply, restore the state's ecosystems, and build a resilient and sustainable water resource system. The Water Action Plan also emphasizes diversified regional supply portfolios to increase resiliency to droughts, floods, population growth, and climate change (CNRA 2016).

Mandatory recycling requirements to reduce landfilled waste and associated GHG emissions were originally established in 2011 through *AB 341*. *AB 1826* was passed in 2014 and requires businesses that generate two cubic yards per week of solid waste (beginning on January 1, 2020) to arrange for recycling services for organic waste (e.g., food and lawncare waste).

In 2019, CARB and other state agencies jointly released the *2030 Natural and Working Lands Climate Change Implementation Plan.* The plan outlines specific conservation, restoration, and management activities that will improve resiliency, maintain a natural carbon sink, and improve environmental quality. The plan sets a 2030 goal to at least double the pace and scale of state-supported land activities by 2030 and beyond, among other goals. The plan estimates that these activities will increase emissions by 12.4-35.9 $MMTCO_2e$ by 2030 and reduce emissions by 83.1–84.2 $MMTCO_2e$ by 2045 (CARB 2019b).

Vehicle Fuel Efficiency

Pavley I (AB 1493) set the nation's first GHG standards for automobiles and required CARB to adopt vehicle standards that lower GHG emissions from new light-duty vehicles to the maximum extent feasible beginning in 2009 (CARB 2021a). In 2012, CARB

strengthened the Pavley standards through the *Advanced Clean Cars* regulations, which limit GHG emissions from passenger vehicles for model years 2017–2025 (CARB 2021b).

Executive Order S-01-07 establishes a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In 2018, CARB passed amendments to the Low Carbon Fuel Standard that set a target to reduce fuel carbon intensity by 20% by 2030, compared to a 2010 baseline (CARB 2018b).

The *Innovative Clean Transit (ICT) regulation* requires all public transit agencies to gradually transition to 100 percent zero-emission bus fleets by 2040. Large and small transit agencies must submit their ZEB rollout plans by July 1, 2020 and July 1, 2023, respectively. State funding to transit agencies is contingent upon the agencies' compliance (CARB 2021d). To further accelerate the transition of zero-emission heavy-duty vehicles, CARB adopted the *Advanced Clean Truck Regulation* in June 2020. The regulation requires the sale of zero-emission medium-and-heavy-duty vehicles as an increasing percentage of total annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales must be 55 percent of Class 2b–3 truck sales, 75 percent of Class 4–8 straight truck sales, and 40 percent of truck tractor sales. By 2045, every new medium-and-heavy-duty truck sold in California will be zero-emission (ICCT 2020). This effort is currently in litigation.

Climate Adaptation

Executive Order S-13-08 requires the California Natural Resources Agency (CNRA) to develop a *Climate Adaptation Strategy* (CAS) in partnership with local, regional, state, and federal entities. It also required the development of a California Sea Level Rise Assessment Report that is reviewed every two years. Among other directives, it directs state agencies planning construction projects to assess the vulnerability to sea level rise and other climate change impacts (Adaptation Clearinghouse 2008). In 2009, California adopted a statewide CAS that summarized climate change impacts and recommended adaptation strategies for seven sectors.

Executive Order B-30-15 requires the CNRA update the state's CAS every 3 years and orders state agencies to take current and future climate impacts into account in all planning and investment decisions (Office of Governor 2015). In 2018, the CNRA updated the CAS to describe ongoing climate actions and recommend cost-effective and achievable next steps to respond to climate change in 11 sectors (CNRA 2018).

SB 246 establishes an integrated climate adaptation and resiliency plan to coordinate regional and local efforts with state strategies. The program emphasizes climate equity considerations throughout all sectors and regions to help develop holistic strategies for climate adaptation (California Legislative Information 2015). As a result of SB 246, in 2020, a new version of the *California Climate Adaptation Planning Guide* was developed by the California Emergency Management Agency and CNRA to include new requirements for local adaptation planning.

SB 379 ensures that climate adaptation is integrated into local jurisdictions' general plan processes. It requires California cities and counties to integrate climate adaptation into the safety element of their general plans by conducting a vulnerability assessment to identify local climate change risks and then develop adaptation and resilience goals, policies, objectives, and implementation measures based on the assessment (OPR 2017). Furthermore, *SB 1035* requires local planning agencies to review and revise the safety element of city or county general plans as necessary to address new climate adaptation risks and resiliency strategies. Planning agencies must do this during each revision of the housing element of the general plan or a local hazard mitigation plan, and not less than once every 8 years (California Legislative Information 2018b).

The State Water Resources Control Board has taken a variety of actions to respond to climate change, including the adoption of the *Comprehensive Response to Climate Change*. It requires the State Water Board to integrate proactive measures to respond to climate change in all its actions. The resolution also outlines specific measures to reduce GHG emissions, improve ecosystem resilience, and respond to climate change impacts (State Water Board 2017).

In response to the increasing frequency and intensity of wildfires across California, the *Wildfire Preparedness and Response* bill was signed in 2018. It allocates $200 million annually from 2019-2024 to fund grants to fire departments, cities, counties, and nonprofit organizations to help reduce forest fuel loads with thinning and prescribed burns in high-risk areas. The California Department of Forestry and Fire Protection (CalFire) distributes the funding and provides technical assistance. The bill also requires utilities to create and implement wildfire mitigation plans (Adaptation Clearinghouse 2018).

The California Coastal Commission adopted the *Sea Level Rise Policy Guidance* in 2015 and an update in 2018. The guidance provides an overview of the sea level rise science and broad recommendations for how to plan for and address sea level rise impacts. The guidance is broadly applicable and is used by the Coastal Commission, local governments, project applicants, and other stakeholders. The Coastal Commission describes the guidance as "a menu of options" that local planners can select from as appropriate, rather than a checklist of requirements (CCC 2019).

Social Equity

SB 1000 requires cities and counties with disadvantaged communities to include an environmental justice element in their general plans to ensure that local governments address environmental justice when planning long-term land use and growth goals and policies. Local governments must identify any disadvantaged communities and develop measures to mitigate and reduce health risks that can be attributed to the environment

(Strategic Growth Council 2021). *SB 32* (discussed above) also includes an environmental justice component that requires GHG reduction targets to be met in a way that benefits the most disadvantaged communities (California Legislative Information 2016a). The *GHG cap-and-trade program* (discussed above) requires 35 percent of program revenue to be directed toward environmentally disadvantaged and low-income communities (California Legislative Information 2016a).

AB 2722 was signed in 2016 to help create more sustainable cities, to address climate justice, and to help California meet its GHG emissions reduction goals. To achieve this, the California Strategic Growth Council created the Transformative Climate Communities program, which issues grants to develop and implement transformative climate plans. The funds are used to create and implement cross-cutting community plans that improve air and water quality, reduce emissions, and provide climate, economic, employment, and health benefits to disadvantaged communities (California Legislative Information 2016b).

AB 617 requires the State to develop a statewide annual reporting system for emissions of criteria air pollutants and toxic air contaminants for certain stationary sources. It also requires the State to prepare a monitoring plan for emissions and to prepare a statewide strategy to reduce emissions of toxic air contaminants and criteria pollutants in communities that experience a high cumulative exposure burden, in consultation with environmental justice groups and other stakeholders. (California Legislative Information, 2017). In response, CARB established the *Community Air Protection Program (CAPP)*, which focuses on reducing pollution exposure to communities that are most affected by air pollution. The CAPP provides funds for deploying clean technologies in communities and to retrofit pollution controls on industrial sources (CARB 2021c).

Planning Guidance

Photo Credit: Port of San Francisco, March 2019

The *California Environmental Quality Act (CEQA)* guidelines, first established in 1970, explain how to determine if an activity is subject to environmental review, what steps are involved in the process, and what documents are required. With respect to GHG emissions, the guidelines require agencies to describe, calculate, or estimate the amount of GHG emissions that are expected to result from a project. They also require a determination of whether a project would exacerbate physical climate change effects (OPR 2021). *SB 743* required revisions to the CEQA Guidelines (which occurred in 2018 and became effective in 2020) to establish new impact analysis criteria for the assessment of a project's transportation impacts. The intent behind SB 743 and revising the CEQA Guidelines was to integrate and better

balance the needs of congestion management, infill development, active transportation, and GHG emissions reduction (Caltrans 2021).

SB 375 provides a planning process that coordinates land use planning, regional transportation plans, and funding priorities to help California meet its GHG reduction goals. SB 375 requires regional transportation plans developed by metropolitan planning organizations to incorporate a sustainable communities strategy (SCS) in their regional transportation plans (Institute for Local Government 2015). The goal of the SCS is to reduce regional vehicle miles traveled through land use planning and transportation planning.

Building Future Equity and Resilience through Better Planning

As discussed in *Social and Environment and Public Health*, underserved and low-income communities and communities of color experience disproportionate environmental and climate change impacts. It is important that resources be targeted to historically over-burdened communities when planning for an equitable and climate-resilient future. Equally, decisionmakers must consider potential unintended consequences that may arise from implementation of emission reduction or adaptation measures. Striving for equity may also mean considering non-traditional measures that create socioeconomic co-benefits.

Planners can support more equitable development by engaging directly with local communities. Community-driven processes allow community members and organizations to set adaptation priorities and influence investments, identify inequities in planning, direct resources to the most at-risk areas and groups, and promote democracy and transparency in government (Georgetown Climate Center 2017).

The GHG emission reduction and climate adaptation measure descriptions presented in Chapters 3 and 4 include equity considerations. Chapter 5, *Measures for Advancing Health and Equity*, presents a non-exhaustive list of measures, examples, and resources to promote future health and equity in project and community planning. Chapter 6, *Resources to Support Resilient and Equitable Emission Reduction Planning*, provides resources and guidance on incorporating equity into resilient planning.

References

Adaptation Clearinghouse. 2008. *California Executive Order S-13-08 Requiring State Adaptation Strategy*. Available: https://www.adaptationclearinghouse.org/resources/california-executive-order-s-13-08-requiring-state-adaptation-strategy.html. Accessed: May 2021.

Adaptation Clearinghouse. 2018. *California SB 901—Wildfire Preparedness and Response*. Available: https://www.adaptationclearinghouse.org/resources/california-sb-901-wildfire-preparedness-and-response.html. Accessed: May 2021.

B3 Attach #1 of 3

August, L., K. Bangla, L. Plummer, S. Prasad, K. Ranjbar, A. Slocombe, and W. Wieland. 2021. *Update to the California Communities Environmental Health Screening Tool: CalEnviroScreen 4.0. Public Draft*. California Environmental Protection Agency and Office of Environmental Health Hazard Assessment. Available: https://oehha.ca.gov/media/downloads/calenviroscreen/document/calenviroscreen40reportd12021.pdf. Accessed: May 2021.

Bay Area Air Quality Management District (BAAQMD). 2020. *Request for Comments Report Regulation 13, Climate Pollutants: Rule 2, Organic Material Handling Operations*. Available: https://www.baaqmd.gov/~/media/dotgov/files/rules/regulation-13-rule-2/documents/20200127_rfc_r1302-pdf.pdf?la=en. Accessed: May 2021.

Bedsworth, L., D. Cayan, G. Franco, L. Fisher, S. Ziaja. (California Governor's Office of Planning and Research, Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission). 2018. Statewide Summary Report. *California's Fourth Climate Change Assessment*. Publication number: SUMCCCA4-2018-013.

Cakmak S., R. E. Dales, and S. Judek. 2006. Respiratory health effects of air pollution gases: modification by education and income. *Archives of Environmental and Occupational Health* 61(1):5–10.

California Air Resources Board (CARB). 2015. Air Quality and Land Use Handbook: A Community Health Perspective. Available: https://ww3.arb.ca.gov/ch/handbook.pdf. Accessed: June 2021.

California Air Resources Board (CARB). 2018a. AB 32 *Global Warming Solutions Act of 2006*. Available: https://ww2.arb.ca.gov/resources/fact-sheets/ab-32-global-warming-solutions-act-2006. Accessed: May 2021.

California Air Resources Board (CARB). 2018b. *Amendments to the Low Carbon Fuel Standard Regulation and to the Regulation on Commercialization of Alternative Diesel Fuels*. Available: https://ww3.arb.ca.gov/regact/2018/lcfs18/fsorlcfs.pdf. Accessed: May 2021.

California Air Resources Board (CARB). 2019a. *EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One*. November. Available: https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf. Accessed: September 2021.

California Air Resources Board (CARB). 2019b. *California 2030 Natural and Working Lands Climate Change Implementation Plan*. Available: https://ww2.arb.ca.gov/sites/default/files/2020-10/draft-nwl-ip-040419.pdf. Accessed: May 2021.

California Air Resources Board (CARB). 2020. *EMFAC Off-Model Adjustment Factors for Carbon Dioxide (CO_2) Emissions to Account for the SAFE Vehicles Rule Part One and the Final SAFE Rule*. June. Available: https://ww3.arb.ca.gov/msei/emfac_off_model_co2_adjustment_factors_06262020-final.pdf. Accessed: September 2021.

California Air Resources Board (CARB). 2021a. *California's Greenhouse Gas Vehicle Emission Standards under Assembly Bill 1493 of 2002 (Pavley)*. Available: https://ww2.arb.ca.gov/californias-greenhouse-gas-vehicle-emission-standards-under-assembly-bill-1493-2002-pavley. Accessed: May 2021.

California Air Resources Board (CARB). 2021b. *Low-Emission Vehicle (LEV III) Program*. Available: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/lev-program/low-emission-vehicle-lev-iii-program. Accessed: May 2021.

California Air Resources Board (CARB). 2021c. *Community Air Protection Program*. Available: https://ww2.arb.ca.gov/capp/about. Accessed: May 2021.

California Air Resources Board (CARB). 2021d. *Innovative Clean Transit*. Available: https://ww2.arb.ca.gov/our-work/programs/innovative-clean-transit/about. Accessed: May 2021.

California Building Standards Commission. 2019. *2019 California Green Building Standards Code*. Available: https://calgreenenergyservices.com/wp/wp-content/uploads/2019_california_green_code.pdf. Accessed: May 2021.

California Coastal Commission. 2019. *Sea Level Rise: Adopted Policy Guidance*. Available: https://www.coastal.ca.gov/climate/slrguidance.html. Accessed: May 2021.

California Department of Public Health (CPDH). 2020. *Climate Change and Health Vulnerability Indicators for California*. Available: https://www.cdph.ca.gov/Programs/OHE/Pages/CC-Health-Vulnerability-Indicators.aspx. Accessed: September 2021.

California Department of Public Health (CPDH). n.d. *Welcome to the CCHVIz*. Available: https://skylab.cdph.ca.gov/CCHVIz/. Accessed: September 2021.

California Environmental Protection Agency. 2021. *California Climate Investments to Benefit Disadvantaged Communities*. Available: https://calepa.ca.gov/envjustice/ghginvest/. Accessed: May 2021.

Cal Fire. 2021. *Top 20 Largest California Wildfires*. Available: https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf. Accessed: November 2021.

California Department of Transportation (Caltrans). 2021. *Senate Bill (SB) 743 Implementation*. Available: https://dot.ca.gov/programs/transportation-planning/office-of-smart-mobility-climate-change/sb-

743#:~:text=SB%20743%20was%20signed%20in,traffic%20congestion%20shall%20not%20be. Accessed: May 2021.

California Department of Water Resources. 2021. *SB X7-7*. Available: https://water.ca.gov/Programs/Water-Use-And-Efficiency/SB-X7-7#:~:text=The%20Water%20Conservation%20Act%20of,that%20DWR%20is%20responsible%20for. Accessed: May 2021.

California Legislative Information. 2015. *SB-246 Climate change adaptation*. Available: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB246. Accessed: May 2021.

California Legislative Information. 2016a. *SB-32 California Global Warming Solutions Act of 2006: emissions limit*. Available: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32. Accessed: May 2021.

California Legislative Information. 2016b. *SB-1000 Land use: general plans: safety and environmental justice*. Available: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB1000. Accessed: May 2021.

California Legislative Information. 2017. *AB-617 Nonvehicular air pollution: criteria air pollutants and toxic air contaminants*. Available: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB617. Accessed: May 2021.

California Legislative Information. 2018. *SB-100 California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases*. Available: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100. Accessed: May 2021.

California Natural Resources Agency (CNRA). 2016. *California Water Action Plan 2016 Update*. Available: https://resources.ca.gov/CNRALegacyFiles/docs/california_water_action_plan/Final_California_Water_Action_Plan.pdf. Accessed: May 2021.

California Natural Resources Agency (CNRA). 2018. *Safeguarding California Plan: 2018 Update*. Available: https://resources.ca.gov/CNRALegacyFiles/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf. Accessed: May 2021.

California Office of Environmental Health Hazard Assessment (OEHHA). No Date. CalEnviroScreen. Available: https://oehha.ca.gov/calenviroscreen. Accessed: May 2021.

Milanes, C., T. Kadir, B. Lock, L. Monserrat, N. Pham, and K. Randles. 2018. *Indicators of Climate Change*. Office of Environmental Health Hazard Assessment and California Environmental Protection Agency. May.

Center for Climate and Energy Solutions (C2ES). No Date. *California Cap and Trade*. Available: https://www.c2es.org/content/california-cap-and-trade/. Accessed: May 2021.

Centers for Disease Control and Prevention (CDC). 2021. *Risk for COVID-19 Infection, Hospitalization, and Death by Race/Ethnicity*. Last revised: March 12. Available: https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html. Accessed: March 2021.

Council on Environmental Quality (CEQ). 1997. *Environmental Justice: Guidance Under the National Environmental Policy Act.* Available: https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf. Accessed: May 2021.

Ebi, K. L., A. Bole, A. Crimmins, G. Glass, S. Saha, M. Shimamoto, J. Trtanj, J. White-Newsome, J. Balbus, and G. Luber. 2018. *Human Health. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, pp. 539–571. doi: 10.7930/NCA4.2018.CH14.

Finkelstein, M., M. Jerrett, P. DeLuca, N. Finkelstein, D. K. Verma, K. Chapman, and M. Sears. 2003. Relation between income, air pollution and mortality: a cohort study. *Cmaj* 169(5):397–402.

Gamble, J. L., J. Balbus, M. Berger, K. Bouye, V. Campbell, K. Chief, K. Conlon, A. Crimmins, B. Flanagan, C. Gonzales-Maddux, E. Hallisey, S. Hutchins, L. Jantarasami, S. Khoury, M. Kiefer, J. Klling, K. Lynn., A. Manangan, M. McDonald, R. Morello-Frosch, M. H. Redsterr, P. Sheffield, K. T. Tart, J. Watson, K. P. Whyte, and A. F. Wolkin. 2016. Ch. 9: Populations of Concern. *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. U.S. Global Change Research Program, Washington, DC, 247–286. http://dx.doi.org/10.7930/J0Q81B0T. Accessed: May 2021.

Georgetown Climate Center. 2017. *Opportunities for Equitable Adaptation in Cities*. Available: https://www.georgetownclimate.org/files/report/GCC-Opportunities_for_Equitable_Adaptation-Feb_2017.pdf. Accessed: May 2021.

Gochfeld, M. and J. Burger. 2011. Disproportionate Exposures in Environmental Justice and Other Populations: The Importance of Outliers. *American Journal of Public Health*. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3222496/. Accessed: May 2021.

Governor's Office of Planning and Research (OPR). 2017. *State of California General Plan Guidelines*. Available: https://opr.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf. Accessed: June 2021.

B3 Attach #1 of 3

Governor's Office of Planning and Research (OPR). 2021. *SB 743 Frequently Asked Questions*. Available: https://opr.ca.gov/ceqa/updates/sb-743/faq.html#draft-docs. Accessed: May 2021.

Institute for Local Government. 2015. *The Basics of SB 375*. Available: https://www.ca-ilg.org/post/basics-sb-375. Accessed: May 2021.

The International Council on Clean Transportation (ICCT). 2020. *California's Advanced Clean Trucks Regulation: Sales Requirements for Zero-Emission Heavy-Duty Trucks.* Available at: https://theicct.org/sites/default/files/publications/CA-HDV-EV-policy-update-jul2020.pdf. Accessed: May 2021.

Katz, Cheryl. 2012. *People in Poor Neighborhoods Breath More Hazardous Particles Scientific American*. Available: https://www.scientificamerican.com/article/people-poor-neighborhoods-breate-more-hazardous-particles/. Accessed: May 2021.

National Highway Traffic Safety Administration (NHTSA). 2020. *SAFE: The Safer Affordable Fuel-Efficient 'SAFE' Vehicles Rule*. Available: https://www.nhtsa.gov/corporate-average-fuel-economy/safe#:~:text=Aug.&text=The%20Safer%20Affordable%20Fuel%2DEfficient%20(SAFE)%20Vehicles%20Rule%20proposed,model%20years%202021%20through%202026. Accessed: May 2021.

No Harm Canada. No Date. *Health Care Without Harm. Climate change, health, and health care*. Available: https://noharm-uscanada.org/sites/default/files/Climate.Physician.Network.pdf. Accessed: May 2021.

Office of Governor. 2005. *Executive Order S-3-05*. Available: http://static1.squarespace.com/static/549885d4e4b0ba0bff5dc695/t/54d7f1e0e4b0f0798cee3010/1423438304744/California+Executive+Order+S-3-05+(June+2005).pdf. Accessed: May 2021.

Office of Governor. 2015. *Governor Brown Establishes Most Ambitious Greenhouse Gas Reduction Target in North America*. Available: https://www.ca.gov/archive/gov39/2015/04/29/news18938/index.html. Accessed: May 2021.

Office of Governor. 2018. *Executive Order B-55-18 to Achieve Carbon Neutrality*. Available: https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf. Accessed: May 2021.

Public Health Alliance of Southern California. 2021. *The California Healthy Places Index*. Last revised: April 22, 2021. Available: https://healthyplacesindex.org/. Accessed: May 6, 2021.

State Water Resources Control Board. 2017. *State Water Resources Control Board Resolution No. 2017-0012*. May 2021.

B3 Attach #1 of 3

Strategic Growth Council. *2021 Transformative Climate Communities*. Available: https://sgc.ca.gov/programs/tcc/. Accessed: May 2021.

Urban Environment & Social Inclusion Index. 2021. *Key Findings. Main Takeaways for the 2020 Urban Environment and Social Inclusion Index Analysis*. Available: https://datadrivenlab.org/urban/report/key-findings/. Accessed: June 2021.

U.S. Department of Transportation (U.S. DOT). 2014. *Corporate Average Fuel Economy (CAFE) Standards*. Available: https://www.transportation.gov/mission/sustainability/corporate-average-fuel-economy-cafe-standards. Accessed: May 2021.

U.S. Environmental Protection Agency (U.S. EPA). 2016. *Greenhouse Gas Reporting Program (GHGRP)*. Available: https://www.epa.gov/ghgreporting/10302009-rule. Accessed: May 2021.

U.S. Environmental Protection Agency (U.S. EPA). 2020a. *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under the Section 202(a) of the Clean Air Act*. Available: https://www.epa.gov/ghgemissions/endangerment-and-cause-or-contribute-findings-greenhouse-gases-under-section-202a-clean#:~:text=On%20April%2017%2C%202009%2C%20the,received%20over%20380%2C000%20public%20comments. Accessed: May 2021.

U.S. Environmental Protection Agency (U.S. EPA). 2020b. *Regulations for Greenhouse Gas Emissions from Commercial Trucks & Buses*. Available: https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-greenhouse-gas-emissions-commercial-trucks. Accessed: May 2021.

U.S. Environmental Protection Agency (U.S. EPA). 2021. *Clean Air Act Overview*. Available: https://www.epa.gov/clean-air-act-overview/clean-air-act-text#:~:text=The%20Clean%20Air%20Act%20is,has%20made%20several%20minor%20changes. Accessed: May 2021.

White House. 2021a. *Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*. Available: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/. Accessed: May 2021.

White House. 2021b. *Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*. Available: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/. Accessed: May 2021.

White House. 2021c. *FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies*. Available: https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/. Accessed: May 2021.

Ziegler, C., V. Morelli, and O. Fawibe. 201. Climate change and underserved communities. *Primary Care: Clinics in Office Practice* 44 (1)171–184. doi:10.1016/j.pop.2016.09.017.

Measures to Reduce GHG Emissions

CHAPTER 3

The California Air Pollution Control Officers Association (CAPCOA) has included a wide range of measures that are frequently used to reduce greenhouse gas (GHG) emissions and provide other benefits, like improved air quality, energy and fuel savings, and water conservation. This chapter provides methods and data to quantitively evaluate many of the measures. While there is no one-size-fits-all approach to GHG planning, the guidance presented in this chapter has been developed to broadly apply across project types, land use types, and California regions.

Categorizing Measures

When thinking about minimizing GHG emissions in a community or for a project, it is useful to organize GHG reduction measures into categories. The standard method of categorizing emissions is to group them by economic sector, such as transportation or energy. Consistent with this practice, the emission reduction measures presented in this chapter are categorized into the following nine sectors. Measures in each sector apply to a similar emissions source or process, as described below.

B3 Attach #1 of 3

- Transportation: Measures that promote transit and alternative transportation, support use of alternatively fueled vehicles, or encourage land use planning practices that reduce vehicle trips and vehicle miles traveled (VMT). Measures within the transportation sector are separated into six subsectors: Land Use, Neighborhood Design, Parking or Road Pricing/Management, Transit, Trip Reduction Programs, and Clean Vehicles and Fuels.
- Energy: Measures that target energy efficiency improvements/reduced natural gas consumption, renewable energy generation, building electrification, or methane (CH_4) recovery at landfills and wastewater treatment plants.
- Water: Measures that reduce water demand and/or use a less energy-intensive water source.
- Lawn and Landscaping: Measures that promote zero-emission landscaping equipment over conventional fossil fuel-powered counterparts.
- Solid Waste: Measures that require alternative waste management pathways, such as recycling and composting, to increase landfill waste diversion.
- Natural and Working Lands: Measures that enhance the sequestration capacity of natural lands or reduce the intensity of emissions from working lands.
- Construction: Measures that promote efficient construction management practices or alternatively fueled construction equipment.
- Refrigerants: Measures to reduce or replace high global warming potential (GWP) refrigerants with lower impact compounds.
- Miscellaneous: General measures that will reduce GHG emissions through the implementation of novel or off-site projects defined by the user.

EMISSIONS SECTORS

Categorizing emissions by sector is standard practice for GHG inventories and reduction plans, but users should note that there is often variation in the scope and nomenclature of sectors. For example, the sectors in this Handbook do not align exactly with the California Air Resources Board or U.S. Environmental Protection Agency inventories because of differences in scale and intended use. Users should take care when comparing sectors in this Handbook to other inventories or plans.

The nine emission sectors are illustrated in Figure 3-1. The figure shows all quantified GHG reduction measures included in this chapter. Users may click on an individual measure to navigate directly to the quantification method for that measure. Figure 3-1 does not include non-quantified measures. These measures are presented later in this chapter in *Supporting or Non-Quantified GHG Reduction Measures*.

B3 Attach #1 of 3

Figure 3-1. Navigation Trees for Quantitative GHG Reduction Measures

Transportation

LAND USE

- T-1. Increase Residential Density
- T-2. Increase Job Density
- T-3. Provide Transit-Oriented Development
- T-4. Integrate Affordable and Below Market Rate Housing
- T-17. Improve Street Connectivity

TRIP REDUCTION PROGRAMS

- T-5. Implement Commute Trip Reduction Program (Voluntary)
- T-6. Implement Commute Trip Reduction Program (Mandatory Implementation and Monitoring)
- T-7. Implement Commute Trip Reduction Marketing
- T-8. Provide Ridesharing Program
- T-9. Implement Subsidized or Discounted Transit Program
- T-10. Provide End-of-Trip Bicycle Facilities
- T-11. Provide Employer-Sponsored Vanpool
- T-12. Price Workplace Parking
- T-13. Implement Employee Parking Cash-Out
- T-23. Provide Community-Based Travel Planning

PARKING OR ROAD PRICING/MANAGEMENT

- T-14. Provide Electric Vehicle Charging Infrastructure
- T-15. Limit Residential Parking Supply
- T-16. Unbundle Residential Parking Costs from Property Cost
- T-24. Implement Market Price Public Parking (On-Street)

NEIGHBORHOOD DESIGN

- T-18. Provide Pedestrian Network Improvement
- T-19-A. Construct or Improve Bike Facility
- T-19-B. Construct or Improve Bike Boulevard
- T-20. Expand Bikeway Network
- T-21-A. Implement Conventional Carshare Program
- T-21-B. Implement Electric Carshare Program
- T-22-A. Implement Pedal (Non-Electric) Bikeshare Program
- T-22-B. Implement Electric Bikeshare Program
- T-22-C. Implement Scootershare Program

TRANSIT

- T-25. Extend Transit Network Coverage or Hours
- T-26. Increase Transit Service Frequency
- T-27. Implement Transit-Supportive Roadway Treatments
- T-28. Provide Bus Rapid Transit
- T-29. Reduce Transit Fares

CLEAN VEHICLES AND FUELS

- T-30. Use Cleaner-Fuel Vehicles

Energy

ENERGY EFFICIENCY IMPROVEMENTS

- E-1. Buildings Exceed 2019 Title 24 Building Envelope Energy Efficiency Standards
- E-2. Require Energy Efficient Appliances
- E-3-A. Require Energy Efficient Residential Boilers
- E-3-B. Require Energy Efficient Commercial Packaged Boilers
- E-4. Install Cool Roofs and/or Cool Walls in Residential Development
- E-5. Install Green Roofs in Place of Dark Roofs
- E-6. Encourage Residential Participation in Existing Demand Response Program(s)
- E-7. Require Higher Efficacy Public Street and Area Lighting
- E-8. Replace Incandescent Traffic Lights with LED Traffic Lights
- E-9. Utilize a Combined Heat and Power System

RENEWABLE ENERGY GENERATION

- E-10-A. Establish Onsite Renewable Energy Systems—Generic
- E-10-B. Establish Onsite Renewable Energy Systems—Solar Power
- E-10-C. Establish Onsite Renewable Energy Systems—Wind Power
- E-11. Procure Electricity from Lower Carbon Intensity Power Supply

BUILDING DECARBONIZATION

- E-12. Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences
- E-13. Install Electric Ranges in Place of Gas Ranges
- E-14. Limit Wood Burning Devices and Natural Gas/Propane Fireplaces in Residential Development
- E-15. Require All-Electric Development
- E-16. Require Zero Net Energy Buildings
- E-17. Require Renewable-Surplus Buildings

METHANE RECOVERY

- E-18. Establish Methane Recovery in Landfills
- E-19. Establish Methane Recovery in Wastewater Treatment Plants

Water

- W-1. Use Reclaimed Non-Potable Water
- W-2. Use Grey Water
- W-3. Use Locally Sourced Water Supply
- W-4. Require Low-Flow Water Fixtures
- W-5. Design Water-Efficient Landscapes
- W-6. Reduce Turf in Landscapes and Lawns
- W-7. Adopt a Water Conservation Strategy

Lawn and Landscaping

- LL-1. Replace Gas Powered Landscape Equipment with Zero-Emission Landscape Equipment

Solid Waste

- S-1. Institute or Extend Recycling Services
- S-2. Implement Organics Diversion Program

Natural and Working Lands

- N-1. Create New Vegetated Open Space
- N-2. Expand Urban Tree Planting
- N-3. Implement Management Practices to Improve the Health and Function of Natural and Working Lands
- N-4. Require Best Management Practices for Manure Management

Construction

- C-1-A. Use Electric or Hybrid Powered Equipment
- C-1-B. Use Cleaner-Fuel Equipment
- C-2. Limit Heavy-Duty Diesel Vehicle Idling
- C-3. Use Local Construction Contractors

Refrigerants

- R-1. Use Alternative Refrigerants Instead of High-GWP Refrigerants
- R-2. Install Secondary Loop and/or Cascade Supermarket Systems in Place of Direct Expansion Systems
- R-3. Install Transcritical CO_2 Supermarket Systems in Place of High-GWP Systems
- R-4. Install Microchannel Heat Exchangers in A/C Equipment in Place of Conventional Heat Exchanger
- R-5. Reduce Service Leak Emissions
- R-6. Reduce Operational Leak Emissions
- R-7. Reduce Disposal Emissions

Miscellaneous

- M-1. Establish a Carbon Sequestration Project
- M-2. Establish Offsite Mitigation
- M-3. Implement an Innovative Strategy for GHG Mitigation

B3 Attach #1 of 3

Selecting Measures

The GHG reduction measures presented in this chapter are diverse. Users are encouraged to carefully review the measure factsheets to determine which measures are most applicable to their project and capable of achieving their GHG reduction goals. There are several reasons a user might implement measures to reduce GHG emissions. Some measures may be implemented voluntarily, simply because users are seeking to reduce their GHG footprint. Other users may be obligated under law or statute to mitigate current or future impacts of specific actions or activities. This can include project-level impacts, such as those evaluated under the California Environmental Quality Act (CEQA), or plan-level impacts, such those resulting from the implementation of a general plan or climate action plan.

When considering which measures are applicable from the Handbook, the underlying reasons and context for reducing GHG emissions should be incorporated into the decision-making process. For example, if a user is seeking to achieve substantial GHG reductions to comply with a CEQA requirement, measures that have the greatest potential to reduce emissions may be most applicable. Or, if a city is aiming to implement a climate action plan by engaging the community, measures that inspire community members and are easily accessible and affordable may be the most applicable.

Other factors for determining measure applicability include the project type, scale, and locational context. Some measures are broad and applicable to many types of projects (e.g., Measure E-2, *Require Energy Efficient Appliances*), while others have a narrower scope of application (e.g., Measure E-19, *Establish Methane Recovery in Wastewater Treatment Plants*). Additionally, certain measures are suitable for urban environments, while others are best implemented in rural contexts. The measure factsheets presented in *GHG Reduction Measure Factsheets and Quantification Methods* later in this chapter summarize these and other important considerations for measure selection to support informed decision making.

Consideration of Measure Co-Benefits

Co-benefits, or additional benefits that often are associated with emissions reduction measures, are valuable elements of climate action planning. Citing co-benefits has become increasingly prevalent in justifying funding, planning, and implementing of emission reduction measures. Like the quantification of GHG reductions, only those benefits with literature and methodologies to support their accurate and reliable quantification are presented in this chapter. Where quantification is not achievable, co-benefits are noted qualitatively for each measure.

The co-benefit categories considered in this Handbook include the following and are visually depicted in the measure factsheets by the corresponding icons.

Improved air quality. Criteria pollutant reductions.

Energy and fuel savings. Electricity, natural gas, refrigerant, propane, gasoline, or diesel reductions.

VMT reductions. Reductions in vehicle miles traveled.

Water conservation. Water use reductions.

Enhanced pedestrian or traffic safety. Reduced collisions; pedestrian/bicyclist safety.

Improved public health. Toxic air contaminant reductions (including exposure); increased physical activity; improved public safety.

Improved ecosystem health. Improved biological diversity and soil and water quality.

Enhanced energy security. Systemwide load reduction; local energy generation, levelling out peaks.

Enhanced food security. Stability of food systems; improved household access to food.

Social equity. Address existing social inequities (e.g., housing/anti-displacement, community engagement, availability of disposable income).

This Handbook assigns co-benefits to measures that are likely to result from measure implementation; however, it should be noted that the achievement of co-benefits is not guaranteed because many co-benefits are dependent on how the measure is implemented. Determining what co-benefits apply to an individual measure in a specific circumstance is not an exact science, and there is no single methodology that can be uniformly applied for

this purpose. When considering co-benefits that may be achieved, it is best to comprehensively think through the implications of implementing that measure. For example, Measure E-12, *Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences,* reduces GHG emissions because it eliminates the onsite combustion of natural gas. Because combusting natural gas also results in emissions of other air pollutants that can cause adverse health effects, this measure would also improve air quality and achieve public health benefits. These co-benefits would be achieved by the measure in all project applications. Depending on where and how the measure is implemented, it may also address disparities in social equity and protect a homeowner or renter from rapid changes in fossil fuel prices, especially if solar energy is produced locally or on site. Users are encouraged to use the co-benefit icons identified for each measure as a starting point for this type of thought exercise and expand or revise for their specific project or application.

Note that while all measures achieve at least one co-benefit, some measures may also yield a disbenefit. For example, measures that electrify a fossil-fuel source will lead to improved air quality and fuel savings but increased electricity consumption. Potential disbenefits are discussed, where appropriate, for individual measures.

Quantifying GHG Reductions

The emissions quantification methods in this chapter are designed to provide GHG estimates using readily available data and user-specified information. In general, emission reductions are quantified (1) as a percentage of emissions from a given source or activity, or (2) as absolute emissions reductions from a given source or activity implementation of the measure. Where appropriate, some measures refer readers to external tools to quantify GHG reductions.

Quantification methods that provide a percent reduction rely on the underlying assumption that GHG emissions are proportional to the emissions source. For example, emissions reductions achieved by transportation measures are estimated using the expected percent reduction in vehicle trips or VMT, with an associated adjustment to account for the relationship between VMT reduction and vehicle emissions, as described further in the *Transportation* section. For these measures, users will need to multiply the reduction percentage by the amount of emissions that would be generated by that source without implementation of the measure to calculate the absolute reductions.[2] This Handbook does not include methods for inventorying emissions from specific sources or under various scenarios, such as baseline or existing conditions. There are several tools and models available for inventorying project-level GHG emissions, including CAPCOA's California Emissions Estimator Model (CalEEMod).

Quantification methods that calculate absolute reductions estimate the amount of emissions that would be released as a result of the source or activity with implementation

[2] The reduction percentage is denoted as a positive value when specified in text or in tables as a "reduction," and is denoted as a negative value when calculated in equations.

B3 Attach #1 of 3

of the measure (e.g., the reduction in water sector GHG emissions achieved from using reclaimed water). GHGs evaluated in this Handbook include carbon dioxide (CO_2), CH_4, nitrous oxide, and commonly used refrigerants. All GHG reductions are expressed in metric tons (MT) of carbon dioxide equivalents (CO_2e), where individual GHGs that would be reduced by a measure are converted to CO_2e by multiplying emissions by their GWP. GWP represent a ratio of the heat trapping characteristic of a gas compared to CO_2, which has a GWP of 1. This Handbook primarily uses GWPs from the Intergovernmental Panel on Climate Change's (IPCC) (2007) Fourth Assessment Report, consistent with statewide GHG emissions reporting protocol.[3] For commonly used refrigerants, GWPs were obtained from the IPCC's Fourth Assessment Report and databases from CARB and the World Meteorological Organization.

Measures presented in this chapter address those reductions over which a user can exercise direct control, as well as indirect emissions associated with electrical generation and the use of natural gas.

Quantification Accuracy and Reliability

IPCC (2006) defines *good practices* for GHG emissions quantification as those that "contain neither over- nor underestimates so far as can be judged, and in which uncertainties are reduced as far as practicable." Part of the challenge in developing methods that meet this standard of good practice is assuring the accuracy of the methods. This Handbook defines *accuracy* as the closeness of the agreement between the result of a measurement or calculation and the true value, or a generally accepted reference value. When a method is accurate, it will, for a particular case, produce a quantification of emissions that is as close to the actual emissions as can practicably be done with information that is reasonably available.

Quantification methods that meet the standard of good practice must also be *reliable*, which is different from being accurate. A reliable method will yield accurate results across a range of different cases, not only in one case. In some cases, the accuracy of quantification may be sacrificed to achieve reliability. This is because a method that can be applied across a range of scenarios must be generalized to some extent. For example, methods for transportation sector measures do not, for the most part, differentiate between peak and off-peak vehicle trips, even though off-peak trips will have a lower emission impact because of the effects of congestion on travel time and engine performance. To fully address all the factors that affect the emissions associated with vehicle trips for a specific project, a far more detailed analysis would be needed, and it would not be readily applied to other situations. The methods contained in this Handbook

[3] The Handbook uses the IPCC's (2007) Fourth Assessment Report because CARB currently (as of 2021) calculates CO_2e values for the statewide GHG inventory using GWPs from this report. GWPs are regularly reassessed by the IPCC, which published updated GWPs in their Fifth Assessment Report (IPCC 2014). Readers are encouraged to consult the latest IPCC assessment report and CARB statewide inventory guidance available at the time of their analysis to determine if alternative GWPs should be used.

have been developed to provide the best balance between accuracy and reliability, because accessibility and ease of use is an important consideration.

The quantification methods included in this Handbook will only be accurate to the degree that a project adheres to the assumptions, limitations, and other criteria specified for a given measure. Most of the quantification methods provide default assumptions for user consideration. The default values are based on the most up-to-date regional-, state-, or national-level data and may not be appropriate for all projects. Accordingly, it is recommended that defaults only be used if they adequately reflect analysis conditions, and no local or project-specific information is available. When a range of effectiveness may be quantified for a specific measure depending on defaults, this Handbook often presents those defaults that would yield the lower end of reductions to avoid overstating potential measure benefits. Where defaults are not available for a specific assumption, data must be provided by the user for the calculations to be valid. The quality of the data provided by the user will substantially affect the quality of the results achieved. Data supplied by the user could be a rough estimate, based on a small, onetime sample, or derived through a full project-specific study. Using a rough estimate for any of the data inputs will yield results that are less accurate than if higher quality data inputs are provided.

Users are encouraged to consider the intended use of the quantification, to make sure that the results achieved will be sufficiently rigorous to support the conclusions drawn from them. When quantification is performed for CEQA or other regulatory compliance, it is recommended that project-specific data be as robust as possible. Approximations and unsubstantiated numbers are discouraged. Moreover, it is strongly recommended that the source(s) and/or basis of all project-specific data supplied by the user be clearly identified in the analysis and the limitations of the data be discussed.

Measure Scales

GHG reduction measures can be applied at different scales or geographic levels. Some measures may only be applicable at the project-level, whereas others may be more appropriate within a broader planning context, such as for a general plan or climate action plan. Geographic levels considered in this Handbook include the Project/Site and Plan/Community. Project/Site refers to measures that reduce emissions at the scale of a parcel, employer, or development project. Plan/Community refers to measures that reduce emissions at the scale of a neighborhood (e.g., specific plan, general plan, climate action plan), corridor, or entire municipality (e.g., city- or county-level).

The transportation measures can be quantified at either the Project/Site scale or the Plan/Community scale, but never both. While some of the transportation measures could be implemented at both scales in practice, the quantification methods presented in this Handbook are limited to only the scale for which there is literature to defensibly support emissions quantification. For example, a bike-sharing program could be implemented at the Project/Site scale for employees to use at a business park, and it could be implemented at the Plan/Community scale by a municipality in their downtown district. However, there is limited defensible research on the GHG reductions associated with small scale, site-specific

bike-share programs. Therefore, only the Plan/Community scale version of this measure is quantified in this Handbook. The *Transportation* section notes each instance in which a transportation measure could be implemented at a scale for which this document does not provide a quantification method.

Some non-transportation measures can be quantified at both the Project/Site scale and the Plan/Community scale. For example, a multi-family development at the Project/Site scale may construct homes without wood-burning devices, while a specific plan for new single-family housing at the Plan/Community scale could require that all future homes prohibit wood-burning devices. The quantification method for this measure would be the same, regardless of the scale of application.

Combining Measure Reductions

When quantifying measures, it is important to be mindful of potential interactions among different measures. Often, combining measures can lead to better emission reductions than implementing a single measure by itself. For example, for Measure LL-1, *Replace Gas Powered Landscape Equipment with Zero-Emission Landscape Equipment*, to succeed, electrical outlets on the exterior of buildings should be accessible so that the electric landscaping equipment can be charged. Measure LL-3, *Electric Yard Equipment Compatibility,* should, therefore, be considered as a supporting action to equipment electrification. Where appropriate, these synergistic relationships are noted within the individual measure quantification methods. However, the compounding effect of combining these select measures is not quantified in this Handbook.

Unfortunately, the effects of combining some measures are not always beneficial, linear, complementary, or accurate. There are two primary reasons for this. The first reason is that there may be diminishing returns when certain measures are implemented together to reduce a particular source of emissions. For example, there may be six measures to increase ridership on a public transit line, any one of which might increase transit ridership by 20 percent. But implementing all these measures will not necessarily increase ridership by 120 percent. In fact, for each successive measure applied, it is likely that a lesser effect will be observed. The second reason is that there may be competition between measures. For example, a campaign to increase ridership on a commuter rail line may be implemented while a new public transit bus line is established with overlapping service areas. Although the ridership campaign might be expected to cause 5 percent of drivers to switch to rail, some of those potential new riders might use the new bus service instead, making the ridership campaign less effective. At the same time, the new bus line might also be expected to reduce vehicle trips by 5 percent, but the actual reduction may be lower if some of the ridership comes from rail passengers. Together, the ridership campaign for the rail line and the new bus line may only reduce vehicle trips by 7 percent, and not the 10 percent predicted from summing the estimates of their independent effectiveness.

Where appropriate, guidance for combining measure reductions is provided within the introductions to each sector. Likewise, the quantification methods for each measure identify any applicable calculation maximums.

B3 Attach #1 of 3

Combining Sector Reductions

The following procedures must be followed when combining measures among the nine sectors where the GHG reduction achieved by individual measures is calculated as a percentage of emissions from a given source or activity. Specifically, the relative magnitude of emissions between sectors must be considered. Users should first determine the percent contribution made by each individual sector to the overall project GHG emissions. This percent contribution by a sector should then be multiplied by the reduction percentages from measures in that sector to determine the scaled GHG emission reductions. This should be done for each sector to be combined. The scaled GHG emissions for each sector can then be added together to give a total GHG reduction for the combined measures in all sectors.

For example, consider a project with total GHG emissions that come from the following sectors: transportation (50 percent), building energy use (40 percent), water (6 percent), and solid waste (4 percent). This project implements transportation measures that result in a 10 percent reduction in VMT. The project also implements measures that result in a combined 30 percent reduction in water usage. The overall reduction in GHG emissions is calculated in the below example.

$\%\ \text{Reduction}_{\text{Transport}} = 50\%\ \text{total emissions} \times 10\%\ \text{sector reduction} = 5\%\ \text{total reduction}$

$\%\ \text{Reduction}_{\text{Water}} = 6\%\ \text{total emissions} \times 30\%\ \text{sector reduction} = 1.8\%\ \text{total reduction}$

$\%\ \text{Reduction}_{\text{Total}} = 5\% + 1.8\% = 6.8\%\ \text{total reduction}$

As discussed above, GHG reductions for some measures in this Handbook are expressed in terms of the absolute MT CO_2e that would be reduced. Reductions from these measures should be combined following the same approach as shown above. However, rather than multiplying percentages, users can simply subtract the expected reductions from the sector emissions.

Users may need to combine sector reductions that are a product of measures where reductions are given as both percentages and absolute values. This can be achieved by modifying the above equations to include actual project emissions. The following equations extend the above project example to include a 10 MT CO_2e reduction achieved by waste sector measures. Uncontrolled project emissions are assumed to be 2,000 MT CO_2e.

$$\text{Absolute Reduction}_{\text{Transport}} = 2{,}000\ \text{MT } CO_2e \times 50\%\ \text{total emissions} \times 10\%\ \text{sector reduction}$$

$$= 100\ \text{MT } CO_2e\ \text{reduction}$$

$$\text{Absolute Reduction}_{\text{Water}} = 2{,}000\ \text{MT } CO_2e \times 6\%\ \text{total emissions} \times 30\%\ \text{sector reduction}$$

$$= 36\ \text{MT } CO_2e\ \text{reduction}$$

$$\text{Absolute Reduction}_{\text{Waste}} = 10\ \text{MT } CO_2e$$

$$\text{Absolute Reduction}_{\text{Total}} = 100\ \text{MT } CO_2e + 36\ \text{MT } CO_2e + 10\ \text{MT } CO_2e = 146\ \text{MT } CO_2e$$

B3 Attach #1 of 3

Limitations and Uncertainty

There are uncertainties associated with any type of estimation method. It is important to understand the limitations to properly apply the quantification methods presented in this Handbook. The following briefly discusses key limitations for user awareness and consideration.

Combination of Data Sources

Developing quantification methods for some of the measures required the use of multiple sources of data. Any time data are derived from different sources, there may be slight discrepancies in the underlying methodologies and data. When the information between two data sets is combined, the discrepancies may affect the ultimate quantification of emissions, either over- or underestimating them. It is not possible to determine the precise magnitude of error that combining data sets induces in the final quantification; however, every effort has been made to minimize potential errors through thorough review of available data and exclusion of incompatible data sets.

Level of Detail for Underlying Assumptions

Many of the calculations require users to input project-specific data or assumptions. Certain information about a project may not be known to the user and must be either estimated or assumed based on standard procedures. Likewise, users may rely on the available defaults provided in the Handbook to enable emissions quantification of applicable measures. While defaults provided in this Handbook are based on credible sources for use in emissions quantification, they are often based on historical regional, state, and national-level data and may produce an inaccurate representation of project-specific conditions or lead to an overestimate or underestimate of associated emissions. This limitation can be minimized to the extent the user can provide better quality data.

Use of Case Studies

Case studies generally have detailed information on reductions that may be achieved in practice by a measure. While these studies provide valuable insight that can support measure quantification, there may be features or characteristics in the case study that do not translate to a specific project and, therefore, may over- or underestimate the GHG emission reductions. Where case studies were used, they were carefully reviewed to ensure the study methods and data meet the quality requirements of this Handbook.

Prediction of Future Behavior

Some of these methods predict future behavior (e.g., water use and energy consumption) using historical data and trends. Although this is a commonly accepted practice, current behavior is not likely to remain constant over time due to technological improvements and increasing awareness of resource conservation. This limitation can be minimized to the extent the user can provide better quality data.

B3 Attach #1 of 3

Combining Multiple Measures

Projects may involve the application of more than one measure. As discussed above, combining measures can have an additive effect on GHG reductions, or result in diminishing returns. This limitation is minimized through the establishment of sector and measure reduction caps, as described within the individual measure methods, as applicable. However, users should still exercise good judgement when selecting measures to ensure that the resulting quantification is appropriate and accurate.

Exclusion of Lifecycle and Biogenic CO_2 Emissions

Except for solid waste measures and certain measures in the refrigerants and transportation sectors, the quantification methods do not include analysis of full lifecycle emissions, which are those that are emitted from the energy and resources used throughout the lifecycle of a product or material. Lifecycle emissions include the extraction of raw resources, physical distribution, use of the product or material, and disposal at the end of a product's life. It is challenging to quantify these lifecycle emissions because identifying all the inputs that are necessary, especially for a generalized guidance document such as this Handbook, is infeasible. Because of these difficulties, lifecycle considerations are only included in the quantitative methods for those measures that cannot be quantified without a lifecycle analysis. The *Transportation*, *Solid Waste*, and *Refrigerants* sections discuss lifecycle considerations specific to those sectors. For all other measures, the quantification methods do not include analysis of full lifecycle emissions.

Except for Measure E-14, *Limit Wood Burning Devices and Natural Gas/Propane Fireplaces in Residential Development*, the methods do not address biogenic CO_2 emissions. Biogenic CO_2 emissions result from materials that are derived from living cells, as opposed to CO_2 emissions derived from fossil fuels, limestone, and other materials that have been transformed by geological processes. Biogenic CO_2 contains carbon that is present in organic materials, including wood, paper, vegetable oils, animal fat, and waste from food, animals, and vegetation (such as yard or forest waste). Biogenic CO_2 emissions are excluded from these GHG emissions quantification methods because they are the result of materials in the biological/physical carbon cycle, rather than the geological or anthropogenic carbon cycle.

Extent Reductions are Achieved in Practice

The reduction methods presented in this Handbook are based on specific underlying data and assumptions for how each measure should be implemented. The quantification methods will yield the most accurate and reliable results when the user adheres to all implementation requirements described in this Handbook. In practice, there is likely to be a wide range of how individual measures are implemented given project-specific considerations, such as cost to implement the measure, physical constraints, availability of technology, and regulatory restrictions.

B3 Attach #1 of 3

GHG Reduction Measure Factsheets and Quantification Methods

Anatomy of the Factsheets

All quantified GHG reduction measures in this Handbook include a one-page measure factsheet. The factsheet highlights important considerations for each measure. They describe the measure, locational context, scale of application, implementation requirements, cost considerations, and options to expand measure effectiveness. The factsheets also show key measure indicators, such as the GHG reduction potential, co-benefits, and considerations for climate resilience and health and equity. Where available, the GHG reduction potential is provided as the estimated maximum percent reduction in emissions. For those measures where GHG reductions are calculated as absolute emissions, the GHG reduction potential is identified as small, moderate, large, or varies. This qualitative ranking characterizes the estimated quantity of reductions relative to the magnitude of emissions generated by the source. For example, Measure E-15, *Require All-Electric Development*, has the potential for a large reduction in GHG emissions from building energy use if all end uses are electrified and the local utility provides zero-carbon electricity. It's important to note that, while this measure could achieve a "large" reduction in building energy emissions, the overall reduction in project emissions could be small if building energy emissions are only a fraction of the project total.

Figure 3-2 illustrates the factsheet layout and annotates key content.

B3 Attach #1 of 3

Figure 3-2. Annotated Outline of the Measure Factsheet

Following each measure's factsheet is the measure's quantification method. Accurate and reliable quantification of GHG reduction measures depends on properly identifying and understanding the important variables that affect the emissions from a source or activity. A consistent framework and presentation are used for all measure quantification methods to provide a clear summary of quantification variables and usable instructions on appropriate application of the method.

The quantification methodology for each measure is comprised of the mathematical formula(s), summary of all variables used in the formula, explanation of any calculation caps or maximums, an example calculation, and information on quantified co-benefits. The variables in the GHG reduction formula(s) are shown as letters (e.g., A, B) and are defined in the table that immediately follows the equation. The table categorizes variables as outputs, user inputs, or constants, assumptions, and defaults. Bolded variables are required user inputs (i.e., variables for which no defaults are available).

Only those measures with literature to defensibly support emissions quantification are discussed in this Handbook. Examples of credible sources consulted for this Handbook include government agency-sponsored studies, peer-reviewed scientific literature, case studies, government-approved modeling software, and widely adopted protocols. Additional measures for user consideration are presented in *Supporting or Non-Quantified GHG Reduction Measures*. Methods for quantifying these measures have not yet been developed, are not fully supported by available research, or require specific details that are difficult to address under a methodology with general applicability. Users are encouraged to consider including these non-quantified measures into their projects, as described further below.

The measure factsheets and quantification methods follow *Supporting or Non-Quantified GHG Reduction Measures*. As discussed above, measures are grouped into nine emission sectors. Information relevant to the general quantification of all measures within a sector is presented at the introduction of each sector. Users may manually scroll through the factsheets in this chapter or use Figure 3-1 (above) to automatically navigate to a specific measure's factsheet.

Supporting or Non-Quantified GHG Reduction Measures

As a supplement to the GHG reduction measures shown in the factsheets, there are supporting or non-quantified measures that may be of interest to users. Although not quantitatively evaluated in the Handbook, supporting or non-quantified measures may achieve emissions reductions and co-benefits on their own or may enhance the ability of quantified measures to attain expanded reductions and co-benefits. These measures may, therefore, strengthen implementation of a project mitigation strategy or community plan.

Beyond their potential to expand the efficacy of a reduction plan, supporting or non-quantified measures provide users with more options to develop a comprehensive set of

B3 Attach #1 of 3

mitigation strategies. For example, this section can be used as a resource for expanded CEQA mitigation to identify additional measures that may be feasible and applicable to a specific project. Local governments developing a climate action plan or update to their general plan may also find this section useful as inspiration for new or more comprehensive policies. Many of the measures will achieve co-benefits (e.g., water conservation), in addition to GHG reductions, and may therefore be impactful throughout several elements of a local general plan (e.g., air quality, conservation, environmental justice).

While benefits of supporting or non-quantified measures may not be quantitively captured (or fully captured), the measures can be implemented using many of the same mechanisms as for quantified measures. When identified in a CEQA document, measures can be incorporated into a project's mitigation monitoring and reporting program to ensure that they are implemented and enforced. Cities and counties can update their municipal codes to require measures or certain measure components, which would ensure that the measures are implemented through new development or renovations in existing development. Measures can also be included as a set of best management practices that a local government or project sponsor encourages or incentivizes.

Table 3-1 presents the list of supporting or non-quantified GHG reduction measures. Note that these measures are numbered sequentially to follow the quantified measures within each sector (refer to the measure factsheets at the conclusion of this section). The table defines the measure's sector, scale of application, locational context, and likely co-benefits. For simplicity, these measure "descriptors" have been abbreviated in Table 3-1 as follows.

- Shaded rows identify the sector and subsector (in parentheses, where applicable) for each group of measures. For example, "Transportation (Land Use)."
- The scale of application is abbreviated as one of the following:
  - P/S = Project/Site
  - P/C = Plan/Community
  - All = Project/Site and Plan/Community
- For transportation measures, abbreviations for locational context refer to the level of development at the census tract level. The three locational contexts identified in the Handbook are suburban (S), urban (U), and rural (R). Most transportation measures are applicable to development within at least one of these three locational context areas.

  The three locational contexts were developed from the eight neighborhood types described in *Quantifying the Effect of Local Government Actions on VMT* (Salon 2014), as summarized below.
  - S = suburb with multifamily housing; suburb with single-family homes

LOCATIONAL CONTEXT

The following neighborhoods are provided as representative examples for the three locational context areas.

Suburban — Malibu, Davis, Santee

Urban — Central Berkeley, Downtown Los Angeles, Downtown San Jose

Rural — Coronado, Mather, most of Alpine County

B3 Attach #1 of 3

  - U = urban low transit; central city urban; urban high transit
  - R = rural; rural-in-urban
- Remaining columns identify co-benefits that may be achieved by the measure where:
  - ●= may be achieved by the measure
  - ⊙= may be achieved by the measure depending on local implementation specifics
  - ○= likely not achieved by the measure

Table 3-2 includes a more detailed description of each non-quantified measure, including equity considerations that lead agencies and project sponsors should review to ensure that measure implementation is as equitable as possible. Users should also refer to Chapter 4, *Assessing Climate Exposures and Measures to Reduce Vulnerabilities*, and Chapter 5, *Measures for Advancing Health and Equity*, for additional context on adaptation and equity that is also relevant to the supporting or non-quantified measures.

Finally, note that the inclusion of a measure in this section does not preclude it from quantification or indicate that it is impossible to quantify the benefits of the measure. If a user has access to specific data or methods, or if quantification guidance becomes available in the future, then users can quantitatively evaluate measures in those circumstances, if desired.

Table 3-1. Summary of Supporting or Non-Quantified GHG Reduction Measures and Descriptors

#	Measure Title	Scale of Application	Locational Context	Co-Benefits: Improved Air Quality	Energy and Fuel Savings	VMT Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
Transportation (Land Use)													
T-31-A	Locate Project in Area with High Destination Accessibility	P/S	U, S	●	●	●	○	●	●	○	○	○	⊙
T-31-B	Improve Destination Accessibility in Underserved Areas	P/C	U, S	●	●	●	○	●	●	○	○	○	●
T-32	Orient Project Toward Transit, Bicycle, or Pedestrian Facility	P/S	U, S, R [a], R [b], R [c]	●	●	●	○	●	●	○	○	○	⊙
T-33	Locate Project near Bike Path/Bike Lane	P/S	U, S	●	●	●	○	●	●	○	○	○	⊙
Transportation (Neighborhood Design)													
T-34	Provide Bike Parking	All	All	●	●	●	○	●	●	○	○	○	⊙
T-35	Provide Traffic Calming Measures	P/C	All	●	●	●	○	●	●	○	○	○	⊙
T-36	Create Urban Non-Motorized Zones	P/C	U	●	●	●	○	●	●	○	○	○	⊙
T-37	Dedicate Land for Bike Trails	P/C	All	●	●	●	○	●	●	○	○	○	⊙
Transportation (Trip Reduction Programs)													
T-38	Provide First and Last Mile TNC Incentives	P/C	U, S, R [b]	●	●	●	○	●	●	○	○	○	⊙
T-39	Implement Preferential Parking Permit Program	P/S	U, S	●	●	●	○	●	●	○	○	○	○

#	Measure Title	Scale of Application	Locational Context	Co-Benefits									
				Improved Air Quality	Energy and Fuel Savings	VMT Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
T-40	Implement School Bus Program	P/S	All	●	●	●	○	●	●	○	○	○	⊙
T-41	Implement a School Pool Program	P/S	All	●	●	●	○	●	●	○	○	○	⊙
T-42	Implement Telecommute and/or Alternative Work Schedule Program	P/S	All	⊙	⊙	⊙	○	⊙	⊙	○	○	○	⊙
Transportation (Transit)													
T-43	Provide Real-Time Transit Information	P/C	All	●	●	●	○	●	●	○	○	○	⊙
T-44	Provide Shuttles (Gas or Electric)	P/S	U, S	●	●	●	○	●	●	○	○	○	⊙
T-45	Provide On-Demand Microtransit	All	U, S	●	●	●	○	●	●	○	○	○	⊙
T-46	Improve Transit Access, Safety, and Comfort	P/C	U, S, R [b], R [c]	●	●	●	○	●	●	○	○	○	⊙
T-47	Provide Bike Parking Near Transit	P/C	U, S	●	●	●	○	●	●	○	○	○	⊙
Transportation (Parking or Road Pricing/Management)													
T-48	Implement Area or Cordon Pricing	P/C	U	●	●	●	○	●	●	○	○	○	○
T-49	Replace Traffic Controls with Roundabout	P/C	All	●	●	●	○	●	●	○	○	○	○
T-50	Required Project Contributions to Transportation Infrastructure Improvement	P/C	All	●	●	●	○	●	●	○	○	○	○

#	Measure Title	Scale of Application	Locational Context	Co-Benefits									
				Improved Air Quality	Energy and Fuel Savings	VMT Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
T-51	Install Park-and-Ride Lots	P/C	S, R	●	●	●	○	●	●	○	○	○	⊙
T-52	Designate Zero Emissions Delivery Zones	P/C	U	●	●	●	○	●	●	○	○	○	⊙
Transportation (Clean Vehicles and Fuels)													
T-53	Electrify Loading Docks	P/S	All	●	●	●	○	○	○	○	●	○	⊙
T-54	Install Hydrogen Fueling Infrastructure	All	—	●	●	○	○	○	●	○	●	○	○
Energy (Energy Efficiency Improvements)													
E-20	Install Whole-House Fans	P/S	—	○	●	○	○	○	○	○	●	○	⊙
E-21	Install Cool Pavements	All	—	●	●	○	○	●	●	●	●	○	⊙
E-22	Obtain Third-party HVAC Commissioning and Verification of Energy Savings	P/S	—	○	●	○	○	○	○	○	●	○	⊙
Energy (Renewable Energy Generation)													
E-23	Use Microgrids and Energy Storage	All	—	⊙	●	○	○	○	●	○	●	○	⊙
E-24	Provide Battery Storage	All	—	⊙	●	○	○	○	●	○	●	○	⊙
Energy (Building Decarbonization)													
E-25	Install Electric Heat Pumps	All	—	●	●	○	○	○	●	○	⊙	○	⊙

#	Measure Title	Scale of Application	Locational Context	Co-Benefits: Improved Air Quality	Energy and Fuel Savings	VMT Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
Lawn and Landscaping													
LL-2	Implement Yard Equipment Exchange Program	P/S	—	●	●	○	○	○	●	●	●	○	⊙
LL-3	Electric Yard Equipment Compatibility	P/S	—	○	○	○	○	○	●	○	○	○	○
Solid Waste													
S-3	Require Edible Food Recovery Program Partnerships with Food Generators	All	—	⊙	⊙	○	⊙	○	⊙	○	○	●	●
S-4	Recycle Demolished Construction Material	P/S	—	○	●	○	○	○	○	⊙	○	○	○
S-5	Source Wood Materials from Urban Wood Re-Use Program	All	—	○	●	●	●	○	○	●	○	○	○
Natural and Working Lands													
N-5	Establish a Local Farmer's Market	P/C	—	●	●	●	○	●	●	○	○	●	⊙
N-6	Establish Community Gardens	P/C	—	●	○	⊙	○	○	●	●	○	●	⊙
Construction													
C-4	Use Local and Sustainable Building Materials	All	—	○	●	●	○	○	○	⊙	○	○	○

#	Measure Title	Scale of Application	Locational Context	Co-Benefits: Improved Air Quality	Energy and Fuel Savings	VMT Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
Miscellaneous													
M-4	Require Environmentally Responsible Purchasing	P/S	—	⊙	⊙	○	⊙	○	○	⊙	○	○	○
M-5	Fund Incentives for Green Technologies	P/C	—	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙

Sector abbreviations: T = transportation; E = energy; W = water; LL = lawn and landscaping; S = solid waste; N = natural and working lands; C = construction; M = miscellaneous.

Scale of application column abbreviations: P/S = Project/Site; P/C = Plan/Community; All.

Locational context column abbreviations: — = non-applicable; R = rural; S = suburban; U = urban. Where applicable, the Handbook provides three land use distinctions within the R locational context category, where R [a] = rural only if the project is in master-planned community; R [b] = rural only if the project is adjacent to commuter a rail station with convenient rail service to a major employment center; R [c] = rural only if there is available transit and the project is close to jobs/services.

Co-benefits columns symbols: ● = may be achieved by the measure; ⊙ = may be achieved by the measure depending on local implementation specifics; ○ = likely not achieved by the measure.

B3 Attach #1 of 3

Table 3-2. Description of Supporting or Non-Quantified GHG Reduction Measures

Transportation (Land Use)
T-31-A. Locate Project in Area with High Destination Accessibility The measure requires development in an area with high accessibility to destinations. Destination accessibility is measured in terms of the number of jobs or other attractions (e.g., schools, supermarkets, and health care services) that are reachable within a given travel time or travel distance, and tends to be highest at central locations and lowest at peripheral ones. When destinations are nearby, the travel time between them is less, thus increasing the potential for people to walk and bike to those destinations and, therefore, reducing the vehicle miles traveled (VMT) and associated greenhouse gas (GHG) emissions. As an implementation consideration, projects should consider accessibility by people of all functional abilities and incorporate design principles such as Universal Design.[4] See Measure T-31-B for a variation of this measure.
T-31-B. Improve Destination Accessibility in Underserved Areas This measure accounts for the VMT reduction that would be achieved by constructing job centers or other attractions (e.g., schools, supermarkets, and health care services) for residents in underserved areas (e.g., food deserts). When destinations are nearby, the travel time between them is less, thus increasing the potential for people to walk and bike to those destinations, reducing VMT and associated GHG emissions. As an implementation consideration, projects should consider accessibility by people of all functional abilities and incorporate design principles such as Universal Design. See Measure T-31-A for a variation of this measure.
T-32. Orient Project Toward Transit, Bicycle, or Pedestrian Facility This measure requires projects to minimize setback distance between the project and planned or existing transit, bicycle, or pedestrian corridors. A project that is designed around an existing or planned transit, bicycle, or pedestrian corridor encourages sustainable mode use. As an implementation consideration, projects should consider accessibility by people of all functional abilities and incorporate design principles such as Universal Design.
T-33. Locate Project near Bike Path/Bike Lane This measure requires projects to be located within 0.5-mile bicycling distance to an existing Class I or IV path or Class II bike lane. A project that is designed around an existing or planned bicycle facility encourages sustainable mode use. The project design should include a comparable network that connects the project uses to the existing off-site facilities that connect to work/retail destinations. As an implementation consideration, projects should provide sufficient and convenient bicycle parking and long-term storage, ideally near the bike lane itself, for residents, employees, and visitors, and a bicycle repair station with tools and equipment. This measure can be implemented with Measure T-9.
Transportation (Neighborhood Design)
T-34. Provide Bike Parking This measure requires projects provide short-term and long-term bicycle parking facilities to meet peak season maximum demand. Parking can be provided in designated areas or added within rights-of-way, including by replacing parking spaces with bike parking corrals. Ensure that bike parking can be accessed by all, not just project employees or residents.

[4] Universal Design is a concept that is comprised of seven principles that seek to make buildings and infrastructure accessible to all people. Accessibility is achieved by considering and implementing each principle during the design process. A project designed by Universal Design standards would ensure that adjacent transit facilities are accessible to people with diverse abilities, preferences, and language skills.

T-35. Provide Traffic Calming Measures

This measure requires projects to include pedestrian/bicycle safety and traffic calming measures above jurisdictional requirements. Roadways should also be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. Traffic calming features may include marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others. Providing traffic calming measures encourages people to walk or bike instead of using a vehicle. This mode shift will result in a decrease in vehicle miles traveled. In 2017, 3,904 people were killed and 277,160 injured by vehicle collisions in California; traffic calming can reduce injuries and death, which improves health (State of California et al., 2018). Traffic calming also promotes active transportation, which improves physical health.

T-36. Create Urban Non-Motorized Zones

The measure requires projects to convert a percentage of its roadway miles to transit malls, linear parks, or other non-motorized zones. These features encourage non-motorized travel and thus a reduction in vehicle miles traveled. This measure is only applicable to projects located in urban environments. Consider access issues for paratransit users and those with mobility impairments.

T-37. Dedicate Land for Bike Trails

This measure requires projects to provide for, contribute to, or dedicate land for the provision of off-site bicycle trails linking the project to designated bicycle commuting routes in accordance with an adopted citywide or countywide bikeway plan. Existing desire paths can make good locations, as it represents a community-identified transportation need.

Transportation (Trip Reduction Programs)

T-38. Provide First and Last Mile TNC Incentives

This measure requires a first-last mile partnership between a municipality/transit agency and a transportation network company (TNC) for subsidized, shared TNC rides to or from the local transit station within a specific geographic area. This measure encourages a shift to transit mode for longer trips. Consider providing inclusive mechanisms so people without bank accounts, credit cards, or smart phones can access the incentives.

T-39. Implement Preferential Parking Permit Program

This measure requires projects provide preferential parking in terms of free or reduced parking fees, priority parking, or reserved parking in convenient locations (such as near public transportation or building entrances) for commuters who carpool, vanpool, ride-share or use sustainably fueled vehicles. Projects should also provide wide parking spaces to accommodate vanpool vehicles. Commercial preferential parking can accommodate workers who work non-standard hours by providing opportunities to participate. Residential preferential parking can consider an equitable distribution of permits, giving priority to owners of sustainably fueled vehicles.

T-40. Implement School Bus Program

This measure will provide school bus service transporting students to a school project. A school bus service can reduce the number of private vehicle trips to drop-off or pick-up students, thereby reducing VMT and associated GHG emissions, as well as onsite air pollution emissions, especially if the bus is zero emissions. Best practices include concentrating service for students who live further away from schools, providing service both before and after school, and encouraging parents to utilize the service. This measure is more effective at schools that draw students from a larger enrollment area, such as high schools or private schools.

B3 Attach #1 of 3

T-41. Implement a School Pool Program

This measure requires projects create a ridesharing program for school children. Most school districts provide bussing services to public schools only. School pool helps match parents to transport students to private schools, or to schools where students cannot walk or bike but do not meet the requirements for bussing. A school pool program can help reduce onsite air pollutant emissions at the school by reducing private vehicle trips, especially if the pool vehicle is zero emissions.

T-42. Implement Telecommute and/or Alternative Work Schedule Program

This measure requires projects to permit employee telecommuting and/or alternative work schedules and monitor employee involvement to ensure forecasted participation matches observed participation. While this measure certainly reduces commute-related VMT, recent research has shown that total VMT from telecommuters can exceed VMT from non-telecommuters (Goulias et al. 2020). In addition, telecommuting affects commercial and residential electricity use, complicating the calculation of the net effect and attribution of emissions. More specifically, an office with fewer employees could result in a decrease in the project's energy used to operate equipment and provide space heating and air conditioning. Conversely, an increase in telecommuters using their private homes as workspaces could result in a residential increase in energy for those same end uses and appliances. While this measure is currently not quantified and, according to some studies, could result in total VMT increases and other disbenefits, it is recommended that users review the most recent literature at the time of their project initiation to see if new findings more conclusively support a quantifiable emissions reduction.

Transportation (Transit)

T-43. Provide Real-Time Transit Information

This measure requires projects provide real-time bus/train/ferry arrival time, travel time, alternative routings, or other transit information via electronic message signs, dedicated monitor or interactive electronic displays, websites, or mobile apps. This makes transit service more convenient and may result in a mode shift from auto to transit, which reduces VMT.

T-44. Provide Shuttles (Gas or Electric)

This measure will provide local shuttle service through coordination with the local transit operator or private contractor. The shuttles will provide service to and from commercial centers to nearby transit centers to help with first and last mile connectivity, thereby incentivizing a shift from private vehicles to transit, reducing associated GHG emissions. Electric shuttle vehicles provide a marginally more effective reduction to GHG emissions compared to gas- or diesel-fueled shuttles due to their use of less emissions-intensive electric power. Shuttles that serve only the project residents and/or employees may be seen as increasing gentrification and exclusionary. Consider allowing all people to use the shuttle, regardless of status. Note that this measure can also be implemented at the Project/Site scale by a large employer as part of a Trip Reduction Program.

T-45. Provide On-Demand Microtransit

This measure will provide small-scale, on-demand public transit services that can offer fixed routes and schedules or flexible routes and on-demand scheduling (e.g., Metro Micro) through coordination with the local transit operator or private contractor. Microtransit aims to offer shorter wait times and improved reliability compared to the bus and rail system to further incentivize alternative transportation modes that are less emissions-intensive than private vehicle trips. On-demand rides can be booked using smartphone applications or call centers. Note that this measure may also be applicable at the Project/Site scale for a large employer (e.g., Google's Via2G pilot) as part of a Trip Reduction Program.

B3 Attach #1 of 3

T-46. Improve Transit Access, Safety, and Comfort

This measure requires projects improve transit access and safety through sidewalk/crosswalk safety enhancements, bus shelter improvements, improved lighting, and other features. Work with the community to determine barriers to use, most desired improvements, and other access challenges.

T-47. Provide Bike Parking Near Transit

This measure requires the project to provide short-term and long-term bicycle parking near rail stations, transit stops, and freeway access points where there are commuter or rapid bus lines. Include locations for shared micromobility devices as well as higher-security parking for personal bicycles.

Transportation (Parking or Road Pricing/Management)

T-48. Implement Area or Cordon Pricing

This measure requires projects implement a cordon pricing scheme. The pricing scheme will set a cordon (boundary) around a specified area to charge a toll to enter the area by vehicle. The cordon location is usually the boundary of a central business district or urban center but could also apply to substantial development projects with limited points of access. The toll price can be based on a fixed schedule or be dynamic, responding to real-time congestion levels. It is critical to have an existing, high quality transit infrastructure for the implementation of this strategy to reach a significant level of effectiveness. The pricing signals will only cause mode shifts if alternative modes of travel are available and reliable. This measure should provide an exception for low-income residents or workers within the pricing zone.

T-49. Replace Traffic Controls with Roundabout

This measure requires projects install a roundabout as a traffic control device to smooth traffic flow, reduce idling, eliminate bottlenecks, and manage speed. In some cases, roundabouts can improve traffic flow and reduce emissions. The emission reduction depends heavily on what the roundabout is compared to (e.g., uncontrolled intersection, stop sign, traffic signal). Design roundabout so cyclists have the option to join traffic or bypass the roundabout with an adjacent path.

T-50. Required Project Contributions to Transportation Infrastructure Improvement

This measure requires projects contribute to traffic-flow improvements or other multi-modal infrastructure projects that reduce emissions and are not considered as substantially growth inducing. The local transportation agency should be consulted for specific needs. Larger projects may be required to contribute a proportionate share to the development and/or continuation of a regional transit system. Contributions may consist of dedicated right-of-way, capital improvements, or easements. Ensure the jurisdictional fee system does not disadvantage infill projects over greenfield projects.

T-51. Install Park-and-Ride Lots

This measure requires projects install park-and-ride lots near transit stops and high occupancy vehicle lanes. Park-and-ride lots also facilitate car- and vanpooling. Parking lots can also incorporate cool pavements, tree canopy, or solar photovoltaic shade canopies to reduce the urban heat island effect as well as evaporative emissions from parked vehicles and dedicated electric vehicle parking spots and/or charging infrastructure.

B3 Attach #1 of 3

T-52. Designate Zero Emissions Delivery Zones

This measure requires the municipality to designate certain curbside locations as commercial loading zones exclusively available for zero-emission commercial delivery vehicles. Doing so replaces tailpipe diesel emissions from last-mile delivery vehicles as well as heavy duty drayage trucks moving goods with less emissions-intensive electric vehicles and potentially micromobility for food and parcel delivery. Locations should be prioritized based on land use density and existing exposure from air pollution.

Transportation (Clean Vehicles and Fuels)

T-53. Electrify Loading Docks

This measure will require that Transport Refrigeration Units and auxiliary power units (APUs) be plugged into the electric grid at the loading dock instead of running on diesel. The indirect GHG emission from electricity generation can partially offset the emissions reduction from fuel reductions. Electrifying loading docks can reduce exposure to air pollutants for workers and drivers.

T-54. Install Hydrogen Fueling Infrastructure

The measure requires projects to implement accessible hydrogen fuel cell fueling infrastructure. Drivers of fuel cell electric vehicles (FCEV), from individual passenger vehicles to haul truck fleets, will be able to refuel using this infrastructure. The expansion of hydrogen fueling locations indirectly supports the uptake of FCEV in place of the typical internal combustion engine vehicle fueled by carbon-emitting gasoline and diesel.

Energy (Energy Efficiency)

E-20. Install Whole-House Fans

This measure requires installation of whole-house fans. Whole-house fans draw cooler outdoor air through open windows, exhaust the warmer air into the attic, and then expel the air outside through attic vents. Whole-house cooling using a whole house fan can substitute for an air conditioner most of the year in most climates, resulting in a reduction in emissions associated with building energy use. Whole-house fans may be inappropriate in locations near sources that generate air pollutants during the evening hours, such as major roads and freeways.

E-21. Install Cool Pavements

This measure will install cool pavements in place of dark pavements. Cool pavements help to lower ambient outdoor air temperatures when compared to dark-colored, heat-absorbent pavements such as asphalt. This reduces the electricity needed to provide cooling, but in some climates, can also increase the energy emissions to provide heating, thereby reducing associated GHG emissions depending on the project parameters (e.g., climate, carbon intensity of local utility). Prioritize cool pavement installation in neighborhoods with high urban heat island effects, large amounts of paved areas, low tree canopy, or high vulnerability due to age, employment, income, linguistic isolation, and other indicators.

E-22. Obtain Third-party HVAC Commissioning and Verification of Energy Savings

This measure requires third-party review of heating ventilation and air conditioning (HVAC) systems to ensure proper installation and construction of energy reduction features. A user can obtain HVAC commissioning and third-party verification of energy savings in thermal efficiency components including HVAC systems, insulation, windows, and water heating. Note that the 2019 Title 24 Standards requires Home Energy Rating System (HERS) verification for all new low-rise residential building (3 stories or less). Taller residential buildings and non-residential buildings may or may or not require a HERS verification depending on other buildings elements.

Energy (Renewable Energy Generation)

E-23. Use Microgrids and Energy Storage

This measure requires management of a microgrid. Microgrids offer the opportunity to deploy more zero-emission electricity sources, thereby reducing GHG emissions. The microgrid manager (e.g., local energy management system) can balance generation from non-controllable renewable power sources, such as solar, with distributed, controllable generation, such as natural gas-fueled combustion turbines. They can also use energy storage and the batteries in electric vehicles to balance energy distribution and usage within the microgrid. Reliable electricity is vital for public health, especially vulnerable populations and people dependent on medical equipment.

E-24. Provide Battery Storage

This measure requires strategically deployed battery storage. Energy storage has no direct emissions effect. When deployed strategically, energy storage can make the grid more flexible, unlocking renewable energy and reducing GHG emissions. When deployed non-strategically, owners of energy storage assets are more likely to charge their facilities during off-peak periods when power prices are lower, in order to supply power during more expensive peak hours. Off-peak generation times such as nighttime hours are more likely to be dominated by conventional power sources, which, with the exception of nuclear and hydropower, are likely to be more emissions-intensive (Bistline and Young 2020). In California, the value of energy storage stems primarily from its ability to reduce renewable curtailment, thereby displacing fossil-fueled generation (Arbabzadeh et al. 2019). While this measure is currently not quantified and, according to some studies, could result in regional GHG and criteria pollutant emissions increases, it is recommended that users (1) review the most recent literature at the time of their project initiation and (2) evaluate any changes in policy or market for renewable energy to see if new findings more conclusively support a quantifiable emissions reduction.

Energy (Building Decarbonization)

E-25. Install Electric Heat Pumps

This measure requires installation of electric heat pumps as alternatives to conventional furnaces or air conditioners. Electric heat pumps use electricity to transfer heat between cool and warm spaces to either provide cooling or heating. When cooling is needed during the summer months, the pumps move warmer inside air to outside. The pumps operate in reverse during the winter, moving warmer outdoor air into the building to provide heat. Because heat pumps move warm air instead of generating heat, they are more efficient than conventional heating and cooling systems. When electric heat pumps replace fossil-fuel heating or cooling sources, they achieve a dual efficiency and decarbonization benefit. The most common types of heat pumps collect heat from the air (are air-to-air), water (water-to-air), or ground (geothermal-to-air). The performance and emissions reductions achieved by electric heat pumps depend heavily on the system type, cooling and heating loads, climate zone, season, and other project-specific variables.

B3 Attach #1 of 3

Lawn and Landscaping

LL-2. Implement Yard Equipment Exchange Program

This measure requires the project to participate in an established yard equipment exchange program, supplement an established program, or implement a new program. When conventional gasoline-powered yard equipment (e.g., lawn mowers, leaf blowers and vacuums, shredders, trimmers, and chain saw) are exchanged for electric and rechargeable battery-powered yard equipment, direct GHG emissions from fossil-fuel combustion are displaced by indirect GHG emissions associated with the generation of electricity used to power the equipment. Commercial users of yard equipment should be targeted for this measure given their comparatively low adoption rate of electric yard equipment relative to residential users. If the specific equipment being replaced through the program is known, reductions may be quantified using the method described under Measure LL-1.

LL-3. Electric Yard Equipment Compatibility

This measure requires projects provide electrical outlets on the exterior of buildings as necessary for sufficient powering of electric lawnmowers and other landscaping equipment. For Measures LL-1 and LL-2 to be successfully implemented, electrical outlets on the exterior of buildings must be accessible so that the electric landscaping equipment can be charged.

Solid Waste

S-3. Require Edible Food Recovery Program Partnerships with Food Generators

This measure requires food service, wholesale, and retail sources of edible food partner with food recovery programs. Food recovery programs collect edible foods from commercial production and distribution channels that would otherwise be transported to a landfill and redistribute them for consumption. This measure would avoid emissions from the decomposition of non-diverted organic material in landfills.

S-4. Recycle Demolished Construction Material

This measure requires recycling of construction waste. Recycling demolished construction material reduces GHGs by displacing new construction materials, thereby reducing the need for new raw material acquisition and manufacturing. If the process of recycling construction materials is less carbon-intensive than the processes required to harvest and produce new construction materials, recycling results in a net reduction in GHG emissions. Using local recycled construction material would also reduce emissions associated with the transportation of new construction materials, which are typically manufactured farther away from a project site. Finally, recycling avoids sending materials to landfills. Wood-based materials decompose in landfills and contribute to methane (CH_4) emissions. Ensure onsite processing does not create nuisance issues for nearby residents.

S-5. Source Wood Materials from Urban Wood Re-Use Program

This measure requires projects to source wood materials from urban wood re-use programs. In areas where removed trees are sent to landfills, they decompose and contribute to CH_4 emissions. Wood re-use programs extend a tree's lifetime by converting it into a range of products and prolonging the sequestration benefit. Re-uses range from logs, lumber, woodchips, mulch, compost, biochar, animal fuel, paper products, engineered wood, furniture, and cellulosic ethanol.

B3 Attach #1 of 3

Natural and Working Lands

N-5. Establish a Local Farmer's Market

This measure would establish a local farmer's market to provide project residents with a more local source of food, potentially reducing the number of trips and VMT by both consumers and food distribution to grocery stores and supermarkets. If the food sold at the local farmer's market is produced organically, it can also contribute to GHG reductions by displacing carbon-intensive food production practices. Work with local non-profits or foundations to provide Electronic Benefit Transfer (EBT) acceptance at the market, which facilitates access for lower-income populations. The USDA offers resource and guidance for farmer's markets accepting EBT, while some foundations offer multiplier programs, in which $1 of EBT funds becomes a greater value if spent at a farmer's market.

N-6. Establish Community Gardens

This measure would establish a community garden to provide project residents with locally sourced food, potentially reducing the number of trips and VMT by both consumers and food distribution to grocery stores and supermarkets. Community gardens can also contribute to GHG reductions by displacing carbon-intensive food production practices. Work with community residents and community-based organizations to make sure the gardens are designed inclusively and are open to all residents.

Construction

C-4. Use Local and Sustainable Building Materials

This measure requires using building materials that are locally sourced and processed (i.e., close to the project site, as opposed to in another state or country). This reduces VMT and therefore GHG emissions from fuel combustion. Using sustainable building materials, such as recycled concrete or sustainably harvested wood, also reduces GHG emissions due to the less carbon-intensive production process. Unlike measures that reduce GHG emissions during the operational lifetime of a project, using local and sustainable building materials mitigates emissions prior to the actual operational lifetime of a project.

Miscellaneous

M-4. Require Environmentally Responsible Purchasing

This measure requires projects to implement an environmentally responsible purchasing plan. Examples of environmentally responsible purchases include but are not limited to: purchasing products made from recycled materials or with sustainable packaging; purchasing post-consumer recycled paper, paper towels, and stationery; purchasing and stocking communal kitchens with reusable dishes and utensils; choosing sustainable cleaning supplies; purchasing products from restaurants, farms, or ranches that source materials or goods from locations that use soil conservation practices; and leasing equipment from manufacturers who will recycle the components at their end of life. Choosing locally made and distributed products reduces the distance required to transport the products from the distribution or manufacturing center to the project, thus reducing GHG emissions associated with transportation.

B3 Attach #1 of 3

M-5. Fund Incentives for Green Technologies

This measure would fund incentives for green technologies. Examples of green technologies include energy-efficient and zero-emission vehicle fleets and off-road equipment, building electrification upgrades, low-flow fixtures in buildings, or energy-efficient stationary sources. The user may choose to contribute to an existing municipal energy fund or establish a new energy fund for the project. Recipients of energy fund grants could include neighborhood developers, home and commercial space builders, homeowners, and utilities. Energy funds allow recipients flexibility in choosing efficiency strategies while still achieving the desired effects of reduced energy use and associated GHG emissions. If coupled with local apprenticeship and job training, this measure can help provide workforce development in green jobs for the local community.

References

Arbabzadeh, M., R. Sioshansi, J. Johnson, and G. Keoleian. 2019. The role of energy storage in deep decarbonization of electricity production. *Nature Communications* 10(1):1–11. Available: https://www.nature.com/articles/s41467-019-11161-5.pdf. Accessed: October 2021.

Bistline, J., and D. Young. 2020. Emissions impacts of future battery storage deployment on regional power systems. *Applied Energy* 264:114678. Available: https://www.sciencedirect.com/science/article/abs/pii/S0306261920301902. Accessed: October 2021.

Goulias, K., R. Su, and E. McBride. 2020. *Revisiting the Impact of Teleworking on Activity-Travel Behavior Using Recent Data and Sequence-Based Analytical Techniques*. Pacific Southwest Region University Transportation Center. December. Available: https://metrans.org/assets/research/psr-19-15_goulias_final-report.pdf. Accessed: October 2021.

Intergovernmental Panel on Climate Change. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H. S., L. Buendia, K. Miwa, T. Ngara and K. Tanabe. (eds). Published: IGES, Japan.

Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.

B3 Attach #1 of 3

Intergovernmental Panel on Climate Change (IPCC). 2014. *Climate Change 2013: The Physical Science Basis*. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T. F., D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P. M. Midgley (eds.)]. Cambridge, United Kingdom, and New York, NY: Cambridge University Press. Available: https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf. Accessed: September 2021.

Salon, D. 2014. *Quantifying the Effect of Local Government Actions on VMT.* Institute of Transportation Studies, University of California, Davis. Prepared for the California Air Resources Board and the California Environmental Protection Agency. Available: https://ww2.arb.ca.gov/sites/default/files/classic/research/apr/past/09-343.pdf. Accessed: August 2021.

State of California, California State Transportation Agency, Department of California Highway Patrol. 2018. *2017 Annual Report of Fatal and Injury Motor Vehicle Traffic Crashes*. Available: https://www.chp.ca.gov/InformationManagementDivisionSite/Documents/2017%20ANNUAL%20REPORT%20CALIFORNIA.pdf. Accessed: November 2021.

Transportation

Fossil-fuel powered vehicles are the primary source of GHG emissions within the transportation sector. On-road vehicles traditionally use gasoline and diesel fuel and release emissions based on the amount of fuel combusted and the emission factor of the engine. Cleaner-fueled and electric powered vehicles can also generate GHG emissions, but often at far lower intensities.

Transportation emissions can be reduced by improving the emissions profile of the vehicle fleet or by reducing VMT. Most of the measures quantified in this Handbook aim to reduce VMT and encourage mode shifts from single-occupancy vehicles to shared (e.g., transit) or active modes of transportation (e.g., bicycle). This can be accomplished by coordinating trip reduction or incentive programs; optimizing the land use of the project study area; enhancing road, bike and pedestrian networks; implementing parking policies; or improving transit systems.

WHAT'S ELASTICITY?

Elasticity refers to how much one variable changes, relative to a change in another variable. For example, the elasticity of a VMT reduction measure would measure how much VMT is reduced in proportion to the increase in bicycle lanes.

Most of the emission reductions are determined by evaluating the *elasticity* of a measure relative to the amount of VMT that may be reduced by the measure. A few transportation measures are aimed at improving the emissions profile of the vehicle fleet. These measures promote alternative fuels and vehicle types. The emission reductions from these measures are based on the improved emission factors and on changes to the assumed vehicle fleet mix.

This section provides guidance for combining emission reductions from transportation measures and adjusting VMT reductions to expected GHG savings. The measure factsheets and quantification methods for individual measures follow. Use the graphic on the following page to click on an individual measure to navigate directly to the measure's factsheet.

Selecting and Combining Transportation Measures

Depending on how VMT has been quantified for a project or program, users should exercise caution when selecting transportation measures to avoid double counting VMT benefits that may already be accounted for in the model used to produce the unmitigated or baseline VMT estimate. For example, regional travel demand models are generally sensitive to built environment and transit service variables (e.g., density, proximity to transit). VMT estimates developed for a project or program that use such models may, therefore, already account for VMT reductions associated with certain measures in this Handbook (e.g., T-1, *Increase Residential Density*).

Transportation

LAND USE

- T-1. Increase Residential Density
- T-2. Increase Job Density
- T-3. Provide Transit-Oriented Development
- T-4. Integrate Affordable and Below Market Rate Housing
- T-17. Improve Street Connectivity

TRIP REDUCTION PROGRAMS

- T-5. Implement Commute Trip Reduction Program (Voluntary)
- T-6. Implement Commute Trip Reduction Program (Mandatory Implementation and Monitoring)
- T-7. Implement Commute Trip Reduction Marketing
- T-8. Provide Ridesharing Program
- T-9. Implement Subsidized or Discounted Transit Program
- T-10. Provide End-of-Trip Bicycle Facilities
- T-11. Provide Employer-Sponsored Vanpool
- T-12. Price Workplace Parking
- T-13. Implement Employee Parking Cash-Out
- T-23. Provide Community-Based Travel Planning

PARKING OR ROAD PRICING/MANAGEMENT

- T-14. Provide Electric Vehicle Charging Infrastructure
- T-15. Limit Residential Parking Supply
- T-16. Unbundle Residential Parking Costs from Property Cost
- T-24. Implement Market Price Public Parking (On-Street)

NEIGHBORHOOD DESIGN

- T-18. Provide Pedestrian Network Improvement
- T-19-A. Construct or Improve Bike Facility
- T-19-B. Construct or Improve Bike Boulevard
- T-20. Expand Bikeway Network
- T-21-A. Implement Conventional Carshare Program
- T-21-B. Implement Electric Carshare Program
- T-22-A. Implement Pedal (Non-Electric) Bikeshare Program
- T-22-B. Implement Electric Bikeshare Program
- T-22-C. Implement Scootershare Program

TRANSIT

- T-25. Extend Transit Network Coverage or Hours
- T-26. Increase Transit Service Frequency
- T-27. Implement Transit-Supportive Roadway Treatments
- T-28. Provide Bus Rapid Transit
- T-29. Reduce Transit Fares

CLEAN VEHICLES AND FUELS

- T-30. Use Cleaner-Fuel Vehicles

Interactions between transportation measures are complex and sometimes counterintuitive, whereby combining measures can have a substantive impact on reported emission reductions. To safeguard the accuracy and reliability of the methods, while maintaining their ease of use, the following rules should be followed when combining reductions achieved by transportation measures.

Combining Measures Across Scales

The first level of organization for the transportation measures is the scale of application. There are 16 quantified measures at the Project/Site scale that can be combined with each other and 17 quantified measures at the Plan/Community scale that can be combined with each other.[4] *The GHG reductions of transportation measures from different scales of application should never be combined.* While it may be possible that a user's project involves measures that affect vehicle trips or VMT at both scales, it is likely that combining the percent reduction from measures of different scales would not be valid. This rule does not apply to non-transportation measures that calculate the emissions reduction in terms of absolute emissions.

[4] There is one additional quantified transportation measure: Measure T-30, *Use Cleaner-Fuel Vehicles*. All below discussion related to combining measures and determining maximums does not apply to this measure, which is part of the Clean Vehicles and Fuels subsector.

Combining Measures within a Subsector

The second level of organization for the transportations measures is the subsector. Transportation measures are separated into six subsectors: Land Use, Neighborhood Design, Trip Reduction Programs, Parking Management, Transit, Parking or Road Pricing/Management, and Clean Vehicles and Fuels.

Effectiveness levels for multiple measures within a subsector may be multiplied to determine a combined effectiveness level. Because the combination of measures and independence of measures are complicated, this Handbook recommends that measure reductions within a subsector be multiplied unless the user can provide substantial evidence indicating that emission reductions are independent of one another and that they should therefore be added. This will take the following form:

$$\text{Reduction}_{\text{subsector}} = 1 - [(1 - A) \times (1 - B) \times (1 - C)]$$

Where A, B, and C are the individual measure reduction percentages for the measures to be combined in each subsector.

Each measure has a maximum allowable reduction, discussed in the quantification methods for each measure. The user should calculate the reduction from each measure, compare it to the individual measure maximum, and use the lower value of the two in the equation above.

In addition, each subsector has a maximum allowable reduction. These were derived by combining the maximum allowable reduction of each individual non–mutually-exclusive measure within the subsector using the above formula (see table below for more details). The subsector maximum is intended to ensure that emissions are not double counted when measures within the subsector are combined. The subsector maximums are provided in the below table by scale of application.

Scale	Subsector	Quantified Measures [a]	Subsector Maximum [b, c, d, e, f]
P/S	Land Use	4	65%
	Neighborhood Design	—	—
	Trip Reduction Programs	9	45% commute VMT
	Parking or Road Pricing/ Management	3	35%
	Transit	—	—
P/C	Land Use	1	30%
	Neighborhood Design	9	10%
	Trip Reduction Programs	1	2.3% commute VMT
	Parking or Road Pricing/ Management	1	30%
	Transit	5	15%

P/S = project/site; P/C = plan/community; VMT = vehicle miles traveled.

[a] Excludes Measure T-30, *Use Cleaner-Fuel Vehicles*, within the Clean Vehicles and Fuels subsector and all supporting or non-quantified measures from other subsectors.

[b] — = no measure within the subsector at the specified scale.

[c] Where a subsector consists of only one measure, the subsector maximum listed is the individual measure maximum.

[d] Most maximums were conservatively rounded down to the nearest multiple of five or whole number.

[e] Measure T-1 and Measure T-2 were assumed to be mutually exclusive for the purpose of deriving a project's single land use type maximum emissions reduction. More specifically, residential density (T-1) only applies to residential development, and job density only applies to commercial development (T-2). Similarly, Measure T-26 and Measure T-27 were assumed to be mutually exclusive with Measure T-28 for the purpose of deriving a plan/community's total transit-related emissions reduction. Measure T-28 accounts for the VMT reduction associated with increased transit frequency (T-26) and decreased transit travel time from transit supportive roadway treatments (T-27). It was assumed that bus rapid transit (BRT) (T-28) would cover all of the community's transit routes, and therefore no additional frequency or time improvements would be attainable (T-26 and T-27).
[f] Measures within the Trip Reduction Programs primarily reduce VMT from *employee commute* trips, whereas all other measures reduce VMT from *all* trips associated with the relevant land use type.

The user should calculate the reduction from each subsector, compare it to the corresponding sector maximum, and use the lower value of the two.

Combining Measures Across Subsectors

There is limited research directly analyzing the combined VMT impact on a project/site or plan/community from implementation of all, or a majority, of the non–mutually-exclusive transportation sector measures provided in this Handbook. However, a University of California, Davis study compared household VMT across different place types in California and found that the difference in average VMT in single-family suburban neighborhoods and central city neighborhoods was approximately 70 percent.[5] Central city neighborhoods are more likely to have implemented transportation strategies like those measures included in the Handbook, when compared to suburban neighborhoods. The Handbook therefore adopts 70 percent as a maximum for the combined VMT impact from the following four subsectors: Land Use, Neighborhood Design, Parking or Road Pricing/Management, and Transit.

$$\text{Reduction}_{\text{multi-subsector}} = 1 - [(1 - \text{Land}) \times (1 - \text{Design}) \times (1 - \text{Parking}) \times (1 - \text{Transit})] \leq 70\%$$

Note that this multi-subsector maximum purposefully excludes the Trip Reduction Program subsector. This is because measures in the Trip Reduction Program subsector are often implemented at the Project/Site scale based on the individual employer and are not as directly correlated with place type as the other subsectors. For example, all central city neighborhoods have a high residential and commercial density (i.e., Measure T-1 and Measure T-2 from the Land Use subsector), and most single-family suburban neighborhoods have low density. Conversely, not all employers in a central city neighborhood provide their employees with discounted transit passes (Measure T-9 from the Trip Reduction Program subsector), and the same is equally likely for the much smaller group of employers in a single-family suburban neighborhood.

Limitations of Maximums and Caps

The words *maximum* and *cap* are used interchangeably to describe either the highest percent reduction in GHG emissions or the highest expected value for a variable in the GHG reduction formula. Each subsector has a maximum allowable reduction and individual measures have a maximum allowable reduction, which is often based on one or more of the capped GHG reduction variables. In most instances, these values are a rule of thumb, or practical approximation, to limit the unrealistic influence of multiplicative measure variables. Where the

[5] Salon, D. 2014. *Quantifying the Effect of Local Government Actions on VMT.* Institute of Transportation Studies, University of California, Davis. Prepared for the California Air Resources Board and the California Environmental Protection Agency. February. Available: https://ww2.arb.ca.gov/sites/default/files/classic/research/apr/past/09-343.pdf. Accessed: October 2021.

maximum is derived based on a more precise methodology (e.g., research results), the source is cited. Users should always confirm the appropriateness of these maximums for their project.

Adjusting VMT Reductions to Emission Reductions

Most of the transportation measures in this Handbook reduce GHG emissions and criteria pollutants (co-benefit) by reducing the source metric of VMT.[6] The below equation highlights the main variables used to calculate VMT in a study area. Note that VMT decreases if any of the following occurs: (1) vehicle ownership declines, (2) vehicle trips are reduced, (3) vehicle trip lengths are reduced, or (4) any combination of these three variables.

$$\text{VMT} = \frac{\text{vehicles}}{\text{study area}} \times \frac{\text{trips}}{\text{vehicle}\cdot\text{day}} \times \frac{\text{distance (miles)}}{\text{trip}} = \frac{\text{miles}}{\text{study area}\cdot\text{day}}$$

Vehicles emit pollutants during all hours of the day. The magnitude of these emissions varies with the activity phase, such as running on the road, idling while stationary, sitting outside in the sun (evaporative), or starting up. The quantification methods presented in this Handbook account for emissions that occur during the three major emission processes of running, evaporation, and starting.[7]

Emissions generated by these processes are determined, in part,[8] by the above VMT variables: (1) emissions from evaporation are a factor of vehicle ownership, (2) emissions from starting are a factor of vehicle ownership and number of vehicle starts (i.e., trips), and (3) emissions from running are a factor of vehicle ownership and number of vehicle trips and distance per trip (i.e., VMT).

$$\text{Emissions}_{\text{total}} = \text{Emissions}_{\text{evap}} + \text{Emissions}_{\text{start}} + \text{Emissions}_{\text{run}}$$

$$\text{Emissions}_{\text{evap}} = \frac{\text{vehicles}}{\text{study area}} \times \frac{\text{pollutant mass (grams)}}{\text{vehicle}\cdot\text{day}} = \frac{\text{grams}}{\text{study area}\cdot\text{day}}$$

$$\text{Emissions}_{\text{start}} = \frac{\text{vehicles}}{\text{study area}} \times \frac{\text{trips}}{\text{vehicle}\cdot\text{day}} \times \frac{\text{pollutant mass (grams)}}{\text{trip}\cdot\text{day}} = \frac{\text{grams}}{\text{study area}\cdot\text{day}}$$

$$\text{Emissions}_{\text{run}} = \frac{\text{vehicles}}{\text{study area}} \times \frac{\text{trips}}{\text{vehicle}\cdot\text{day}} \times \frac{\text{miles}}{\text{trip}} \times \frac{\text{pollutant mass (grams)}}{\text{distance (miles)}} = \frac{\text{grams}}{\text{study area}\cdot\text{day}}$$

GHG and criteria pollutant reductions achieved by transportation measures are primarily presented in terms of a percent reduction, where the total emissions reduction was determined based on a ratio comparison to the VMT reduction. In other words, if a measure reduces VMT by some percent, the total emissions are reduced by the same percent (or a fraction of that percent, as described below). As discussed above, VMT can be reduced by decreasing any of the three variables of vehicle ownership, number of vehicle trips, and trip distance. The ratio comparison between reductions in VMT and emissions depends on the pollutant and which VMT variable(s) decrease with implementation of a transportation measure.

[6] Exceptions include Measures T-14, *Provide Electric Charging Infrastructure*, and T-30, *Use Cleaner-Fuel Vehicles*.

[7] A fourth emission process is idling. EMFAC estimates idle exhaust emissions only for heavy-duty vehicles that idle for extended periods of time while loading or unloading goods. This document analyzes emissions primarily from passenger vehicles and thus focuses on the three relevant emission processes of evaporation, starting, and running.

[8] Vehicle emissions are also a function of the chosen analysis year, project location, and fleet mix. When using EMFAC, future year emissions decline over time, reflecting assumed changes in fleet mix for the location and cleaner engine and fuel technologies.

1. *Less vehicle ownership*. If a transportation measure reduces VMT by decreasing vehicle ownership, the measure would decrease running, starting, and evaporative emissions by the same rate.[9] The measures where this applies are Measures T-15, *Limit Residential Parking Supply*, and T-16, *Unbundle Residential Parking Costs from Property Cost*, where the VMT reduction is a function of avoided vehicle ownership in residents disincentivized to park offsite or pay the separate cost of parking for a vehicle. For these measures, there is a 1:1 relationship between reductions in VMT and emissions because these measures reduce all emission processes at the same rate, not just running emissions.

2. *Fewer vehicle trips*. If a transportation measure reduces VMT by decreasing the number of vehicle trips, the measure would decrease running emissions and starting emissions by approximately the same rate. This applies to all transportation measures except Measures T-14, *Provide Electric Vehicle Charging Infrastructure;* T-15, *Limit Residential Parking Supply;* T-16, *Unbundle Residential Parking Costs from Property Cost;* and T-30, *Use Cleaner-Fuel Vehicles*. This is because each measure would result in, at minimum,[10] fewer vehicle trips by promoting alternative modes of transportation in place of single-occupancy vehicles.

   These measures would not decrease evaporative emissions, which are a function of vehicle ownership. However, this does not affect the ratio comparison between reductions in VMT and GHG emissions because there are no evaporation GHG emissions (i.e., 100 percent of CO_2, CH_4, and nitrous oxide (N_2O) from vehicles are from running and starting). This is also true for nitrogen oxides (NOx) particulate matter (PM2.5 and PM10), carbon monoxide (CO), and sulfur dioxide (SOx). Therefore, for these measures and pollutants, there is a 1:1 relationship between reductions in VMT and emissions.

   Reactive organic gases (ROG) from vehicles include not only running and starting emissions, but also evaporative emissions.[11] Running and starting ROG emissions represent approximately 87 percent of total ROG emissions in passenger vehicles.[12] This adjustment factor should be applied when converting the percent GHG reduction to the percent reduction in total ROG emission.

   $$\% \text{ reduction in ROG emissions} = \% \text{ reduction in GHG} \times 87\%$$

   This is noted in the co-benefits section of *Improved Air Quality* for each applicable transportation measure.

3. *Shorter vehicle trips*. If a transportation measure reduces VMT by only decreasing the distance of vehicle trips, the measure would not reduce starting or evaporative emissions. There are no transportation measures in this Handbook where this scenario occurs and, therefore, an adjustment factor is not developed.

[9] Assuming emission factor variables are held constant.

[10] Many of these measures also result in shorter vehicle trips. In these instances, the VMT reduction is either largely a function of the reduction in vehicle trips or is an equal function of the reduction in vehicle trips and the reduction in trip distances. There are no measures where the VMT reduction is largely a function of the reduction in trip distances with a lesser contribution from the reduction in vehicle trips.

[11] See *EMFAC2017 User's Guide* for more detail on these emission processes. Available: https://ww3.arb.ca.gov/msei/downloads/emfac2017-volume-i-users-guide.pdf.

[12] Combined emissions from the EMFAC vehicle types of LDA, LDT1, and LDT2.

The criteria pollutants CO, NO_2, SO_2, and PM are local pollutants that can potentially affect populations near the emissions source. Accordingly, measures that reduce localized criteria pollutant emissions can improve ambient air quality. Measures that reduce emissions of ozone precursors (NOx and ROG), which are regional pollutants, can improve regional air quality.

Note that the Handbook's use of a ratio comparison of VMT reduction to GHG and criteria pollutant reductions makes two key assumptions that may not be valid for every user's project. It is important users consider the validity of these assumptions on a project-by-project basis and either (1) perform any post-processing to the emissions reductions achieved by the transportation measures to better reflect their project conditions, or (2) provide a qualitative disclaimer about the accuracy of the estimated reductions considering the below assumptions.

1. *Vehicle class is assumed to remain unchanged with implementation of a measure*. Say a user is interested in calculating the plan/community-level GHG reduction from Measure T-22-B, *Implement Electric Bikeshare Program*. The user has community-level VMT without the measure and elects to calculate community-wide mobile emissions using EMFAC. The user calculates in EMFAC that the existing percent of the community VMT by vehicle class is 75 percent light-duty vehicles and 25 percent non-light-duty vehicles. In this example, the average emission factor for light-duty vehicles is 250 grams CO_2 per mile and for non–light-duty vehicles is 400 grams CO_2 per mile. The average community emission factor, as weighted by VMT, would be 288 grams per mile [(75% X 250 grams CO_2 per mile) + (25% X 400 grams CO_2 per mile)]. Users then estimate vehicle emissions prior to implementation of Measure T-22-B by applying this average vehicle emission factor to their community-level VMT.

   The user then implements Measure T-22-A, *Implement Pedal (Non-Electric) Bikeshare Program*, and reduces GHG emissions from vehicle travel by 4 percent by replacing vehicle trips with bikeshare trips. The majority of those replaced vehicle trips are private trips as light-duty vehicles. As a result, the percent of the community VMT by vehicle class is now 70 percent light-duty vehicles and 30 percent non–light-duty vehicles, effectively increasing the community average vehicle emission factor, as weighted by VMT, from 288 grams per mile to 295 grams per mile [70% X 250 grams CO_2 per mile) + (30% X 400 grams CO_2 per mile)]. This increase in the community average vehicle emission factor lessens the GHG reduction that would be achieved from reduced vehicle trips.

   Conversely, the circumstances could be such that a measure increases the GHG reduction that would be achieved from reduced vehicle trips. For example, Measure T-22-A may replace existing vehicle trips that are primarily from more emissions-intensive non–light-duty vehicles (e.g., transit buses). In this case, the percent of the community VMT by the less–emissions-intensive light-duty vehicle would be higher, reducing the community average vehicle emission factor. This decrease in the community average vehicle emission factor would increase the GHG reduction that would be achieved from reduced vehicle trips.

   The Handbook method cannot predict or know how each measure could affect the user's specific fleet mix. Therefore, the fleet mix is assumed to remain constant before and after implementation of all transportation measures.

2. *Vehicle speeds are assumed to remain unchanged with implementation of a measure*. The logic of this assumption is similar to the first assumption. Say a user is interested in calculating the plan/community-level GHG reduction from Measure T-20, *Expand Bikeway Network*. The user elects to calculate community-wide mobile emissions prior to implementation of the measures using EMFAC and aggregated vehicle speeds. In this example, EMFAC aggregates the vehicle speeds in the user's community at approximately 30 miles per hour (mph).[13] The user implements Measure T-20 and expansion of the bikeway network reduces the average vehicle speed to approximately 25 mph. Because vehicles are slightly more GHG emissions-intensive at 25 mph compared to 30 mph, the GHG reduction achieved by the measure would be less if the impact of vehicle speeds were included in the quantification method.

   Conversely, the circumstances could be such that a measure increases the GHG reduction that would be achieved from reduced vehicle trips. For example, Measure T-11, *Provide Employer-Sponsored Vanpool*, replaces private vehicle trips with shared vanpool trips, reducing the number of cars on the road. If roadways are currently congested and causing vehicles to move at low speeds, implementation of this measure could alleviate roadway congestion and increase vehicle speeds to a speed in which they are less GHG emissions intensive. The decrease in the community average vehicle emission factor would increase the GHG reduction that would be achieved from reduced vehicle trips.

   The Handbook method cannot predict or know how each measure could affect vehicle speeds under the various use cases. Therefore, the vehicle speeds are assumed to remain constant before and after implementation of all transportation measures.

Use of Transportation Quantification Methodologies for Senate Bill 375 Compliance

As described in Appendix B, *Federal and State Planning Framework,* Senate Bill (SB) 375 requires metropolitan planning organizations (MPOs) to incorporate a SCS in their regional transportation plans (RTPs) and submit it to the California Air Resources Board (CARB) for review. The goal of the SCS is to reduce regional passenger vehicle VMT and associated GHG emissions through land use and transportation planning. CARB requires MPOs quantify the passenger vehicle VMT reductions achieved by their SCSs using a specific method. It is therefore not recommended that MPOs use the transportation measure quantification methodologies found in this Handbook when preparing their SCSs.

[13] Vehicle running emission factors are, in part, dependent on vehicle speed. Vehicles are generally more emissions-intensive at speeds that are very low (e.g., 5 mph) and very high (e.g., greater than 70 mph), though this varies by pollutant and vehicle class.

T-1. Increase Residential Density

GHG Mitigation Potential

Up to 30.0% of GHG emissions from project VMT in the study area

Co-Benefits (icon key on pg. 34)

Climate Resilience

Increased density can put people closer to resources they may need to access during an extreme weather event. Increased density can also shorten commutes, decreasing the amount of time people are on the road and exposed to hazards such as extreme heat or flooding.

Health and Equity Considerations

Neighborhoods should include different types of housing to support a variety of household sizes, age ranges, and incomes.

Measure Description

This measure accounts for the VMT reduction achieved by a project that is designed with a higher density of dwelling units (du) compared to the average residential density in the U.S. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. Increasing residential density results in shorter and fewer trips by single-occupancy vehicles and thus a reduction in GHG emissions. This measure is best quantified when applied to larger developments and developments where the density is somewhat similar to the surrounding area due to the underlying research being founded in data from the neighborhood level.

Subsector

Land Use

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

This measure is most accurately quantified when applied to larger developments and/or developments where the density is somewhat similar to the surrounding neighborhood.

Cost Considerations

Depending on the location, increasing residential density may increase housing and development costs. However, the costs of providing public services, such as health care, education, policing, and transit, are generally lower in more dense areas where things are closer together. Infrastructure that provides drinking water and electricity also operates more efficiently when the service and transmission area is reduced. Local governments may provide approval streamlining benefits or financial incentives for infill and high-density residential projects.

Expanded Mitigation Options

When paired with Measure T-2, *Increase Job Density*, the cumulative densification from these measures can result in a highly walkable and bikeable area, yielding increased co-benefits in VMT reductions, improved public health, and social equity.

GHG Reduction Formula

$$A = \frac{B - C}{C} \times D$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project VMT in study area	0–30.0	%	calculated
User Inputs				
B	Residential density of project development	[ ]	du/acre	user input
Constants, Assumptions, and Available Defaults				
C	Residential density of typical development	9.1	du/acre	Ewing et al. 2007
D	Elasticity of VMT with respect to residential density	-0.22	unitless	Stevens 2016

Further explanation of key variables:

- (C) – The residential density of typical development is based on the blended average density of residential development in the U.S. forecasted for 2025. This estimate includes apartments, condominiums, and townhouses, as well as detached single-family housing on both small and large lots. An acre in this context is defined as an acre of developed land, not including streets, school sites, parks, and other undevelopable land. If reductions are being calculated from a specific baseline derived from a travel demand forecasting model, the residential density of the relevant transportation analysis zone should be used instead of the value for a typical development.
- (D) – A meta-regression analysis of five studies that controlled for self-selection found that a 0.22 percent decrease in VMT occurs for every 1 percent increase in residential density (Stevens 2016).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The percent reduction in GHG emissions (A) is capped at 30 percent. The purpose for the 30 percent cap is to limit the influence of any single built environmental factor (such as density). Projects that implement multiple land use strategies (e.g., density, design, diversity) will show more of a reduction than relying on improvements from a single built environment factor.

Subsector Maximum

($\sum A_{max_{T\text{-}1 \text{ through } T\text{-}4}} \leq 65\%$) This measure is in the Land Use subsector. This subcategory includes Measures T-1 through T-4. The VMT reduction from the combined implementation of all measures within this subsector is capped at 65 percent.

Example GHG Reduction Quantification

The user reduces VMT by increasing the residential density of the project study area. In this example, the project's residential density would be 15 du per acre (B), which would reduce GHG emissions from project VMT by 14.2 percent.

$$A = \frac{15 \frac{du}{ac} - 9.1 \frac{du}{ac}}{9.1 \frac{du}{ac}} \times -0.22 = -14.2\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Ewing, R., K. Bartholomew, S. Winkelman, J. Walters, and D. Chen. 2007. *Growing Cooler: The Evidence on Urban Development and Climate Change*. October. Available: https://www.nrdc.org/sites/default/files/cit_07092401a.pdf. Accessed: January 2021.
- Stevens, M. 2016. Does Compact Development Make People Drive Less? *Journal of the American Planning Association* 83:1(7–18), DOI: 10.1080/01944363.2016.1240044. November. Available: https://www.researchgate.net/publication/309890412_Does_Compact_Development_Make_People_Drive_Less. Accessed: January 2021.

T-2. Increase Job Density

GHG Mitigation Potential

30%

Up to 30.0% of GHG emissions from project VMT in the study area

Co-Benefits (icon key on pg. 34)

Climate Resilience

Increased density can put people closer to resources they may need to access during an extreme weather event. Increased density can also shorten commutes, decreasing the amount of time people are on the road and exposed to hazards such as extreme heat or flooding.

Health and Equity Considerations

Increased job density may increase nearby housing prices. Jurisdictions should consider the jobs-housing balance and consider measures to reduce displacement and increase affordable housing.

Measure Description

This measure accounts for the VMT reduction achieved by a project that is designed with a higher density of jobs compared to the average job density in the U.S. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. Increasing job density results in shorter and fewer trips by single-occupancy vehicles and thus a reduction in GHG emissions.

Subsector

Land Use

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

This measure is most accurately quantified when applied to larger developments and/or developments where the density is somewhat similar to the surrounding neighborhood.

Cost Considerations

Areas with increased job density generally have higher economic gross metropolitan product (GMP) and job growth. Prosperity, measured as GMP per job, also grows faster in areas with increased job density. Decreased commute times and car use may also generate funds for public transit and reduce the need for infrastructure spending on road maintenance.

Expanded Mitigation Options

When paired with Measure T-1, *Increase Residential Density*, the cumulative densification from these measures can result in a highly walkable and bikeable area, yielding increased co-benefits in VMT reductions, improved public health, and social equity.

GHG Reduction Formula

$$A = \frac{B - C}{C} \times D$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project VMT in study area	0–30.0	%	calculated
User Inputs				
B	Job density of project development	[ ]	jobs per acre	user input
Constants, Assumptions, and Available Defaults				
C	Job density of typical development	145	jobs per acre	ITE 2020
D	Elasticity of VMT with respect to job density	-0.07	unitless	Stevens 2016

Further explanation of key variables:

- (C) – The jobs density is based on the calculated density of a development with a floor-area ratio of 1.0 and 300 square feet (sf) of building space per employee:

  $$\frac{43{,}560 \frac{\text{sf}}{\text{acre}}}{300 \frac{\text{sf}}{\text{employee}}} \times 1.0 \frac{\text{sf}}{\text{acre}} = 145 \frac{\text{employees}}{\text{acre}}$$

  If reductions are being calculated from a specific baseline derived from a travel demand forecasting model, the job density of the relevant transportation analysis zone should be used for this variable instead of the default value presented above.
- (D) – A meta-regression analysis of two studies that controlled for self-selection found that a 0.07 percent decrease in VMT occurs for every 1 percent increase in job density (Stevens 2016).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The percent reduction in GHG emissions (A) is capped at 30 percent. The purpose for the 30 percent cap is to limit the influence of any single built environmental factor (such as density). Projects that implement multiple land use strategies (e.g., density, design, diversity) will show more of a reduction than relying on improvements from a single built environment factor.

Subsector Maximum

($\sum A_{max_{T\text{-}1 \text{ through } T\text{-}4}} \leq 65\%$) This measure is in the Land Use subsector. This subcategory includes Measures T-1 through T-4. The VMT reduction from the combined implementation of all measures within this subsector is capped at 65 percent.

Example GHG Reduction Quantification

The user reduces VMT by increasing the job density of the project study area. In this example, the project's job density would be 400 jobs per acre (B), which would reduce GHG emissions from project VMT by 12.3 percent.

$$A = \frac{400 \frac{job}{acre} - 145 \frac{job}{acre}}{145 \frac{job}{acre}} \times -0.07 = -12.3\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Institute of Transportation Engineers (ITE). *Trip Generation Manual*. 10th Edition. Available: https://www.ite.org/technical-resources/topics/trip-and-parking-generation/trip-generation-10th-edition-formats/. Accessed: January 2021.
- Stevens, M. 2016. Does Compact Development Make People Drive Less? *Journal of the American Planning Association* 83:1(7–18), DOI: 10.1080/01944363.2016.1240044. November. Available: https://www.researchgate.net/publication/309890412_Does_Compact_Development_Make_People_Drive_Less. Accessed: January 2021.

T-3. Provide Transit-Oriented Development

GHG Mitigation Potential

Up to 31.0% of GHG emissions from project VMT in study area

Co-Benefits (icon key on pg. 34)

Climate Resilience

Providing TOD puts a large number of people close to reliable public transportation, diversifying their transportation options during an extreme weather event.

Health and Equity Considerations

TOD may increase housing prices, leading to gentrification and displacement. Please refer to the *Accountability and Anti-Displacement and Housing* section in Chapter 5, *Measures for Advancing Health and Equity*, for potential strategies to minimize disruption to existing residents. TOD coupled with affordable housing options can help to support equity by helping to lower transportation costs for residents and increase active mobility.

Measure Description

This measure would reduce project VMT in the study area relative to the same project sited in a non-transit-oriented development (TOD) location. TOD refers to projects built in compact, walkable areas that have easy access to public transit, ideally in a location with a mix of uses, including housing, retail offices, and community facilities. Project site residents, employees, and visitors would have easy access to high-quality public transit, thereby encouraging transit ridership and reducing the number of single-occupancy vehicle trips and associated GHG emissions.

Subsector

Land Use

Locational Context

Urban and suburban. Rural only if adjacent to commuter rail station with convenient rail service to a major employment center.

Scale of Application

Project/Site

Implementation Requirements

To qualify as a TOD, the development must be a residential or office project that is within a 10-minute walk (0.5 mile) of a high frequency transit station (either rail, or bus rapid transit with headways less than 15 minutes). Ideally, the distance should be no more than 0.25 to 0.3 of a mile but could be up to 0.5 mile if the walking route to station can be accessed by pedestrian-friendly routes. Users should confirm "unmitigated" or "baseline" VMT does not already account for reductions from transit proximity.

Cost Considerations

TOD reduces car use and car ownership rates, providing cost savings to residents. It can also increase property values and public transit use rates, providing additional revenue to municipalities, as well as open new markets for business development. Increased transit use will likely necessitate increased spending on maintaining and improving public transit systems, the costs of which may be high.

Expanded Mitigation Options

When building TOD, a best practice is to incorporate bike and pedestrian access into the larger network to increase the likelihood of transit use.

GHG Reduction Formula

$$A = \frac{(B \times C)}{-D}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project VMT in study area	6.9–31.0	%	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
B	Transit mode share in surrounding city	Table T-3.1	%	FHWA 2017a
C	Ratio of transit mode share for TOD area with measure compared to existing transit mode share in surrounding city	4.9	unitless	Lund et al. 2004
D	Auto mode share in surrounding city	Table T-3.1	%	FHWA 2017b

Further explanation of key variables:

- (B and D) – Ideally, the user will calculate transit and auto mode share for a Project/Site at a scale no larger than a census tract. Ideally, variables B and D will reflect travel behavior in locations that are *not* already within 0.5 mile of a high-quality transit stop and may instead substitute data from nearby tracts further from transit if such locations exist. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input the mode share for one of the six most populated core-based statistical areas (CBSAs) in California, as presented in Table T-3.1 in Appendix C, *Emission Factors and Data Tables*. Transit mode share is likely to be smaller for areas not covered by the listed CBSAs, which represent the most transit-accessible areas of the state. Conversely, auto mode share is likely to be larger.
- (C) – A study of people living in TODs in California found that, on average, transit shares for TOD residents exceed the surrounding city by a factor of 4.9 (Lund et al. 2004).

GHG Calculation Caps or Maximums

Measure Maximum

$((B \times C)_{max})$ The transit mode share in the project study area with the measure is capped at 27 percent. This is based on the weighted average transit commute mode share of five surveyed sites in California where residents lived within 3 miles of rail stations (Lund et al. 2004). As transit mode share is typically higher for commute trips compared to all trips, 27 percent represents a reasonable upper bound for expected transit mode share in a TOD

area. Projects in the CBSAs of San Francisco-Oakland-Hayward and San Jose-Sunnyvale-Santa Clara would have their transit mode share capped at 27 percent in the formula.

(A_{max}) For projects that use default CBSA data from Table T-3.1 in Appendix C, the maximum percent reduction in GHG emissions (A) is 31.0 percent. This is based on a project in the CBSA of San Francisco-Oakland-Hayward with a transit mode share that reaches the cap ($(B \times C)_{max}$). This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}1 \text{ through } T\text{-}4}} \leq 65\%$) This measure is in the Land Use subsector. This subcategory includes Measures T-1 through T-4. The VMT reduction from the combined implementation of all measures within this subsector is capped at 65 percent.

Example GHG Reduction Quantification

The user reduces VMT by locating their project in a TOD location. Project site residents, employees, and visitors would have easy access to high-quality public transit, thereby encouraging transit use and reducing single occupancy vehicle travel. In this example, the project is within the San Jose-Sunnyvale-Santa Clara CBSA with an existing transit mode share (B) of 6.69 percent. Applying a 4.9 ratio of transit mode share for TOD area with the measure compared to existing transit mode share in the surrounding city yields 33 percent, which exceeds the 27 percent cap ($(B \times C)_{max}$). Therefore, 27 percent is used to define ($B \times C$). The existing vehicle mode share is 86.96 percent (D). The user would reduce GHG emissions from project study area VMT (as compared to the same project in a non-TOD location) by 31 percent.

$$A = \frac{27\%}{-86.96\%} = -31\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

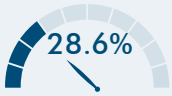
The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Federal Highway Administration. 2017a. *National Household Travel Survey–2017 Table Designer. Travel Day PMT by TRPTRANS by HH_CBSA*. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Federal Highway Administration. 2017b. *National Household Travel Survey – 2017 Table Designer. Average Vehicle Occupancy by HHSTFIPS*. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Lund, H., R. Cervero, and R. Wilson. 2004. *Travel Characteristics of Transit-Oriented Development in California*. January. Available: https://community-wealth.org/sites/clone.community-wealth.org/files/downloads/report-lund-cerv-wil.pdf. Accessed: January 2021.

T-4. Integrate Affordable and Below Market Rate Housing

GHG Mitigation Potential



Up to 28.6% of GHG emissions from project/site multifamily residential VMT

Co-Benefits (icon key on pg. 34)

Climate Resilience

Increasing affordable housing creates the opportunity for a greater diversity of people to be closer to their desired destinations and the resources they may need to access during an extreme weather event. Close proximity to destinations allows for more opportunities to use active transportation and transit and to be less reliant on private vehicles. Alleviating the housing-cost burden also enables more people to remain housed, and increases people's capacity to respond to disruptions, including climate impacts.

Health and Equity Considerations

Neighborhoods should include different types of housing to support a variety of household sizes, age ranges, abilities, and incomes.

Measure Description

This measure requires below market rate (BMR) housing. BMR housing provides greater opportunity for lower income families to live closer to job centers and achieve a jobs/housing match near transit. It is also an important strategy to address the limited availability of affordable housing that might force residents to live far away from jobs or school, requiring longer commutes. The quantification method for this measure accounts for VMT reductions achieved for multifamily residential projects that are deed restricted or otherwise permanently dedicated as affordable housing.

Subsector

Land Use

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

Multifamily residential units must be permanently dedicated as affordable for lower income families. The California Department of Housing and Community Development (2021) defines lower-income as 80 percent of area median income or below, and affordable housing as costing 30 percent of gross household income or less.

Cost Considerations

Depending on the source of the affordable subsidy, BMR housing may have implications for development costs but would also have the benefit of reducing costs for public services, similar to Measure T-1, *Increase Residential Density*.

Expanded Mitigation Options

Pair with Measure T-1, *Increase Residential Density*, and Measure T-2, *Increase Job Density*, to achieve greater population and employment diversity.

GHG Reduction Formula

$A = B \times C$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from Project/Site VMT for multifamily residential developments	0–28.6	%	calculated
User Inputs				
B	Percent of multifamily units permanently dedicated as affordable	0–100	%	user input
Constants, Assumptions, and Available Defaults				
C	Percent reduction in VMT for qualified units compared to market rate units	-28.6	%	ITE 2021

Further explanation of key variables:

- (B) – This refers to percent of multifamily units in the project that are deed restricted or otherwise permanently dedicated as affordable.
- (C) – The 11th Edition of the *ITE Trip Generation Manual* (ITE 2021) contains daily vehicle trip rates for market rate multifamily housing that is low-rise and not close to transit (ITE code 221) as well as affordable multifamily housing (ITE code 223). While these rates do not account for trip length, they serve as a proxy for the expected difference in vehicle trip generation and VMT generation presuming similar trip lengths for both types of land use. If the user has information about trip length differences between market rate and affordable housing, then adjusting the percent reduction accordingly is recommended.

  Users should note that the ITE trip rate estimates are based on a small sample of studies for the affordable housing rate and that no stratification of affordable housing by number of stories was available. This is an important distinction since the multifamily low-rise vehicle trip rate applies to four or fewer stories. Therefore, this measure may not apply to affordable housing projects with more than four stories.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The maximum GHG reduction from this measure is 28.6 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}1 \text{ through } T\text{-}4}} \leq 65\%$) This measure is in the Land Use subsector. This subsector includes Measures T-1 through T-4. The VMT reduction from the combined implementation of all measures within this subsector is capped at 65 percent.

Example GHG Reduction Quantification

The user reduces project VMT by requiring a portion of the multifamily residential units to be permanently dedicated as affordable. In this example, the percent of units (B) is 100 percent, which would reduce GHG emissions from VMT by 28.6 percent.

$$A = 100\% \times -28.6\% = -28.6\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

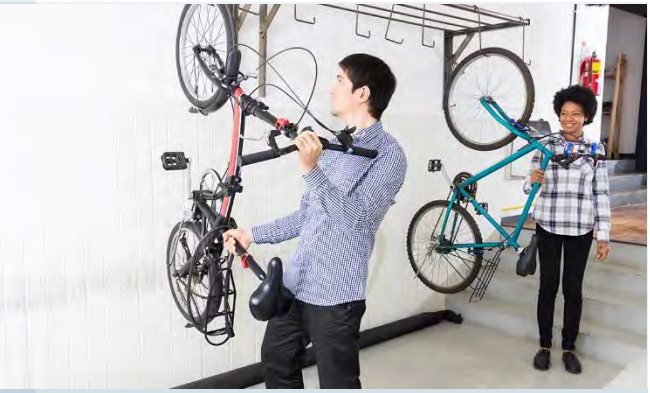
VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

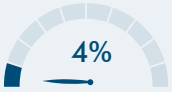
Sources

- California Department of Housing and Community Development. 2021. *Income Limits*. Available: https://www.hcd.ca.gov/grants-funding/income-limits/index.shtml#:~:text=%E2%80%9CAffordable%20housing%20cost%E2%80%9D%20for%20lower,of%20gross%20income%2C%20with%20variations. Accessed; November 2021.
- Institute of Transportation Engineers (ITE). 2021. *Trip Generation Manual*. 11th Edition. Available: https://www.ite.org/technical-resources/topics/trip-and-parking-generation/. Accessed; November 2021.

T-5. Implement Commute Trip Reduction Program (Voluntary)



GHG Mitigation Potential



Up to 4.0% of GHG emissions from project/site employee commute VMT

Co-Benefits (icon key on pg. 34)

Climate Resilience

CTR programs could result in less traffic, potentially reducing congestion or delays on major roads during peak AM and PM traffic periods. When this reduction occurs during extreme weather events, it better allows emergency responders to access a hazard site. Lower transportation costs would also increase community resilience by freeing up resources for other purposes.

Health and Equity Considerations

Design of CTR programs need to ensure equitable access and benefits to all employees are provided considering disparate existing mobility options in diverse communities.

Measure Description

This measure will implement a voluntary commute trip reduction (CTR) program with employers. CTR programs discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking, thereby reducing VMT and GHG emissions. Voluntary implementation elements are described in this measure.

Subsector

Trip Reduction Programs

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

Voluntary CTR programs must include the following elements to apply the VMT reductions reported in literature.

- Employer-provided services, infrastructure, and incentives for alternative modes such as ridesharing (Measure T-8), discounted transit (Measure T-9), bicycling (Measure T-10), vanpool (Measure T-11), and guaranteed ride home.
- Information, coordination, and marketing for said services, infrastructure, and incentives (Measure T-7).

Cost Considerations

Employer costs may include recurring costs for transit subsidies, capital and maintenance costs for the alternative transportation infrastructure, and labor costs for staff to manage the program. Where the local municipality has a VMT reduction ordinance, costs may include the labor costs for government staff to track the efficacy of the program.

Expanded Mitigation Options

Other strategies may also be included as part of a voluntary CTR program, though they are not included in the VMT reductions reported by literature and thus are not incorporated in the VMT reductions for this measure.

This program typically serves as a complement to the more effective workplace CTR measures such as pricing workplace parking (Measure T-12) or implementing employee parking "cash-out" (Measure T-13).

GHG Reduction Formula

$A = B \times C$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project/site employee commute VMT	0–4.0	%	calculated
User Inputs				
B	Percent of employees eligible for program	0–100	%	user input
Constants, Assumptions, and Available Defaults				
C	Percent reduction in commute VMT from eligible employees	-4	%	Boarnet et al. 2014

Further explanation of key variables:

- (B) – This refers to the percent of employees that would be able to participate in the program. Employees who might not be able to participate could include those who work nighttime hours when transit and rideshare services are not available or employees who are required to drive to work as part of their job duties. This input does not refer to the percent of employees who participate in the program.
- (C) – A policy brief summarizing the results of employer-based trip reduction studies concluded that these programs reduce total commute VMT for employees at participating work sites by 4 to 6 percent (Boarnet et al. 2014). To be conservative, the low end of the range is cited.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The maximum GHG reduction from this measure is 4 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}5 \text{ through } T\text{-}13}} \leq 45\%$) This measure is in the Trip Reduction Programs subsector. This subcategory includes Measures T-5 through T-13. The employee commute VMT reduction from the combined implementation of all measures within this subsector is capped at 45 percent.

Mutually Exclusive Measures

If this measure is selected, the user may not also take credit for Measure T-6, which represents the same implementation activities as Measure T-5, except that the CTR program would be mandatory. Users should select either Measure T-5 or T-6.

If this measure is selected, the user may not also take credit for Measures T-7 through T-11. Measure T-5 accounts for the combined GHG reductions achieved by each of these individual measures. To combine the GHG reductions from T-5 with any of these measures would be considered double counting. However, the user may take credit for Measures T-12 through T-13 within the larger CTR subcategory, so long as the combined VMT reduction does not exceed 45 percent, as noted above.

Example GHG Reduction Quantification

The user reduces employee commute VMT by requiring that employers of a project offer a voluntary commute trip reduction program to their employees. In this example, the percent of employees eligible (B) is 100 percent, which would reduce GHG emissions from employee commute VMT by 4 percent.

$$A = 100\% \times -4\% = -4\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Boarnet, M., H. Hsu, and S. Handy. 2014. *Impacts of Employer-Based Trip Reduction Programs and Vanpools on Passenger Vehicle Use and Greenhouse Gas Emissions*. September. Available: https://ww2.arb.ca.gov/sites/default/files/2020-06/Impacts_of_Employer-Based_Trip_Reduction_Programs_and_Vanpools_on_Passenger_Vehicle_Use_and_Greenhouse_Gas_Emissions_Policy_Brief.pdf. Accessed: January 2021.

T-6. Implement Commute Trip Reduction Program (Mandatory Implementation and Monitoring)

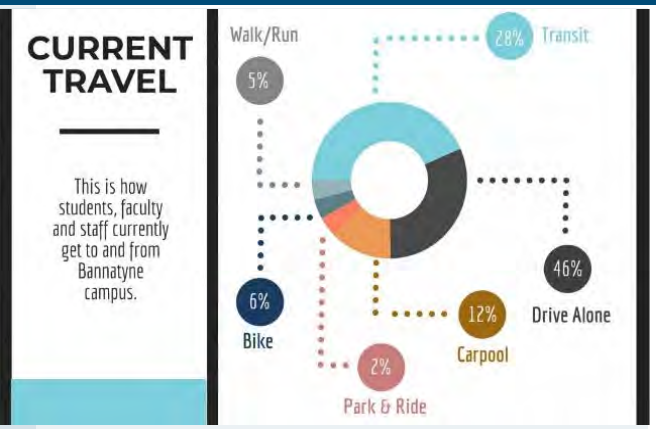


Photo Credit: University of Manitoba, 2018

GHG Mitigation Potential

Up to 26.0% of GHG emissions from project/site employee commute VMT

Co-Benefits (icon key on pg. 34)

Climate Resilience

Commute trip reduction programs could result in less traffic, potentially reducing congestion or delays on major roads during peak AM and PM traffic periods. When this reduction occurs during extreme weather events, it better allows emergency responders to access a hazard site. Lower transportation costs would also increase community resilience by freeing up resources for other purposes.

Health and Equity Considerations

Design of CTR programs needs to consider existing mobility options in diverse communities and ensure equitable access and benefit to all employees.

Measure Description

This measure will implement a mandatory CTR program with employers. CTR programs discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking, thereby reducing VMT and GHG emissions.

Subsector

Trip Reduction Programs

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

The mandatory CTR program must include all other elements (i.e., Measures T-7 through T-11) described for the voluntary program (Measure T-5) plus include mandatory trip reduction requirements (including penalties for non-compliance) and regular monitoring and reporting to ensure the calculated VMT reduction matches the observed VMT reduction.

Cost Considerations

Employer costs may include recurring, direct costs for transit subsidies, capital and maintenance costs for alternative transportation infrastructure, and labor costs for staff to manage the program. If the local municipality has a mandatory VMT reduction ordinance, additional employer costs could include non-compliance penalties if the municipality fines CTR programs that do not meet a VMT goal. Municipal costs may include the labor costs for government staff to track the efficacy of the program, which may be outweighed by revenue generated from fines collected from non-compliant businesses.

Expanded Mitigation Options

This program typically serves as a complement to the more effective workplace CTR measures, such as pricing workplace parking (Measure T-12) or implementing employee parking "cash-out" (Measure T-13).

GHG Reduction Formula

$A = B \times C \times D$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project/site employee commute VMT	0–26.0	%	calculated
User Inputs				
B	Percent of employees eligible for program	0–100	%	user input
Constants, Assumptions, and Available Defaults				
C	Percent reduction in vehicle mode share of employee commute trips	-26	%	Nelson\Nygaard Consulting Associates 2015
D	Adjustment from vehicle mode share to commute VMT	1	unitless	assumed

Further explanation of key variables:

- (B) – This refers to the percent of employees that would be able to participate in the program. This will usually be 100 percent. Employees who might not be able to participate could include those who work nighttime hours when transit and rideshare services are not available or employees who are required to drive to work as part of their job duties. This input does not refer to the percent of employees who participate in the program.
- (C) – A multiyear study of mode share on Genentech's South San Francisco campuses tracked the long-run change in employee commute mode share with implementation of mandatory CTR. Between 2006 and 2014, employee vehicle mode share (includes single-occupied vehicles and carpools) decreased from approximately 90 percent to 64 percent, which is a 26 percent reduction (Nelson\Nygaard Consulting Associates 2015).
- (D) – The adjustment factor from vehicle mode share to commute VMT is 1. This assumes that all vehicle trips will average out to typical trip length. Thus, it can be assumed that a percentage reduction in vehicle trips will equal the same percentage reduction in VMT.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The maximum GHG reduction from this measure is 26 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}5 \text{ through } T\text{-}13}} \leq 45\%$) This measure is in the Trip Reduction Programs subsector. This subcategory includes Measures T-5 through T-13. The employee commute VMT reduction from the combined implementation of all measures within this subsector is capped at 45 percent.

Mutually Exclusive Measures

If this measure is selected, the user may not also take credit for Measure T-5, which represents the same implementation activities as Measure T-5, except that the CTR program would be mandatory. Users should select either Measure T-5 or T-6.

If this measure is selected, the user may not also take credit for Measures T-7 through T-11. Measure T-6 accounts for the combined GHG reductions achieved by each of these individual measures. To combine the GHG reductions from T-6 with any of these measures would be considered double counting. However, the user may take credit for Measure T-12 and T-13 within the larger CTR subcategory, so long as the combined VMT reduction does not exceed 45 percent, as noted above.

Example GHG Reduction Quantification

The user reduces employee commute VMT by requiring that the employer of the proposed project offer a mandatory CTR program to their employees. In this example, the percent of employees eligible (B) is 100 percent, which would reduce GHG emissions from employee commute VMT by 26 percent.

$$A = 100\% \times -26\% \times 1 = -26\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Nelson/Nygaard Consulting Associates. 2015. *Genentech–South San Francisco Campus TDM and Parking Report*. June. Available: http://ci-ssf-ca.granicus.com/MetaViewer.php?view_id=2&clip_id=859&meta_id=62028. Accessed: January 2021.

T-7. Implement Commute Trip Reduction Marketing

Photo Credit: Sacramento Area Council of Governments, 2012

GHG Mitigation Potential

Up to 4.0% of GHG emissions from project/site employee commute VMT

Co-Benefits (icon key on pg. 34)

Climate Resilience

Commute trip reduction programs could result in less traffic, potentially reducing congestion or delays on major roads during peak AM and PM traffic periods. When this reduction occurs during extreme weather events, it better allows emergency responders to access a hazard site. Lower transportation costs would also increase community resilience by freeing up resources for other purposes.

Health and Equity Considerations

Design of CTR programs needs to consider existing mobility options in diverse communities and ensure equitable access and benefit to all employees. CTR programs may need to include multi-language materials.

Measure Description

This measure will implement a marketing strategy to promote the project site employer's CTR program. Information sharing and marketing promote and educate employees about their travel choices to the employment location beyond driving such as carpooling, taking transit, walking, and biking, thereby reducing VMT and GHG emissions.

Subsector

Trip Reduction Programs

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

The following features (or similar alternatives) of the marketing strategy are essential for effectiveness.

- Onsite or online commuter information services.
- Employee transportation coordinators.
- Onsite or online transit pass sales.
- Guaranteed ride home service.

Cost Considerations

Employer costs include labor and materials for development and distribution of survey and marketing materials to promote the program and educate potential participants.

Expanded Mitigation Options

This measure could be packaged with other commute trip reduction measures (Measures T-8 through T-13) as a comprehensive CTR program (Measure T-5 or T-6).

GHG Reduction Formula

$A = B \times C \times D$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project/site employee commute VMT	0–4.0	%	calculated
User Inputs				
B	Percent of employees eligible for program	0–100	%	user input
Constants, Assumptions, and Available Defaults				
C	Percent reduction in employee commute vehicle trips	-4	%	TRB 2010
D	Adjustment from vehicle trips to VMT	1	unitless	assumed

Further explanation of key variables:

- (B) – This refers to the percent of employees that would be able to participate in the program. This will usually be 100 percent. Employees who might not be able to participate could include those who work nighttime hours when transit and rideshare services are not available or employees who are required to drive to work as part of their job duties. This input does not refer to the percent of employees who actually participate in the program.
- (C) – A review of studies measuring the effect of transportation demand management measures on traveler behavior notes that the average empirically-based estimate of reductions in vehicle trips for full-scale, site-specific employer support programs is 4 to 5 percent. To be conservative, the low end of the range is cited (TRB 2010).
- (D) – The adjustment factor from vehicle trips to VMT is 1. This assumes that all vehicle trips will average out to typical trip length ("assumes all trip lengths are equal"). Thus, it can be assumed that a percentage reduction in vehicle trips will equal the same percentage reduction in VMT.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The maximum GHG reduction from this measure is 4 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}5 \text{ through } T\text{-}13}} \leq 45\%$) This measure is in the Trip Reduction Programs subsector. This subcategory includes Measures T-5 through T-13. The employee commute VMT reduction from the combined implementation of all measures within this subsector is capped at 45 percent.

Mutually Exclusive Measures

If this measure is selected, the user may not also take credit for either Measure T-5 or T-6. However, this measure may be implemented alongside other individual CTR measures (Measures T-8 through T-13). The efficacy of individual programs may vary highly based on individual employers and local contexts.

Example GHG Reduction Quantification

The user reduces employee commute VMT by requiring that employers of a project market to employees travel options for modes alternative to single-occupied vehicles. In this example, the percent of employees eligible (B) is 100 percent, which would reduce GHG emissions from employee commute VMT by 4 percent.

$$A = 100\% \times -4\% \times 1 = -4\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Transportation Research Board (TRB). 2010. *Traveler Response to Transportation System Changes Handbook, Third Edition: Chapter 19, Employer and Institutional TDM Strategies*. June. Available: http://www.trb.org/Publications/Blurbs/163781.aspx. Accessed: January 2021.

T-8. Provide Ridesharing Program

GHG Mitigation Potential

Up to 8.0% of GHG emissions from project/site employee commute VMT

Co-Benefits (icon key on pg. 34)

Climate Resilience

Ridesharing programs could result in less traffic, potentially reducing congestion or delays on major roads during peak AM and PM traffic periods. When this reduction occurs during extreme weather events, it better allows emergency responders to access a hazard site. Lower transportation costs would also increase community resilience by freeing up resources for other purposes.

Health and Equity Considerations

Program should include all onsite workers, such as contractors, interns, and service workers. Because ridesharing is vehicle-based, and some employees may not be in areas with feasible rideshare networks, design of programs need to ensure equitable benefits to those with and without access to rideshare opportunities.

Measure Description

This measure will implement a ridesharing program and establish a permanent transportation management association with funding requirements for employers. Ridesharing encourages carpooled vehicle trips in place of single-occupied vehicle trips, thereby reducing the number of trips, VMT, and GHG emissions.

Subsector

Trip Reduction Programs

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

Ridesharing must be promoted through a multifaceted approach. Examples include the following.

- Designating a certain percentage of desirable parking spaces for ridesharing vehicles.
- Designating adequate passenger loading and unloading and waiting areas for ridesharing vehicles.
- Providing an app or website for coordinating rides.

Cost Considerations

Costs of developing, implementing, and maintaining a rideshare program in a way that encourages participation are generally borne by municipalities or employers. The beneficiaries include the program participants saving on commuting costs, the employer reducing onsite parking expenses, and the municipality reducing cars on the road, which leads to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

When providing a ridesharing program, a best practice is to establish funding by a non-revocable funding mechanism for employer-provided subsidies. In addition, encourage use of low-emission ridesharing vehicles (e.g., shared Uber Green).

This measure could be paired with any combination of the other commute trip reduction strategies (Measures T-7 through T-13) for increased reductions.

GHG Reduction Formula

$A = B \times C$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project/site employee commute VMT	0–8.0	%	calculated
User Inputs				
B	Percent of employees eligible for program	0–100	%	user input
Constants, Assumptions, and Available Defaults				
C	Percent reduction in employee commute VMT	Table T-8.1	%	SANDAG 2019

Further explanation of key variables:

- (B) – This refers to the percent of employees that would be able to participate in the program. This will usually be 100 percent. Employees who might not be able to participate could include those who work nighttime hours when transit and rideshare services are not available or employees who are required to drive to work as part of their job duties. This input does not refer to the percent of employees who actually participate in the program.
- (C) – The percent reduction in employee commute VMT by place type is provided in Table T-8.1 in Appendix C. The reduction differs by place type because the willingness and ability to participate in carpooling is higher in urban areas than in suburban areas. Note that this measure is not applicable for implementation in rural areas (SANDAG 2019).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The maximum GHG reduction from this measure is 8 percent.

Subsector Maximum

($\sum A_{max_{T\text{-}5 \text{ through } T\text{-}13}} \leq 45\%$) This measure is in the Trip Reduction Programs subsector. This subcategory includes Measures T-5 through T-13. The employee commute VMT reduction from the combined implementation of all measures within this subsector is capped at 45 percent.

Mutually Exclusive Measures

If this measure is selected, the user may not also take credit for either Measure T-5 or T-6. However, this measure may be implemented alongside other individual CTR measures (Measures T-7 and T-9 through T-13). The efficacy of individual programs may vary highly based on individual employers and local contexts.

Example GHG Reduction Quantification

The user reduces employee commute VMT by requiring that employers of a project provide a ridesharing program to their employees. In this example, the percent of employees eligible (B) at a packaging and distribution center is 50 percent and the place type of the project is urban (C). GHG emissions from employee commute VMT would be reduced by 4 percent.

$A = 50\% \times -8\% = -4\%$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- San Diego Association of Governments (SANDAG). 2019. *Mobility Management VMT Reduction Calculator Tool–Design Document*. June. Available: https://www.icommutesd.com/docs/default-source/planning/tool-design-document_final_7-17-19.pdf?sfvrsn=ec39eb3b_2. Accessed: January 2021.

T-9. Implement Subsidized or Discounted Transit Program

GHG Mitigation Potential

Up to 5.5% of emissions from employee/resident vehicles accessing the site

Co-Benefits (icon key on pg. 34)

Climate Resilience

Subsidized and discounted transit programs increase the capacity of low-income populations to use transit to evacuate or access resources during an extreme weather event. They could also incentivize more people to use transit, resulting in less traffic and better allowing emergency responders to access a hazard site during an extreme weather event. Lower overall out-of-pocket costs would also help increase community resilience by freeing up resources for other purposes.

Health and Equity Considerations

Program should include all onsite workers, such as contractors, interns, and service workers.

Measure Description

This measure will provide subsidized or discounted, or free transit passes for employees and/or residents. Reducing the out-of-pocket cost for choosing transit improves the competitiveness of transit against driving, increasing the total number of transit trips and decreasing vehicle trips. This decrease in vehicle trips results in reduced VMT and thus a reduction in GHG emissions.

Subsector

Trip Reduction Programs

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

The project should be accessible either within 1 mile of high-quality transit service (rail or bus with headways of less than 15 minutes), 0.5 mile of local or less frequent transit service, or along a designated shuttle route providing last-mile connections to rail service. If a well-established bikeshare service (Measure T-22-A) is available, the site may be located up to 2 miles from a high-quality transit service.

If more than one transit agency serves the site, subsidies should be provided that can be applied to each of the services available. If subsidies are applied for only one service, all variable inputs below should also pertain only to the service that is subsidized.

Cost Considerations

The employer cost is the recurring, direct cost for transit subsidies. The subsidies will lower the per capita income of the transit service, decreasing the revenue of the local transit agency. This cost may be offset by increased revenue from increased ridership. The beneficiaries include the program participants saving on commuting cost, the employer reducing onsite parking expenses, and the municipality reducing cars on the road, which leads to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

This measure could be paired with any combination of the other commute trip reduction strategies (Measures T-7 through T-13) for increased reductions.

GHG Reduction Formula

$$A = \frac{C}{B} \times G \times D \times E \times F \times H \times I$$

GHG Calculation Variables

If subsidies or discounts target employees, the GHG reduction from this measure may be limited to work-related employee trips only (i.e., home-to- work) and work-to-other, where at least one trip end is work). If residents are targeted, the GHG reductions extend to all trips.

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from employee/resident vehicles accessing the site	0–5.5	%	calculated
User Inputs				
B	Average transit fare without subsidy	[ ]	$	user input
C	Subsidy amount	[ ]	$	user input
D	Percent of employees/residents eligible for subsidy	0–100	%	user input
E	Percent of project-generated VMT from employees/residents	0–100	%	user input
Constants, Assumptions, and Available Defaults				
F	Transit mode share of all trips or work trips	Table T-3.1 or Table T-9.1	%	FHWA 2017
G	Elasticity of transit boardings with respect to transit fare price	-0.43	unitless	Taylor et al. 2008
H	Percent of transit trips that would otherwise be made in a vehicle	50	%	Handy & Boarnet 2013
I	Conversion factor of vehicle trips to VMT	1.0	unitless	assumption

Further explanation of key variables:

- (B and C) – The average transit fare and subsidy amount can be presented as either a fare per ride, or the cost of a monthly pass for typical transit service near the site. Pricing should be based on the expected means of subsidy implementation; for instance, if a monthly pass is provided to all residents, prices should be input on a monthly basis.
- (D) – The percentage of employees/residents associated with the site who have access to the subsidy. If subsidy is provided as an employee benefit, care should be taken to account for any contract or temporary workers who do not receive such benefits.
- (E) – The percentage of project-generated VMT from employees/residents is used to adjust the percent reduction in GHG emissions from the scale of employee and/or resident-generated VMT to project-generated VMT. If subsidies or discounts target employees at an office development, this value would simply be 100 percent. If the project site is a multifamily development with no onsite workers, this value would also be

100 percent. If the project site is a retail development, this value would be less than 100 percent, as it does not account for retail shopper trips to the site. The share of total VMT generated by employees for visitor-intensive uses, such as retail or medical offices, can be roughly estimated by multiplying the total number of employees by two (to account for both arrival and departure), divided by the total number of daily trips.

- (F) – Ideally, the user will calculate transit mode share for work trips or all trips of a Project/Site at a scale no larger than a census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. Care should be taken *not* to present the reported commute mode share as retrieved from the American Community Survey (ACS), unless the land use is office or employment based and the tables are based on work location (rather than home location). If the subsidies or discounts target employees and their commute trips, then the mode share should use the home-to-work trip purpose. If the user is not able to provide a project-specific value using one of the data sources described above, they have the option to input the transit mode share for one of the six most populated CBSAs in California. The transit mode share for work trips by CBSA is presented in Table T-9.1 in Appendix C (FHWA 2017). The transit mode share for all trips is provided in Table T-3.1 in Appendix C.
- (G) – A cross-sectional analysis of transit use in 265 urbanized areas in the U.S. found that a 0.43 percent decrease in transit boardings occurs for every 1 percent increase in transit fare price (Taylor et al. 2008). A policy brief summarizing the results of transit service strategies found this analysis to fall in the mid-point of observed, short-term values (Handy & Boarnet 2013). Price elasticities of transit demand vary based on both long-term and short-term demand, service type, and service location (Litman 2020 and Handy & Boarnet 2013).
- (H) – Not all new transit trips replace a vehicle trip. The share of transit trips that would otherwise be made by private vehicle ranges from less than 5 percent to 50 percent across studies. This assumption is based on observed values for high quality BRT service under the assumption that this measure is implemented alongside marketing measures and is targeted primarily at reducing vehicle commute trips. (Handy & Boarnet 2013). Note that this study looked at service improvements rather than fare changes and is used as a proxy variable. If project-specific or location-specific information is available, it should be substituted for this assumptive variable.
- (I) – The adjustment factor from vehicle trips to VMT is 1. This assumes that all vehicle trips will average out to typical trip length ("assumes all trip lengths are equal"). Thus, it can be assumed that a percentage reduction in vehicle trips will equal the same percentage reduction in VMT. Subsidies or discounts targeting commute trips may have a higher factor as they are generally longer than the trip lengths for other purposes.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The GHG reduction is capped at 5.5 percent, which is based on the following assumptions:

- (C=B) – The subsidy coverage is capped at 100 percent of the typical transit fare.
- (D) – All employees are eligible for the subsidy.

- (E) – All project-generated VMT is from employee-generated VMT.
- (F) – Employees at an office development in the San Francisco-Oakland-Hayward CBSA have a default transit mode share for work trips of 25.60 percent.

Subsector Maximum

$(\sum A_{max_{T\text{-}5 \text{ through } T\text{-}13}} \leq 45\%)$ This measure is in the Trip Reduction Programs subsector. This subcategory includes Measures T-5 through T-13. The employee commute VMT reduction from the combined implementation of all measures within this subsector is capped at 45 percent.

Mutually Exclusive Measures

If this measure is selected, the user may not also take credit for either Measure T-5 or T-6. However, this measure may be implemented alongside other individual CTR measures (Measures T-7, T-8, T-10 through T-13). The efficacy of individual programs may vary highly based on individual employers and local contexts.

Example GHG Reduction Quantification

In this example, the user reduces VMT by providing all employees (D) of a proposed office development in the San Francisco-Oakland-Hayward CBSA a 100 percent transit subsidy in the form of a $100 monthly transit pass (C=B). The user would reduce GHG emissions from VMT by 5.5 percent.

$$A = \left(\frac{\$100}{\$100} \times -0.43\right) \times 100\% \times 100\% \times 25.60\% \times 50\% \times 1 = -5.5\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

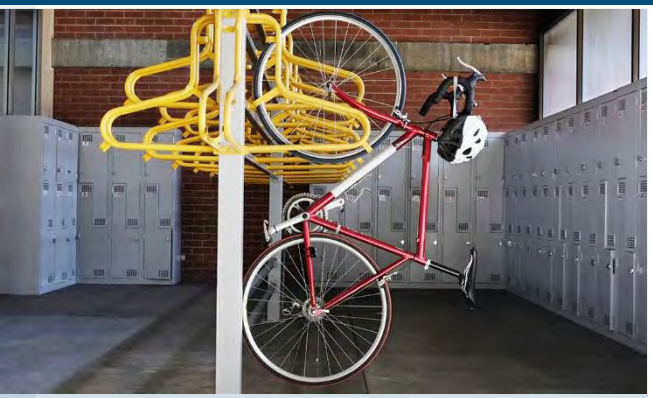
VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

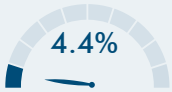
Sources

- Federal Highway Administration (FHWA). 2017. *National Household Travel Survey–2017 Table Designer*. Travel Day PMT by TRPTRANS by HH_CBSA, Workers by WRKTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Handy, L. and S. Boarnet. 2013. *Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions*. Available: http://www.arb.ca.gov/cc/sb375/policies/transitservice/transit_brief.pdf. Accessed: January 2021.
- Litman, T. 2020. *Transit Price Elasticities and Cross-elasticities*. Victoria Transport Policy Institute. April. Available: https://www.vtpi.org/tranelas.pdf. Accessed: January 2021.
- Taylor, B., D. Miller, H. Iseki, and C. Fink. 2008. *Nature and/or Nurture? Analyzing the Determinants of Transit Ridership Across US Urbanized Areas*. Transportation Research Part A: Policy and Practice, 43(1), 60-77. Available: https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.367.5311&rep=rep1&type=pdf. Accessed: January 2021.

T-10. Provide End-of-Trip Bicycle Facilities



GHG Mitigation Potential



Up to 4.4% of GHG emissions from project/site employee commute VMT

Co-Benefits (icon key on pg. 34)

Climate Resilience

End-of-trip bicycle facilities could take more cars off the road, resulting in less traffic and better allowing emergency responders to access a hazard site during an extreme weather event. They could also make it easier for bicycle users to access resources in an extreme weather event.

Health and Equity Considerations

Facilities should be inclusive of all gender identities and expressions. Consider including gender-neutral, single-occupancy options to allow for additional privacy for those who want it.

Measure Description

This measure will install and maintain end-of-trip facilities for employee use. End-of-trip facilities include bike parking, bike lockers, showers, and personal lockers. The provision and maintenance of secure bike parking and related facilities encourages commuting by bicycle, thereby reducing VMT and GHG emissions.

Subsector

Trip Reduction Programs

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

End-of-trip facilities should be installed at a size proportional to the number of commuting bicyclists and regularly maintained.

Cost Considerations

Employer costs include capital and maintenance costs for construction and maintenance of facilities and potentially labor and materials costs for staff to monitor facilities and provide marketing to encourage use of new facilities. The beneficiaries include the program participants saving on commuting cost, the employer reducing onsite parking expenses, and the municipality reducing cars on the road, which leads to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

Best practice is to include an onsite bicycle repair station and post signage on or near secure parking and personal lockers with information about how to reserve or obtain access to these amenities.

This measure could be paired with any combination of the other commute trip reduction strategies (Measures T-7 through T-13) for increased reductions.

GHG Reduction Formula

$$A = \frac{C \times (E - (B \times E))}{D \times F}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from employee project/site commute VMT	0.1–4.4	%	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
B	Bike mode adjustment factor	1.78 or 4.86	unitless	Buehler 2012
C	Existing bicycle trip length for all trips in region	Table T-10.1	miles	FHWA 2017a
D	Existing vehicle trip length for all trips in region	Table T-10.1	miles	FHWA 2017a
E	Existing bicycle mode share for work trips in region	Table T-10.2	%	FHWA 2017b
F	Existing vehicle mode share for work trips in region	Table T-10.2	%	FHWA 2017b

Further explanation of key variables:

- (B) – The bike mode adjustment factor should be provided by the user based on type of bike facility. A study found that commuters with showers, lockers, and bike parking at work are associated with 4.86 times greater likelihood to commute by bicycle when compared to individuals without any bicycle facilities at work. Individuals with bike parking, but no showers and lockers at the workplace, are associated with 1.78 times greater likelihood to cycle to work than those without trip-end facilities (Buehler 2012).
- (C and D) – Ideally, the user will calculate bicycle and auto trip length for a Project/Site at a scale no larger than a census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input the trip lengths for bicycles and vehicles for one of the six most populated CBSAs in California, as presented in Table T-10.1 in Appendix C (FHWA 2017a). Trip lengths are likely to be longer for areas not covered by the listed CBSAs, which represent the denser areas of the state.
- (E and F) – Ideally, the user will calculate bicycle and auto mode share for work trips for a Project/Site at a scale no larger than a census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input the regional average mode shares for bicycle and vehicle

work trips for one of the six most populated CBSAs in California, as presented in Table T-10.2 in Appendix C (FHWA 2017b). If the project study area is not within the listed CBSAs or the user is able to provide a project-specific value, the user should replace these regional defaults in the GHG reduction formula. For areas not covered by the listed CBSAs, which represent the denser areas of the state, bicycle mode share is likely to be lower and vehicle share higher than presented in Table T-10.2.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The maximum GHG reduction from this measure is 4.4 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}5 \text{ through } T\text{-}13}} \leq 45\%$) This measure is in the Trip Reduction Programs subsector. This subcategory includes Measures T-5 through T-13. The employee commute VMT reduction from the combined implementation of all measures within this subsector is capped at 45 percent.

Mutually Exclusive Measures

If this measure is selected, the user may not also take credit for either Measure T-5 or T-6. However, this measure may be implemented alongside other individual CTR measures (Measures T-7, T-8, T-9, and T-11 through T-13). The efficacy of individual programs may vary highly based on individual employers and local contexts.

Example GHG Reduction Quantification

The user reduces VMT by providing end-of-trip facilities for the project's employees, which encourages bicycle trips in place of vehicle trips. In this example, the type of bike facility provided by the project is parking with showers, bike lockers, and personal lockers (B). The project is within San Jose-Sunnyvale-Santa Clara CBSA, and the user does not have project-specific values for trip lengths and mode shares and for bicycles and vehicles. Per Tables T-10.1 and T-10.2 in Appendix C, inputs for these variables are 2.8 miles, 11.5 miles, 4.1 percent, and 86.6 percent, respectively (C, D, E, and F). GHG emissions from employee commute VMT would be reduced by 4.4 percent.

$$A = \frac{2.8 \text{ miles} \times \left(4.1\% - (4.86 \times 4.1\%)\right)}{11.5 \text{ miles} \times 86.6\%} = -4.4\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be

calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Buehler, R. 2012. *Determinants of bicycle commuting in the Washington, DC region: The role bicycle parking, cyclist showers, and free car parking at work.* Transportation Research Part D, 17, 525–531. Available: http://www.pedbikeinfo.org/cms/downloads/DeterminantsofBicycleCommuting.pdf. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017a. *National Household Travel Survey–2017 Table Designer*. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017b. *National Household Travel Survey–2017 Table Designer.* Workers by WRKTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

T-11. Provide Employer-Sponsored Vanpool

Photo Credit: UCLA Transportation/Flickr, 2021

GHG Mitigation Potential

Up to 20.4% of GHG emissions from project/site employee commute VMT

Co-Benefits (icon key on pg. 34)

Climate Resilience

Employer-sponsored vanpools could result in less traffic, potentially reducing congestion or delays on major roads during peak AM and PM traffic periods. When this reduction occurs during extreme weather events, it better allows emergency responders to access a hazard site.

Health and Equity Considerations

Consider using zero-emission or plug-in electric vehicles (PHEVs) for additional emission reduction benefits.

Measure Description

This measure will implement an employer-sponsored vanpool service. Vanpooling is a flexible form of public transportation that provides groups of 5 to 15 people with a cost-effective and convenient rideshare option for commuting. The mode shift from long-distance, single-occupied vehicles to shared vehicles reduces overall commute VMT, thereby reducing GHG emissions.

Subsector

Trip Reduction Programs

Locational Context

Urban, suburban, rural

Scale of Application

Project/Site

Implementation Requirements

Vanpool programs are more appropriate for the building occupant or tenant (i.e., employer) to implement and monitor than the building owner or developer.

Cost Considerations

Employer costs primarily include the capital costs of vehicle acquisition and the labor costs of drivers, either through incentives to current employees or the hiring of dedicated drivers. The beneficiaries include the program participants saving on commuting cost, the employer reducing onsite parking expenses, and the municipality reducing cars on the road, which leads to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

When implementing a vanpool service, best practice is to subsidize the cost for employees that have a similar origin and destination and provide priority parking for employees that vanpool.

This measure could be paired with any combination of the other commute trip reduction strategies (Measures T-7 through T-13) for increased reductions.

GHG Reduction Formula

$$A = \frac{((1 - B) \times C \times F) + \left(B \times \frac{D}{E} \times G\right)}{((1 - B) \times C \times F) + (B \times D \times F)} - 1$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project/site employee commute VMT	3.4–20.4	%	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
B	Percent of employees that participate in vanpool program	2.7	%	SANDAG 2019
C	Average length of one-way vehicle commute trip in region	Table T-11.1	miles per trip	FHWA 2017
D	Average length of one-way vanpool commute trip	42.0	miles per trip	SANDAG 2019
E	Average vanpool occupancy (including driver)	6.25	occupants	SANDAG 2019
F	Average emission factor of average employee vehicle	307.5	g CO_2e per mile	CARB 2020
G	Vanpool emission factor	763.4	g CO_2e per mile	CARB 2020

Further explanation of key variables:

- (B) – The percent of employees that would participate in a vanpool program is based on a survey of commuters in San Diego County (SANDAG 2019). If the project is not within San Diego County or the user is able to provide a project-specific value for within San Diego County, the user should replace the default employee participation rate in the GHG reduction formula.
- (C) – Ideally, the user will calculate auto commute trip lengths for a Project/Site at a scale no larger than a census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input the regional average one-way auto commute trip length for one of the six most populated CBSAs in California, as presented in Table T-11.1 in Appendix C (FHWA 2017). Trip lengths are likely to be longer for areas not covered by the listed CBSAs, which represent the denser areas of the state.
- (D and E) – The average one-way vanpool commute trip length and occupancy are based on data from the San Diego Association of Government's regional vanpool program (SANDAG 2019). If the project is not within San Diego County or the user is

able to provide a project-specific value for within San Diego County, the user should replace these defaults in the GHG reduction formula.

- (F and G) – The average GHG emission factors for employee commute and vanpool vehicles were calculated in terms of CO_2e per mile using EMFAC2017 (v1.0.3). The model was run for a 2020 statewide average using diesel and gasoline fuel. The average of the light-duty automobile (LDA) and light duty truck (LDT1/LDT2) vehicle categories represents employee non-vanpool vehicles and the light-heavy duty truck (LHDT1) vehicle category conservatively represents a large cargo vanpool vehicle. The running emission factors for CO_2, CH_4, and N_2O (CARB 2020) were multiplied by the corresponding 100-year GWP values from the IPCC's Fourth Assessment Report (IPCC 2007). If the user can provide a project-specific value (i.e., for a future year and project location), the user should run EMFAC to replace the defaults in the GHG reduction formula.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects in San Diego County that use default CBSA data from Table T-11.1 and (B_{max}), the maximum percent reduction in GHG emissions (A) is 20.4 percent. This maximum scenario is presented in the below example quantification.

(B_{max}) The percent of employees that participate in the vanpool program is capped at 15 percent, which is based on the high end of vanpool participation survey data for several successful programs in the U.S. (SANDAG 2019).

Subsector Maximum

($\sum A_{max_{T\text{-}5 \text{ through } T\text{-}13}} \leq 45\%$) This measure is in the Trip Reduction Programs subsector. This subcategory includes Measures T-5 through T-13. The employee commute VMT reduction from the combined implementation of all measures within this subsector is capped at 45 percent.

Mutually Exclusive Measures

If this measure is selected, the user may not also take credit for either Measure T-5 or T-6. However, this measure may be implemented alongside other individual CTR measures (Measures T-7 through T-10, T-12, and T-13). The efficacy of individual programs may vary highly based on individual employers and local contexts.

Example GHG Reduction Quantification

The user reduces employee commute VMT by requiring that the employer of the project to sponsor a vanpool program. In this example, the project is in the San Diego-Carlsbad CBSA and would have an average vehicle commute trip length of 14.52 miles (C). The percent of employees that participate in the vanpool program is 15 percent (B_{max}). GHG emissions from employee commute would be reduced by 20.4 percent.

$$A = \frac{\left((1-15\%) \times 14.52 \frac{\text{miles}}{\text{trip}} \times 307.5 \frac{\text{g } CO_2e}{\text{miles}}\right) + \left(15\% \times \frac{42 \frac{\text{miles}}{\text{trip}}}{6.25 \text{ occupants}} \times 763.4 \frac{\text{g } CO_2e}{\text{miles}}\right)}{\left((1-15\%) \times 14.52 \frac{\text{miles}}{\text{trip}} \times 307.5 \frac{\text{g } CO_2e}{\text{miles}}\right) + \left(15\% \times 42 \frac{\text{miles}}{\text{trip}} \times 307.5 \frac{\text{g } CO_2e}{\text{miles}}\right)} - 1 = -20.4\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption (H) can be calculated using the GHG reduction formula except that (F) and (G) should be replaced by (I) and (J), as follows.

Fuel Use Reduction Formula

$$H = \frac{\left((1-B) \times C \times I\right) + \left(B \times \frac{D}{E} \times J\right)}{\left((1-B) \times C \times I\right) + (B \times D \times I)} - 1$$

Fuel Use Reduction Calculation Variables

ID	Variable	Value	Unit	Source
Output				
H	Percent reduction in fuel use from project/site employee commute VMT	4.7–21.4	%	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
I	Fuel efficiency of average employee vehicle	0.03639	gallon (gal) per mile	CARB 2020
J	Fuel efficiency of vanpool vehicle	0.08328	gal per mile	CARB 2020

Further explanation of key variables:

- (I and J) – The average fuel efficiencies for employee commute and vanpool vehicles were calculated using EMFAC2017 (v1.0.3). The model was run for a 2020 statewide average using diesel and gasoline fuel. The average of the LDA,

LDT1, and LDT2 vehicle categories represents employee non-vanpool vehicles, and the LHDT1 vehicle category conservatively represents a large cargo vanpool vehicle. If the user can provide a project-specific value (i.e., for a future year and project location), the user should run EMFAC to replace the defaults in the fuel use reduction formula.

- Please refer to the GHG Calculation Variables table above for definitions of variables that have been previously defined.

VMT Reductions

The percent reduction in VMT can be calculated using a modified version of the GHG reduction formula, as shown below.

$$\%\ \text{VMT Reduction} = \frac{((1 - B) \times C) + \left(B \times \frac{D}{E}\right)}{C} - 1$$

Sources

- California Air Resources Board (CARB). 2020. *EMFAC2017 v1.0.3*. August. Available: https://arb.ca.gov/emfac/emissions-inventory. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017. *National Household Travel Survey–2017 Table Designer*. Travel Day VT by HH_CBSA by TRPTRANS by TRIPPURP. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- San Diego Association of Governments (SANDAG). 2019. *Mobility Management VMT Reduction Calculator Tool–Design Document*. June. Available: https://www.icommutesd.com/docs/default-source/planning/tool-design-document_final_7-17-19.pdf?sfvrsn=ec39eb3b_2. Accessed: January 2021.

T-12. Price Workplace Parking

GHG Mitigation Potential

Up to 20.0% of GHG emissions from project/site employee commute VMT

Co-Benefits (icon key on pg. 34)

Climate Resilience

Priced workplace parking could incentivize increased use of public transit and thus result in less traffic, potentially reducing congestion or delays on major roads during peak AM and PM traffic periods. When this reduction occurs during extreme weather events, it better allows emergency responders to access a hazard site.

Health and Equity Considerations

Parking pricing should include hourly and daily options so part-time staff do not need a monthly pass. If the project includes low-waged employees that have fewer transportation choices or time and resource constraints, it is instead recommended to consider implementing Measure T-13, *Implement Employee Parking Cash-Out*, or other transportation subsidy.

Measure Description

This measure will price onsite parking at workplaces. Because free employee parking is a common benefit, charging employees to park onsite increases the cost of choosing to drive to work. This is expected to reduce single-occupancy vehicle commute trips, resulting in decreased VMT, thereby reducing associated GHG emissions.

Subsector

Trip Reduction Programs

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

Implementation may include the following.

- Explicitly charging for employee parking.
- Implementing above-market rate pricing.
- Validating parking only for invited guests (or not providing parking validation at all).
- Not providing employee parking and transportation allowances.

In addition, this measure should include marketing and education regarding available alternatives to driving.

Cost Considerations

Parking fees would be a direct, recurring cost for employees. Employer costs include labor costs for program management and monitoring, but this may be offset by revenue generated by the program.

Expanded Mitigation Options

Best practice is to ensure that other transportation options are available, convenient, and have competitive travel times (i.e., transit service near the project site, shuttle service, or a complete active transportation network serving the site and surrounding community), and that there is not alternative free parking available nearby (such as on-street). This measure is substantially less effective in environments that do not have other modes available or where unrestricted street parking or other offsite parking is available nearby and has adequate capacity to accommodate project-related vehicle parking demand.

GHG Reduction Formula

For calculating effectiveness of pricing residential parking, see Measure T-16, *Unbundle Residential Parking Costs from Property Cost*. For calculating effectiveness of pricing parking at visitor-intensive land uses, see Measure T-24, *Implement Market Price Public Parking (On-Street)*.

$$A = \frac{B - C}{C} \times E \times D \times F$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from employee commute VMT	0–20.0	%	calculated
User Inputs				
B	Proposed parking price	[ ]	$	user input
C	Baseline parking price	[ ]	$	user input
D	Share of employees paying for parking	[ ]	%	user input
Constants, Assumptions, and Available Defaults				
E	Elasticity of parking demand with respecting to parking price	-0.4	unitless	Lehner & Peer 2019
F	Ratio of vehicle trip reduction to VMT	1	unitless	assumption

Further explanation of key variables:

- (B) – Parking price can be provided on an hourly, daily, or monthly basis. Monthly pricing is less effective than requiring daily or hourly payment since the price signal is diluted to only once a month.
- (C) – If baseline parking price is $0 (that is, if parking is typically free), set C = ¼ B, allowing for the maximum 50 percent increase in price. Alternatively, for locations that are located within 0.5 mile of transit service, set C = average transit fare to/from the location.
- (D) – Many organizations allow some employees free parking benefits. VMT reductions should be adjusted based on the share of employees that would be paying for parking.
- (E) – A meta-analysis of parking price studies found that a 0.40 percent decrease in parking demand occurs for every 1 percent increase in parking price (Lehner & Peer 2019). Price elasticity of parking demand varies by location, day of the week, and time of day.
- (F) – The adjustment factor from vehicle trips to VMT is 1. This assumes that all vehicle trips will average out to typical trip length ("assumes all trip lengths are equal"). Thus, it can be assumed that a percentage reduction in vehicle trips will equal the same percentage reduction in VMT. Subsidies or discounts targeting commute trips may have a higher factor as they are generally longer than the trip lengths for other purposes.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The GHG reduction from priced workplace parking is capped at 20 percent. This maximum scenario is presented in the below example quantification.

($\left(\frac{B-C}{C}\right)_{max}$) The percent increase in parking price is capped at 50 percent.

Subsector Maximum

($\sum A_{max_{T\text{-}5 \text{ through } T\text{-}13}} \leq 45\%$) This measure is in the Trip Reduction Programs subsector. This subcategory includes Measures T-5 through T-13. The employee commute VMT reduction from the combined implementation of all measures within this subsector is capped at 45 percent.

Mutually Exclusive Measures

If this measure is selected, the user may not also take credit for Measure T-13, *Implement Employee Parking Cash-Out*. While both measures focus on providing a price signal for employees to consider other modes for their work commute, this measure actively charges all employees to park, while Measure T-13 reimburses employees who do not park. Users should select either Measure T-12 or T-13.

Example GHG Reduction Quantification

The user reduces VMT by increasing the price of a monthly parking permit. In this example, the permit fee is increased from $50 (C) to $75 (B). If 100 percent of employees are subject to parking pricing (D), the user would reduce GHG emissions from VMT by 20 percent.

$$A = \frac{\$75 - \$50}{\$50} \times -0.4 \times 100\% \times 1 = -20\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

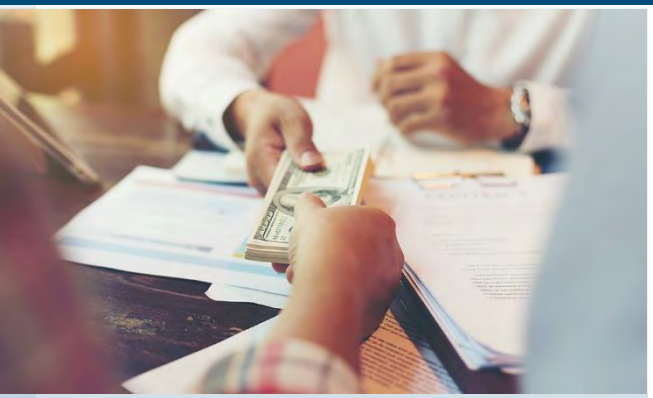
VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Lehner, S., Peer, S. 2019. *The Price Elasticity of Parking: A Meta-analysis*. Transportation Research Part A: Policy and Practice 121 2019. Available: http://sustainabletransportationsc.org/garage/pdf/parking_elasticity.pdf. Accessed: January 2021.

T-13. Implement Employee Parking Cash-Out



GHG Mitigation Potential

Up to 12.0% of GHG emissions from project/site employee commute VMT

Co-Benefits (icon key on pg. 34)

Climate Resilience

Employee parking cash-out could incentivize increased use of public transit and thus result in less traffic, potentially reducing congestion or delays on major roads during peak AM and PM traffic periods. When this reduction occurs during extreme weather events, it better allows emergency responders to access a hazard site.

Health and Equity Considerations

Non-applicable

Measure Description

This measure will require project employers to offer employee parking cash-out. Cash-out is when employers provide employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to or greater than the cost of the parking space. This encourages employees to use other modes of travel instead of single occupancy vehicles. This mode shift results in people driving less and thereby reduces VMT and GHG emissions.

Subsector

Trip Reduction Programs

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

To prevent spill-over parking and continued use of single occupancy vehicles, residential parking in the surrounding area must be permitted, and public on-street parking must be market rate.

Cost Considerations

Employer costs include the recurring, direct cost for payment to program participants and labor costs for program management. Employees that participate in the program would achieve cost savings through the cash-out benefit and potentially through reduced vehicle ownership and usage.

Expanded Mitigation Options

This measure could be paired with many other commute trip reduction strategies (Measures T-7 through T-11) for increased reductions.

GHG Reduction Formula

$A = B \times C$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project/site commute VMT	0–12.0	%	calculated
User Inputs				
B	Percentage of employees eligible	[ ]	%	user input
Constants, Assumptions, and Available Defaults				
C	Percent reduction in commute VMT from implementation of measure	-12	%	Shoup 2005

Further explanation of key variables:

- (B) – The percentage of employees eligible refers to the employees that would be able to participate in the program. This will usually be 100 percent. Employees who might not be able to participate could include those who work nighttime hours when transit and rideshare services are not available or employees who are required to drive to work as part of their job duties. This does not refer to the percentage of employees who end up participating in the program.
- (C) – A study of eight California firms that complied with California's 1992 parking cash-out law found employee commute VMT decreased by an average of 12 percent (Shoup 2005).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The maximum percent reduction in GHG emissions (A) is 12.0 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}5 \text{ through } T\text{-}13}} \leq 45\%$) This measure is in the Trip Reduction Programs subsector. This subcategory includes Measures T-5 through T-13. The employee commute VMT reduction from the combined implementation of all measures within this subsector is capped at 45 percent.

Mutually Exclusive Measures

If this measure is selected, the user may not also take credit for Measure T-12, *Price Workplace Parking*. While both measures focus on providing a price signal for employees to consider other modes for their work commute, this measure reimburses employees who

do not park, while Measure T-12 actively charges all employees to park. Users should select either Measure T-12 or T-13.

Example GHG Reduction Quantification

The user reduces project/site VMT by offering commuters the option to choose a cash payment equal to or greater than the current parking subsidy offered by their employer. In this example, all employees (i.e., 100 percent) are eligible to participate (B), which would reduce GHG emissions from employee commute VMT by 12 percent.

$$A = 100\% \times -12\% = -12\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Shoup, D. 2005. *Parking Cash Out*. Planners Advisory Service, American Planning Association. Available: http://shoup.bol.ucla.edu/ParkingCashOut.pdf. Accessed: January 2021.

T-14. Provide Electric Vehicle Charging Infrastructure

GHG Mitigation Potential

Up to 11.9% of GHG emissions from vehicles accessing the commercial or multifamily housing building

Co-Benefits (icon key on pg. 34)

Climate Resilience

Providing electric vehicle charging infrastructure increases fuel redundancy for electric vehicles even if an extreme weather event disrupts other fuel sources. Electric vehicles could also provide benefits to buildings and the grid, such as emergency backup, energy reserves, and demand response.

Health and Equity Considerations

Differential costs of PHEVs compared to conventional vehicles are decreasing over time, but at present are more expensive, which means this measure could disproportionately benefit those of greater economic means. As costs come into parity over time, this will be less of an issue. Employer, electricity provider, and state incentives for PHEV purchase could help address near-term disparities.

Measure Description

Install onsite electric vehicle chargers in an amount beyond what is required by the 2019 California Green Building Standards (CALGreen) at buildings with designated parking areas (e.g., commercial, educational, retail, multifamily). This will enable drivers of PHEVs to drive a larger share of miles in electric mode (eVMT), as opposed to gasoline-powered mode, thereby displacing GHG emissions from gasoline consumption with a lesser amount of indirect emissions from electricity. Most PHEVs owners charge their vehicles at home overnight. When making trips during the day, the vehicle will switch to gasoline mode if/when it reaches its maximum all-electric range.

Subsector

Parking or Road Pricing/Management

Locational Context

Urban, suburban, rural

Scale of Application

Project/Site

Implementation Requirements

Parking at the chargers must be limited to electric vehicles.

Cost Considerations

The primary costs associated with electric vehicle charging infrastructure include the capital costs of purchasing and installing charging stations, electricity costs from use of stations, and maintenance costs of keeping the charging stations in working order. Costs initially fall to the station owners, either municipalities or private owners, but can be passed along to station users with usage fees. Depending on station placement and charging times required for PHEVs, businesses near charging stations can derive benefits from patronage of station users.

Expanded Mitigation Options

In addition to increasing the percentage of electric miles for PHEVs, the increased availability of chargers from implementation of this measure could mitigate consumer "range anxiety" concerns and increase the adoption and use of battery electric vehicles (BEVs), but this potential effect is not included in the calculations as a conservative assumption. Expanded mitigation could include quantification of the effect of this measure on BEV use.

GHG Reduction Formula

$$A = \frac{B \times D \times (F - E) \times (G - (H \times I \times K \times L))}{-C \times J}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicles accessing the office building or housing	0–11.9	%	calculated
User Inputs				
B	Number of chargers installed at site	[ ]	integer	user input
C	Total vehicles accessing the site per day	[ ]	integer	user input
Constants, Assumptions, and Available Defaults				
D	Average number of PHEVs served per day per charger installed	2	integer	CARB 2019
E	Percent of PHEV miles in electric mode without measure	46	%	CARB 2020a
F	Percent of PHEV miles in electric mode with measure	80	%	CARB 2017
G	Average emission factor of PHEV in gasoline mode	205.1	g CO_2e per mile	CARB 2020a; U.S. DOE 2021
H	Energy efficiency of PHEV in electric mode	0.327	kilowatt hours (kWh) per mile	CARB 2020b; U.S. DOE 2021
I	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per megawatt hour (MWh)	CA Utilities 2021
J	Average emission factor of non-electric vehicles accessing the site	307.5	g CO_2e per mile	CARB 2020a
K	conversion from lb to g	454	g per lb	conversion
L	Conversion from kWh to MWh	0.001	MWh per kWh	conversion

Further explanation of key variables:

- (D) – The average number of PHEVs served per day per charger installed is 2 vehicles (CARB 2019). If the user can provide a project-specific value, they should replace the default in the GHG reduction formula.
- (E) - Based on the EMFAC2017 model (v1.0.3), 46 percent of miles traveled by PHEVs in California are eVMT, and 54 percent are in gasoline mode (CARB 2020a).

- (F) – A review of EV user surveys and analytics included in the CARB's *Advanced Clean Cars Mid-Term Report* suggest that PHEV owners can reach 80 percent eVMT with access to adequate supportive charging infrastructure (CARB 2017).
- (G) – As described for (J), the average GHG emission factor for gasoline vehicles is 307.5 grams of CO_2e per mile.
- The fuel efficiency of a PHEV in gasoline mode is calculated as 66.7 percent of the fuel consumption rate of a gasoline vehicle, based on the assumption that a gasoline hybrid vehicle has 50 percent higher fuel economy (miles per gal [mpg]) than a comparable gasoline vehicle, based on a comparison of the gasoline and hybrid Toyota Camry and Corolla models (U.S. DOE 2021). This percentage is applied to the average GHG emission factor for gasoline vehicles to determine the average emission factor for PHEVs in gasoline mode as (66.7%×307.5 g CO_2e per mile). If the user can provide a project-specific value by running EMFAC based on the future year of a project, they should replace the default in the GHG reduction formula.
- (H) – Scaled from a light-duty automobile gasoline equivalent fuel economy 30.3 mpg (CARB 2020a), an energy efficiency ratio (EER) of 2.5 (CARB 2020b), and an assumption of 33.7 kWh electricity per gallon of gasoline (U.S. DOE 2021).
- (I) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year not referenced in Appendix C), the user should replace the default in the GHG calculation formula. If the electricity provider is not known, the user may elect to use the statewide grid average carbon intensity.
- (J) – The average GHG emission factor for non-electric vehicles accessing the site was calculated in terms of CO_2e per mile using EMFAC2017 (v1.0.3). The model was run for a 2020 statewide average of LDA, LDT1, and LDT2 vehicles using diesel and gasoline fuel. The running emission factors for CO_2, CH_4, and N_2O (CARB 2020a) were multiplied by the corresponding 100-year GWP values from the IPCC's Fourth Assessment Report (IPCC 2007). If the user can provide a project-specific value (i.e., for a future year and project location), the user should run EMFAC to replace the default in the GHG reduction formula.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The percent reduction in GHG emissions (A) is capped at 11.9 percent, which is based on the following assumptions used to generate a maximum scenario:

- (B) – number of chargers installed = 20. CALGreen provides a non-residential voluntary Tier 2 measure that requires projects with 201 or more parking spaces to allocate 10 percent of total parking spaces for "EV Capable" parking spaces (or 20 parking spaces) (CBSC 2019). Note that EV Capable parking spaces do not actually have EV chargers installed, though they do have electrical panel capacity, a dedicated branch circuit, and a raceway to the EV parking spot to support future installation of charging stations. Therefore, using the number of EV Capable parking spaces as a proxy for EV chargers as a high-end estimate is conservative.

- (C) – total vehicles accessing the site = 200. Per the CALGreen voluntary measure, the number of total parking spaces that correspond with 20 "EV Capable" parking spaces is 201.
- (D) – PHEVs served per day per charger installed = 7. This value is the max (D_{max}). This assumes that all PHEV drivers would coordinate sharing of the limited number of chargers at the site. Value is based on data from the National Renewable Energy Laboratory (CARB 2019).
- (I) – carbon intensity of local electricity provider = 0 lb CO_2e per MWh. This assumes that the local electricity provider is powered 100 percent by renewables and thus has a carbon intensity of zero.

Subsector Maximum

($\sum A_{max_{T\text{-}14 \text{ through } T\text{-}16}} \leq 35\%$) This measure is in the Parking or Road Pricing/Management subsector. This subcategory includes Measures T-14 through T-16. The VMT reduction from the combined implementation of all measures within this subsector is capped at 35 percent.

Example GHG Reduction Quantification

The user will install electric vehicle chargers at their proposed office or multifamily housing development, which will enable employees or residents with PHEVs to drive a larger share of miles in electric mode, as opposed to gasoline-powered mode, thereby displacing GHG emissions from gasoline consumption with a lesser amount of indirect emissions from indirect electricity. In this example, 20 chargers (B) will be installed at a workplace with 200 daily employee vehicles accessing the site (C). The electricity provider for the project area is the Sacramento Municipal Utility District (SMUD) and the analysis year is 2022. The carbon intensity of electricity is therefore 344 lb CO_2e per MWh (I). The GHG impact is calculated as a 3.4 percent reduction from the total emissions from vehicles accessing the site.

$$A = \frac{20 \times 2\frac{\text{PHEVs}}{\text{charger}\cdot\text{day}} \times (80\% - 46\%) \times (205.1\ \frac{\text{g } CO_2e}{\text{miles}} - (0.327\frac{\text{kWh}}{\text{mile}} \times 344\ \frac{\text{lb } CO_2e}{\text{MWh}} \times 454\frac{\text{g}}{\text{lb}} \times 0.001\frac{\text{MWh}}{\text{kWh}}))}{200 \text{ vehicles} \times 307.5\ \frac{\text{g } CO_2e}{\text{miles}}} = 3.4\%$$

Quantified Co-Benefits

While the measure will achieve fuel savings, it will also increase electricity consumption. This section defines the methods for quantifying Improved Local Air Quality and fuel savings, as well as increased electricity consumption.

Improved Local Air Quality

Local criteria pollutants will be reduced by the reduction in fossil fuel combustion. The percent reduction in criteria pollutants can be calculated using the GHG reduction formula. Electricity supplied by statewide fossil-fueled or bioenergy power plants will generate criteria pollutants. However, because these power plants are located throughout the state, electricity consumption from vehicles charging will not generate localized criteria pollutant emissions. Consequently, for the quantification

of criteria pollutant emission reductions, either the electricity portion of the equation can be removed, or the electricity intensity (I) can be set to zero.

Fuel Savings (Increased Electricity)

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in criteria pollutant emissions. The percent increase in electricity use (M) from this measure can be calculated as follows.

Electricity Use Increase Formula

$$M = \frac{B \times D \times (F - E) \times J \times N \times O}{-C \times P}$$

Electricity Use Increase Calculation Variables

ID	Variable	Value	Unit	Source
Output				
M	Increase in electricity from PHEVs	[ ]	%	calculated
User Inputs				
N	Existing electricity consumption of project/site	[ ]	kWh per year	user input
O	Days per year with vehicles accessing the site	260–365	days per year	user input
P	Average annual VMT of vehicles accessing the site	[ ]	miles per day per vehicle	user input
Constants, Assumptions, and Available Defaults				
	None			

Further explanation of key variables:

- (N) – The user should take care to properly quantify building electricity using accepted methodologies (such as CalEEMod).
- (O) – If the proposed development is a workplace in which employees access the site an average of 5 days per week, the user should input 260 workdays. If the development is multifamily dwelling, the user should input 365 days.
- Please refer to the GHG Calculation Variables table above for definitions of variables that have been previously defined.

Sources

- California Air Resources Board (CARB). 2017. *Advanced Clean Cars Mid-Term Report, Appendix G: Plug-in Electric Vehicle In-Use and Charging Data Analysis*. Available: https://ww2.arb.ca.gov/resources/documents/2017-midterm-review-report. Accessed: January 2021.
- California Air Resources Board (CARB). 2019. *Final Sustainable Communities Strategy Program and Evaluation Guidelines Appendices*. November. Available: https://ww2.arb.ca.gov/sites/default/files/2019-11/Final%20SCS%20Program%20and%20Evaluation%20Guidelines%20Appendices.pdf. Accessed: January 2021.

- California Air Resources Board (CARB). 2020a. *EMFAC2017 v1.0.3*. August. Available: https://arb.ca.gov/emfac/emissions-inventory. Accessed: January 2021.
- California Air Resources Board (CARB). 2020b. *Unofficial electronic version of the Low Carbon Fuel Standard Regulation*. Available: https://ww2.arb.ca.gov/sites/default/files/2020-07/2020_lcfs_fro_oal-approved_unofficial_06302020.pdf
- California Air Resources Board (CARB). 2021. OFFROAD2017–ORION. Available: https://arb.ca.gov/emfac/emissions-inventory. Database queried by Ramboll and provided electronically to ICF. March 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- California Building Standards Commission (CBSC). 2019. Green Building Standards Code, Title 24, Part 11. Appendix A5 – Nonresidential Voluntary Measures. Table A5.601 Nonresidential Buildings: Green Building Standards Code Proposed Performance Approach. July. Available: https://codes.iccsafe.org/content/CAGBSC2019/appendix-a5-nonresidential-voluntary-measures. Accessed: May 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- U.S. Department of Energy (U.S. DOE). 2021. *Download Fuel Economy Data*. January. Available: https://www.fueleconomy.gov/feg/download.shtml. Accessed: January 2021.

T-15. Limit Residential Parking Supply

GHG Mitigation Potential

Up to 13.7% of GHG emissions from resident vehicles accessing the site

Co-Benefits (icon key on pg. 34)

Climate Resilience

Limiting residential parking supply could incentivize increased use of public transit and thus result in less traffic, potentially reducing congestion or delays on major roads during peak AM and PM traffic periods. When this reduction occurs during extreme weather events, it better allows emergency responders to access a hazard site. Evacuation plans and plans for transport to cooling/heating/clean air centers during power outages or unhealthy air quality events, however, would need to consider needs of households without access to private vehicles.

Health and Equity Considerations

Limiting parking supply can reduce the cost of housing development and, potentially, increase housing supply and decrease housing expenses. However, this may negatively impact residents that do not have a viable alternative to personal vehicle travel.

Measure Description

This measure will reduce the total parking supply available at a residential project or site. Limiting the amount of parking available creates scarcity and adds additional time and inconvenience to trips made by private auto, thus disincentivizing driving as a mode of travel. Reducing the convenience of driving results in a shift to other modes and decreased VMT and thus a reduction in GHG emissions. Evidence of the effects of reduced parking supply is strongest for residential developments.

Subsector

Parking or Road Pricing/Management

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

This measure is ineffective in locations where unrestricted street parking or other offsite parking is available nearby and has adequate capacity to accommodate project-related vehicle parking demand.

Cost Considerations

Reducing residential parking supply, especially in high density residential areas, can have high-cost savings if it reduces the need for additional investment in parking infrastructure. Some of these savings may be offset by investments in alternative transport solutions, which will need to be robust to ensure that residents can effectively travel to work and all other destinations without a car.

Expanded Mitigation Options

When limiting parking supply, a best practice is to do so at sites that are located near high quality alternative modes of travel (such as a rail station, frequent bus line, or in a higher density area with multiple walkable locations nearby). Limiting parking supply may also allow for more active uses on any given lot, which may support Measures T-1 and T-2 by allowing for higher density construction.

GHG Reduction Formula

$$A = -\frac{B - C}{B} \times D \times E \times F$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from resident vehicles accessing the site	0–13.7	%	calculated
User Inputs				
B	Residential parking demand	[ ]	parking spaces	user input
C	Project residential parking supply	[ ]	parking spaces	user input
D	Percentage of project VMT generated by residents	[ ]	%	user input
Constants, Assumptions, and Available Defaults				
E	Percent of household VMT that is commute based	37	%	Caltrans 2012
F	Percent reduction in commute mode share by driving among households in areas with scarce parking	37	%	Chatman 2013

Further explanation of key variables:

- (B) – The user can calculate the parking demand in the *ITE Parking Generation Manual* based on the project building square footage or number of du. For residential projects, this demand varies based on the size of each unit, and ranges from 1.0 spaces/unit for one-bedroom apartments to 2.6 spaces/unit for single-family homes with 3+ bedrooms.
- (D) – Available research on changes in parking supply focuses on residential land uses. Therefore, reductions are applied only to the share of VMT generated by residents of a project. For most residential projects, this will be 100 percent; however, for mixed-use projects, the user will need to provide project-specific data.
- (E) – The percent of household VMT that is commute-based varies from location to location; the statewide average is 37 percent (Caltrans 2012). If the user can provide a project-specific value based on their project type and area, they should replace the default in the GHG reduction formula.
- (F) – A study found that among households with limited off-street parking (<1 space per adult), there was a 37 percent decrease in auto mode share for commute trips. The method above pro-rates this reduction based on how much the project's parking supply is reduced from demand rates calculated in the *ITE Parking Generation Manual* (ITE 2019). In addition, this reduction is applied to commute trips only due to the limitations of the research.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The percent reduction in GHG emissions is capped at 13.7 percent. This occurs for projects that have no onsite parking (C), 100 percent of VMT arising from residential land use (D), and 37 percent of all VMT arising from commute trips (E). This maximum scenario is presented in the below example quantification.

(C>B) Parking supply is considered to be limited when demand (C) exceeds supply (B). If demand is equal to or less than supply, then implementation of this measure would not result in a GHG reduction.

Subsector Maximum

($\sum A_{max_{T\text{-}14 \text{ through } T\text{-}16}} \leq 35\%$) This measure is in the Parking or Road Pricing/Management subsector. This subcategory includes Measures T-14 through T-16. The VMT reduction from the combined implementation of all measures within this subsector is capped at 35 percent.

Example GHG Reduction Quantification

The user reduces VMT by reducing a project's parking supply. In this example, the parking demand per ITE is 100 parking spaces (B) and the project would not supply any parking spaces (C). The user would reduce GHG emissions from VMT by 13.7 percent.

$$A = -\frac{100 \text{ spaces} - 0 \text{ spaces}}{100 \text{ spaces}} \times 100\% \times 37\% \times 37\% = -13.7\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- California Department of Transportation (Caltrans). 2012. *California Household Travel Survey (CHTS)*. Available: https://www.nrel.gov/transportation/secure-transportation-data/tsdc-california-travel-survey.html. Accessed: January 2021.
- Chatman, D. 2013. Does TOD need the T? On the importance of factors other than rail access. *Journal of the American Planning Association* 79(1). Available: https://trid.trb.org/view/1243004. Accessed: January 2021.
- Institute of Transportation Engineers (ITE). 2019. Parking Generation Manual. 5th Edition. February. Available: https://ecommerce.ite.org/IMIS/ItemDetail?iProductCode=PG5-ALL. Accessed: May 2021.

T-16. Unbundle Residential Parking Costs from Property Cost

GHG Mitigation Potential

Up to 15.7% of GHG emissions from project VMT in the study area

Co-Benefits (icon key on pg. 34)

Climate Resilience

Unbundling residential parking costs from property costs could incentivize increased use of public transit and thus result in less traffic, potentially reducing congestion or delays on major roads during peak AM and PM traffic periods. When this reduction occurs during extreme weather events, it better allows emergency responders to access a hazard site.

Health and Equity Considerations

The unbundling of parking costs would help decrease housing costs for individuals who do not own personal vehicles.

Measure Description

This measure will unbundle, or separate, a residential project's parking costs from property costs, requiring those who wish to purchase parking spaces to do so at an additional cost. On the assumption that parking costs are passed through to the vehicle owners/drivers utilizing the parking spaces, this measure results in decreased vehicle ownership and, therefore, a reduction in VMT and GHG emissions. Unbundling may not be available to all residential developments, depending on funding sources.

Subsector

Parking or Road Pricing/Management

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

Parking costs must be passed through to the vehicle owners/drivers utilizing the parking spaces for this measure to result in decreased vehicle ownership.

Cost Considerations

Unbundling residential parking costs from property costs may decrease revenue for property owners. This loss may be partially offset by reduced costs needed to maintain parking facilities with less car occupancy and the potential for non-resident parking as a supplementary income stream. For residents, reduced fees and the ability to go without owning a car is a major cost benefit. Municipalities also benefit from a reduction of cars on the road, which can lead to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

Pair with Measure T-19-A or T-19-B to ensure that residents who eliminate their vehicle and shift to a bicycle can safely access the area's bikeway network.

GHG Reduction Formula

$$A = \frac{B}{C} \times D \times E$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project VMT in study area	0–15.7	%	calculated
User Inputs				
B	Annual parking cost per space	[ ]	$ per year	user input
Constants, Assumptions, and Available Defaults				
C	Average annual vehicle cost	$9,282	$ per year	AAA 2019
D	Elasticity of vehicle ownership with respect to total vehicle cost	-0.4	unitless	Litman 2020
E	Adjustment factor from vehicle ownership to VMT	1.01	unitless	FHWA 2017

Further explanation of key variables:

- (B) – For most projects, this represents a monthly parking fee multiplied by 12. For deeded parking spaces, an estimate of the additional cost to a mortgage may be used, or the total cost may be prorated over 30 years. Costs to park will vary widely based on location; however, this value should consider if other nearby offsite parking options are available at lower cost. See Table T-16.1 in Appendix C for examples of monthly parking prices for different facility types.
- (C) – The average vehicle cost per year in 2019 was $9,282, based on a car driven 15,000 miles per year. Costs include gasoline, maintenance, insurance, license and registration, loan finance charges, and depreciation but do not include parking (AAA 2019).
- (D) – A synthesis of literature reported that, on the low end, a 0.4 percent decrease in vehicle ownership occurs for every 1 percent increase in total vehicle costs (Litman 2020).
- (E) – The adjustment factor from vehicle ownership to VMT is based on the following (FHWA 2017):
  - The average Californian household with 1 vehicle drives 11,117 miles per vehicle while households with 2 vehicles drives 11,223 miles per vehicle.
  - The reduction of 1 vehicle from a 2-vehicle household leads to a 0.94 percent decrease in VMT per vehicle.
  - So, $E = 1 - \left(\frac{11{,}117 \frac{\text{miles}}{\text{vehicle}} - 11{,}223 \frac{\text{miles}}{\text{vehicle}}}{11{,}223 \frac{\text{miles}}{\text{vehicle}}} \right) = 1.01$

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The GHG reduction from unbundled parking is capped at 15.7 percent, which is based on the use of (B_{max}) in the GHG reduction formula.

(B_{max}) The annual cost of parking space is capped at $3,600, or $300 per month. At monthly costs above $300, the cost of parking represents more than a 30 percent increase in total vehicle cost. In addition, this reflects the upper maximum of observed parking prices outside of extremely dense downtown areas (such as San Francisco's SOMA neighborhood).

Subsector Maximum

($\sum A_{max_{T\text{-}14 \text{ through } T\text{-}16}} \leq 35\%$) This measure is in the Parking or Road Pricing/Management subsector. This subcategory includes Measures T-14 through T-16. The VMT reduction from the combined implementation of all measures within this subsector is capped at 35 percent.

Example GHG Reduction Quantification

The user reduces VMT by unbundling the parking costs from property costs of a project, discouraging vehicle ownership, and therefore reducing VMT. In this example, the annual parking cost per space is $1,800 (B), which would reduce GHG emissions from project study area VMT (as compared to the same project with bundled parking costs) by 7.8 percent.

$$A = \left(\frac{\$1{,}800}{\$9{,}282}\right) \times -0.4 \times 1.01 = -7.8\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- AAA. 2019. *Your Driving Costs*. September. Available: https://exchange.aaa.com/wp-content/uploads/2019/09/AAA-Your-Driving-Costs-2019.pdf. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017. *National Household Travel Survey – 2017 Table Designer*. Annual VMT / Vehicle by Count of Household Vehicles in California. Available: https://nhts.ornl.gov/. Accessed: March 2021.
- Litman, T. 2020. *Parking Requirement Impacts on Housing Affordability*. June. Available: https://www.vtpi.org/park-hou.pdf. Accessed: January 2021.

T-17. Improve Street Connectivity

GHG Mitigation Potential

Up to 30.0% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Improving street connectivity could increase route redundancy, allowing faster and more efficient travel during extreme weather events, evacuations, or for emergency vehicles requiring access to hazard sites.

Health and Equity Considerations

Multiple active modes routing options allows vulnerable road users to choose based on perceived safety, comfort, speed, and other factors.

Measure Description

This measure accounts for the VMT reduction achieved by a project that is designed with a higher density of vehicle intersections compared to the average intersection density in the U.S. Increased vehicle intersection density is a proxy for street connectivity improvements, which help to facilitate a greater number of shorter trips and thus a reduction in GHG emissions.

Subsector

Land Use

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

Projects that increase intersection density would be building a new street network in a subdivision or retrofitting an existing street network to improve connectivity (e.g., converting cul-de-sacs or dead-end streets to grid streets).

Cost Considerations

Capital and infrastructure costs for improved street connectivity may be high. Depending on the location, losses may also be incurred through the reduction of sellable land due to the increased street footprint. Benefits come mainly from the reduction of traffic on arterial streets, which reduces congestion and allows for safer use of nonmotorized transportation, such as bikes. These outcomes, in turn, can reduce car usage, which provides costs savings to commuters and municipalities.

Expanded Mitigation Options

Pair with Measure T-18, *Provide Pedestrian Network Improvement*, to best support use of the local pedestrian network.

GHG Reduction Formula

$$A = \frac{B - C}{C} \times D$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–30.0	%	calculated
User Inputs				
B	Intersection density in project site with measure	[ ]	intersections per sq mile	user input
Constants, Assumptions, and Available Defaults				
C	Average intersection density	36	intersections per sq mile	Fehr & Peers 2009
D	Elasticity of VMT with respect to intersection density	-0.14	unitless	Stevens 2016

Further explanation of key variables:

- (C) – The average intersection density is based on the standard suburban intersection density in the U.S. (Fehr & Peers 2009). This density is approximately equivalent to block faces of 750 to 800 feet, or cul-de-sac–style built environments, which are appropriate for suburban areas.
- (D) – A meta-regression analysis of 15 studies found that a 0.14 percent decrease in VMT occurs for every 1 percent increase in intersection density (Stevens 2016).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The percent reduction in GHG emissions (A) is capped at 30 percent. The purpose of the 30 percent cap is to limit the influence of any single built environmental factor (such as intersection density).

Subsector Maximum

Same as (A_{max}). Measure T-17 is the only measure at the Plan/Community scale within the Land Use subsector.

Example GHG Reduction Quantification

The user reduces VMT by constructing their project with a higher intersection density than the surrounding city. In this example, the project intersection density (B) would be 72

intersections per square mile (sq mile), which would reduce GHG emissions from project VMT by 14 percent.

$$A = \frac{72 \frac{\text{int}}{\text{sq mile}} - 36 \frac{\text{int}}{\text{sq mile}}}{36 \frac{\text{int}}{\text{sq mile}}} \times -0.14 = -14\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Fehr & Peers. 2009. *Proposed Trip Generation, Distribution, and Transit Mode Split Forecasts for the Bayview Waterfront Project Transportation Study*.
- Stevens, M. 2016. Does Compact Development Make People Drive Less? *Journal of the American Planning Association* 83:1(7–18), DOI: 10.1080/01944363.2016.1240044. November. Available: https://www.researchgate.net/publication/309890412_Does_Compact_Development_Make_People_Drive_Less. Accessed: January 2021.

T-18. Provide Pedestrian Network Improvement

GHG Mitigation Potential

Up to 6.4% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Improving pedestrian networks increases accessibility of outdoor spaces, which can provide health benefits and thus improve community resilience. This can also improve connectivity between residents and resources that may be needed in an extreme weather event.

Health and Equity Considerations

Ensure that the improvements also include accessibility features to allow for people of all abilities to use the network safely and conveniently. Ensure that sidewalks connect to nearby community assets, such as schools, retail, and healthcare.

Measure Description

This measure will increase the sidewalk coverage to improve pedestrian access. Providing sidewalks and an enhanced pedestrian network encourages people to walk instead of drive. This mode shift results in a reduction in VMT and GHG emissions.

Subsector

Neighborhood Design

Locational Context

Urban, suburban, rural

Scale of Application

Plan/Community

Implementation Requirements

The GHG reduction of this measure is based on the VMT reduction associated with expansion of sidewalk coverage expansion, which includes not only building of new sidewalks but also improving degraded or substandard sidewalk (e.g., damaged from street tree roots). However, pedestrian network enhancements with non-quantifiable GHG reductions are encouraged to be implemented, as discussed under *Expanded Mitigation Options*.

Cost Considerations

Depending on the improvement, capital and infrastructure costs may be high. However, improvements to the pedestrian network will increase pedestrian activity, which can increase businesses patronage and provide a local economic benefit. The local municipality may achieve cost savings through a reduction of cars on the road leading to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

When improving sidewalks, a best practice is to ensure they are contiguous and link externally with existing and planned pedestrian facilities. Barriers to pedestrian access and interconnectivity, such as walls, landscaping buffers, slopes, and unprotected crossings should be minimized. Other best practice features could include high-visibility crosswalks, pedestrian hybrid beacons, and other pedestrian signals, mid-block crossing walks, pedestrian refuge islands, speed tables, bulb-outs (curb extensions), curb ramps, signage, pavement markings, pedestrian-only connections and districts, landscaping, and other improvements to pedestrian safety (see Measure T-35, *Provide Traffic Calming Measures*).

GHG Reduction Formula

$$A = \left(\frac{C}{B} - 1\right) \times D$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from household vehicle travel in plan/community	0–6.4	%	calculated
User Inputs				
B	Existing sidewalk length in study area	[ ]	miles	user input
C	Sidewalk length in study area with measure	[ ]	miles	user input
Constants, Assumptions, and Available Defaults				
D	Elasticity of household VMT with respect to the ratio of sidewalks-to-streets	-0.05	unitless	Frank et al. 2011

Further explanation of key variables:

- (B and C) – Sidewalk length should be measured on both sides of the street. For example, if one 0.5-mile-long street has full sidewalk coverage, the sidewalk length would be 1.0 mile. If there is only sidewalk on one side of the street, the sidewalk length would be 0.5 mile. The recommended study area is 0.6 mile around the pedestrian network improvement. This represents a 6- to 10-minute walking time.
- (D) – A study found that a 0.05 percent decrease in household vehicle travel occurs for every 1 percent increase in the sidewalk-to-street ratio (Frank et al. 2011; Handy et al. 2014).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The percent reduction in GHG emissions (A) is capped at 3.4 percent, which is based on the following assumptions:

- 35.2 percent of vehicle trips are short trips (2 mile or less, average of 1.29 miles) and thus could easily shift to walking (FHWA 2019).
- 64.8 percent of vehicle trips are longer trips that are unlikely to shift to walking (2 miles or more, average of 10.93 miles) (FHWA 2019).
- So $A_{max} = \frac{35.2\% \times 1.29 \text{ miles}}{64.8\% \times 10.93 \text{ miles}} = 6.4\%$

Subsector Maximum

($\sum A_{max_{T\text{-}18 \text{ through } T\text{-}22\text{-}C}} \leq 10\%$) This measure is in the Neighborhood Design subsector. This subcategory includes Measures T-18 through T-22-C. The VMT reduction from the combined implementation of all measures within this subsector is capped at 10 percent.

Example GHG Reduction Quantification

The user reduces household VMT by improving the pedestrian network in the study area. In this example, the existing sidewalk length (B) is 9 miles, and the sidewalk length with the measure (C) would be 10 miles. With these conditions, the user would reduce GHG emissions from household VMT within the study area by 0.6 percent.

$$A = \left(\frac{10 \text{ miles}}{9 \text{ miles}} - 1\right) \times -0.05 = -0.6\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in household VMT would be the same as the percent reduction in GHG emissions (A).

Improved Public Health

Users are directed to the Integrated Transport and Health Impact Model (ITHIM) (CARB et al. 2020). The ITHIM can quantify the annual change in health outcomes associated with active transportation, including deaths, years of life lost, years of living with disability, and incidence of community and individual disease.

Sources

- California Air Resources Board (CARB), California Department of Public Health (CDPH), and Nicholas Linesch Legacy Fund. 2020. Integrated Transport and Health Impact Model. Available: https://skylab.cdph.ca.gov/HealthyMobilityOptionTool-ITHIM/#Home. Accessed: September 17, 2021.
- Federal Highway Administration (FHWA). 2019. *2017 National Household Travel Survey Popular Vehicle Trip Statistics*. Available: https://nhts.ornl.gov/vehicle-trips. Accessed: January 2021.

- Frank, L., M. Greenwald, S. Kavage, and A. Devlin. 2011. *An Assessment of Urban Form and Pedestrian and Transit Improvements as an Integrated GHG Reduction Strategy*. WSDOT Research Report WA-RD 765.1, Washington State Department of Transportation. April. Available: www.wsdot.wa.gov/research/reports/fullreports/765.1.pdf. Accessed: January 2021.
- Handy, S., S. Glan-Claudia, and M. Boarnet. 2014. *Impacts of Pedestrian Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions: Policy Brief*. September. Available: https://ww2.arb.ca.gov/sites/default/files/2020-06/Impacts_of_Pedestrian_Strategies_on_Passenger_Vehicle_Use_and_Greenhouse_Gas_Emissions_Policy_Brief.pdf. Accessed: January 2021.

T-19-A. Construct or Improve Bike Facility

GHG Mitigation Potential

Up to 0.8% of GHG emissions from vehicles parallel roadways

Co-Benefits (icon key on pg. 34)

Climate Resilience

Constructing and improving bike facilities can incentivize more bicycle use and decrease vehicle use, which have health benefits and can thus improve community resilience. This can also improve connectivity between residents and resources that may be needed in an extreme weather event.

Health and Equity Considerations

Prioritize low-income and underserved areas and communities with lower rates of vehicle ownership or fewer transit options. Make sure that the bicycle facility connects to a larger existing bikeway network that accesses destinations visited by low-income or underserved communities.

Measure Description

This measure will construct or improve a single bicycle lane facility (only Class I, II, or IV) that connects to a larger existing bikeway network. Providing bicycle infrastructure helps to improve biking conditions within an area. This encourages a mode shift on the roadway parallel to the bicycle facility from vehicles to bicycles, displacing VMT and thus reducing GHG emissions. When constructing or improving a bicycle facility, a best practice is to consider local or state bike lane width standards. A variation of this measure is provided as T-19-B, *Construct or Improve Bike Boulevard*.

Subsector

Neighborhood Design

Locational Context

Urban, suburban

Scale of Application

Plan/Community. This measure reduces VMT on the roadway segment parallel to the bicycle facility (i.e., the corridor). An adjustment factor is included in the formula to scale the VMT reduction from the corridor level to the plan/community level.

Implementation Requirements

The bicycle lane facility must be either Class I, II, or IV. Class I bike paths are physically separated from motor vehicle traffic. Class IV bikeways are protected on-street bikeways, also called cycle tracks. Class II bike lanes are striped bicycle lanes that provide exclusive use to bicycles on a roadway.

Cost Considerations

Capital and infrastructure costs for new bike facilities may be high. The local municipality may achieve cost savings through a reduction of cars on the road leading to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

Implement alongside Measures T-22-A, T-22-B, and/or T-22-C to ensure that micromobility users can ride safely along bicycle lane facilities and not have to ride along pedestrian infrastructure, which is a risk to pedestrian safety.

GHG Reduction Formula

$$A = -B \times \frac{\frac{F}{I} \times (C + D) \times E \times G}{H}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from displaced vehicles on roadway parallel to bicycle facility	0–0.8	%	calculated
User Inputs				
B	Percent of plan/community VMT on parallel roadway	0–100	%	user input
C	Active transportation adjustment factor	Table T-19.1	unitless	CARB 2020
D	Credits for key destinations near project	Table T-19.2	unitless	CARB 2020
E	Growth factor adjustment for facility type	Table T-19.3	unitless	CARB 2020
Constants, Assumptions, and Available Defaults				
F	Annual days of use of new facility	Table T-19.4	days per year	NOAA 2017
G	Existing regional average one-way bicycle trip length	Table T-10.1	miles per trip	FHWA 2017
H	Existing regional average one-way vehicle trip length	Table T-10.1	miles per trip	FHWA 2017
I	Days per year	365	days per year	standard

Further explanation of key variables:

- (B) – The percent of total plan/community VMT within the roadway parallel to the bike facility should represent the expected total VMT generated by all land use in that area, including office, residences, retail, schools, and other uses. The most appropriate source for this data is from a local travel demand forecasting model. An alternate method uses VMT per worker or VMT per resident as calculated for SB 743 compliance and screening purposes multiplied by the population in the area.
- (C, D, and E) – The active transportation adjustment factor, key destination credit, and growth factor adjustment should be looked up by the user in Tables T-19.1 through T-19.3 in Appendix C. The active transport adjustment factor is based on the existing annual average daily traffic (AADT) of the facility, length of the proposed bike facility, and the city population. The key destination credit is based on the number of key destinations within 0.5-mile of the facility. The growth factor is based on the type of proposed bicycle facility.
- (F) – The annual days of use for the new facility should be looked up by users in Table T-19.4 based on the county in which the project is located. The days of use is based on the number of days per year where there is no rainfall (i.e., <=0.1 inches) (NOAA 2017).

- (G and H) – Ideally, the user will calculate bicycle and vehicle trip lengths for the corridor at a scale no larger than the surrounding census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input regional average one-way bicycle and vehicle trip lengths for one of the six most populated CBSAs in California provided in Table T-10.1 in Appendix C (FHWA 2017).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects that use CBSA data from Table T-10.1 in Appendix C, the maximum percent reduction in GHG emissions (A) is 0.8 percent. This is based on a neighborhood project the size of a large corridor (B = 100%) within the CBSA of Sacramento-Roseville-Arden-Arcade that uses the highest values for (C, D, and E) in Tables T-19.1 through T-19.3 and annual use days for Sacramento County (F) in Table T-19.4. This maximum scenario is presented in the below example quantification.

(C_{max}) The active transportation adjustment factor (C) was determined for roadways with AADT ranging from 1 to 30,000 (CARB 2020). Roadways with AADT greater than 30,000 are generally not appropriate for bicycle facilities. Care should be taken by the user in interpreting the results from this equation for a project roadway with AADT greater than 30,000.

Subsector Maximum

($\sum A_{max_{T\text{-}18 \text{ through } T\text{-}22\text{-}C}} \leq 10\%$) This measure is in the Neighborhood Design subsector. This subcategory includes Measures T-18 through T-22-C. The VMT reduction from the combined implementation of all measures within this subsector is capped at 10 percent.

Example GHG Reduction Quantification

The user reduces VMT by constructing a bicycle facility that displaces vehicle trips with bicycle trips. In this example, the following assumptions are made to obtain inputs from Tables T-19.1 through T-19.3 in Appendix C:

- Percent of plan/community VMT on parallel roadway (B) = 100%. The project would establish a bike corridor the whole length of a central commercial thoroughfare. It is assumed this main street makes up the entire neighborhood.
- Active transportation adjustment factor (C) = 0.0207. Existing AADT on the roadway parallel to the proposed bicycle facility is 10,000, the facility length is 2.5 miles, and the project site is in a university town with a population of 200,000.
- Key destination credit (D) = 0.003. There are 10 key destinations within 0.25 mile of the project site.
- Growth factor adjustment (E) = 1.54. The bike facility would be a new Class IV bikeway.

The project is within the Sacramento-Roseville-Arden-Arcade CBSA and the user does not have project-specific values for average bicycle and vehicle trip lengths. Accordingly, the inputs of 2.9 miles and 10.9 miles, respectively (G and H), from Table T-10.1 in Appendix C are assumed. The user would displace GHG emissions from project study area VMT by 0.8 percent.

$$A = \textbf{-100\%} \times \left(\frac{\frac{307 \text{ days}}{365 \text{ days}} \times (\textbf{0.0207} + \textbf{0.003}) \times \textbf{1.54} \times 2.9 \text{ miles}}{10.9 \text{ miles}} \right) = -0.8\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Improved Public Health

Users are directed to the ITHIM (CARB et al. 2020). The ITHIM can quantify the annual change in health outcomes associated with active transportation, including deaths, years of life lost, years of living with disability, and incidence of community and individual disease.

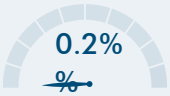
Sources

- California Air Resources Board (CARB). 2020. *Quantification Methodology for the Strategic Growth Council's Affordable Housing and Sustainable Communities Program*. September. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/draft_sgc_ahsc_qm_091620.pdf. Accessed: January 2021.
- California Air Resources Board (CARB), California Department of Public Health (CDPH), and Nicholas Linesch Legacy Fund. 2020. Integrated Transport and Health Impact Model. Available: https://skylab.cdph.ca.gov/HealthyMobilityOptionTool-ITHIM/#Home. Accessed: September 17, 2021.
- Federal Highway Administration (FHWA). 2017. *National Household Travel Survey–2017 Table Designer*. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

- National Oceanic and Atmospheric Administration (NOAA). 2021. *Global Historical Climatology Network–Daily (GHCN-Daily), Version 3*. 2015-2019 Average of Days Per Year with Precipitation >0.1 Inches. Available: https://www.ncei.noaa.gov/access/search/data-search/daily-summaries?bbox=38.922,-120.071,38.338,-119.547&place=County:1276&dataTypes=PRCP&startDate=2015-01-01T00:00:00&endDate=2019-01-01T23:59:59. Accessed: May 2021.

T-19-B. Construct or Improve Bike Boulevard

GHG Mitigation Potential



Up to 0.2% of GHG emissions from vehicles on roadway

Co-Benefits (icon key on pg. 34)

Climate Resilience

Constructing and improving bike boulevards can incentivize more bicycle use and decrease vehicle use, which have health benefits and can thus improve community resilience. This can also improve connectivity between residents and resources that may be needed in an extreme weather event.

Health and Equity Considerations

Prioritize low-income and underserved areas and communities with lower rates of vehicle ownership or fewer transit options. Make sure that the bicycle boulevard connects to a larger existing bikeway network that accesses destinations visited by low-income or underserved communities.

Measure Description

Construct or improve a single bicycle boulevard that connects to a larger existing bikeway network. Bicycle boulevards are a designation within Class III Bikeway that create safe, low-stress connections for people biking and walking on streets. This encourages a mode shift from vehicles to bicycles, displacing VMT and thus reducing GHG emissions. A variation of this measure is provided as T-19-A, *Construct or Improve Bike Facility*, which is for Class I, II, or IV bicycle infrastructure.

Subsector

Neighborhood Design

Locational Context

Urban, suburban

Scale of Application

Plan/Community. This measure reduces VMT on the roadway segment parallel to the bicycle facility (i.e., the corridor). An adjustment factor is included in the formula to scale the VMT reduction from the corridor level to the plan/community level.

Implementation Requirements

The following roadway conditions must be met.

- Functional classification: local and collector if there is no more than a single general-purpose travel lane in each direction.
- Design speed: <= 25 miles per hour.
- Design volume <= 5,000 average daily traffic.
- Treatments at major intersections: both directions have traffic signals (or an effective control device that prioritizes pedestrian and bicycle access such as rapid flashing beacons, pedestrian hybrid beacons, high-intensity activated crosswalks, TOUCANs), bike route signs, "sharrowed" roadway markings, and pedestrian crosswalks.

Cost Considerations

Capital and infrastructure costs for new bike boulevards may be high, though lower than implementing the same length of protected bicycle lanes (Class IV). After the bike boulevard is complete, the local municipality may achieve cost savings from reduced infrastructure and roadway maintenance costs.

Expanded Mitigation Options

Construct boulevards with forced turns for vehicles every few blocks to minimize through traffic while ensuring that speed and volume metrics are met. Implement alongside Measures T-22-A, T-22-B, and/or T-22-C to ensure that micromobility users can ride safely along bicycle lane facilities and not pedestrian infrastructure, which is a risk to pedestrian safety.

GHG Reduction Formula

$$A = B \times \frac{D \times (F - (C \times F))}{E \times G}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from displaced vehicles on roadway with bicycle boulevard	0–0.2	%	calculated
User Inputs				
B	Percent of plan/community VMT on roadway to have bicycle boulevard	0–100	%	user input
Constants, Assumptions, and Available Defaults				
C	Bike mode adjustment factor	1.14	unitless	Schwartz 2021
D	Existing bicycle trip length for all trips in region	Table T-10.1	miles	FHWA 2017a
E	Existing vehicle trip length for all trips in region	Table T-10.1	miles	FHWA 2017a
F	Existing bicycle mode share for work trips in region	Table T-10.2	%	FHWA 2017a
G	Existing vehicle mode share for work trips in region	Table T-10.2	%	FHWA 2017a

Further explanation of key variables:

- (C) – The bike mode adjustment factor is based on a database of before/after bicycle counts for 10 projects in four U.S. cities that invested in bicycle boulevards. Bicycle ridership increased on average by 114 percent (Schwartz 2021).
- (D and E) – Ideally, the user will calculate bicycle and vehicle trip lengths for the corridor at a scale no larger than the surrounding census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input regional average one-way bicycle and vehicle trip lengths for one of the six most populated CBSAs in California provided in Table T-10.1 in Appendix C (FHWA 2017a).
- (F and G) – Ideally, the user will calculate bicycle and auto mode share for work trips for a Project/Site at a scale no larger than a census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input the regional average mode shares for bicycle and vehicle work trips for one of the six most populated CBSAs in California, as presented in Table T-10.2 in Appendix C (FHWA 2017b). If the project study area is not within the listed

CBSAs or the user is able to provide a project-specific value, the user should replace these regional defaults in the GHG reduction formula. For areas not covered by the listed CBSAs, which represent the denser areas of the state, bicycle mode share is likely to be lower and vehicle share higher than presented in Table T-10.2.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects that use CBSA data from Tables T-10.1 and T-10.2 in Appendix C, the maximum percent reduction in GHG emissions (A) is 0.2 percent. This is based on a neighborhood project the size of a large corridor (B = 100%) within the CBSA of San Jose-Sunnyvale-Santa Clara that uses the highest values for (C, D, and E) in Tables T-19.1 through T-19.3 and annual use days for Sacramento County (F) in Table T-19.4. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}18 \text{ through } T\text{-}22\text{-}C}} \leq 10\%$) This measure is in the Neighborhood Design subsector. This subcategory includes Measures T-18 through T-22-C. The VMT reduction from the combined implementation of all measures within this subsector is capped at 10 percent.

Example GHG Reduction Quantification

The user reduces VMT by providing a bicycle boulevard on the targeted roadway, which encourages bicycle trips in place of vehicle trips. In this example, it is assumed this main street makes up the entire plan area, i.e., (B) is 100 percent. The project is within San Jose-Sunnyvale-Santa Clara CBSA and the user does not have project-specific values for trip lengths and mode shares for bicycles and vehicles. Per Tables T-10.1 and T-10.2, inputs for these variables are 2.8 miles, 11.5 miles, 4.1 percent, and 86.6 percent, respectively (D, E, F, and G). GHG emissions from plan/community VMT would be reduced by 0.2 percent.

$$A = 100\% \times \frac{2.8 \text{ miles} \times \left(4.1\% - (1.14 \times 4.1\%)\right)}{11.5 \text{ miles} \times 86.6\%} = -0.2\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Improved Public Health

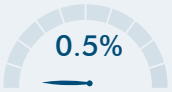
Users are directed to the ITHIM (CARB et al. 2020). The ITHIM can quantify the annual change in health outcomes associated with active transportation, including deaths, years of life lost, years of living with disability, and incidence of community and individual disease.

Sources

- California Air Resources Board (CARB), California Department of Public Health (CDPH), and Nicholas Linesch Legacy Fund. 2020. Integrated Transport and Health Impact Model. Available: https://skylab.cdph.ca.gov/HealthyMobilityOptionTool-ITHIM/#Home. Accessed: September 17, 2021.
- Federal Highway Administration (FHWA). 2017a. *National Household Travel Survey–2017 Table Designer*. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017b. *National Household Travel Survey–2017 Table Designer*. Workers by WRKTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Schwartz, S. 2021. *Planning for Stress Free Connections: Estimating VMT Reductions.* February.

T-20. Expand Bikeway Network

GHG Mitigation Potential



Up to 0.5% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Expanding bikeway networks can incentivize more bicycle use and decrease vehicle use, which have health benefits and can thus improve community resilience. This can also improve connectivity between residents and resources that may be needed in an extreme weather event.

Health and Equity Considerations

Prioritize low-income and underserved areas and communities with lower rates of vehicle ownership or fewer transit options. Make sure that destinations visited by low-income or underserved communities are served by the network.

Measure Description

This measure will increase the length of a city or community bikeway network. A bicycle network is an interconnected system of bike lanes, bike paths, bike routes, and cycle tracks. Providing bicycle infrastructure with markings and signage on appropriately sized roads with vehicle traffic traveling at safe speeds helps to improve biking conditions (e.g., safety and convenience). In addition, expanded bikeway networks can increase access to and from transit hubs, thereby expanding the "catchment area" of the transit stop or station and increasing ridership. This encourages a mode shift from vehicles to bicycles, displacing VMT and thus reducing GHG emissions. When expanding a bicycle network, a best practice is to consider bike lane width standards from local agencies, state agencies, or the National Association of City Transportation Officials' *Urban Bikeway Design Guide*.

Subsector

Neighborhood Design

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

The bikeway network must consist of either Class I, II, or IV infrastructure.

Cost Considerations

Capital and infrastructure costs for expanding the bikeway network may be high. Construction of these facilities may also increase vehicle traffic, leading to more congestion and temporarily longer trip times for motorist. However, the local municipality may achieve cost savings through a reduction of cars on the road leading to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

As networks expand, ensure safe, secure, and weather-protected bicycle parking facilities at origins and destinations. Also, implement alongside T-22-A, T-22-B, and/or T-22-C to ensure that micromobility options can ride safely along bicycle lane facilities and not have to ride along pedestrian infrastructure, which is a risk to pedestrian safety.

GHG Reduction Formula

$$A = -1 \times \frac{\left(\frac{C - B}{B}\right) \times D \times F \times H}{E \times G}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from employee commute vehicle travel in plan/community	0–0.5	%	calculated
User Inputs				
B	Existing bikeway miles in plan/community	[ ]	miles	user input
C	Bikeway miles in plan/community with measure	[ ]	miles	user input
Constants, Assumptions, and Available Defaults				
D	Bicycle mode share in plan/community	Table T-20.1	%	FHWA 2017
E	Vehicle mode share in plan/community	Table T-3.1	%	FHWA 2017
F	Average one-way bicycle trip length in plan/community	Table T-10.1	miles per trip	FHWA 2017
G	Average one-way vehicle trip length in plan/community	Table T-10.1	miles per trip	FHWA 2017
H	Elasticity of bike commuters with respect to bikeway miles per 10,000 population	0.25	unitless	Pucher & Buehler 2011

Further explanation of key variables:

- (B) – The existing bikeway miles in a plan/community should be calculated by measuring the distance of all Class I, II, III, and IV bikeways within the plan/community. This information can sometimes be found in a city's bicycle master plan, if a plan has been prepared and is up to date.
- (D, E, F, and G) – Ideally, the user will calculate bicycle and auto mode share and trip length for a plan/community at the city scale. Potential data sources include the California Household Travel Survey (preferred) or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input the mode shares and trip lengths for bicycles and vehicles for one of the six most populated CBSAs in California, as presented in Table T-3.1, T-10.2, and T-20.1 in Appendix C. Trip lengths are likely to be longer for areas not covered by the listed CBSAs, which represent the denser areas of the state. Similarly, it is likely for areas outside of the area covered by the listed CBSAs to have vehicle mode shares higher and bicycle mode shares lower than the values provided in the tables.
- (H) – A multivariate analysis of the impacts of bike lanes on cycling levels in the 100 largest U.S. cities found that a 0.25 percent increase in commute cycling occurs for every 1 percent increase in bike lane distance (Pucher & Buehler 2011).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects that use CBSA data from Tables T-3.1, T-10.2, and T-20.1 in Appendix C, the maximum percent reduction in GHG emissions (A) is 0.5 percent. This is based on a project within the CBSA of San Jose-Sunnyvale-Santa Clara that has no existing bike lane infrastructure. This maximum scenario is presented in the below example quantification.

($\left(\frac{C-B}{B}\right)_{max}$) The maximum percent increase in bike lane miles in the plan/community is conservatively capped at 1000 percent. If there is no existing bike lane infrastructure in the plan/community, (B) should be set to (1/11×C), resulting in a percentage change of 1000 percent.

Subsector Maximum

($\sum A_{max_{T\text{-}18 \text{ through } T\text{-}22\text{-}C}} \leq 10\%$) This measure is in the Neighborhood Design subsector. This subcategory includes Measures T-18 through T-22-C. The VMT reduction from the combined implementation of all measures within this subsector is capped at 10 percent.

Example GHG Reduction Quantification

The user reduces employee commute VMT by increasing the length of a bicycle network within a plan/community, which displaces commute vehicle trips with bicycle trips. In this example, the existing bikeway length in the plan/community (B) is 0 miles and the length with the measure (C) is 11 miles. The project is within the San Jose-Sunnyvale-Santa Clara CBSA, yielding the following inputs from Tables T-3.1, T-10.2, and T-20.1 in Appendix C.

- Bicycle mode share (D) = 0.79 percent.
- Vehicle mode share (E) = 91.32 percent.
- Average one-way bicycle trip length (F) = 2.8 miles.
- Average one-way vehicle trip length (G) = 11.5 miles.

The user would displace GHG emissions from project study area employee commute VMT by 0.5 percent.

$$A = -1 \times \left(\frac{(1000\%) \times 0.79\% \times 2.8 \text{ miles} \times 0.25}{91.32\% \times 11.5 \text{ miles}} \right) = -0.5\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an

adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in employee commute VMT would be the same as the percent reduction in GHG emissions (A).

Improved Public Health

Users are directed to the ITHIM (CARB et al. 2020). The ITHIM can quantify the annual change in health outcomes associated with active transportation, including deaths, years of life lost, years of living with disability, and incidence of community and individual disease.

Sources

- California Air Resources Board (CARB), California Department of Public Health (CDPH), and Nicholas Linesch Legacy Fund. 2020. Integrated Transport and Health Impact Model. Available: https://skylab.cdph.ca.gov/HealthyMobilityOptionTool-ITHIM/#Home. Accessed: September 17, 2021.
- Federal Highway Administration (FHWA). 2017. *National Household Travel Survey – 2017 Table Designer*. Travel Day PMT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Pucher, J., and Buehler, R. 2011. *Analysis of Bicycling Trends and Policies in Large North American Cities: Lessons for New York.* March. Available: http://www.utrc2.org/sites/default/files/pubs/analysis-bike-final_0.pdf. Accessed: January 2021.

T-21-A. Implement Conventional Carshare Program

GHG Mitigation Potential

Up to 0.15% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Carshare programs can increase accessibility and provide redundancy to vehicles that can be used to evacuate or obtain resources during an extreme weather event. Carshare programs can allow residents to give up or avoid car ownership, leading to cost savings that can help build economic resilience.

Health and Equity Considerations

Provide inclusive mechanisms so people without bank accounts, credit cards, or smart phones can access the system.

Measure Description

This measure will increase carshare access in the user's community by deploying conventional carshare vehicles. Carsharing offers people convenient access to a vehicle for personal or commuting purposes. This helps encourage transportation alternatives and reduces vehicle ownership, thereby avoiding VMT and associated GHG emissions. A variation of this measure, electric carsharing, is described in Measure T-21-B, *Implement Electric Carshare Program*.

Subsector

Neighborhood Design

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

The GHG mitigation potential is based, in part, on literature analyzing one-way carsharing service with a free-floating operational model. This measure should be applied with caution if using a different form of carsharing (e.g., roundtrip, peer-to-peer, fractional).

Cost Considerations

The costs incurred by the carshare program service manager (typically a municipality or carshare company) may include the capital costs of purchasing vehicles; costs of storing, maintaining, and replacing the fleet; and costs for marketing and administration. Some of these costs may be offset by income generated through program use.

Expanded Mitigation Options

When implementing a carshare program, best practice is to discount carshare membership and provide priority parking for carshare vehicles to encourage use of the service.

GHG Reduction Formula

$$A = \frac{B \times (E - D)}{C}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–0.15	%	calculated
User Inputs				
B	Number of vehicles deployed in plan/community	[ ]	integer	user input
C	VMT in plan/community without measure	[ ]	VMT per day	user input
Constants, Assumptions, and Available Defaults				
D	Conventional VMT avoided with measure	68.2	VMT per day per vehicle	Martin and Shaheen 2016
E	Conventional VMT added with measure	24.4	VMT per day per vehicle	Martin and Shaheen 2016

Further explanation of key variables:

- (B) – The number of cars in the carshare program is selected by the carshare provider, but its magnitude is relative to the size of the service area. A study of several carsharing programs (Martin and Shaheen 2016) documented a range of carshare fleet sizes for different North American cities: Calgary (590), San Diego (406), Seattle (640), Vancouver (920), Washington, D.C. (626).
- (C) – The total plan/community VMT should represent the expected total VMT generated by all land use in that area. The most appropriate source for this data is from a local travel demand model.
- (D) – Conventional VMT avoided per deployed carshare vehicle was derived based on a study of conventional-engine based car share programs in Calgary, Seattle, Vancouver, and Washington, D.C. It accounts for VMT avoided from carshare users who sold their personal vehicles and carshare users who decided not to purchase a personal vehicle, both directly because of the availability of carshare (Martin and Shaheen 2016).
- (E) – Conventional VMT added per deployed carshare vehicle was derived based on a study of conventional-engine based car share programs in Calgary, Seattle, Vancouver, and Washington, D.C. It accounts for the VMT of the carshare vehicles (Martin and Shaheen 2016).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The maximum GHG reduction from this measure is 0.15 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}18 \text{ through } T\text{-}22\text{-}C}} \leq 10\%$) This measure is in the Neighborhood Design subsector. This subcategory includes Measures T-18 through T-22-C. The VMT reduction from the combined implementation of all measures within this subsector is capped at 10 percent.

Example GHG Reduction Quantification

The user reduces plan/community VMT by deploying carshare vehicles. In this example, the project would be in the city of San Diego, which in 2017 had a VMT per day of 24,101,089 miles (C) (SANDAG 2019). Assuming twice the number of vehicles used in the Car2go San Diego program (B), the GHG emissions from plan/community VMT would be reduced by 0.15 percent.

$$A = \frac{812 \text{ vehicles} \times \left(24.4 \frac{\text{VMT}}{\text{day·vehicle}} - 68.2 \frac{\text{VMT}}{\text{day·vehicle}}\right)}{24{,}101{,}089 \frac{\text{VMT}}{\text{day}}} = -0.15\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Martin, E. and S. Shaheen. 2016. *The Impacts of Car2go on Vehicle Ownership, Modal Shift, Vehicle Miles Traveled, and Greenhouse Gas Emissions: An Analysis of Five North American Cities*. July. Available: https://tsrc.berkeley.edu/publications/impacts-car2go-vehicle-ownership-modal-shift-vehicle-miles-traveled-and-greenhouse-gas. Accessed: March 2021.
- San Diego Association of Governments (SANDAG). 2019. *Mobility Management VMT Reduction Calculator Tool – Design Document*. June. Available: https://www.icommutesd.com/docs/default-source/planning/tool-design-document_final_7-17-19.pdf?sfvrsn=ec39eb3b_2. Accessed: January 2021.

T-21-B. Implement Electric Carshare Program

GHG Mitigation Potential

Up to 0.18% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Electric carshare programs can increase accessibility and provide redundancy to vehicles that can be used to evacuate or obtain resources during an extreme weather event. Electric vehicles also provide fuel redundancy by allowing an alternative fuel source if an extreme event disrupts other fuel sources; however, they may decrease resilience if they are the only option available during a power outage.

Health and Equity Considerations

Provide inclusive mechanisms so people without bank accounts, credit cards, or smart phones can access the system.

Measure Description

This measure will increase carshare access in the user's community by deploying electric carshare vehicles. Carsharing offers people convenient access to a vehicle for personal or commuting purposes. This helps encourage transportation alternatives and reduces vehicle ownership, thereby avoiding VMT and associated GHG emissions. This also encourages a mode shift from internal combustion engine vehicles to electric vehicles, displacing the emissions-intensive fossil fuel energy with less emissions-intensive electricity. Electric carshare vehicles require more staffing support compared to conventional carshare programs for shuttling electric vehicles to and from charging points. A variation of this measure, conventional carsharing, is described in Measure T-21-A, *Implement Conventional Carshare Program*.

Subsector

Neighborhood Design

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

The GHG mitigation potential is based, in part, on literature analyzing one-way carsharing service with a free-floating operational model. This measure should be applied with caution if using a different form of carsharing (e.g., roundtrip, peer-to-peer, fractional).

Cost Considerations

Costs incurred by the service manager (e.g., municipality, carshare company) may include the capital costs of purchasing vehicles; costs of storing, maintaining, and replacing the fleet; and costs for marketing and administration. Some of these costs may be offset by income generated through program use. Participants' recurring costs of renting a carshare vehicle may be offset by the cost savings from access to cheaper transportation.

Expanded Mitigation Options

When implementing a carshare program, best practice is to discount carshare membership and provide priority parking for carshare vehicles to encourage use of the service.

GHG Reduction Formula

$$A = -1 \times \frac{B \times ((E \times G \times H \times I \times J) - (D \times F))}{C \times F}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–0.18	%	calculated
User Inputs				
B	Number of electric vehicles deployed in plan/community	[ ]	integer	user input
C	VMT in plan/community without measure	[ ]	VMT per day	user input
Constants, Assumptions, and Available Defaults				
D	Conventional VMT avoided with measure	54.8	VMT per day per EV	Martin and Shaheen 2016
E	Electric VMT added with measure	13.7	VMT per day per EV	Martin and Shaheen 2016
F	Emission factor of non-electric light duty fleet mix	307.5	g CO_2e per mile	CARB 2020a
G	Energy efficiency of carshare electric vehicle	0.327	kWh per mile	CARB 2020b; U.S. DOE 2021
H	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
I	Conversion from lb to g	454	g per lb	conversion
J	Conversion from kWh to MWh	0.001	MWh per kWh	conversion

Further explanation of key variables:

- (B) – The number of cars in the carshare program is selected by the carshare provider, but its magnitude is relative to the size of the service area. A study of several carsharing programs (Martin and Shaheen 2016) documented a range of carshare fleet sizes for different North American cities: Calgary (590), San Diego (406), Seattle (640), Vancouver (920), Washington, D.C. (626).
- (C) – The total plan/community VMT should represent the expected total VMT generated by all land use in that area. The most appropriate source for this data is from a local travel demand forecasting model.
- (D) – Conventional VMT avoided per deployed carshare vehicle was derived based on a study of an electric vehicle carshare program in San Diego. It accounts for VMT avoided from carshare users who sold their personal vehicles and carshare users who decided not to purchase a personal vehicle, both directly because of the availability of carshare (Martin and Shaheen 2016).

- (E) – Electric VMT added per deployed carshare vehicle was derived based on a study of an electric vehicle carshare program in San Diego. It accounts for the VMT of the carshare vehicles and includes staff-driven VMT needed to bring the vehicles to charging points (Martin and Shaheen 2016).
- (F) – The average GHG emission factor for non-electric vehicles was calculated in terms of CO_2e per mile using EMFAC2017 (v1.0.3). The model was run for a 2020 statewide average of LDA, LDT1, and LDT2 vehicles using diesel and gasoline fuel. The running emission factors for CO_2, CH_4, and N_2O (CARB 2020a) were multiplied by the corresponding 100-year GWP values from the IPCC's Fourth Assessment Report (IPCC 2007). If the user can provide a project-specific value (i.e., for a future year and project location), the user should run EMFAC to replace the default in the GHG reduction formula.
- (G) – Scaled from light-duty automobile gasoline equivalent fuel economy (G from Measure T-14) based on energy efficiency ratio (EER) of 2.5 (CARB 2020b) and an assumption of 33.7 kWh electricity per gallon of gasoline (U.S. DOE 2021).
- (H) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year not referenced in Appendix C), the user should replace the default in the GHG calculation formula. If the electricity provider is not known, the user may elect to use the statewide grid average carbon intensity.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The maximum GHG reduction from this measure is 0.18 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{\text{T-18 through T-22-C}}} \leq 10\%$) This measure is in the Neighborhood Design subsector. This subcategory includes Measures T-18 through T-22-C. The VMT reduction from the combined implementation of all measures within this subsector is capped at 10 percent.

Example GHG Reduction Quantification

The user reduces plan/community VMT by deploying carshare vehicles. In this example, the project would be in the city of San Diego, which in 2017 had a VMT per day of 24,101,089 miles (C) (SANDAG 2019). Assuming twice the number of vehicles used in the Car2go San Diego program (B), and a commitment by the carshare service provider to purchase zero-carbon electricity for all carshare charging stations (H), the GHG emissions from plan/community VMT would be reduced by 0.18 percent.

$$A = -1 \times \frac{812 \times \left(\left(13.7 \frac{eVMT}{day \cdot vehicle} \times 0.327 \frac{kWh}{mile} \times 0 \frac{lb\ CO_2e}{MWh} \times 454 \frac{g}{lb} \times 0.001 \frac{MWh}{kWh}\right) - \left(54.8 \frac{cVMT}{day \cdot vehicle} \times 307.5 \frac{g\ CO_2e}{mile}\right)\right)}{24{,}101{,}089 \frac{VMT}{day} \times 307.5 \frac{g\ CO_2e}{mile}} = -0.18\%$$

Quantified Co-Benefits

Improved Local Air Quality

Local criteria pollutants will be reduced by the reduction in vehicle fuel consumption. Electricity supplied by statewide fossil-fueled or bioenergy power plants will generate criteria pollutants. However, because these power plants are located throughout the state, electricity consumption from electric vehicles will not generate localized criteria pollutant emissions. Accordingly, the percent reduction in NO_X, CO, NO_2, SO_2, and PM (K) is calculated using a simplified version of the GHG reduction formula, as follows:

$$K = -1 \times \frac{B \times -D}{C}$$

Reductions in ROG emissions can be calculated by multiplying the percent reduction in other criteria pollutant emissions (K) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Fuel Savings (Increased Electricity)

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in criteria pollutant emissions (K). The percent increase in electricity use (L) from this measure can be calculated using a variation of the GHG reduction formula, as follows.

Electricity Use Increase Formula

$$L = \frac{B \times E \times G \times N}{M}$$

Electricity Use Increase Calculation Variables

ID	Variable	Value	Unit	Source
Output				
L	Increase in electricity from electric vehicles	[ ]	%	calculated
User Inputs				
M	Existing electricity consumption of plan/community	[ ]	kWh per year	user input
Constants, Assumptions, and Available Defaults				
N	Days per year carshare program operational	365	days per year	assumed

Further explanation of key variables:

- (M) – The user should take care to properly quantify building electricity using accepted methodologies (such as CalEEMod).
- Please refer to the GHG Calculation Variables table above for definitions of variables that have been previously defined.

VMT Reductions

The percent reduction in VMT (O) is calculated using a simplified version of the GHG reduction formula that excludes the variables related to emission factors, as follows.

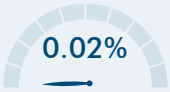
$$O = -1 \times \frac{B \times (E - D)}{C}$$

Sources

- California Air Resources Board (CARB). 2020a. *EMFAC2017 v1.0.3*. August. Available: https://arb.ca.gov/emfac/emissions-inventory. Accessed: January 2021.
- California Air Resources Board (CARB). 2020b. Unofficial electronic version of the Low Carbon Fuel Stproved_unofficial_06302020.pdf
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- Martin, E. and Shaheen, S. 2016. *The Impacts of Car2go on Vehicle Ownership, Modal Shift, Vehicle Miles Traveled, and Greenhouse Gas Emissions: An Analysis of Five North American Cities*. July. Available: https://tsrc.berkeley.edu/publications/impacts-car2go-vehicle-ownership-modal-shift-vehicle-miles-traveled-and-greenhouse-gas. Accessed: March 2021.
- San Diego Association of Governments (SANDAG). 2019. *Mobility Management VMT Reduction Calculator Tool – Design Document*. June. Available: https://www.icommutesd.com/docs/default-source/planning/tool-design-document_final_7-17-19.pdf?sfvrsn=ec39eb3b_2. Accessed: January 2021.
- U.S. Department of Energy (U.S. DOE). 2021. Download Fuel Economy Data. January. Available: https://www.fueleconomy.gov/feg/download.shtml. Accessed: January 2021.

T-22-A. Implement Pedal (Non-Electric) Bikeshare Program

GHG Mitigation Potential



Up to 0.02% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Bikeshare programs can incentivize more bicycle use and decrease vehicle use, which have health benefits and can thus improve community resilience. This can also improve connectivity between residents and resources that may be needed in an extreme weather event.

Health and Equity Considerations

Provide inclusive mechanisms so people without bank accounts, credit cards, or smart phones can access the system.

Measure Description

This measure will establish a bikeshare program. Bikeshare programs provide users with on-demand access to bikes for short-term rentals. This encourages a mode shift from vehicles to bicycles, displacing VMT and thus reducing GHG emissions. Variations of this measure are described in Measure T-22-B, *Implement Electric Bikeshare Program*, and Measure T-22-C, *Implement Scootershare Program*.

Subsector

Neighborhood Design

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

The GHG mitigation potential is based, in part, on literature analyzing docked (i.e., station-based) bikeshare programs. This measure should be applied with caution if using dockless (free-floating) bikeshare.

Cost Considerations

The costs incurred by the service manager (e.g., municipality or bikeshare company) may include the capital costs for purchasing a bicycle fleet; installing accessible and secure docking stations; storing, maintaining, and replacing the fleet; and marketing and administration. Some of these costs may be offset by income generated through program use. Program participants will benefit from the cost savings from access to cheaper transportation alternatives (compared to private vehicles, private bicycles, or use of ride-hailing services). The local municipality may achieve cost savings through a reduction of cars on the road leading to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

Best practice is to discount bikeshare membership and dedicate bikeshare parking to encourage use of the service. Also consider including space on the vehicle to store personal items while traveling, such as a basket.

GHG Reduction Formula

This measure methodology does not account for the direct GHG emissions from vehicle travel of program employees picking up and dropping off bikes.

$$A = -1 \times \frac{(C - B) \times D \times E \times F}{G \times H}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–0.02	%	calculated
User Inputs				
B	Percent of residences in plan/community with access to bikeshare system without measure	0–100	%	user input
C	Percent of residences in plan/community with access to bikeshare system with measure	0–100	%	user input
Constants, Assumptions, and Available Defaults				
D	Daily bikeshare trips per person	0.021	trips per day per person	MTC 2017
E	Vehicle to bikeshare substitution rate	19.6	%	McQueen et al. 2020
F	Bikeshare average one-way trip length	1.4	miles per trip	Lazarus et al. 2019
G	Daily vehicle trips per person	2.7	trips per day per person	FHWA 2018
H	Regional average one-way vehicle trip length	Table T-10.1	miles per trip	FHWA 2017

Further explanation of key variables:

- (B and C) – Access to bikesharing is measured as the percent of residences in the plan/community within 0.25 mile of a bikeshare station. For dockless bikes, assume that all residences within 0.25 mile of the designated dockless service area would have access.
- (D) – An analysis of bike share service areas in the San Francisco Bay Area estimated that in locations with access to bikesharing, there were between 21 and 25 bikeshare trips per day per 1,000 residents (MTC 2017). To be conservative, the low end of this range is cited.
- (E) – A literature review of several academic and government reports found that the average car trip substitution rate by bikeshare trips was 19.6 percent. This included bikeshare programs in Washington D.C., Minneapolis, and Montreal (McQueen et al. 2020).

- (F) – A case study on average trip lengths for pedal and electric bikeshare programs in San Francisco reported a one-way pedal bikeshare trip of 1.4 miles (Lazarus et al. 2019).
- (G) – A summary report of the 2017 National Household Travel Survey data found that the average person in the U.S. takes 2.7 vehicle trips per day (FHWA 2018).
- (H) – Ideally, the user will calculate auto trip length for a plan/community at a scale no larger than a census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. If the user is not able to provide a plan-specific value using one of these data sources, they have the option to input the existing regional average one-way auto trip length for one of the six most populated CBSAs in California, as presented in Table T-10.1 in Appendix C (FHWA 2017). Trip lengths are likely to be longer for areas not covered by the listed CBSAs, which represent the denser areas of the state.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects that use default CBSA data from Table T-10.1, the maximum percent reduction in GHG emissions (A) is 0.02 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}18 \text{ through } T\text{-}22\text{-}C}} \leq 10\%$) This measure is in the Neighborhood Design subsector. This subcategory includes Measures T-18 through T-22-C. The VMT reduction from the combined implementation of all measures within this subsector is capped at 10 percent.

Example GHG Reduction Quantification

The user reduces plan/community VMT by deploying bikesharing throughout the area. In this example, the project is in the Los Angeles-Long Beach-Anaheim CBSA, and the one-way vehicle trip length would be 9.72 miles (H). Assuming 100 percent of residents in the plan/community would have bikeshare access (C) where there was no existing access (B), the user would reduce GHG emissions from plan/community VMT by 0.02 percent.

$$A = -1 \times \frac{(100\% - 0\%) \times 0.021 \ \frac{\text{trips}}{\text{day·person}} \times 19.6\% \times 1.4 \ \frac{\text{miles}}{\text{trip}}}{2.7 \ \frac{\text{trips}}{\text{day·person}} \times 9.72 \ \frac{\text{miles}}{\text{trip}}} = -0.02\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an

adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

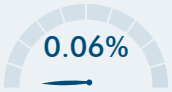
The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Federal Highway Administration (FHWA). 2017. *National Household Travel Survey–2017 Table Designer*. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2018. *Summary of Travel Trends 2017–National Household Travel Survey*. July. Available: https://www.fhwa.dot.gov/policyinformation/documents/2017_nhts_summary_travel_trends.pdf. Accessed: January 2021.
- Lazarus, J., J. Pourquier, F. Feng, H. Hammel, and S. Shaheen. 2019. *Bikesharing Evolution and Expansion: Understanding How Docked and Dockless Models Complement and Compete – A Case Study of San Francisco*. Paper No. 19-02761. Annual Meeting of the Transportation Research Board: Washington, D.C. Available: https://trid.trb.org/view/1572878. Accessed: January 2021.
- McQueen, M., G. Abou-Zeid, J. MacArthur, and K. Clifton. 2020. Transportation Transformation: Is Micromobility Making a Macro Impact on Sustainability? *Journal of Planning Literature*. November. Available: https://doi.org/10.1177/0885412220972696. Accessed: March 2021.
- Metropolitan Transportation Commission (MTC). 2017. *Plan Bay Area 2040 Final Supplemental Report–Travel Modeling Report*. July. Available: http://2040.planbayarea.org/files/2020-02/Travel_Modeling_PBA2040_Supplemental%20Report_7-2017.pdf. Accessed: January 2021.

T-22-B. Implement Electric Bikeshare Program

GHG Mitigation Potential



Up to 0.06% of GHG emissions vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Bikeshare programs can incentivize more bicycle use and decrease vehicle use, which have health benefits and can thus improve community resilience. This can also improve connectivity between residents and resources that may be needed in an extreme weather event. However, they may decrease resilience if they are the only option available during a power outage.

Health and Equity Considerations

Provide inclusive mechanisms so people without bank accounts, credit cards, or smart phones can access the system.

Measure Description

This measure will establish an electric bikeshare program. Electric bikeshare programs provide users with on-demand access to electric pedal assist bikes for short-term rentals. This encourages a mode shift from vehicles to electric bicycles, displacing VMT and reducing GHG emissions. Variations of this measure are described in Measure T-22-A, *Implement Pedal (Non-Electric) Bikeshare Program*, and Measure T-22-C, *Implement Scootershare Program*.

Subsector

Neighborhood Design

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

The GHG mitigation potential is based, in part, on literature analyzing docked (i.e., station-based) bikeshare programs. This measure should be applied with caution if using dockless (free-floating) bikeshare.

Cost Considerations

The costs incurred by the service manager (e.g., municipality or bikeshare company) may include the capital costs for purchasing a bicycle fleet; installing accessible and secure charging stations; storing, maintaining, and replacing the fleet; and marketing and administration. Some of these costs may be offset by income generated through program use. Program participants will benefit from the cost savings from access to cheaper transportation alternatives (compared to private vehicles, private bicycles, or use of ride-hailing services). The local municipality may achieve cost savings through a reduction of cars on the road leading to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

Best practice is to discount electric bikeshare membership and dedicate electric bikeshare parking to encourage use of the service. Consider also including space on the vehicle to store personal items while traveling, such as a basket.

GHG Reduction Formula

The quantification methodology does not account for indirect GHG emissions from electricity used to charge the bicycles or direct GHG emissions from vehicle travel of program employees picking up and dropping off bikes.

$$A = -1 \times \frac{(C - B) \times D \times E \times F}{G \times H}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–0.06	%	calculated
User Inputs				
B	Percent of residences in plan/community with access to electric bikeshare system without measure	0–100	%	user input
C	Percent of residences in plan/community with access to electric bikeshare system with measure	0–100	%	user input
Constants, Assumptions, and Available Defaults				
D	Daily electric bikeshare trips per person	0.021	trips per day per person	MTC 2017
E	Vehicle to electric bikeshare substitution rate	35	percent	Fitch et al. 2021
F	Electric bikeshare average one-way trip length	2.1	miles per trip	Fitch et al. 2021
G	Daily vehicle trips per person	2.7	trips per day per person	FHWA 2018
H	Regional average one-way vehicle trip length	Table T-10.1	miles per trip	FHWA 2017

Further explanation of key variables:

- (B and C) – Access to electric bikesharing is measured as the percent of residences in the plan/community within 0.25-mile of an electric bikeshare station. For dockless bikes, assume that all residences within 0.25 mile of the designated dockless service area would have access.
- (D) – An analysis of bike share service areas in the San Francisco Bay Area estimated that in locations with access to bikesharing, there were between 21 and 25 bikeshare trips per day per 1,000 residents (MTC 2017). To be conservative, the low end of this range is cited. Conventional bikeshare trip rate data was used due to lack of specific data for electric bikeshare.
- (E) – A study of dockless electric bike share in Sacramento found that the substitution rate of vehicles trips by electric bikeshare trips was 35 percent (Fitch et al. 2021).

- (F) – A study of dockless electric bike share in Sacramento found that the average one-way bikeshare trip was 2.1 miles (Fitch et al. 2021).
- (G) – A summary report of the 2017 National Household Travel Survey data found that the average person in the U.S. takes 2.7 vehicle trips per day (FHWA 2018).
- (H) – Ideally, the user will calculate auto trip length for a plan/community at a scale no larger than a census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. If the user is not able to provide a plan-specific value using one of these data sources, they have the option to input the existing regional average one-way auto trip length for one of the six most populated CBSAs in California, as presented in Table T-10.1 in Appendix C (FHWA 2017). Trip lengths are likely to be longer for areas not covered by the listed CBSAs, which represent the denser areas of the state.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects that use default CBSA data from Table T-10.1, the maximum percent reduction in GHG emissions (A) is 0.06 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}18 \text{ through } T\text{-}22\text{-}C}} \leq 10\%$) This measure is in the Neighborhood Design subsector. This subcategory includes Measures T-18 through T-22-C. The VMT reduction from the combined implementation of all measures within this subsector is capped at 10 percent.

Example GHG Reduction Quantification

The user reduces plan/community VMT by deploying electric bikesharing throughout the area. In this example, the project is in the Los Angeles-Long Beach-Anaheim CBSA, and the one-way vehicle trip length would be 9.72 miles (H). Assuming 100 percent of residents in the plan/community would have bikeshare access (C) where there was no existing access (B), the user would reduce GHG emissions from plan/community VMT by 0.06 percent.

$$A = -1 \times \frac{(100\% - 0\%) \times 0.021 \frac{\text{trips}}{\text{day·person}} \times 35\% \times 2.1 \frac{\text{miles}}{\text{trip}}}{2.7 \frac{\text{trips}}{\text{day·person}} \times 9.72 \frac{\text{miles}}{\text{trip}}} = -0.06\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an

adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A). This quantification methodology does not account for the increase in electricity used to charge the vehicles or the fuel consumption from vehicle travel of program employees picking up and dropping off bikes.

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A). This quantification methodology does not account for the miles traveled from vehicle travel of program employees picking up and dropping off bikes.

Sources

- Federal Highway Administration (FHWA). 2017. *National Household Travel Survey–2017 Table Designer*. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2018. *Summary of Travel Trends 2017–National Household Travel Survey*. July. Available: https://www.fhwa.dot.gov/policyinformation/documents/2017_nhts_summary_travel_trends.pdf. Accessed: January 2021.
- Fitch, D., H. Mohiuddin, and S. Handy. 2021. *Examining the Effects of the Sacramento Dockless E-Bike Share on Bicycling and Driving*. MDPI: Sustainability. January. Available: https://www.mdpi.com/2071-1050/13/1/368. Accessed: March 2021.
- Metropolitan Transportation Commission (MTC). 2017. *Plan Bay Area 2040 Final Supplemental Report–Travel Modeling Report*. July. Available: http://2040.planbayarea.org/files/2020-02/Travel_Modeling_PBA2040_Supplemental%20Report_7-2017.pdf. Accessed: January 2021.

T-22-C. Implement Scootershare Program

GHG Mitigation Potential

Up to 0.07% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Scootershare programs can incentivize more scooter use and decrease vehicle use, which have health benefits and can thus improve community resilience. This can also improve connectivity between residents and resources that may be needed in an extreme weather event.

Health and Equity Considerations

Provide inclusive mechanisms so people without bank accounts, credit cards, or smart phones can access the system.

Measure Description

This measure will establish a scootershare program. Scootershare programs provide users with on-demand access to electric scooters for short-term rentals. This encourages a mode shift from vehicles to scooters, displacing VMT and thus reducing GHG emissions. Variations of this measure are described in Measure T-22-A, *Implement Pedal (Non-Electric) Bikeshare Program*, and Measure T-22-B, *Implement Electric Bikeshare Program*.

Subsector

Neighborhood Design

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

The GHG mitigation potential is based, in part, on literature analyzing docked (i.e., station-based) bikeshare programs. This measure should be applied with caution given the likely higher popularity of scootershare compared to bikeshare.

Cost Considerations

The costs incurred by the service manager (e.g., municipality or scootershare company) may include the capital costs for purchasing a scooter fleet; installing accessible and secure docking stations; storing, maintaining, and replacing the fleet; and marketing and administration. Some of these costs may be offset by income generated through program use. Program participants will benefit from cost savings from access to cheaper transportation alternatives (compared to private vehicles, private scooters, or use of ride-hailing services). The local municipality may achieve cost savings through a reduction of cars on the road leading to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

Best practice is to discount scootershare membership and dedicate scootershare parking to encourage use of the service. Consider also including space on the vehicle to store personal items while traveling, such as a basket.

GHG Reduction Formula

This measure methodology does not account for the indirect GHG emissions from electricity used to charge the scooters or direct GHG emissions from vehicle travel of program employees picking up and dropping off scooters.

$$A = -1 \times \frac{(C - B) \times D \times E \times F}{G \times H}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–0.07	%	calculated
User Inputs				
B	Percent of residences in plan/community with access to scootershare system without measure	0–100	%	user input
C	Percent of residences in plan/community with access to scootershare system with measure	0–100	%	user input
Constants, Assumptions, and Available Defaults				
D	Daily scootershare trips per person	0.021	trips per day per person	MTC 2017
E	Vehicle to scootershare substitution rate	38.5	%	McQueen et al. 2020
F	Scootershare average one-way trip length	2.14	miles per trip	PBOT 2021
G	Daily vehicle trips per person	2.7	trips per day per person	FHWA 2018
H	Regional average one-way vehicle trip length	Table T-10.1	miles per trip	FHWA 2017

Further explanation of key variables:

- (B and C) – Access to scootersharing is measured as the percent of residences in the plan/community within 0.25-mile of a scootershare station. For dockless scooters, assume that all residences within 0.25-mile of the designated dockless service area would have access.
- (D) – An analysis of bike share service areas in the San Francisco Bay Area estimated that in locations with access to bikesharing, there were between 21 and 25 bikeshare trips per day per 1,000 residents (MTC 2017). To be conservative, the low end of this range is cited. Conventional bikeshare trip rate data was used due to lack of specific data for scootershare.
- (E) – A literature review of several academic and government reports found that the average car trip substitution rate by scootershare trips was 38.5 percent. This included scootershare programs in Santa Monica, Minneapolis, San Francisco, and Portland (McQueen et al. 2020).

- (F) – In Oregon, Portland's scootershare pilot data dashboard reports that the average trip length of scootershare trips is 2.14 miles (PBOT 2021).
- (G) – A summary report of the 2017 National Household Travel Survey data found that the average person in the U.S. takes 2.7 vehicle trips per day (FHWA 2018).
- (H) – Ideally, the user will calculate auto trip length for a plan/community at a scale no larger than a census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. If the user is not able to provide a plan-specific value using one of these data sources, they have the option to input the existing regional average one-way auto trip length for one of the six most populated CBSAs in California, as presented in Table T-10.1 in Appendix C (FHWA 2017). Trip lengths are likely to be longer for areas not covered by the listed CBSAs, which represent the denser areas of the state.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects that use default CBSA data from Table T-10.1, the maximum percent reduction in GHG emissions (A) is 0.07 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}18 \text{ through } T\text{-}22\text{-}C}} \leq 10\%$) This measure is in the Neighborhood Design subsector. This subcategory includes Measures T-18 through T-22-C. The VMT reduction from the combined implementation of all measures within this subsector is capped at 10 percent.

Example GHG Reduction Quantification

The user reduces plan/community VMT by deploying scootershare throughout the area. In this example, the project is in the Los Angeles-Long Beach-Anaheim CBSA, and the one-way vehicle trip length would be 9.72 miles (H). Assuming 100 percent of residents in the plan/community would have scootershare access (C) where there was no existing access (B), the user would reduce GHG emissions from plan/community VMT by 0.07 percent.

$$A = -1 \times \frac{(100\% - 0\%) \times 0.021 \frac{\text{trips}}{\text{day·person}} \times 38.5\% \times 2.14 \frac{\text{miles}}{\text{trip}}}{2.7 \frac{\text{trips}}{\text{day·person}} \times 9.72 \frac{\text{miles}}{\text{trip}}} = -0.07\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an

adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A). This quantification methodology does not account for the increase in electricity used to charge the scooters or the fuel consumption from vehicle travel of program employees picking up and dropping off scooters.

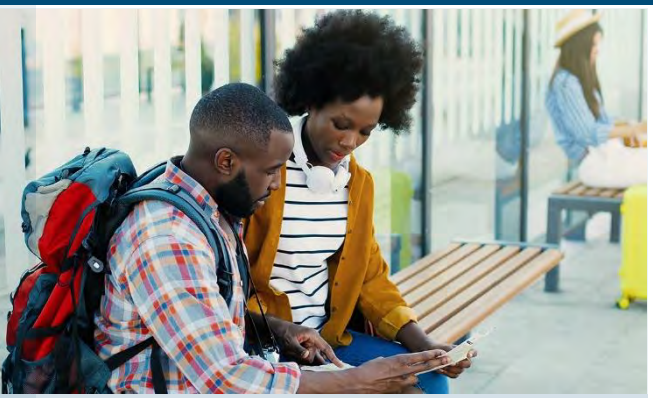
VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A). This quantification methodology does not account for the miles traveled from vehicle travel of program employees picking up and dropping off scooters.

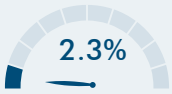
Sources

- Federal Highway Administration (FHWA). 2017. *National Household Travel Survey–2017 Table Designer*. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2018. *Summary of Travel Trends 2017–National Household Travel Survey*. July. Available: https://www.fhwa.dot.gov/policyinformation/documents/2017_nhts_summary_travel_trends.pdf. Accessed: January 2021.
- Metropolitan Transportation Commission (MTC). 2017. *Plan Bay Area 2040 Final Supplemental Report–Travel Modeling Report*. July. Available: http://2040.planbayarea.org/files/2020-02/Travel_Modeling_PBA2040_Supplemental%20Report_7-2017.pdf. Accessed: January 2021.
- McQueen, M., G. Abou-Zeid, J. MacArthur, and K. Clifton. 2020. *Transportation Transformation: Is Micromobility Making a Macro Impact on Sustainability?* Journal of Planning Literature. November. Available: https://doi.org/10.1177/0885412220972696. Accessed: March 2021.
- Portland Bureau of Transportation (PBOT). 2021. *Portland Bureau of Transportation E-Scooter Dashboard*. Available: https://public.tableau.com/profile/portland.bureau.of.transportation#!/vizhome/PBOTE-ScooterTripsDashboard/ScooterDashboard. Accessed: March 2021.

T-23. Provide Community-Based Travel Planning



GHG Mitigation Potential



Up to 2.3% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

CBTP can decrease vehicle use and thus improve air quality, resulting in health impacts that may increase the resilience of communities near freeways and roads. This can also increase the adaptive capacity of communities by informing them of travel alternatives if certain modes become disrupted due to extreme events.

Health and Equity Considerations

Outreach materials may need to be in multiple languages to address diverse linguistic communities.

Measure Description

This measure will target residences in the plan/community with community-based travel planning (CBTP). CBTP is a residential-based approach to outreach that provides households with customized information, incentives, and support to encourage the use of transportation alternatives in place of single occupancy vehicles, thereby reducing household VMT and associated GHG emissions.

Subsector

Trip Reduction Programs

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

CBTP involves teams of trained travel advisors visiting all households within a targeted geographic area, having tailored conversations about residents' travel needs, and educating residents about the various transportation options available to them. Due to the personalized outreach method, communities are typically targeted in phases.

Cost Considerations

The main cost consideration for CBTP is labor costs for program managers and resident outreach staff plus material costs for development of educational material. The beneficiaries are the commuters who may be able to reduce vehicle usage or ownership. The local municipality may achieve cost savings through a reduction of cars on the road leading to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

Pair with any of the Measures from T-17 through T-22-C to ensure that residents that are targeted by CBTP who want to use alternative transportation have the infrastructure and technology to do so.

GHG Reduction Formula

$$A = \frac{C}{B} \times D \times -E \times F$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from household vehicle travel in plan/community	0–2.3	%	calculated
User Inputs				
B	Residences in plan/community	[ ]	residences	user input
C	Residences in plan/community targeted with CBTP	[ ]	residences	user input
Constants, Assumptions, and Available Defaults				
D	Percent of targeted residences that participate	19	%	MTC 2021
E	Percent vehicle trip reduction by participating residences	12	%	MTC 2021
F	Adjustment factor from vehicle trips to VMT	1	unitless	assumed

Further explanation of key variables:

- (D) – Results from program evaluations of CBTP in several counties in Washington and Oregon across multiple years indicate that an average of 19 percent of residences targeted will participate (MTC 2021).
- (E) – Results from program evaluations of CBTP in several counties in Washington and Oregon across multiple years indicate that a 12 percent vehicle trip reduction will occur among participating residences (MTC 2021).
- (F) – The adjustment factor from vehicle trips to VMT is 1. This assumes that all vehicle trips will average out to typical trip length ("assumes all trip lengths are equal"). Thus, it can be assumed that a percentage reduction in vehicle trips will equal the same percentage reduction in VMT.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The maximum percent reduction in GHG emissions (A) is 2.3 percent. This maximum scenario is presented in the below example quantification.

Subsector Maximum

Same as (A_{max}). Measure T-23 is the only measure at the Plan/Community scale within the Trip Reduction Programs subsector.

Example GHG Reduction Quantification

The user reduces household VMT by having residences in the plan/community participate in CBTP. In this example, all of the residences in a city of 5,000 are targeted (B and C), which would reduce GHG emissions from citywide household VMT by 2.3 percent.

$$A = \left(\frac{\text{5,000 residences}}{\text{5,000 residences}}\right) \times 19\% \times -12\% \times 1 = -2.3\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

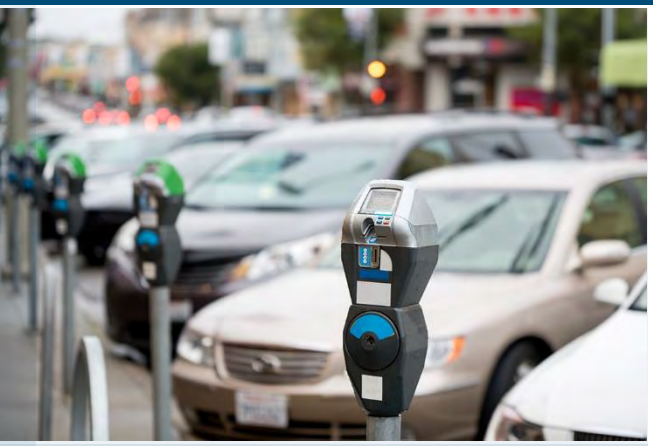
VMT Reductions

The percent reduction in household VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Metropolitan Transportation Commission (MTC). October 2021. *Plan Bay Area 2050, Forecasting and Modeling Report*. Available: https://www.planbayarea.org/sites/default/files/documents/Plan_Bay_Area_2050_Forecasting_Modeling_Report_October_2021.pdf. Accessed: November 2021.

T-24. Implement Market Price Public Parking (On-Street)



GHG Mitigation Potential

30%

Up to 30.0% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Implementing market price public parking could incentivize increased use of public transit and thus result in less traffic, potentially reducing congestion or delays on major roads during peak AM and PM traffic periods. In addition, this reduces illegal loading/standing in bus stops and travel lanes. When these reductions occur during extreme weather events, they better allow emergency responders to access a hazard site.

Health and Equity Considerations

Pricing on-street parking at market rates reduces illegal loading/standing in bus stops and travel lanes, improving transit times.

Measure Description

This measure will price all on-street parking in a given community, with a focus on parking near central business districts, employment centers, and retail centers. Increasing the cost of parking increases the total cost of driving to a location, incentivizing shifts to other modes and thus decreasing total VMT to and from the priced areas. This VMT reduction results in a corresponding reduction in GHG emissions.

Subsector

Parking or Road Pricing/Management

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

When pricing on-street parking, best practice is to allow for dynamic adjustment of prices to ensure approximately 85 percent occupancy, which helps prevent induced VMT due to circling behaviors as individuals search for a vacant parking space. In addition, this method should primarily be implemented in areas with available alternatives to driving, such as transit availability within 0.5. mile or areas of high residential density nearby (allowing for increased walking/biking). If the measure is implemented in a small area, residential parking permit programs should be considered to prevent parking intrusion on nearby streets in residential areas without priced parking.

Cost Considerations

Municipalities may incur costs from installing the meter network, which may require meters at individual spaces or at more central terminals. There would also be staffing costs to monitor the metered spaces and collect payments. Residents also incur a cost by having to pay for on-street parking. A portion of costs to the municipality may be offset through revenue collected by the parking system.

Expanded Mitigation Options

Pricing on-street parking also helps support individual projects with priced onsite parking by removing potential alternative parking locations.

GHG Reduction Formula

$$A = \frac{B}{C} \times \frac{D - E}{E} \times F \times G \times H$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–30.0	%	calculated
User Inputs				
B	VMT in priced area without measure	[ ]	VMT per day	user input
C	VMT in plan/community without measure	[ ]	VMT per day	user input
D	Proposed parking price	1.00–5.00	$ per hour	user input
E	Initial parking price	0.00–5.00	$ per hour	user input
F	Default percentage of trips parking on street	5–75	%	user input
Constants, Assumptions, and Available Defaults				
G	Elasticity of parking demand with respect to price	-0.4	unitless	Pierce and Shoup 2013
H	Ratio of VMT to vehicle trips	1	unitless	assumption

Further explanation of key variables:

- (B and C) – Total daily VMT in both the priced area and the plan/community area should represent the expected total VMT generated by all land use in that area, including office, residences, retail, schools, and other uses. The most appropriate source for this data is from a local travel demand forecasting model. An alternate method uses VMT per worker or VMT per resident as calculated for SB 743 compliance and screening purposes multiplied by the population in the area.
  - These variables for VMT by area are used to ensure that the percent GHG reduction from the priced area is at the same geographic scale as the vehicle travel in the plan/community. If the area priced is a business district and the analysis is limited to the business district, then the VMT would be equal (B=C).
- (D) – The proposed parking price can be presented in cost per minute, hour, or day, provided that the same units are used for variable (E)
- (E) – Because this is used to calculate the percent change in parking price, if parking is free under existing conditions, (E) should be set to (1/2×D), resulting in a percentage change of 100 percent. In areas where metered parking is common, E may instead by set to equal the average metered parking price in nearby areas or districts.
- (F) – On-street parking represents only a portion of the total available parking supply. An estimate will typically range from 5 percent (in locations with offsite parking garages available) to 75 percent (in locations where most parcels have little to no onsite parking for visitors). The user should provide a project-specific value within this range, by surveying the total on-street vs. off-street parking spaces within ¼ mile of the study area.

- (G) – An evaluation of the SFPark program in San Francisco found that a 0.4 percent decrease in parking demand occurs for every 1 percent increase in parking price (Pierce and Shoup 2013). Price elasticity of parking demand varies by location, day of the week, and time of day.
- (H) – The adjustment factor from vehicle trips to VMT is 1. This assumes that all vehicle trips will average out to typical trip length ("assumes all trip lengths are equal"). Thus, it can be assumed that a percentage reduction in vehicle trips will equal the same percentage reduction in VMT.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The total reduction in VMT due to on-street parking pricing is capped at 30 percent, which is based on the following assumptions:

- $\left(\frac{D-E}{E} = 100\%\right)$ – Parking prices double (i.e., increase by 100 percent) or parking pricing is introduced in previously free areas.
- (F) – 75 percent of all vehicle trips utilize on-street parking. Note that only within a small-scale commercial district is 75 percent of parking likely to occur on street.

This maximum scenario is presented in the below example quantification.

Subsector Maximum

Same as (A_{max}). Measure T-24 is the only measure at the Plan/Community scale within the Parking or Road Pricing/Management subsector.

Example GHG Reduction Quantification

The user reduces VMT by increasing hourly on-street parking costs. In this example, the hourly parking cost increases from $1.00 (E) to $2.00 (D) in a business district. The business district daily VMT is 1,000,000 (B), and the scale of implementation is the business district (B=C). If around 75 percent of the district's parking supply is on street (F), the user would reduce GHG emissions from VMT by 30 percent.

$$A = \frac{1{,}000{,}000\,\frac{VMT}{day}}{1{,}000{,}000\,\frac{VMT}{day}} \times \frac{\$2.00 - \$1.00}{\$1.00} \times 75\% \times -0.4 \times 1 = -30\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an

adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Pierce, G., and D. Shoup. 2013. Getting the Prices Right: An Evaluation of Pricing Parking by Demand in San Francisco. *Journal of the American Planning Association* 79(1)67–81. May. Available: https://www.tandfonline.com/doi/pdf/10.1080/01944363.2013.787307?needAccess=true. Accessed: January 2021.

T-25. Extend Transit Network Coverage or Hours

GHG Mitigation Potential

Up to 4.6% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Increasing transit network coverage or hours improves the reliability of the transportation network and allows redundancy to exist even if an extreme event disrupts part of the system. They could also incentivize more people to use transit, resulting in less traffic and better allowing emergency responders to access a hazard site during an extreme weather event.

Health and Equity Considerations

This measure increases access to social, educational, and employment opportunities. Expansion of transit networks need to ensure equitable access by all communities to the transit system.

Measure Description

This measure will expand the local transit network by either adding or modifying existing transit service or extending the operation hours to enhance the service near the project site. Starting services earlier in the morning and/or extending services to late-night hours can accommodate the commuting times of alternative-shift workers. This will encourage the use of transit and therefore reduce VMT and associated GHG emissions.

Subsector

Transit

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

There are two primary means of expanding the transit network: by increasing the frequency of service, thereby reducing average wait times and increasing convenience, or by extending service to cover new areas and times.

Cost Considerations

Infrastructure costs for extending the physical network coverage of a transit system can be significant. Costs to expand track-dependent transit, such as light rail and passenger rail, are high and can require resource- and time-intensive advanced planning. Costs to expand vehicle-dependent transit, such as busses, are likewise high but may be limited to procurement of additional vehicles. Any expansion of transit, including just service hours, would increase staffing and potentially maintenance costs. A portion of these costs may be offset by increased transit usage and associated income. Commuters who may more easily be able to travel without a car may also observe cost savings from reduce vehicle usage or ownership.

Expanded Mitigation Options

This measure is focused on providing additional transit network coverage, with no changes to transit frequency. This measure can be paired with Measure T-26, *Increase Transit Service Frequency*, which is focused on increasing transit service frequency, for increased reductions.

GHG Reduction Formula

$$A = -1 \times \frac{C - B}{B} \times D \times E \times F \times G$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from plan/community VMT	0–4.6	%	calculated
User Inputs				
B	Total transit service miles or service hours in plan/community before expansion	[ ]	miles	user input
C	Total transit service miles or service hours in plan/community after expansion	[ ]	miles	user input
D	Transit mode share in plan/community	Table T-3.1	%	user input
Constants, Assumptions, and Available Defaults				
E	Elasticity of transit demand with respect to service miles or service hours	0.7	unitless	Handy et al. 2013
F	Statewide mode shift factor	57.8	%	FHWA 2017
G	Ratio of vehicle trip reduction to VMT	1	unitless	assumption

Further explanation of key variables:

- (A) – This formula does not reflect any increase in transit vehicle travel and emissions, which can at least partially offset the reduction in GHG emissions from passenger vehicle travel. Inclusion of this component in the percent GHG reduction formula would require inputs that would not be available to most users.
- (B and C) – Transit service miles are defined as the total service mileage. Service hours represent the hours of operation. Either metric can be used in the GHG reduction formula so long as both B and C use the same metric.
- (D) – The transit mode share for the six most populated CBSAs in California are provided in Table T-3.1 in Appendix C (FHWA 2017). If the project study area is not within the listed CBSAs or the user is able to provide a project-specific value, the user should replace these regional defaults in the GHG reduction formula. It is likely for areas outside of the area covered by the listed CBSAs to have transit mode shares lower than the values provided in the table. Ideally, the user will calculate existing transit mode share for work trips or all trips at a scale no larger than a census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. Care should be taken to not present the reported commute mode share as retrieved from the ACS, unless the land use is office or employment based and the ACS tables are based on work location (rather than home location).
- (E) – A policy brief summarizing the results of transit service strategies concluded that a 0.7 percent increase in transit ridership occurs for every 1 percent increase in service miles or hours (Handy et al. 2013).

- (F) – Mode shift factor is an adjustment to reflect the reduction in vehicle trips associated with a reduction in person trips, since some vehicles carry more than one person. It is calculated as (1/average vehicle occupancy).
- (G) – The adjustment factor from vehicle trips to VMT is 1. This assumes that all vehicle trips will average out to typical trip length ("assumes all trip lengths are equal"). Thus, it can be assumed that a percentage reduction in vehicle trips will equal the same percentage reduction in VMT.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The GHG reduction from expanding the transit network is capped at 4.6 percent, which is based on the following assumptions:

- $\left(\frac{C-B}{B} \leq 100\%\right)$ – The transit network increase is capped at a doubling in size, or 100 percent (twice as many revenue miles are provided, for a 100 percent increase).
- (D) – The CBSA is San Francisco-Oakland-Hayward, which has a default transit mode share for all trips of 11.38 percent.

This maximum scenario is presented in the below example quantification.

Subsector Maximum

($\sum A_{max_{T\text{-}25 \text{ through } T\text{-}29}} \leq 15\%$) This measure is in the Transit subsector. This subcategory includes Measures T-25 through T-29. The VMT reduction from the combined implementation of all measures within this subsector is capped at 15 percent.

Example GHG Reduction Quantification

The user reduces VMT by extending an existing transit route or lengthening the service hours. In this example, the project in a neighborhood of the San Francisco-Oakland-Hayward CBSA and would increase transit coverage in the area from 20 miles (B) to 40 miles (C). If the existing transit mode share in the study area is 11.38 percent (D), the user would reduce GHG emissions from VMT by 4.6 percent.

$$A = -1 \times \frac{(40 \text{ miles} - 20 \text{ miles})}{20 \text{ miles}} \times 11.38\% \times 0.7 \times 57.8\% \times 1 = -4.6\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Federal Highway Administration (FHWA). 2017. *National Household Travel Survey–2017 Table Designer*. Average Vehicle Occupancy by HHSTFIPS. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Handy, S., K. Lovejoy, M. Boarnet, and S. Spears. 2013. *Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions*. October. Available: https://ww2.arb.ca.gov/sites/default/files/2020-06/Impacts_of_Transit_Service_Strategies_on_Passenger_Vehicle_Use_and_Greenhouse_Gas_Emissions_Policy_Brief.pdf. Accessed: January 2021.

T-26. Increase Transit Service Frequency

GHG Mitigation Potential

Up to 11.3% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Increasing transit service frequency improves the reliability of the transportation network and allows redundancy to exist even if an extreme event disrupts part of the system. It could also incentivize more people to use transit, resulting in less traffic and better allow emergency responders to access a hazard site during an extreme weather event.

Health and Equity Considerations

This measure increases access to social, educational, and employment opportunities. Expansion of transit service needs to ensure equitable access by all communities to the transit system.

Measure Description

This measure will increase transit frequency on one or more transit lines serving the plan/community. Increased transit frequency reduces waiting and overall travel times, which improves the user experience and increases the attractiveness of transit service. This results in a mode shift from single occupancy vehicles to transit, which reduces VMT and associated GHG emissions.

Subsector

Transit

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

See measure description.

Cost Considerations

Increasing transit service frequency may require capital investment to purchase additional vehicles. Staff and maintenance costs may also increase. A portion of these costs may be offset by increased transit usage and associated income. Commuters who may more easily be able to travel without a car may also observe cost savings from reduce vehicle usage or ownership.

Expanded Mitigation Options

This measure is focused on providing increased transit frequency, with no changes to transit network coverage. This measure can be paired with Measure T-25, *Extend Transit Network Coverage or Hours*, which is focused on increasing transit network coverage, for increased reductions.

GHG Reduction Formula

$$A = -C \times \frac{B \times E \times D \times G}{F}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–11.3	%	calculated
User Inputs				
B	Percent increase in transit frequency	0–300	%	user input
C	Level of implementation	0–100	%	user input
Constants, Assumptions, and Available Defaults				
D	Elasticity of transit ridership with respect to frequency of service	0.5	unitless	Handy et al. 2013
E	Transit mode share in plan/community	Table T-3.1	%	FHWA 2017a
F	Vehicle mode share in plan/community	Table T-3.1	%	FHWA 2017a
G	Statewide mode shift factor	57.8	%	FHWA 2017b

Further explanation of key variables:

- (A) – This formula does not reflect any increase in transit vehicle travel and emissions, which can at least partially offset the reduction in GHG emissions from passenger vehicle travel. Inclusion of this component in the percent GHG reduction formula would require inputs that would not be available to most users. Users can calculate the absolute changes in passenger vehicle and bus VMT and emissions using the process described under *Co-Benefits*.
- (B) – Frequency is measured as the number of arrivals over a given time (e.g., buses per hour). Frequency is the inverse of transit headway, defined as the time between transit vehicle arrivals on a given route. This variable can be calculated as [transit frequency with measure minus existing transit frequency] divided by existing transit frequency.
- (C) – The level of implementation refers to the number of transit routes receiving the frequency improvement as a fraction of the total transit routes in the plan/community.
- (D) – A policy brief summarizing the results of transit service strategies concluded that a 0.5 percent increase in transit ridership occurs for every 1 percent increase in frequency (Handy et al. 2013).
- (E and F) – Ideally, the user will calculate transit and auto mode shares for a plan/community at the city scale (or larger). Potential data sources include the California Household Travel Survey (preferred) or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input the mode shares for transit and vehicles for one of the six most populated CBSAs in California, as presented in Table T-3.1 in Appendix C. It is likely for areas outside of

the area covered by the listed CBSAs to have vehicle mode shares higher and transit mode shares lower than the values provided in the table.

- (G) – Mode shift factor is an adjustment to reflect the reduction in vehicle trips associated with a reduction in person trips, since some vehicles carry more than one person. It is calculated as (1/average vehicle occupancy).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects that use default CBSA data from Table T-3.1 and (B_{max}), the maximum percent reduction in GHG emissions (A) is 11.3 percent. This maximum scenario is presented in the below example quantification.

(B_{max}) The percent change in transit frequency is capped at 300 percent (SANDAG 2019).

Subsector Maximum

($\sum A_{max_{T\text{-}25 \text{ through } T\text{-}29}} \leq 15\%$) This measure is in the Transit subsector. This subcategory includes Measures T-25 through T-29. The VMT reduction from the combined implementation of all measures within this subsector is capped at 15 percent.

Mutually Exclusive Measures

If the user selects Measure T-28, *Provide Bus Rapid Transit*, and converts all transit routes in the plan/community to BRT, then the user cannot also take credit for this measure or Measure T-27, *Implement Transit-Supportive Roadway Treatments*. This is because Measure T-28 accounts for the VMT reduction associated with increased transit frequency and decreased transit travel time as well as the additional BRT-specific bonus. To combine the GHG reductions from Measure T-28 with Measure T-27 and/or Measure T-26 would be considered double counting. However, where BRT is proposed on less than all of the existing bus routes in the plan/community area, this measure and/or Measure T-27 could be applied to the remaining bus routes, and the measure reductions could be combined with Measure T-28 to determine the emissions reduction at the larger plan/community scale.

Example GHG Reduction Quantification

The user reduces plan/community GHGs by increasing transit frequency, thereby encouraging a mode shift from vehicles to transit and reducing VMT. In this example, the project is in the San Francisco-Oakland-Hayward CBSA where the transit and vehicle mode shares would be 11.38 percent and 86.96 percent, respectively (E and F). Assuming the maximum increase in transit frequency of 300 percent (B) and implementation for all transit routes (100 percent) in the plan/community (C), the user would reduce plan/community GHG emissions from VMT by 11.3 percent.

$$A = -100\% \times \frac{300\% \times 11.38\% \times 0.5 \times 57.8\%}{86.96\%} = -11.3\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

VMT Reductions

The decrease in passenger vehicle miles (H) and increase in bus miles (L) by the measure can be calculated as follows.

Passenger Vehicle VMT Reduction Formula

The percent reduction in passenger VMT would be the same as the percent reduction in GHG emissions (A). The absolute reduction in passenger VMT can be calculated using the following formula.

$$H = I \times E \times J \times B \times D \times G \times K$$

Passenger Vehicle VMT Reduction Calculation Variables

ID	Variable	Value	Unit	Source
Output				
H	Reduction in passenger vehicle miles in plan/community	[ ]	miles per year	calculated
User Inputs				
I	Total daily person trips in corridor(s)	[ ]	trips per day	user input
J	Vehicle trip length	[ ]	miles per trip	user input
Constants, Assumptions, and Available Defaults				
K	Days per year transit available	365	days per year	assumed

Further explanation of key variables:

- (I) – The total daily person trips in the corridor(s) represents the total daily trips by all modes between the bus route origin area and the bus route destination area. This may be obtained through travel demand modeling. If the strategy involves frequency improvements for more than one transit route, then the total person trips should reflect the sum of all the routes being improved.
- (J) – If the strategy involves frequency improvements for more than one transit route, then the trip length should reflect the average of all the routes being improved.
- Please refer to the GHG Calculation Variables table above for definitions of variables that have been previously defined.

Bus VMT Increase Formula

The absolute increase in bus VMT can be calculated using the formula below. As noted above, the formula for the percent GHG reduction (A) does not reflect any increase in bus VMT and bus emissions. Users that wish to capture these impacts should calculate absolute changes.

$$L = P \times (M_2 - M_1) \times N \times O \times K$$

Bus VMT Increase Calculation Variables

ID	Variable	Value	Unit	Source
Output				
L	Increase in annual bus miles in plan/community	[ ]	miles per year	calculated
User Inputs				
M_1	Bus frequency without measure	[ ]	transit vehicle roundtrips per hour	user input
M_2	Bus frequency with measure	[ ]	transit vehicle roundtrips per hour	user input
N	Bus hours of operation	0–24	hours per day	user input
O	Bus route one-way length	[ ]	miles per route	user input
Constants, Assumptions, and Available Defaults				
P	One-way trips in a roundtrip	2	one-way trips per roundtrip	conversion

Further explanation of key variables:

- (L) – If the strategy involves frequency improvements for more than one transit route, then the increase in bus miles should be calculated separately for each route.
- Please refer to the GHG Calculation Variables table above for definitions of variables that have been previously defined.

Energy and Fuel Savings

The decrease in passenger vehicle fuel consumption and increase in bus fuel consumption by the measure can be calculated as follows.

Passenger Vehicle Fuel Use Reduction Formula

Multiply the reduction in passenger vehicle miles (H) above by the fuel efficiency of the vehicle type (see Table T-30.2 in Appendix C) to output the change in fuel consumption.

Bus Fuel Use Increase Formula

The absolute increase in bus fuel consumption (Q) can be calculated using the formula below.

$$Q = L \times R$$

Bus Fuel Use Increase Calculation Variables

ID	Variable	Value	Unit	Source
Output				
Q	Increase in annual bus fuel consumption in plan/community	[ ]	gal per year	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
R	Fuel economy of a transit bus, by fuel type	Table T-26.1	gal or kilowatt hour per mile	CARB 2020; U.S. DOE 2021

Further explanation of key variables:

- (R) – The average fuel economy for gasoline, diesel, and natural gas transit buses was calculated using EMFAC2017 (v1.0.3). The model was run for a 2020 statewide average of UBUS vehicles, disaggregated by fuel type (CARB 2020). The efficiency of electric buses was calculated based on the gasoline equivalent value (U.S. DOE 2021). The user should reference Table T-26.1 for the fuel economy of the appropriate fuel type for their location's transit system. If the user can provide a project-specific value (i.e., for a future year and project location), the user should run EMFAC to replace the default in the fuel use increase formula.
- Please refer to the Bus VMT Increase Calculation Variables table above for definitions of variables that have been previously defined.

Sources

- California Air Resources Board (CARB). 2020. *EMFAC2017 v1.0.3*. August. Available: https://arb.ca.gov/emfac/emissions-inventory. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017a. *National Household Travel Survey–2017 Table Designer*. Travel Day PMT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017b. *National Household Travel Survey–2017 Table Designer*. Average Vehicle Occupancy by HHSTFIPS. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Handy, S., K. Lovejoy, M. Boarnet, S. Spears. 2013. *Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions*. October. Available: https://ww2.arb.ca.gov/sites/default/files/2020-06/Impacts_of_Transit_Service_Strategies_on_Passenger_Vehicle_Use_and_Greenhouse_Gas_Emissions_Policy_Brief.pdf. Accessed: January 2021.
- San Diego Association of Governments (SANDAG). 2019. *Mobility Management VMT Reduction Calculator Tool–Design Document*. June. Available: https://www.icommutesd.com/docs/default-source/planning/tool-design-document_final_7-17-19.pdf?sfvrsn=ec39eb3b_2. Accessed: January 2021.
- U.S. Department of Energy (U.S. DOE). 2021. *Fuel Economy Datasets for All Model Years (1984-2021)*. January. Available: https://www.fueleconomy.gov. Accessed: January 2021.

T-27. Implement Transit-Supportive Roadway Treatments

GHG Mitigation Potential

Up to 0.6% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Implementing transit-supportive roadway treatments improves the reliability of the transportation network and allows redundancy to exist even if an extreme event disrupts part of the system. It could also incentivize more people to use transit, resulting in less traffic and better allowing emergency responders to access a hazard site during an extreme weather event. Furthermore, emergency responders can use queue jumps and dedicated bus lanes when needed.

Health and Equity Considerations

Transit facilities can have conflicts with cyclists. Consider appropriate treatments to minimize conflicts. Improved transit investments should be equitably distributed prioritizing areas with transit deficiencies in underserved communities.

Measure Description

This measure will implement transit-supportive treatments on the transit routes serving the plan/community. Transit-supportive treatments incorporate a mix of roadway infrastructure improvements and/or traffic signal modifications to improve transit travel times and reliability. This results in a mode shift from single occupancy vehicles to transit, which reduces VMT and the associated GHG emissions.

Subsector

Transit

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

Treatments can include transit signal priority, bus-only signal phases, queue jumps, curb extensions to speed passenger loading, and dedicated bus lanes.

Cost Considerations

Costs and savings of transit-supportive roadway treatments vary depending on the strategy pursued, ranging from low-cost route optimization changes to high-cost infrastructure projects (e.g., bus-only lanes). Reducing route cycle time without significantly increasing the number of transit vehicles can result in net cost savings for the transit system. Dedicated transit infrastructure will improve transit reliability and increase ridership. This supplements existing transit income streams for municipalities. Increased ridership similarly reduces vehicle use, which has cost benefits for both commuters and municipalities.

Expanded Mitigation Options

This measure could be paired with other Transit subsector strategies (Measure T-25 and Measure T-29) for increased reductions.

GHG Reduction Formula

$$A = -1 \times \frac{B \times C \times D \times E \times G}{F}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–0.6	%	calculated
User Inputs				
B	Percent of plan/community transit routes that receive treatments	0–100	%	user input
Constants, Assumptions, and Available Defaults				
C	Percent change in transit travel time due to treatments	-10	%	TRB 2007
D	Elasticity of transit ridership with respect to transit travel time	-0.4	unitless	TRB 2007
E	Transit mode share in plan/community	Table T-3.1	%	FHWA 2017a
F	Vehicle mode share in plan/community	Table T-3.1	%	FHWA 2017a
G	Statewide mode shift factor	57.8	%	FHWA 2017b

Further explanation of key variables:

- (C) – A literature review of studies from the U.S. and United Kingdom indicates that the travel time savings associated with one type of transit-supportive roadway treatment—transit signal prioritization—typically ranged from 8 to 12 percent (TRB 2007). To account for the likelihood that a user would implement multiple transit-supportive treatments, the midpoint of this range is used for the measure formula. Use of the midpoint is still conservative given the additional travel time savings associated with other transit-supportive treatments. If the user can provide a project-specific value based on the suite of their treatments, then the user should replace this default in the GHG reduction formula.
- (E and F) – Ideally, the user will calculate transit and auto mode shares for a plan/community at the city scale (or larger). Potential data sources include the California Household Travel Survey (preferred) or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input the mode shares for transit and vehicles for one of the six most populated CBSAs in California, as presented in Table T-3.1 in Appendix C. It is likely for areas outside of the area covered by the listed CBSAs to have vehicle mode shares higher and transit mode shares lower than the values provided in the table.

- (G) – Mode shift factor is an adjustment to reflect the reduction in vehicle trips associated with a reduction in person trips as some vehicles carry more than one person. It is calculated as (1/average vehicle occupancy) (FHWA 2017b).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects that use default CBSA data from Table T-3.1 and (C_{max}), the maximum percent reduction in GHG emissions (A) is 0.6 percent. This maximum scenario is presented in the below example quantification.

(C_{max}) The percent reduction in transit travel time is capped at 20 percent, which is based on the values reported in a literature review of studies from the U.S. and United Kingdom (TRB 2007).

Subsector Maximum

($\sum A_{max_{T\text{-}25 \text{ through } T\text{-}29}} \leq 15\%$) This measure is in the Transit subsector. This subcategory includes Measures T-25 through T-29. The VMT reduction from the combined implementation of all measures within this subsector is capped at 15 percent.

Mutually Exclusive Measures

If the user selects Measure T-28, *Provide Bus Rapid Transit*, and converts all transit routes in the plan/community to BRT, then the user cannot also take credit for this measure or Measure T-26, *Increase Transit Service Frequency*. This is because Measure T-28 accounts for the VMT reduction associated with increased transit frequency and decreased transit travel time as well as the additional BRT-specific bonus. To combine the GHG reductions from Measure T-28 with Measure T-27 and/or Measure T-26 would be considered double counting. However, where BRT is proposed on less than all of the existing bus routes in the plan/community area, this measure and/or Measure T-26 could be applied to the remaining bus routes, and the measure reductions could be combined with Measure T-28 to determine the emissions reduction at the larger plan/community scale.

Example GHG Reduction Quantification

The user reduces plan/community GHGs by implementing transit-supportive roadway treatments that decrease transit travel time, thereby encouraging a mode shift from vehicles to transit and reducing VMT. In this example, the project is in San Francisco-Oakland-Hayward CBSA where the transit and vehicle mode shares would be 11.38 percent and 86.96 percent, respectively (E and G). Assuming the maximum decrease in transit travel time of 20 percent (C_{max}) and implementation for all transit routes (100 percent) in the plan/community (B), the user would reduce plan/community GHG emissions from VMT by 0.6 percent.

$$A = -1 \times \frac{100\% \times -20\% \times -0.4 \times 11.38\% \times 57.8\%}{86.96\%} = -0.6\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in passenger vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in passenger VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Federal Highway Administration (FHWA). 2017a. *National Household Travel Survey–2017 Table Designer*. Travel Day PMT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017b. *National Household Travel Survey–2017 Table Designer*. Average Vehicle Occupancy by HHSTFIPS. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Transportation Research Board (TRB). 2007. *Transit Cooperative Research Program Report 118: Bus Rapid Transit Practitioner's Guide*. Available: https://nacto.org/docs/usdg/tcrp118brt_practitioners_kittleson.pdf. Accessed: January 2021.

T-28. Provide Bus Rapid Transit

Photo Credit: LA Metro, 2021

GHG Mitigation Potential

13.8%

Up to 13.8% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Providing BRT can incentivize more people to use transit, resulting in less traffic and better allowing emergency responders to access a hazard site during an extreme weather event. Furthermore, emergency responders can use queue jumps and dedicated BRT lanes when needed.

Health and Equity Considerations

Transit facilities can have conflicts with cyclists. Consider appropriate BRT components to minimize conflicts. Improved transit investments should be equitably distributed, prioritizing areas with transit deficiencies in underserved communities.

Measure Description

This measure will convert an existing bus route to a bus rapid transit (BRT) system. BRT includes the following additional components, compared to traditional bus service: exclusive right-of-way (e.g., busways, queue jumping lanes) at congested intersections, increased limited-stop service (e.g., express service), intelligent transportation technology (e.g., transit signal priority, automatic vehicle location systems), advanced technology vehicles (e.g., articulated buses, low-floor buses), enhanced station design, efficient fare-payment smart cards or smartphone apps, branding of the system, and use of vehicle guidance systems. BRT can increase the transit mode share in a community due to improved travel times, service frequencies, and the unique components of the BRT system. This mode shift reduces VMT and the associated GHG emissions.

Subsector

Transit

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

The measure quantification methodology accounts for the increase in ridership from (1) improved travel times from transit signal prioritization, (2) increased service frequency, and (3) the unique ridership increase associated with a full-featured BRT service operating on a fully segregated running way with specialized (or stylized) vehicles, attractive stations, and efficient fare collection practices. To take credit for the estimated emissions reduction, the user should implement, at minimum, these components.

Cost Considerations

Providing BRT will require capital investment to purchase specialized vehicles, develop passenger information systems, and construct stations and busways. Total costs vary depending on the suite of BRT components pursued. Grade-separated busways are more expensive than at-grade busways and mixed flow lanes. Dedicated transit infrastructure will improve transit reliability and increase ridership. This supplements existing transit income streams for municipalities. Increased ridership similarly reduces vehicle use, which has cost benefits for both commuters and municipalities.

Expanded Mitigation Options

This measure could be paired with Measure T-25, *Extend Transit Network Coverage or Hours,* and Measure T-29, *Reduce Transit Fares,* for increased reductions.

GHG Reduction Formula

$$A = -C \times \frac{D \times F \times ((B \times I) + (H \times J) + G)}{E}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–13.8	%	calculated
User Inputs				
B	Percent increase in transit frequency due to BRT	0–300	%	user input
C	Level of implementation	0–100	%	user input
Constants, Assumptions, and Available Defaults				
D	Transit mode share in plan/community	Table T-3.1	%	FHWA 2017a
E	Vehicle mode share in plan/community	Table T-3.1	%	FHWA 2017a
F	Statewide mode shift factor	57.8	%	FHWA 2017b
G	Percent change in transit ridership due to BRT	25	%	TRB 2007
H	Percent change in transit travel time due to BRT	-10 to -20	%	TRB 2007
I	Elasticity of transit ridership with respect to frequency of service	0.5	unitless	Handy et al. 2013
J	Elasticity of transit ridership with respect to transit travel time	-0.4	unitless	TRB 2007

Further explanation of key variables:

- (A) – This formula does not reflect any increase in transit vehicle travel and emissions, which can at least partially offset the reduction in GHG emissions from passenger vehicle travel.[14] Inclusion of this component in the percent GHG reduction formula would require inputs that would not be available to most users. Users can calculate the absolute changes in passenger vehicle and bus VMT and emissions using the process described under *Co-Benefits*.
- (B) – Frequency is measured as the number of arrivals over a given time (e.g., buses per hour). Frequency is the inverse of transit headway, defined as the time between transit vehicle arrivals on a given route. This variable can be calculated as [transit frequency with measure minus existing transit frequency] divided by existing transit frequency.

[14] As discussed in Chapter 2, *Integrated and Resilient Planning*, the ICT regulation requires all public transit agencies to gradually transition to 100 percent zero-emission bus fleets by 2040. Accordingly, combustion emissions from transit operation will decline as vehicle fleets move to achieve the state's zero-emission bus goals.

- (C) – The level of implementation refers to the number of transit routes receiving the frequency improvement as a fraction of the total transit routes in the plan/community.
- (D and E) – Ideally, the user will calculate transit and auto mode shares for a plan/community at the city scale (or larger). Potential data sources include the California Household Travel Survey (preferred) or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, the user has the option to input the mode shares for transit and vehicles for one of the six most populated CBSAs in California, as presented in Table T-3.1 in Appendix C. It is likely for areas outside of the area covered by the listed CBSAs to have vehicle mode shares higher and transit mode shares lower than the values provided in the table.
- (F) – Mode shift factor is an adjustment to reflect the reduction in vehicle trips associated with a reduction in person trips, since some vehicles carry more than one person. It is calculated as (1/average vehicle occupancy).
- (G) – A BRT practitioner's guide summarizing the results of numerous BRT case studies concluded that, on top of the ridership gains from improved travel times and increased service frequency, an additional 25 percent increase in ridership would occur from a full-featured BRT service operating on a fully segregated running way with specialized (or stylized) vehicles, attractive stations, and efficient fare collection practices.
- (H) – A literature review of studies from the United States and United Kingdom indicates that the travel time savings associated with one type of BRT component—transit signal prioritization—typically average 10 percent (TRB 2007). If the user can provide a project-specific value based on the suite of BRT components, then the user should replace this default in the GHG reduction formula. Note that, as described below, (H) should not exceed 20 percent.
- (I) – A policy brief summarizing the results of transit service strategies concluded that a 0.5 percent increase in transit ridership occurs for every 1 percent increase in frequency (Handy et al. 2013).
- (J) – A BRT practitioner's guide summarizing the results of numerous BRT case studies concluded that a -0.4 percent decrease in transit ridership occurs for every 1 percent increase in transit travel time (TRB 2007).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects that use default CBSA data from Table T-3.1 and (B_{max}), the maximum percent reduction in GHG emissions (A) is 13.8 percent. This maximum scenario is presented in the below example quantification.

(B_{max}) The percent change in transit frequency is capped at 300 percent (SANDAG 2019).

(H_{max}) The percent reduction in transit travel time is capped at 20 percent, which is based on the values reported in a literature review of studies from the United States and United Kingdom (TRB 2007).

Subsector Maximum

($\sum A_{max_{T\text{-}25 \text{ through } T\text{-}29}} \leq 15\%$) This measure is in the Transit subsector. This subcategory includes Measures T-25 through T-29. The VMT reduction from the combined

implementation of all the non–mutually-exclusive measures within this subsector is capped at 15 percent.

Mutually Exclusive Measures

If the user selects this measure and converts all transit routes in the plan/community to BRT (B), then the user cannot also take credit for Measure T-26, *Increase Transit Service Frequency*, or Measure T-27, *Implement Transit-Supportive Roadway Treatments*. This is because Measure T-28 accounts for the VMT reduction associated with increased transit frequency and decreased transit travel time as well as the additional BRT-specific bonus. To combine the GHG reductions from Measure T-28 with Measure T-27 and/or Measure T-26 would be considered double counting. However, where BRT is proposed on less than all of the existing bus routes in the plan/community area, Measure T-26 and/or Measure T-27 could be applied to the remaining bus routes, and the measure reductions could be combined to determine the emissions reduction at the larger plan/community scale.

Example GHG Reduction Quantification

The user reduces plan/community GHGs by implementing a full-featured BRT system, thereby encouraging a mode shift from vehicles to transit and reducing VMT. In this example, the project is in the San Francisco–Oakland–Hayward CBSA where transit and vehicle mode shares would be 11.38 percent and 86.96 percent, respectively (D and E). Assuming the maximum increase in transit frequency of 300 percent (B_{max}), the maximum decrease in transit travel time of 20 percent (H_{max}), and implementation for all transit routes (100 percent) in the plan/community (B), the user would reduce plan/community GHG emissions from VMT by 13.8 percent.

$$A = -100\% \times \frac{11.38\% \times 57.8\% \times ((300\% \times 0.5) + (-20\% \times -0.4) + 25\%)}{86.96\%} = -13.8\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

VMT Reductions

The decrease in passenger vehicle miles (K) and increase in BRT miles (O) by the measure can be calculated as follows.

Passenger Vehicle VMT Reduction Formula

The percent reduction in passenger VMT would be the same as the percent reduction in GHG emissions (A). The absolute reduction in passenger VMT can be calculated using the following formula.

$$K = -\left(D \times L \times M \times N \times \left((B \times I) + (H \times J) + G\right)\right)$$

Passenger Vehicle VMT Reduction Calculation Variables

ID	Variable	Value	Unit	Source
Output				
K	Reduction in passenger vehicle miles in plan/community	[ ]	miles per year	calculated
User Inputs				
L	Total daily person trips in corridor(s)	[ ]	trips per day	user input
M	Vehicle trip length	[ ]	miles per trip	user input
Constants, Assumptions, and Available Defaults				
N	Days per year BRT available	365	days per year	assumed

Further explanation of key variables:

- (L) – The total daily person trips in the corridor(s) represents the total daily trips by all modes between the BRT origin area and the BRT destination area. This may be obtained through travel demand modeling. If the strategy involves BRT for more than one route, then the total person trips should reflect the sum of all the routes being improved.
- (M) – If the strategy involves BRT for more than one transit route, then the trip length should reflect the average of all the routes being converted.
- Please refer to the GHG Calculation Variables table above for definitions of variables that have been previously defined.

BRT VMT Increase Formula

The absolute increase in BRT VMT can be calculated using the formula below. As noted above, the formula for the percent GHG reduction (A) does not reflect any increase in BRT VMT or BRT emissions. Users that wish to capture these impacts should calculate absolute changes.

$$O = S \times (P_2 - P_1) \times Q \times R \times N$$

BRT VMT Increase Calculation Variables

ID	Variable	Value	Unit	Source
Output				
O	Increase in annual BRT miles in plan/community	[ ]	miles per year	calculated
User Inputs				
P_1	Bus frequency without measure	[ ]	transit vehicle roundtrips per hour	user input
P_2	BRT frequency with measure	[ ]	transit vehicle roundtrips per hour	user input
Q	BRT hours of operation	0–24	hours per day	user input
R	BRT route one-way length	[ ]	miles per route	user input
Constants, Assumptions, and Available Defaults				
S	One-way trips in a roundtrip	2	One-way trips per roundtrip	conversion

Further explanation of key variables:

- (O) – If the strategy involves frequency improvements for more than one transit route, then the increase in BRT miles should be calculated separately for each route.
- Please refer to the Passenger Vehicle VMT Reduction Calculation Variables table above for definitions of variables that have been previously defined.

Energy and Fuel Savings

The decrease in passenger vehicle fuel consumption and increase in BRT fuel consumption by the measure can be calculated as follows.

Passenger Vehicle Fuel Use Reduction Formula

Multiply the reduction in passenger vehicle miles (K) above by the fuel efficiency of the vehicle type (see Table T-30.2 in Appendix C) to output the change in fuel consumption.

BRT Fuel Use Increase Formula

The absolute increase in BRT fuel consumption (T) can be calculated using the formula below.

$$T = O \times U$$

BRT Fuel Use Increase Calculation Variables

ID	Variable	Value	Unit	Source
Output				
T	Increase in annual BRT fuel consumption in plan/community	[ ]	gal per year	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
U	Fuel economy of BRT, by fuel type	Table T-26.1	gal or kilowatt hour per mile	CARB 2020; U.S. DOE 2021

Further explanation of key variables:

- (U) – The average fuel economy for gasoline, diesel, and natural gas transit buses was calculated using EMFAC2017 (v1.0.3). The model was run for a 2020 statewide average of UBUS vehicles, disaggregated by fuel type (CARB 2020). The efficiency of electric buses was calculated based on the gasoline equivalent value (U.S. DOE 2021). The user should reference Table T-26.1 for the fuel economy of the appropriate fuel type for their location's transit system. If the user can provide a project-specific value (i.e., for a future year and project location), the user should run EMFAC to replace the default in the fuel use increase formula. Also, if the BRT vehicles are fueled by hydrogen, the user will need to calculate the increase in hydrogen fuel consumption using project-specific values, as hydrogen is currently not included as a fuel type in EMFAC.
- Please refer to the BRT VMT Increase Calculation Variables table above for definitions of variables that have been previously defined.

Sources

- California Air Resources Board (CARB). 2020. *EMFAC2017 v1.0.3*. August. Available: https://arb.ca.gov/emfac/emissions-inventory. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017a. *National Household Travel Survey–2017 Table Designer*. Travel Day PMT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017b. *National Household Travel Survey–2017 Table Designer*. Average Vehicle Occupancy by HHSTFIPS. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Handy, S., K. Lovejoy, M. Boarnet, and S. Spears. 2013. *Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions*. October. Available: https://ww2.arb.ca.gov/sites/default/files/2020-06/Impacts_of_Transit_Service_Strategies_on_Passenger_Vehicle_Use_and_Greenhouse_Gas_Emissions_Policy_Brief.pdf. Accessed: January 2021.
- San Diego Association of Governments (SANDAG). 2019. *Mobility Management VMT Reduction Calculator Tool–Design Document*. June. Available: https://www.icommutesd.com/docs/default-source/planning/tool-design-document_final_7-17-19.pdf?sfvrsn=ec39eb3b_2. Accessed: January 2021.
- Transportation Research Board (TRB). 2007. *Transit Cooperative Research Program Report 118: Bus Rapid Transit Practitioner's Guide*. Available: https://nacto.org/docs/usdg/tcrp118brt_practitioners_kittleson.pdf. Accessed: January 2021.
- U.S. Department of Energy (U.S. DOE). 2021. *Fuel Economy Datasets for All Model Years (1984-2021)*. January. Available: https://www.fueleconomy.gov. Accessed: January 2021.

T-29. Reduce Transit Fares

GHG Mitigation Potential

Up to 1.2% of GHG emissions from vehicle travel in the plan/community

Co-Benefits (icon key on pg. 34)

Climate Resilience

Reducing transit fares increases the capacity of low-income populations to use transit to evacuate or access resources during extreme weather events. Reduced fares could also incentivize more people to use transit, resulting in less traffic and better allowing emergency responders to access sites. This also reduces transit system disruptions due to extreme weather events. Lower transportation costs would also increase community resilience by freeing up resources for other purposes, such as increased cooling costs.

Health and Equity Considerations

Transit fare reduction programs should first prioritize routes with higher-volume potential in underserved communities and those most reliant on transit for travel (e.g., students, persons with disabilities, seniors).

Measure Description

This measure will reduce transit fares on the transit lines serving the plan/community. A reduction in transit fares creates incentives to shift travel to transit from single-occupancy vehicles and other traveling modes, which reduces VMT and associated GHG emissions.

This measure differs from Measure T-8, *Implement Subsidized or Discounted Transit Program*, which can be offered through employer-based benefits programs in which the employer fully or partially pays the employee's cost of transit.

Subsector

Transit

Locational Context

Urban, suburban

Scale of Application

Plan/Community

Implementation Requirements

Transit fare reductions can be implemented systemwide or in specific fare-free or reduced-fare zones.

Cost Considerations

Reducing transit fares will lower the per capita income of the transit service. This may be outweighed by increased ridership, and savings on infrastructure costs due to reduced car usage. Reduced fares can be targeted to specific populations or groups, depending on need. Individuals receiving the reduced fare will obtain a cost savings.

Expanded Mitigation Options

This measure could be paired with other Transit subsector strategies (Measure T-25, *Extend Transit Network Coverage or Hours,* and Measure T-26, *Increase Transit Service Frequency*) for increased reductions.

GHG Reduction Formula

$$A = \frac{B \times C \times D \times E \times G}{F}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–1.2	%	calculated
User Inputs				
B	Percent reduction in transit fare with measure	0–50	%	user input
C	Percent of plan/community transit routes that receive reduced fares	0–100	%	user input
Constants, Assumptions, and Available Defaults				
D	Elasticity of transit ridership with respect to transit fare	-0.3	unitless	Handy et al. 2013
E	Transit mode share in plan/community	Table T-3.1	%	FHWA 2017a
F	Vehicle mode share in plan/community	Table T-3.1	%	FHWA 2017a
G	Statewide mode shift factor	57.8	%	FHWA 2017a

Further explanation of key variables:

- (B) – The user can calculate the percent reduction in transit fare based on the percent difference between the existing fare price and the proposed fare price.
- (C) – The level of implementation refers to the fraction of transit routes that on which fare reductions are implemented. Typically, fare reductions are made system-wide, so this variable would be 100.
- (D) – A policy brief summarizing the results of transit service studies reported that a 0.3 to 1.0 percent increase in transit ridership occurs for every 1.0 percent decrease in transit fares (Handy et al. 2013). To be conservative, the low end of this range is cited.
- (E and F) – Ideally, the user will calculate transit and auto mode shares for a plan/community at the city scale (or larger). Potential data sources include the California Household Travel Survey (preferred) or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input the mode shares for transit and vehicles for one of the six most populated CBSAs in California, as presented in Table T-3.1 in Appendix C. It is likely for areas outside of the area covered by the listed CBSAs to have vehicle mode shares higher and transit mode shares lower than the values provided in the table.
- (G) – Mode shift factor is an adjustment to reflect the reduction in vehicle trips associated with a reduction in person trips as some vehicles carry more than one person. It is calculated as (1/average vehicle occupancy) (FHWA 2017b).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects that use default CBSA data from Table T-3.1 and (B_{max}), the maximum percent reduction in GHG emissions (A) is 1.2 percent.

(B_{max}) The percent reduction in transit fare is capped at 50 percent (SANDAG 2019).

Subsector Maximum

($\sum A_{max_{T\text{-}25 \text{ through } T\text{-}29}} \leq 15\%$) This measure is in the Transit subsector. This subcategory includes Measures T-25 through T-29. The VMT reduction from the combined implementation of all measures within this subsector is capped at 15 percent.

Example GHG Reduction Quantification

The user reduces plan/community GHGs by reducing the costs associated with using transit, thereby encouraging a mode shift from single occupancy vehicles to transit and reducing VMT. In this example, the project is in the San Jose-Sunnyvale-Santa Clara CBSA, where the transit and vehicle mode shares would be 6.69 percent and 91.32 percent, respectively (E and F). Assuming the maximum decrease in transit fares of 50 percent (B) and implementation for all transit routes (100 percent) in the plan/community (C), the user would reduce plan/community GHG emissions from VMT by 0.6 percent.

$$A = \frac{50\% \times 100\% \times -0.3 \times 6.69\% \times 57.8\%}{91.32\%} = -0.6\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in passenger VMT would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in passenger vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

Sources

- Federal Highway Administration (FHWA). 2017a. *National Household Travel Survey–2017 Table Designer*. Travel Day PMT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Federal Highway Administration (FHWA). 2017b. *National Household Travel Survey–2017 Table Designer*. Average Vehicle Occupancy by HHSTFIPS. Available: https://nhts.ornl.gov/. Accessed: January 2021.
- Handy, S., K. Lovejoy, M. Boarnet, and S. Spears. 2013. *Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions*. October. Available: https://ww2.arb.ca.gov/sites/default/files/2020-06/Impacts_of_Transit_Service_Strategies_on_Passenger_Vehicle_Use_and_Greenhouse_Gas_Emissions_Policy_Brief.pdf. Accessed: January 2021.
- San Diego Association of Governments (SANDAG). 2019. *Mobility Management VMT Reduction Calculator Tool–Design Document*. June. Available: https://www.icommutesd.com/docs/default-source/planning/tool-design-document_final_7-17-19.pdf?sfvrsn=ec39eb3b_2. Accessed: January 2021.

T-30. Use Cleaner-Fuel Vehicles

GHG Mitigation Potential

Up to 100% of GHG emissions from on-road vehicles

Co-Benefits (icon key on pg. 34)

Climate Resilience

Using cleaner-fuel vehicles increases transportation resilience by providing a wider range of available vehicles if other fuels (like gasoline) become unavailable.

Health and Equity Considerations

While most cleaner fuels reduce both GHG and criteria air pollutants, a few may increase criteria pollutant emissions. The most prominent example of this is biodiesel, which generally results in higher NO_x emissions, but lower PM emissions compared to diesel.

Measure Description

This measure requires use of cleaner-fuel vehicles in lieu of similar vehicles powered by gasoline or diesel fuel. Cleaner-fuel vehicles addressed in this measure include electric vehicles, natural gas and propane vehicles, and vehicles powered by biofuels such as composite diesel (blend of renewable diesel, biodiesel, and conventional fossil diesel), ethanol, and renewable natural gas.

The full GHG emissions impact of cleaner fuels depends on the emissions from the vehicle's tailpipe as well as the emissions associated with production of the fuel (sometimes termed "upstream" emissions). For example, tailpipe GHG emissions from renewable natural gas are identical to tailpipe GHG emissions from conventional natural gas; the GHG benefits of renewable natural gas come from the fact that it is produced from biomass. Similarly, BEVs have zero tailpipe emissions, but properly accounting for their GHG impacts requires quantifying the emissions associated with the electricity generation needed to charge the vehicle's batteries.

Subsector

Clean Vehicles and Fuels

Locational Context

Non-applicable

Scale of Application

Project/Site or Plan/Community

Implementation Requirements

See measure description.

Cost Considerations

Capital costs to purchase cleaner fuel vehicles are high. Fueling infrastructure may be required, which will add to the upfront cost of transitioning to cleaner fuel vehicles. Fuel costs and savings compared to gasoline and diesel will vary depending on the type of fuel and market conditions. It is feasible to expect reduced fuel costs from cleaner fuels with an increased market and overall fuel cost savings over the life of the vehicle fleet.

Expanded Mitigation Options

If using electric vehicles, pair with Measure T-14 to ensure that electric vehicles have sufficient access to charging infrastructure.

GHG Reduction Formula

California has a well-defined process for quantifying the GHG emissions impacts of cleaner-fuel vehicles by virtue of the state's Low Carbon Fuel Standard (LCFS) program. An emissions calculation that considers both vehicle tailpipe and upstream fuel production emissions is sometimes referred to as a "well-to-wheels" analysis (A3 below). An emissions calculation that considers only vehicle tailpipe emissions is referred to as a "tank-to-wheels" analysis (A1 and A2 below).

The convention for project analysis under CEQA typically employs a hybrid approach. For natural gas, propane, and biofuels vehicles, the CEQA analysis quantifies only tailpipe emissions and does not seek to capture differences in emission associated with fuel production. However, for electric vehicles, CEQA analyses typically account for emissions associated with electricity generation (A1 and A2 below).

$$A1 = \mathbf{B} \times \frac{(D \times E \times F \times G) - \mathbf{C}}{\mathbf{C}}$$

$$A2 = \mathbf{B} \times \frac{(D \times E \times F \times G \times H) + \left(\mathbf{C} \times \frac{1}{T} \times (1 - H)\right) - \mathbf{C}}{\mathbf{C}}$$

$$A3 = \mathbf{B} \times \frac{J - K}{K}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A1	Percent reduction in GHG emissions from on-road vehicle emissions for BEVs	0–100	%	calculated
A2	Percent reduction in GHG emissions from on-road vehicle emissions for PHEVs	0–64	%	calculated
A3	Percent reduction in well-to-wheels GHG emissions from cleaner fuels or vehicle technologies	0–100	%	calculated
User Inputs				
B	Percent of vehicle fleet being converted to cleaner fuels	1–100	%	user input
C	Emission factor for existing (conventional fuel) vehicle	[ ]	g CO_2e per mile	CARB 2020a
Constants, Assumptions, and Available Defaults				
D	BEV efficiency	Table T-30.1	kWh per mile	see note

ID	Variable	Value	Unit	Source
E	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
F	Conversion from lb to gram	454	g per lb	conversion
G	Conversion from kWh to MWh	0.001	MWh per kWh	conversion
H	Percent of PHEV miles in electric mode	46	%	CARB 2020a
I	Ratio of average hybrid vehicle mpg to comparable gasoline vehicle mpg	1.5	unitless	see below
J	Well-to-wheels emission factor for cleaner vehicle/fuel	Table T-30.2	g CO_2e per mile	CARB 2020a, 2020b, 2020c; U.S. DOE 2021
K	Well-to-wheels emission factor for existing (conventional fuel) vehicle	Table T-30.2	g CO_2e per mile	CARB 2020a, 2020b, 2020c; U.S. DOE 2021

Further explanation of key variables:

- (A1 or A2) – Use of these equations is appropriate for a typical CEQA project analysis, which considers tailpipe GHG emissions and, for electric vehicles, electricity generation emissions.
- (A3) – Use of this equation is appropriate for a user interested in a well-to-wheels analysis for all fuel types. The user should determine the appropriate emission factors for the conventional fuel and cleaner fuel.
- (C) – The user should run EMFAC to output GHG emission factors (CO_2, CH_4, and N_2O) for the existing (conventional fuel) vehicles. The EMFAC run should be based on project-specific values for the region, project year, season, vehicle category, model year, speed, and fuel type (gasoline, diesel, or a weighted average).[15] To determine the CO_2e emission factor of the conventional fuel vehicle, the emission factors for CO_2, CH_4, and N_2O from EMFAC should be multiplied by the corresponding 100-year GWP values (1, 25, and 298, respectively) from the IPCC's Fourth Assessment Report (IPCC 2007) and then summed.
- (E) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for a future year not referenced in Tables E-4.3 and E-4.4), the user should use that specific value in the GHG calculation formula. If the electricity provider is not known, users may elect to use the statewide grid average carbon intensity.
- (H) – Based on the EMFAC2017 model (v1.0.3), 46 percent of miles traveled by PHEVs in California are in electric mode (eVMT), with 54 percent in gasoline mode (CARB 2020a).

[15] There are many different combinations of input variables a user could specify in EMFAC to result in a unique emission factor output. This report does not attempt to consolidate a standardized group of emission factor output into a database table for the user to refer to. It is recommended the user run EMFAC to obtain project-specific results.

- (I) – Assumes that a PHEV operating in gasoline mode is similar to a gasoline hybrid (non-plug-in) vehicle. A typical gasoline hybrid vehicle has 50 percent higher fuel economy (mpg) than a comparable gasoline vehicle, based on a comparison of the gasoline and hybrid Toyota Camry and Corolla models (U.S. DOE 2021).
- (J and K) – The average California values for fuel efficiency, energy density, and carbon intensity of typical vehicle and fuel types are provided in Table T-30.2 (CARB 2020a, 2020b, 2020c; U.S. DOE 2021). Table T-30.2 also provides the well-to-wheels emission factor, which can be calculated based on the product of the fuel efficiency, energy density, and carbon intensity. If the user can provide a project-specific value, then the user should replace in the GHG calculation formula one or more of these values that produces the emission factor.
- (D) – BEV energy efficiency varies by vehicle type. The average California values are provided in Table T-30.1 in Appendix C. If the user can provide a project-specific value, they should replace the default in the GHG reduction formula. BEV energy efficiency can be calculated as:

$$\text{BEV efficiency (kWh per mile)} = \frac{L}{M \times N}$$

Where,

- (L) – Gasoline to electricity conversion. Users can assume 33.7 kWh per gallon of gasoline, which is a standard conversion factor used by U.S. EPA and U.S DOE (U.S. EPA 2021).
- (M) – Fuel economy (mpg) of a comparable gasoline vehicle. Users can obtain this from Table T-30.2.
- (N) –EER for an electric vehicle. Users can assume 3.4, which is the EER established by CARB for electric vehicles as stated in the LCFS regulation. (CARB 2020b).

GHG Calculation Caps or Maximums

Measure Maximum

($A1_{max}$) The GHG reduction from the use of BEVs is capped at 100 percent, which assumes that 100 percent of the fleet would be converted (B) and that the local electricity provider is powered 100 percent by renewables and thus has a carbon intensity of zero (E).

($A2_{max}$) The GHG reduction from the use of PHEVs is capped at 64 percent, which assumes that 100 percent of the fleet would be converted (B) and that the local electricity provider is powered 100 percent by renewables and thus has a carbon intensity of zero (E).

($A3_{max}$) For a well-to-wheels analysis, the GHG reduction from the use of electric vehicles is capped at 100 percent, which assumes that the local electricity provider is powered 100 percent by renewables and thus has a carbon intensity of zero (L). Note that the maximum percent reduction for all other cleaner vehicles and fuels presented in Table T-30.2 will not reach this maximum.

Subsector Maximum

Same as (A_{max}). Measure T-30 is the only measure at the Plan/Community scale within the Clean Vehicles and Fuels subsector.

Example GHG Reduction Quantification

The user reduces vehicle emissions by avoiding the use of conventional fuels in place of cleaner fuels or vehicle technologies. In this example, a municipality that sources their electricity from an electricity provider powered 100 percent by renewables (E) is converting half of their fleet of gasoline light duty automobiles to BEVs (B). The user has run EMFAC for their county, vehicle category, and project year, and determined the fleet emission factor to be 400 g CO_2e (C). The user would reduce GHG emissions from the existing fleet by 50 percent.

$$A1 = 50\% \times \frac{(0.33\frac{kWh}{mi} \times 0\ \frac{lb\ CO_2e}{MWh} \times 454\ \frac{g}{lb} \times 0.001\frac{MWh}{kWh}) - 400\frac{g\ CO_2e}{mi}}{400\frac{g\ CO_2e}{mi}} = -50\%$$

Quantified Co-Benefits

Improved Local Air Quality

(O1) – The use of BEVS in lieu of conventional vehicles would decrease local criteria pollutants. The percent reduction is equal to (B). Electricity supplied by statewide fossil-fueled or bioenergy power plants will generate criteria pollutants. However, because these power plants are located throughout the state or outside the state, electricity consumption from vehicles charging typically will not generate localized criteria pollutant emissions on the project site or roadways traveled by the electric vehicles.

(O2) – The percent reduction in local criteria pollutants from use of PHEVs in lieu of conventional vehicles (A2) is equal to ($B \times A2_{max}$). See ($A2_{max}$) above, which assumes (E) is set to zero to nullify eVMT activity and vehicle fleet conversion (B_{max}) is set to 100 percent. ($A2_{max}$) is multiplied by the actual conversion of the vehicle fleet (B) to adjust the percent reduction calculated from ($A2_{max}$). Electricity supplied by statewide fossil-fueled or bioenergy power plants will generate criteria pollutants. However, because these power plants are located throughout the state or outside the state, electricity consumption from vehicles charging typically will not generate localized criteria pollutant emissions.

(O3) – For a well-to-wheels analysis, the fuels produced by facilities within and outside of California will generate criteria pollutants. Because these facilities are dispersed, offsite of the project/site or plan/community, fuel production typically will not generate localized criteria pollutant emissions. Therefore, only the tank-to-wheels (i.e., tailpipe) portion of the vehicle criteria pollutant emissions should be quantified. For BEVs and PHEVs, this can be done using the methodologies described above (O1 and O2, respectively). For vehicles fueled by diesel, biodiesel,

renewable diesel, and natural gas, the criteria pollutant emission factor can be outputted by EMFAC (see C). The criteria pollutant reductions from use of gasoline hybrid or flex fuel vehicles cannot be readily quantified within EMFAC as these fuel types are not inputs the user can specify.

Fuel Savings (Increased Electricity)

(P1 and Q1) – The use of BEVs in lieu of conventional vehicles would decrease vehicle fuel consumption and increase electricity use. The percent reduction in fuel use (P1) is equal to (B). The absolute increase in electricity use can be calculated using the below formula (Q1).

(P2 and Q2) – The use of PHEVs in lieu of conventional vehicles would decrease vehicle fuel consumption and increase electricity use. The percent reduction in fuel use (P2) is equal to $(B \times A2_{max})$. The absolute increase in electricity use (Q2) is equal to $(H \times Q1)$.

(P3 and Q3) – For gasoline, gasoline hybrid, flex fuel, diesel, biodiesel, renewable diesel, and natural gas, the percent reduction in fuel use of the existing (conventional fuel) vehicle is equal to (B). The absolute increase in the cleaner fuel/vehicle energy can be calculated using the below formula (P3).

BEV Electricity Use Increase Formula

$$Q1 = B \times D \times R$$

Electricity Use Increase Calculation Variables

ID	Variable	Value	Unit	Source
Output				
Q1	Increase in electricity from electric vehicles	[ ]	kWh per year	calculated
User Inputs				
R	Average annual VMT of all vehicles in fleet	[ ]	miles per year	user input
Constants, Assumptions, and Available Defaults				
	None			

Further explanation of key variables:

- Please refer to the GHG Calculation Variables table above for definitions of variables that have been previously defined.

Cleaner Vehicle Energy Use Increase Formula

$$P3 = B \times R \times \frac{S}{T}$$

Cleaner Vehicle Energy Use Increase Variables

ID	Variable	Value	Unit	Source
Output				
P3	Increase in vehicle fuel use in fleet	[ ]	megajoules (MJ)	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
S	Energy density for cleaner fuel/vehicle	Table T-30.2	MJ per gal	CARB 2019, 2020a, 2020b, 2020c; U.S. DOE 2021
T	Fuel efficiency for cleaner fuel/vehicle	Table T-30.2	mpg	

Further explanation of key variables:

- (S and T) – The average California values for fuel efficiency and energy density of typical vehicle and fuel types are provided in Table T-30.2 (CARB 2019, 2020a, 2020b, 2020c; U.S. DOE 2021). If the user can provide a project-specific value, then the user should replace in the fuel use reduction formula one or more of these values that produces the energy consumption value (MJ).
- Please refer to the GHG Calculation Variables table above for definitions of variables that have been previously defined.

Sources

- California Air Resources Board (CARB). 2019. *LCFS Pathway Certified Carbon Intensities*. Available: https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities. Accessed: January 2021.
- California Air Resources Board (CARB). 2020a. *EMFAC2017 v1.0.3*. August. Available: https://arb.ca.gov/emfac/emissions-inventory. Accessed: January 2021.
- California Air Resources Board (CARB). 2020b. *Unofficial electronic version of the Low Carbon Fuel Standard Regulation*. Available: https://ww2.arb.ca.gov/sites/default/files/2020-07/2020_lcfs_fro_oal-approved_unofficial_06302020.pdf. Accessed: January 2021.
- California Air Resources Board (CARB). 2020c. *California Climate Investments Quantification Methodology Emission Factor Database and Documentation*. August. Available: https://ww2.arb.ca.gov/resources/documents/cci-quantification-benefits-and-reporting-materials. Accessed: January 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- U.S. Department of Energy (U.S. DOE). 2021. *Fuel Economy Datasets for All Model Years (1984-2021)*. January. Available: https://www.fueleconomy.gov. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2021. *Green Vehicle Guide*. Available: https://www3.epa.gov/otaq/gvg/learn-more-technology.htm.

Energy

The GHG emissions from energy use come from power generation that provides the energy used to operate a building or source. Power is typically generated by either a remote, central electricity generating plant, onsite generation by fuel combustion, or onsite solar, wind, or other renewable power. Because the emissions from central electricity generation are not emitted where the electricity is being used, these types of emissions are referred to as *indirect* emissions. As such, measures that reduce electricity consumption result in reductions of criteria pollutants where the electricity is generated (i.e., power plants). Electricity-reducing measures are, therefore, not considered to result in local air quality co-benefits at the project site, although they could contribute to regional air quality improvements.

Because the emissions from onsite fuel combustion are emitted where the fuel is being consumed, these types of emissions are referred to as *direct* emission. Measures that reduce residential natural gas use (e.g., from cooktops and for space and water heating) reduce onsite fuel combustion and improve local air quality. Direct use of onsite solar or wind power generated electricity does not result in emissions.

Energy sector emissions can be reduced through energy efficiency improvements, renewable energy generation, building electrification, and CH_4 recovery and reuse at industrial facilities (landfills and wastewater treatment plants). These types of measures are discussed below. This section also provides guidance for combining emission reductions from energy measures and accounting for statewide legislation that may reduce future emissions reductions achieved by energy measures. The measure factsheets and quantification methods for individual measures follow. Use the graphic on the following page to click on an individual measure to navigate directly to the measure's factsheet.

Measures to Improve Efficiency

Energy sector emissions can be reduced by lowering the amount of electricity and natural gas required for building operations. This can be achieved by designing a more energy-efficient building structure and/or installing energy-efficient appliances.[14] Emissions reductions from energy efficiency improvements are quantified based on the amount of expected energy savings that would be achieved over existing energy codes and regulations. Existing consumption values are determined using California-specific energy end use databases, such as the California Commercial End-Use Survey and Residential Appliance Saturation Study (RASS), and other literature sources

[14] This Handbook does not account for potential "rebound effects" of energy efficiency measures. *Rebound effect* is the phenomenon that an increase in energy efficiency may lead to fewer energy savings because energy use will increase due to consumer and market responses. While rebound effects have been documented in literature, they are difficult to precisely and reliably quantify.

(e.g., ENERGY STAR program). Quantified measures that target energy efficiency improvements described in this section include Measures E-1 through E-9.

Energy

ENERGY EFFICIENCY IMPROVEMENTS

- ○ E-1. Buildings Exceed 2019 Title 24 Building Envelope Energy Efficiency Standards
- ○ E-2. Require Energy Efficient Appliances
- ○ E-3-A. Require Energy Efficient Residential Boilers
- ○ E-3-B. Require Energy Efficient Commercial Packaged Boilers
- ○ E-4. Install Cool Roofs and/or Cool Walls in Residential Development
- ○ E-5. Install Green Roofs in Place of Dark Roofs
- ○ E-6. Encourage Residential Participation in Existing Demand Response Program(s)
- ○ E-7. Require Higher Efficacy Public Street and Area Lighting
- ○ E-8. Replace Incandescent Traffic Lights with LED Traffic Lights
- ○ E-9. Utilize a Combined Heat and Power System

RENEWABLE ENERGY GENERATION

- ○ E-10-A. Establish Onsite Renewable Energy Systems—Generic
- ○ E-10-B. Establish Onsite Renewable Energy Systems—Solar Power
- ○ E-10-C. Establish Onsite Renewable Energy Systems—Wind Power
- ○ E-11. Procure Electricity from Lower Carbon Intensity Power Supply

BUILDING DECARBONIZATION

- ○ E-12. Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences
- ○ E-13. Install Electric Ranges in Place of Gas Ranges
- ○ E-14. Limit Wood Burning Devices and Natural Gas/Propane Fireplaces in Residential Development
- ○ E-15. Require All-Electric Development
- ○ E-16. Require Zero Net Energy Buildings
- ○ E-17. Require Renewable-Surplus Buildings

METHANE RECOVERY

- ○ E-18. Establish Methane Recovery in Landfills
- ○ E-19. Establish Methane Recovery in Wastewater Treatment Plants

Measures to Increase Renewable Energy Generation

Different modes of electricity generation have different GHG emission intensities. Fossil fuel-based generation emits GHGs from fuel combustion, with the emissions quantity depending on the quantity and type of fuel used. Renewable energy generation, on the other hand, typically has significantly fewer emissions, and most types of renewable sources—such as solar photovoltaic (PV) systems—have zero associated GHG emissions. Renewable energy generation reduces emissions by avoiding an equivalent amount of grid energy. To calculate this, the amount of energy generated by the renewable system(s) must be quantified and then multiplied by the electricity provider-specific emission factor for the type of energy (e.g., electricity, natural gas) being replaced.[15] Quantified measures that target renewable energy generation described in this section include Measures E-10-A through E-11.

Measures for Building Decarbonization

Building decarbonization, also termed *beneficial electrification* or *building electrification*, involves shifting from fossil fuels (e.g., natural gas) to electricity as the power source for heating, cooking, and appliances. In a fully electrified building, gas-powered water heaters, gas-powered ovens and cooktops, gas-powered clothes washers and dryers, and space heating that normally uses natural gas, propane, or heating oil are all replaced by electric alternatives, which are usually 2 to 3 times more efficient than traditional appliances. Displacing emissions-intensive fossil fuel energy with less emissions-intensive electricity results in a net emission reduction. Further, the emission reduction increases if the electricity for these end uses is generated by solar, wind, or other sources of zero-carbon electricity. These zero-carbon sources can be provided on a project site or integrated into the local electricity providers' renewable energy mix. In future years, building decarbonization measures will become increasingly effective at reducing GHG emissions because electricity provided by retail sellers of electricity will be procured from increasing amounts of renewable energy sources.

Emissions reductions achieved through building electrification are quantified based on the direct emissions avoided by the displaced fuel plus the indirect emissions added by the increased use of electricity. To calculate this, the avoided energy (i.e., negative value) generated by the fossil-fueled appliance(s) must be quantified and then multiplied by the appropriate fuel emission factor. The additional energy (i.e., positive value) generated by the electric alternative appliance(s) must be quantified and then multiplied by the electricity provider-specific emission factor.[16] The sum of these two emissions represents the net emission reduction. Quantified

[15] The quantification methods do not account for potential future renewable energy curtailment (i.e., the deliberate reduction in power output below what could have been generated to balance supply and demand), which could reduce expected emissions savings from certain renewable energy measures.

[16] One method for determining energy consumption for an electric alternative appliance is to convert the natural gas consumption, typically measured in therms, into British thermal units, which can then be converted into the electricity energy consumption metric of kWh. However, this method does not account for the differing energy efficiencies of natural gas versus electricity or potential differences in the technical specifications of the associated appliances. Accordingly, the Handbook does not use this basic conversion method. Instead, the Handbook recommends using actual reported energy consumption for electric alternative appliances.

measures that target building decarbonization described in this section include Measures E-12 through E-17.

Measures for Methane Recovery

Decomposition of waste and organic material in landfills and at wastewater treatment facilities generates CH_4. Capturing CH_4 through recovery systems directly reduces GHG emissions. Additional reductions can be achieved if the captured CH_4 is combusted to generate electricity for onsite energy needs, which displaces the associated indirect GHG emissions from electricity production. Emissions reductions from CH_4 recovery systems that include electricity generation are quantified using similar methods as described above for measures to increase renewable energy generation. Quantified measures that target CH_4 recovery described in this section include Measures E-18 and E-19.

Combining Emissions Reductions from Energy Measures

The total reductions claimed by a user for energy measures should not exceed 100 percent of project energy emissions, unless a measure would result in additional excess energy capacity that would be sold to an electricity provider or other project. This may include renewable energy generation systems tied into the grid. These additional emission reductions may be used to offset other categories of emissions, with approval of the agency reviewing the project. In these cases of excess capacity, the quantified excess emissions must be carefully verified to ensure that any credit allowed for these additional reductions is truly additional.[17]

Reduced Effectiveness of Energy Measures in Future Years

Senate Bill 100 requires that 100 percent of electricity supplied to California end-use customers be from eligible renewable energy resources and zero-carbon resources by 2045. As retail sellers of electricity procure increasing amounts of renewable energy to displace fossil fuels in their energy generation mix, the emission factors of local electricity providers will decrease over time. Because some energy measures reduce electricity consumption or displace grid energy, the annual GHG reduction from these measures will be less in future years. As noted above, however, the shift to a larger portfolio of renewable energy will make building decarbonization measures more effective. Further, if the local electricity provider for a project already has carbon-free electricity, then energy reduction measures would not reduce electricity emissions as they would already be zero or near zero.[18] Users should take care to appropriately account for this possibility by using the electricity provider-specific, year-specific emission factors presented in Tables E-4.3 and E-4.4 in Appendix C, *Emissions Factors and Data Tables*.[19]

Similarly, measures that reduce building energy consumption may become less effective over time because of increasingly stringent Title 24, California Building Standards Code, standards.

---

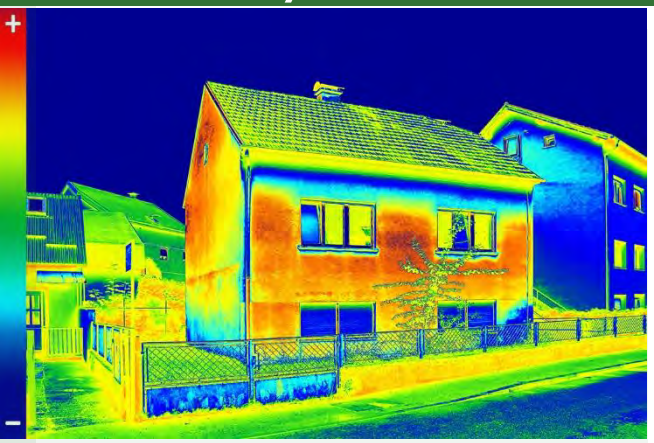
[17] For more detailed information on offset verification protocols visit https://www.climateactionreserve.org/how/future-protocol-development/criteria/.

[18] Senate Bill 100 requires 100 percent renewable for retail sales but not for all power generation/supply (e.g., grid balancing or in-facility usage). Thus, emission factors may not be exactly zero by 2045.

[19] The default electricity provider emission factors reflect the annual average emissions intensity of delivered electricity. Depending on the time of day and load, measures that reduce electricity consumption may offset emissions from marginal power sources, yielding greater emissions reductions than estimated when using average annual emission factors.

Strengthening of Title 24 requirements, including provisions for zero net energy (ZNE) buildings (i.e., energy efficiency improvements and onsite renewable energy), will improve energy efficiency and reduce energy consumption in new construction. The quantification methods presented in this report include measures that exceed minimum regulatory requirements of the 2019 Title 24 standards. Some measures in this Handbook may become obsolete if they are made mandatory for all new buildings as part of future Title 24 standards. As such, users should take care to determine whether the measures in this Handbook still exceed the Title 24 requirements at the time of project implementation. If the user's project exceeds the requirements of Title 24, then they can take credit for the resulting reductions.

E-1. Exceed 2019 Title 24 Building Envelope Energy Efficiency Standards



GHG Mitigation Potential

Up to 99% of GHG emissions from building electricity and/or natural gas use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Increased energy efficiency can reduce the strain on the overall grid, particularly the risk of power outages during peak loads. Increased efficiency can also reduce energy costs, particularly if extreme heat would otherwise increase these costs.

Health and Equity Considerations

More energy efficient buildings can help residents to save money on utility costs and reduce exposure to extreme heat, supporting greater resilience to climate health impacts. This can be especially critical for low-income and vulnerable residents.

Measure Description

This measure requires new buildings to exceed the energy efficiency requirements of the building energy standards of the 2019 version of Title 24. GHGs are emitted because of activities in residential and commercial buildings that use electricity and natural gas as energy sources. By committing to a percent improvement over Title 24, the building's energy use is reduced, thereby reducing GHG emissions. Title 24 Part 6 regulates energy uses including space heating and cooling, hot water heating, ventilation, and integrated lighting. End use categories not subject to Title 24 requirements include appliances, electronics, and miscellaneous "plug-in" uses.

Subsector

Energy Efficiency Improvements

Scale of Application

Project/Site

Implementation Requirements

Reduce energy use from any of the following end uses: space heating and cooling, hot water heating, ventilation, and integrated lighting.

Cost Considerations

In order to make buildings even more energy efficient, developers will face greater upfront costs to purchase higher-quality materials, which may be passed on to the property owner. However, property owners will realize cost savings from reduced energy use. Property owners will also avoid potential retrofitting costs in the future if efficiency standards are made more stringent.

Expanded Mitigation Options

Pair with Measure E-2, *Require Energy Efficient Appliances*, to reduce energy use from both end use categories that are subject to Title 24 requirements and those that are not to yield increased GHG reductions.

GHG Reduction Formula

$$A = -C \times E$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from building electricity and/or natural gas consumption	[ ]	0–99%	calculated
User Inputs				
B	Building/housing type	[ ]	text	user input
C	Percent improvement beyond 2019 Title 24	0–100	% expressed as a whole number	user input
Constants, Assumptions, and Available Defaults				
D	Electricity Demand Forecast Zone	Figure E-1.1 Table E-1.1	integer	CEC 2017
E	Percent reduction in building electricity or natural gas consumption for 1% improvement over 2019 Title 24 Standards	Tables E-1.2 through Table E-1.5	%	CEC 2020, 2021

Further explanation of key variables:

- (A) – The output provides the percent reduction in GHG emissions from either building electricity or natural gas consumption, depending on which energy source the user is interested in calculating (E). To determine the percent reduction in GHG emissions from building energy (i.e., electricity plus natural gas), the user would need to know the percent of total GHG emissions from each energy source. For example, if 40 percent of building energy emissions come from electricity and 60 percent come from natural gas consumption, the percent reduction in GHG emissions from building energy could be calculated as follows.

  $$A_{energy} = (40\% \times A_{electricity}) + (60\% \times A_{natural\ gas})$$

  Further, to determine the percent reduction in GHG emissions for a project with multiple buildings, the user would need to know the percent of total building energy emissions from each building. For example, if 67 percent of building energy emissions come from Building 1 and 33 percent come from Building 2, the percent reduction in GHG emissions from all building energy could be calculated as follows.

  $$A_{energy\_total} = (67\% \times A_{energy\_1}) `+ (33\% \times A_{energy\_2})$$

- (B) – The building and housing types are needed to lookup the percent reduction in electricity or natural gas consumption over 2019 Title 24 Standards (E).
- (D) – The California Energy Commission (CEC) has specified 28 distinct Electricity Demand Forecast Zones (EDFZs) in California. Users should refer to Figure E-1.1 in

Appendix C to determine the EDFZ for their project. This measure relies on energy consumption data from the year 2019 tied to the CEC's 2018-2030 Uncalibrated Commercial Sector Forecast (Commercial Forecast) and the 2019 RASS (CEC 2020, 2021). Because data from all 28 EDFZs are not included in the Commercial Forecast and RASS, representative data from similar EDFZs may need to be used. Users should refer to Table E-1.1 for the proxy EDFZ that corresponds with those listed in Tables E-1.2 through E-1.5.

- (E) – See Tables E-1.2 through E-1.5 for the percent reduction in building electricity and natural consumption by EDFZ and land use type. There are two tables for residential land uses and two for non-residential land uses. This information is based on the percent of total building energy that comes from end use categories subject to Title 24 requirements (e.g., space heating and cooling, hot water heating, ventilation) (CEC 2020, 2021).[20, 21] For example, for a general office building in EDFZ 1, 65 percent of electricity and 79 percent of natural gas consumption come from end use categories subject to Title 24 requirements. Thus, a 1 percent improvement in building energy efficiency standards results in a 0.65 percent reduction in electricity use and a 0.79 percent reduction in natural gas consumption.

GHG Calculation Caps or Maximums

Measure Maximum

(C_{max}) The percent improvement beyond 2019 Title 24 standards is capped at 100.

It is assumed that the energy demand of the user's project is currently being met by grid electricity that requires *some* amount of fossil fuel–based energy generation and/or onsite natural gas, both of which emit GHGs from fuel combustion. In other words, the local electricity provider has an energy intensity factor (lb of CO_2e per MWh) greater than zero and/or the project consumes natural gas onsite for building energy. For all-electric projects that are served by electricity providers already with a renewable portfolio of 100 percent, this measure could have no reduction in GHG emissions. If the electricity provider is using renewable energy credits (REC) to meet a 100 percent renewable portfolio goal, then some emissions reductions may be achieved. This measure would still result in the co-benefits of reduced electricity use and enhanced energy security.

Mutually Exclusive Measures

If the user selects Measure E-15, *Require All-Electric Development*, they may not also take credit for any natural gas–related efficiency gains under this measure. In other words, ($A_{natural\ gas}$) should be zeroed out in the above equation.

Example GHG Reduction Quantification

The user reduces building energy by exceeding energy efficiency standards. In this example, the user commits to a 10 percent improvement over 2019 Title 24 requirements (C) for

[20] End use categories not subject to Title 24 requirements include appliances, electronics, and miscellaneous "plug-in" uses.
[21] Hardwired lighting is part of Title 24 Part 6. However, it is not part of the building envelope energy and, therefore, not considered as part of this measure.

their project located in EDFZ 3 (D). The project includes Building 1, a day-care center, and Building 2, apartments (mid-rise) (B). The user would reduce GHG emissions from the day-care center from electricity and natural gas by 8.1 percent and 9.9 percent, respectively. GHG emissions from the apartment from electricity and natural gas would be reduced by 2.4 percent and 9.5 percent, respectively.

$A_{electricity\_1} = -10 \times 0.81\% = -8.1\%$ day care electricity emissions

$A_{natural\ gas\_1} = -10 \times 0.99\% = -9.9\%$ day care natural gas emissions

$A_{electricity\_2} = -10 \times 0.24\% = -2.4\%$ apartment electricity emissions

$A_{natural\ gas\_2} = -10 \times 0.95\% = -9.5\%$ apartment natural gas emissions

The percent reduction in GHG emissions from building energy (i.e., electricity plus natural gas) per building can also be calculated if the user knows the percent of total GHG emissions from each energy source. In this example, 40 percent of the day-care building's energy emissions come from electricity and 60 percent come from natural gas consumption, while 45 percent of the apartment building's energy emissions come from electricity and 55 percent come from natural gas consumption. Energy sector GHG emissions from the day-care and apartment would be reduced by 9.2 percent and 6.3 percent, respectively.

$A_{energy\_1} = (40\% \times -8.1\%) + (60\% \times -9.9\%) = -9.2\%$ day care energy emissions

$A_{energy\_2} = (45\% \times -2.4\%) + (55\% \times -9.5\%) = -6.3\%$ apartment energy emissions

Further, the percent reduction in GHG emissions for the project can be calculated if the user knows the percent of total building energy emissions from each building. In this example, 33 percent of building energy emissions come from the day-care and 67 percent come from the apartment. The percent reduction in GHG emissions from all building energy would be 7.9 percent.

$A_{energy\_total} = (33\% \times -9.2\%) + (77\% \times -6.3\%) = -7.9\%$ building energy emissions

Quantified Co-Benefits

Improved Air Quality

Electricity supplied by statewide fossil-fueled or bioenergy power plants generates criteria pollutants. However, because these power plants are located throughout the state, the reduction in electricity use from this measure will not reduce localized criteria pollutant emissions at the project site.

The reduction in natural gas consumption from this measure would result in local improvements in air quality because the building natural gas combustion regulated under Title 24 Part 6 occurs on the project site (e.g., space heating, water heating).

The percent reduction in criteria pollutants from natural gas ($A_{naturalgas}$) is the same as the percent reduction in building natural gas consumption achieved by the measure.

Energy and Fuel Savings

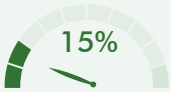
The percent reduction in electricity use achieved by the measure is the same as the percent reduction in GHG emissions from electricity ($A_{electricity}$). The percent reduction in natural gas consumption achieved by the measure is the same as the percent reduction in GHG emissions from natural gas ($A_{naturalgas}$).

Sources

- California Energy Commission (CEC). 2017. *California Electricity Demand Forecast Zones*. Available: https://cecgis-caenergy.opendata.arcgis.com/datasets/86fef50f6f344fabbe545e58aec83edd_0/data?geometry=-165.327%2C31.004%2C-72.427%2C43.220. Accessed: June 2021.
- California Energy Commission (CEC). 2020. Excel database with the 2019 Residential Appliance Saturation Study (RASS), provided to ICF. November 13, 2020.
- California Energy Commission (CEC). 2021. Excel database with the 2018–2030 Uncalibrated Commercial Sector Forecast, provided to ICF. January 21, 2021.

E-2. Require Energy Efficient Appliances

GHG Mitigation Potential



Up to 15.0% of GHG emissions from building electricity

Co-Benefits (icon key on pg. 34)

Climate Resilience

Increased energy efficiency can reduce the strain on the overall grid, particularly the risk of power outages during peak loads. Increased efficiency can also reduce energy costs, particularly if extreme heat would otherwise increase these costs.

Health and Equity Considerations

The use of ENERGY STAR appliances can increase upfront purchase costs; thus, it should be clearly explained to occupants or buyers that these costs can be offset by reduced operational utility costs. This can be particularly beneficial for low-income residents.

Measure Description

This measure will require installation of ENERGY STAR-certified appliances that exceed the energy efficiency of conventional appliances. By committing to more efficient appliances, the building's energy use is reduced, thereby reducing GHG emissions.

Subsector

Energy Efficiency Improvements

Scale of Application

Project/Site

Implementation Requirements

This measure can be used for commercial refrigerators. It can also be used for residential refrigerators, clothes washers, dishwashers, and ceiling fans. This measure will only result in reductions associated with electricity use and does not apply to natural gas as no ENERGY STAR appliances that use natural gas were evaluated.

Cost Considerations

More energy-efficient appliances are typically more expensive than less efficient ones, leading to greater upfront costs. However, the replacement of less efficient appliances with more efficient models reduces energy consumption and thereby reduces long-term energy costs.

Expanded Mitigation Options

Pair with Measure E-1, *Exceed Title 24 Building Envelope Energy Efficiency Standards*, to reduce energy use from both end use categories subject to Title 24 requirements and those that are not to yield increased GHG reductions.

GHG Reduction Formula

$$A = (E_1 \times F_1) + (E_2 \times F_2) + (E_3 \times F_3) + (E_4 \times F_4)$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from building electricity	0–15.0	%	calculated
User Inputs				
B	Building/housing type	[ ]	text	user input
$C_{1,2,3...}$	ENERGY STAR appliance(s) installed	[ ]	text	user input
Constants, Assumptions, and Available Defaults				
D	Electricity Demand Forecast Zone	Figure E-1.1 Table E-1.1	integer	CEC 2017
$E_{1,2,3...}$	Percent reduction in electricity for ENERGY STAR appliance compared to conventional appliance	Table E-2.1	%	ENERGY STAR 2014; 2016; 2017; 2018a; 2018b
$F_{1,2,3...}$	Percent of total building electricity by appliance	Table E-2.2 Table E-2.3	%	CEC 2020, 2021

Further explanation of key variables:

- (A) – The output provides the percent reduction in GHG emissions from building electricity. To determine the percent reduction in GHG emissions from building energy (i.e., electricity plus natural gas), the user would need to know the percent of total GHG emissions from electricity. For example, if 40 percent of building energy emissions come from electricity, the percent reduction in GHG emissions from building energy could be calculated as follows.

  $$A_{energy} = (40\% \times A_{electricity})$$

  Further, to determine the percent reduction in GHG emissions for a project with multiple buildings, the user would need to know the percent of total building energy emissions from each building. For example, if 67 percent of building energy emissions come from Building 1 and 33 percent come from Building 2, the percent reduction in GHG emissions from all building energy could be calculated as follows.

  $$A_{energy\_total} = (67\% \times A_{energy\_1}) + (33\% \times A_{energy\_2})$$

- (B) – The building and housing types are needed to lookup the percent of total building electricity by appliance (F). Commercial refrigerators were evaluated for the non-residential building types of grocery stores, restaurants, and refrigerated warehouses. Residential refrigerators, clothes washers, dishwashers, and ceiling fans were evaluated for all residential housing types.
- (D) – The CEC has specified 28 distinct EDFZs in California. Users should refer to Figure E-1.1 in Appendix C to determine the EDFZ for their project. This measure relies

on energy consumption data from the year 2019 tied to the CEC's Commercial Forecast and the 2019 RASS (CEC 2020, 2021). Because data from all 28 EDFZs are not included in the Commercial Forecast and RASS, representative data from similar EDFZs may need to be used. Users should refer to Table E-1.1 for the proxy EDFZ that corresponds with those listed in Table E-2.2 and Table E-2.3.

- (E) – See Table E-2.1 for the percent reduction in ENERGY STAR appliance electricity use compared to conventional appliances that meet the minimum federal efficiency standards (ENERGY STAR 2014; 2016; 2017; 2018a; 2018b).
- (F) – See Table E-2.2 and Table E-2.3 for the percent of total building electricity by appliance. There is one table for residential land uses and another for non-residential land uses. This information, excluding ceiling fans, is primarily based on data from the CEC (2020, 2021). RASS does not specify a ceiling fan end-use; rather, electricity use from ceiling fans is accounted for in the Miscellaneous category, which includes interior lighting, attic fans, and other miscellaneous plug-in loads. Because the electricity usage of ceiling fans alone is not specified, a value from a National Renewable Energy Laboratory (NREL) study is used. The study reports that the average energy use per ceiling fan is 84.1 kWh per year (NREL 2008). In this measure, it is assumed that each multi-family, single-family, and townhome residence has one ceiling fan. The electricity savings shown here are based on installing an ENERGY STAR ceiling fan and do not account for an occupant's decreased use of cooling devices such as air conditioners.

GHG Calculation Caps or Maximums

It is assumed that the electricity demand of the project's appliances is currently being met by grid electricity that requires *some* amount of fossil fuel–based energy generation, which emits GHGs from fuel combustion. In other words, the local electricity provider has an energy intensity factor (lb of CO_2e per MWh) greater than zero. For projects that are served by electricity providers already with a renewable portfolio of 100 percent, this measure could have no reduction in GHG emissions. If the electricity provider is using REC to meet a 100 percent renewable portfolio goal, then some emissions reductions may be achieved. This measure would still result in the co-benefits of reduced electricity use and enhanced energy security.

Example GHG Reduction Quantification

The user reduces building energy by requiring the builder supply appliances that exceed the energy efficiency of conventional appliances. In this example, the user's project includes Building 1, a supermarket, and Building 2, single-family home (B) located in EDFZ 1 (D). The user would commit to ENERGY STAR commercial refrigerators in the grocery store and ENERGY STAR residential refrigerators, clothes washers, dishwashers, and ceiling fans in the single-family housing (C). GHG emissions from the supermarket and single-family home from electricity would be reduced by 4.6 percent and 2.8 percent, respectively.

$A_{electricity\_1} = -20\% \times 23\% = -4.6\%$ supermarket electricity emissions

$A_{electricity\_2} = (-9\% \times 18\%) + (-25\% \times 1.1\%) + (-12\% \times 1.1\%) + (-60\% \times 1.3\%) = -2.8\%$ housing electricity emissions

The percent reduction in GHG emissions from building energy (i.e., electricity plus natural gas) per building can also be calculated if the user knows the percent of total GHG emissions from each energy source. In this example, 60 percent of the supermarket's energy emissions come from electricity and 50 percent of the single-family home's energy emissions come from electricity. GHG emissions from the supermarket and single-family home would be reduced by 2.8 percent and 1.4 percent, respectively.

$A_{energy\_1} = (60\% \times -4.6\%) = -2.8\%$ supermarket energy emissions

$A_{energy\_2} = (50\% \times -2.8\%) = -1.4\%$ housing energy emissions

Further, the percent reduction in GHG emissions for the project can be calculated if the user knows the percent of total building energy emissions from each building. In this example, 67 percent of building energy emissions come from the supermarket and 33 percent come from the single-family home. The percent reduction in GHG emissions from all building energy would be 2.3 percent.

$A_{energy\_total} = (67\% \times -2.8\%) + (33\% \times -1.4\%) = -2.3\%$ building energy emissions

Quantified Co-Benefits

Energy and Fuel Savings

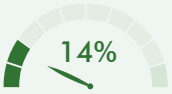
The percent reduction in electricity use achieved by the measure is the same as the percent reduction in GHG emissions from electricity ($A_{electricity}$).

Sources

- California Energy Commission (CEC). 2017. *California Electricity Demand Forecast Zones*. Available: https://cecgis-caenergy.opendata.arcgis.com/datasets/86fef50f6f344fabbe545e58aec83edd_0/data?geometry=-165.327%2C31.004%2C-72.427%2C43.220. Accessed: June 2021.
- California Energy Commission (CEC). 2020. Excel database with the 2019 Residential Appliance Saturation Study (RASS), provided to ICF. November 13, 2020.
- California Energy Commission (CEC). 2021. Excel database with the 2018–2030 Uncalibrated Commercial Sector Forecast, provided to ICF. January 21, 2021.
- ENERGY STAR. 2014. *Refrigerators – Overview*. September. Available: https://www.energystar.gov/products/appliances/refrigerators. Accessed: January 2021.
- ENERGY STAR. 2016. *Dishwashers – Overview*. January. Available: https://www.energystar.gov/products/appliances/dishwashers. Accessed: January 2021.
- ENERGY STAR. 2017. *Commercial Refrigerators & Freezers – Overview*. March. Available: https://www.energystar.gov/products/commercial_food_service_equipment/commercial_refrigerators_freezers. Accessed: January 2021.
- ENERGY STAR. 2018a. *Clothes Washers – Overview*. February. Available: https://www.energystar.gov/products/appliances/clothes_washers?qt-consumers_product_tab=2#qt-consumers_product_tab. Accessed: January 2021.
- ENERGY STAR. 2018b. *Ceiling Fans – Overview*. June. Available: https://www.energystar.gov/products/lighting_fans/ceiling_fans. Accessed: January 2021.
- National Renewable Energy Laboratory (NREL). 2010. *Building America Research Benchmark Definition*. Available: https://www.nrel.gov/docs/fy10osti/47246.pdf. Accessed: January 2021.

E-3-A. Require Energy Efficient Residential Boilers

GHG Mitigation Potential



Up to 14.0 % of GHG emissions from boiler fuel consumption

Co-Benefits (icon key on pg. 34)

Climate Resilience

If the boilers are electric, increased energy efficiency can reduce the strain on the overall grid, particularly the risk of power outages during peak loads. Increased efficiency can also reduce energy costs.

Health and Equity Considerations

If the boilers use natural gas, propane, or home heat oil, a more efficient model can directly reduce fuel combustion in the home and thus help reduce indoor air pollution, supporting improvements to public health.

Measure Description

This measure requires installation of a residential boiler with a higher energy efficiency than what is required by regulation. Improving boiler efficiency decreases fuel consumption for the same amount of energy output, thereby reducing associated GHG emissions.

Subsector

Energy Efficiency Improvements

Scale of Application

Project/Site

Implementation Requirements

This measure is only appropriate for residential boilers. A *residential boiler*, as defined in the Code of Federal Regulations (C.F.R.), means a product that utilizes only single-phase electric current, or single-phase electric current or DC current in conjunction with natural gas, propane, or home heating oil and that (1) is designed to be the principal heating source for the living space of residence; and (2) has a heat input rate of less than 300,000 British Thermal Units (Btus) per hour.

Cost Considerations

More energy-efficient boilers are typically more expensive than less efficient ones, leading to greater upfront costs. However, the use of more efficient models reduces energy consumption and thereby reduces long-term energy costs. Boilers with improved insulation—a metric in improved energy efficiency—are also less likely to freeze and burst, potentially avoiding cold weather repair costs and water damage.

Expanded Mitigation Options

Pair with Measure E-12, *Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences*, to reduce energy use from both space heating and water heating to yield increased GHG reductions.

GHG Reduction Formula

A = D

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from boiler fuel consumption	1.2–14.0	%	calculated
User Inputs				
B	Boiler type	[ ]	text	user input
C	Annual fuel utilization efficiency of boiler with measure	83–96	%	user input
Constants, Assumptions, and Available Defaults				
D	Boiler fuel savings with measure compared to minimum requirement	Table E-3-A.1	%	U.S. DOE 2015

Further explanation of key variables:

- (C) – The U.S. Department of Energy's (U.S. DOE) 2016 Conservation Standards for Residential Boilers (10 C.F.R. 430) set increased energy efficiency requirements for residential boilers, effective January 2021. The annual fuel utilization efficiency (AFUE) is a common metric for determining residential boiler efficiency as it represents the ratio of the total useful heat delivered to the heat value from the annual amount of fuel consumed. The project boiler AFUE must exceed the minimum AFUE required by the standards to result in GHG emission reductions. Boiler efficiency should be obtainable from manufacturer specifications.
- (D) – The U.S. DOE calculated the average annual fuel use and savings of boilers at various AFUEs above the minimum requirement of the standards based on historical consumption data. This information is summarized in Table E-3-A.1 in Appendix C.

GHG Calculation Caps or Maximums

Measure Maximum

(C_{max}) The annual fuel utilization efficiency of the proposed boiler is capped at the "Max Tech" percentage for each boiler type, which is presented in Table E-3-A.1 in Appendix C.

Mutually Exclusive Measures

If the user selects Measure E-15, *Require All-Electric Development*, the user cannot also select this measure, given that it calls for use of gas- and oil-fired boilers.

Example GHG Reduction Quantification

The user reduces boiler fuel use by requiring installation of a boiler with a higher AFUE than what is required by the 2016 Conservation Standards for Residential Boilers. If the boiler is a gas-fired hot water boiler (B) with an AFUE of 96 percent (C), the user would reduce GHG emissions from boiler fuel consumption by 14 percent based on Table E-3-A.1 in Appendix C.

A = -14%

Quantified Co-Benefits

Improved Air Quality

The reduction in fuel consumption (i.e., natural gas or oil) from this measure would result in local improvements in air quality because pollutants from fuel consumption would be reduced at the project site. The percent reduction in GHG emissions (A) is the same as the percent reduction in criteria pollutant emissions achieved by the measure.

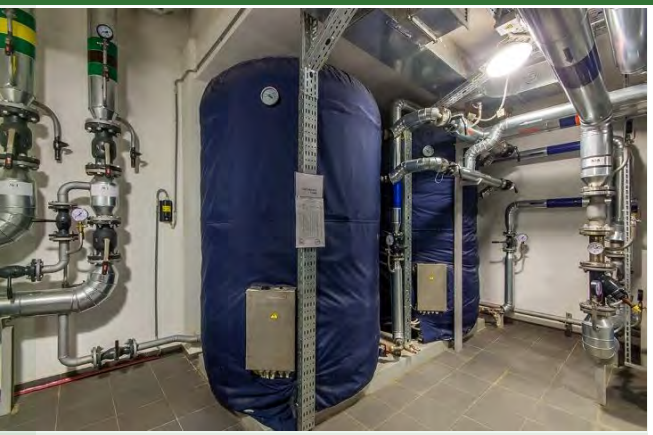
Energy and Fuel Savings

The percent reduction in fuel consumption achieved by the measure is the same as the percent reduction in GHG emissions (A).

Sources

- U.S. Department of Energy (U.S. DOE). 2015. *Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Residential Boilers*. March. Available: https://www.regulations.gov/docketBrowser?rpp=25&so=DESC&sb=commentDueDate&po=0&dct=SR%2BO&D=EERE-2012-BT-STD-0047. Accessed: January 2021.

E-3-B. Require Energy Efficient Commercial Packaged Boilers



GHG Mitigation Potential

Up to 16.0% of GHG emissions from boiler fuel consumption

Co-Benefits (icon key on pg. 34)

Climate Resilience

Increased energy efficiency can reduce the strain on the overall grid, particularly the risk of power outages during peak loads. Increased efficiency can also reduce energy costs.

Health and Equity Considerations

Reduction of fuel combustion in commercial spaces can help reduce indoor pollution.

Measure Description

This measure requires installation of a commercial packaged boiler with a higher energy efficiency than what is required by regulation. Improving boiler efficiency decreases fuel consumption for the same amount of energy output, thereby reducing associated GHG emissions.

Subsector

Energy Efficiency Improvements

Scale of Application

Project/Site

Implementation Requirements

This measure is only appropriate for a *commercial packaged boiler*, which, as defined in the C.F.R., means a type of packaged low pressure boiler that is industrial equipment with a capacity (rated maximum input) of 300,000 Btus per hour or more, which, to any significant extent, is distributed in commerce (1) for heating or space conditioning applications in buildings, or (2) for service water heating in buildings, but does not meet the definition of *hot water supply boiler* (as defined in 10 C.F.R. 431).

Cost Considerations

More energy-efficient boilers are typically more expensive than less efficient ones, leading to greater upfront costs. However, the replacement of less efficient boilers with more efficient models reduces energy consumption and thereby reduces long-term energy costs.

Expanded Mitigation Options

Non-applicable.

GHG Reduction Formula

A = D

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from boiler fuel consumption	1.1–16.0	%	calculated
User Inputs				
B	Boiler type	[ ]	text	user input
C	Thermal or combustion efficiency of boiler with measure	83–99	%	user input
Constants, Assumptions, and Available Defaults				
D	Boiler fuel savings with measure compared to minimum requirement	Table E-3-B.1 Table E-3-B.2	%	U.S. DOE 2016

Further explanation of key variables:

- (C) –U.S. DOE's Conservation Standards for Commercial Packaged Boilers (10 C.F.R. 431) were amended in July 2009 to set increased energy efficiency requirements for commercial packaged boilers installed after March 2012. In March 2020, U.S. DOE increased the standards, which will affect boilers installed after January 10, 2023. The minimum thermal efficiency (TE) and combustion efficiency (CE) are the metrics for determining commercial packaged boiler efficiency. TE is the ratio of the heat energy absorbed by the water to the heat energy available in the fuel burned. CE is the ratio of heat energy released by the fuel to the heat energy available in the fuel burned. The project boiler TE or CE must exceed the minimum required by the standards to result in GHG emission reductions. Boiler efficiency should be obtainable from manufacturer specifications.
- (D) – U.S. DOE calculated the average annual fuel use and savings of boilers at various TEs and CEs above the minimum requirement of the 2009 and 2020 standards based on historical consumption data. If the proposed boiler would be installed before January 10, 2023, the user should reference the annual fuel savings relative to the 2009 standards, summarized in Table E-3-B.1 in Appendix C. If the proposed boiler would be installed after January 10, 2023, the user should reference the annual fuel savings relative to the 2020 standards, summarized in Table E-3-B.2 in Appendix C.

GHG Calculation Caps or Maximums

Measure Maximum

(C_{max}) The TE or CE of the proposed boiler is capped at the "Max Tech" percentage for each boiler type, which is presented in Tables E-3-B.1 and E-3-B.2 in Appendix C.

Mutually Exclusive Measures

If the user selects Measure E-15, *Require All-Electric Development*, the user cannot also select this measure, given that it calls for use of gas- and oil-fired boilers.

Example GHG Reduction Quantification

The user reduces boiler fuel use by requiring installation of a boiler with a higher CE or TE than what is required by the 2009 or 2020 Conservation Standards for Commercial Packaged Boilers. If the proposed boiler is a 350,000 Btu/hour gas-fired hot water boiler installed in 2022 (B) with a TE of 99 percent (C), the user would reduce GHG emissions from boiler fuel consumption by 16 percent based on Table E-3-B.1 in Appendix C.

A = -16%

Quantified Co-Benefits

Improved Air Quality

The reduction in fuel consumption (i.e., natural gas or oil) from this measure would result in local improvements in air quality, because pollutants from fuel consumption would be reduced at the project site. The percent reduction in GHG emissions (A) is the same as the percent reduction in criteria pollutant emissions achieved by the measure.

Energy and Fuel Savings

The percent reduction in fuel consumption achieved by the measure is the same as the percent reduction in GHG emissions (A).

Sources

- U.S. Department of Energy (U.S. DOE). 2016. *Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Commercial Packaged Boilers*. December. Available: https://www.regulations.gov/docket?D=EERE-2013-BT-STD-0030. Accessed: January 2021.

E-4. Install Cool Roofs and/or Cool Walls in Residential Development

GHG Mitigation Potential

Potentially small reduction in GHG from building energy use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Cool roofs and walls absorb less heat and keep buildings cool, increasing the building's adaptive capacity to extreme heat. This also reduces the strain on the electric grid, particularly the risk of power outages during peak loads, and can reduce energy costs. If implemented across a development or throughout a community, cool roofs and walls can reduce the urban heat island effect, building not just individual but also communitywide resilience to extreme heat.

Health and Equity Considerations

Cool roofs and walls can protect the health of vulnerable and low-income residents during heat waves and extreme heat days. In colder climate zones, cool roofs and walls can potentially increase winter heating costs, but the increase may be offset by reduced electricity bills in summer.

Measure Description

This measure will install cool roofs and/or walls in place of dark roofs and/or conventional walls for residential development. Cool roofs have been designed to reflect more sunlight and absorb less heat than a standard roof, keeping buildings cooler in the summertime and thus reducing air-conditioning loads. Complementary to cool roofs, cool walls achieve a similar result through using more reflective paints or materials. This reduces the electricity needed to provide cooling but can potentially increase the energy needed to provide winter heating, thereby reducing associated GHG emissions depending on the project parameters (e.g., climate, level of implementation, carbon intensity of local electricity provider). However, the winter heating penalty may be small with lower levels of winter sunlight due to shorter daylight hours and more overcast skies.

Subsector

Energy Efficiency Improvements

Scale of Application

Project/Site

Implementation Requirements

Cool roofs can be made of tiles, shingles, coatings, membranes, or metal, among other materials, in a wide range of colors (not just white). Similarly, cool wall paints and materials come in a range of colors, though light-colored paints have the greatest cooling effect. To apply the effectiveness reported by the literature, the albedo of the proposed surface must be at least 0.25 for walls and at least 0.4 for roofs.

Cost Considerations

Installing cool roofs and walls leads to substantial cost savings for relatively low additional input costs. Low-effort residential maintenance options, like painting walls with light-colored or more reflective paint, cost about the same as darker paint colors, and yet immediately reduce the cost of cooling the building. Cool roofs can have higher initial costs, depending on the material chosen, but these costs can be offset by lifetime energy savings.

Expanded Mitigation Options

Pair with Measure E-21, *Install Cool Pavements*, in Table 3-2 to adopt cool pavements. This measure could also be paired Measure E-15, *Require All-Electric Development*, to eliminate the implementation disbenefit of worsened air quality, further discussed below under *Quantified Co-Benefits*.

GHG Reduction Formula

$$H_T = H_N + H_S + H_E + H_W$$

$$L_T = \sum L_z \times \frac{H_z}{H_T}$$

$$A = [((I_R \times G_R \times H_R) + (I_T \times L_T \times H_T)) \times M \times O \times Q \times R]$$

$$-[((J_R \times G_R \times H_R) + (J_T \times L_T \times H_T)) \times N \times P \times Q \times R]$$

GHG Calculation Variables

Many of the values for the variables in this equation can be obtained from the Lawrence Berkeley National Laboratory's Cool Surface Savings Explorer (Explorer) (Levinson et al. 2019). The Explorer is an Excel tool that parses a database containing the results of whole-building model simulations that calculate the building energy changes from the use of cool walls and cool roofs under various scenarios for different building types in California.

ID	Variable	Value	Unit	Source
Output				
A	Reduction in GHG emissions from building energy	[ ]	MT CO_2e per year	calculated
L_T	Composite solar availability factor of non-roof building sides to be cooled	[ ]	unitless	calculated
H_T	Total area of non-roof building sides to be cooled (N+S+E+W)	[ ]	KSF	calculated
User Inputs				
B	Building type	[ ]	text	user input
C	Building climate zone	1–16	integer	user input
D	Building orientation	[ ]	text	user input
E	Building side(s) to be cooled (N, S, E, W & roof)	[ ]	text	user input
F	Albedo of cool surface(s)	0.25–0.60	unitless	user input
G_R	Coverage of cool roof material	0–100	%	user input
H_z	Coverage of cool building side z (N, S, E, W, R [roof])	[ ]	KSF	user input
Constants, Assumptions, and Available Defaults				
I_R	Change in natural gas use of building (roof only)	Savings Explorer	therm per year per m^2	Levinson et al. 2019
I_T	Change in natural gas use of non-roof building sides (N+S+E+W)	Savings Explorer	therm per year per m^2	Levinson et al. 2019

ID	Variable	Value	Unit	Source
J_R	Change in electricity use of building (roof only)	Savings Explorer	kWh per year per m^2	Levinson et al. 2019
J_T	Change in electricity use of non-roof building sides (N+S+E+W)	Savings Explorer	kWh per year per m^2	Levinson et al. 2019
K_z	Wall canyon aspect ratio of building side z (N, S, E, W)	Table E-4.1	unitless	Levinson 2019
L_z	Solar availability factor of building side z (N, S, E, W)	Table E-4.2	unitless	Levinson 2019
M	Carbon intensity of residential natural gas	117	lb CO_2e per MMBtu	U.S. EPA 2020
N	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
O	Conversion from therm to MMBtu	0.1	MMBtu per therm	conversion
P	Conversion from kWh to MWh	0.001	MWh per kWh	conversion
Q	Conversion from lb to MT	0.000454	MT per lb	conversion
R	Conversion from KSF to m^2	92.9	m^2 per KSF	conversion

Further explanation of key variables:

- (B) – The building type is needed to run the Explorer, further discussed under (I). The Explorer provides two types of residential buildings and eight types of commercial buildings.
- (C) – Climate zones are specific geographic areas of similar climatic characteristics, including temperature, weather, and other factors that affect building energy use. The CEC has specified numerous EDFZs in California, which are referenced in CEC's Commercial Forecast and RASS. Note that this measure references the 16 building climate zones (BCZs) that were developed for Title 24 Standards and differ from the EDFZs. Users should ensure that they are selecting the appropriate BCZ by referring to Figure E-4.1 in Appendix C (CEC 2020). Alternatively, users can search for the appropriate BCZ by looking up the project address or zip code in the CEC's web-based interactive map (CEC 2018). The BCZ is needed to run the Explorer, further discussed under (I).
- (D) – The building orientation is needed to run the Explorer, further discussed under (I). Building orientation refers to whether the building's longer axis runs east-west or north south.
- (E) – The building side(s) to be cooled is needed to run the Explorer, further discussed under (I). The Explorer provides 16 combinations of sides for the user to choose from. Note that the user cannot select roof at the same time as a wall, so the Explorer will need to be run twice for projects that include both cool walls and cool roofs.
- (F) – The albedo of the cool surface is needed to run the Explorer, further discussed under (I). The energy changes outputted by the Explorer are based on a scenario of a roof with an aged roof albedo of 0.10 and walls with an aged albedo of 0.25. The Explorer provides several options for modified albedo: walls = 0.4, 0.6; roofs = 0.25,

0.4, and 0.6. Users should exercise caution in interpreting their results if the project would have different albedos than provided.

- (G_R) – The coverage of the cool roof material represents the percent of the roof area that is a cool roof.
- (H_Z) – The area of building side to be cooled represents the area of the building side minus any area that would not be covered in cool materials.
- (I_R, I_T, J_R and J_T) –The change in annual building electricity use and natural gas consumption per square meter of building surface modified can be obtained from the Explorer. Increased cool surfaces would result in a heating penalty (i.e., increase in gas consumption to heat the building and, for select commercial buildings, any electricity that provides auxiliary heat) and a cooling savings (i.e., decrease in electricity to cool and fan the building).[22] Users can run the Explorer to output these values using the following instructions.[23]
  1. Download the tool and database from the ZIP archive online at http://bit.ly/2Kwvtpu. To install, copy the two files to a local folder.
  2. Open the Savings Explorer file. Click the "Launch Simulation Selector" button.
  3. The following inputs should be the same for all projects: simulation region = California; building vintage = new,[24] property = site energy; metric = savings intensity.
  4. The first query of the Explorer should be done to output energy intensity values for roofs (I_R and J_R). The second query should be done for building sides (I_T and J_T).
     a. The following inputs should be specified based on project-specific information.
        i. Building type (class/category) = (B).
        ii. Building climate zone (location) = (C).
        iii. Building orientation = (D).
        iv. Building side(s) to be cooled = (E). The first query should be roofs only, if applicable. The second should be the applicable building sides.
        v. Albedo of cool surface(s) = (F).
     b. Once all inputs are specified from #3 and #4, the Explorer will update the variables and results in columns A and B of the workbook.
     c. Sum the results from Column B for cooling, electric heating, and fan. This represents the change in electricity use for cool roofs (J_R). Take the gas heating results from Column B, which represents the change in natural gas use for cool roofs (I_R).
  5. Repeat #4 for the building sides to output (J_T and I_T).
- (K_z) – Table E-4.1 presents the four canyon aspect ratios used by Levinson (2019) to determine standard solar availability factors (SAF) for each wall direction. The canyon aspect ratio is the ratio of the project wall height to nearest building separation. The

[22] As the effects of climate change become more severe, temperatures and solar radiation during the winter may continually increase. The heating penalty may therefore be lower in future years, making this measure more effective at reducing GHG emissions.

[23] See additional instruction in Appendix P, Section 4 of Levinson et al. (2019).

[24] *New* as termed in the Explorer refers to buildings compliant with the 2016 Title 24 Standards. The latest Title 24 Standards are from 2019 and are updated every 3 years. Users should exercise caution in interpreting their results for future years subject to more stringent Title 24 Standards.

user should select the canyon aspect ratio that best corresponds to each project's cool wall to appropriately lookup the SAFs (Lz) in Table E-4.2.

- (L_z) – Table E-4.2 presents the average U.S. SAFs by cardinal direction and canyon aspect ratio. The SAFs are presented for two scenarios, one in which the neighboring building has cool walls and one in which it has conventional walls. The solar availability of the walls at the project building can be lowered by shadows cast by neighboring buildings and raised by sunlight reflected from neighboring buildings. The SAFs are used in the GHG reduction formula to adjust the values for energy use change from Levinson et al. (2019), which were based on model simulations with isolated buildings that were not surrounded by any buildings.
- (M) – The carbon intensity of residential natural gas was calculated in terms of CO_2e by multiplying the U.S. natural gas combustion emission factors for CO_2, CH_4, and N_2O (U.S. EPA 2020) by the corresponding 100-year GWP values from the IPCC's Fourth Assessment Report (IPCC 2007). See Table E-4.5 in Appendix C for more natural gas emission factors.
- (N) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year not referenced in Appendix C), the user should use that specific value in the GHG calculation formula. If the electricity provider is not known, users may elect to use the statewide grid average carbon intensity.

GHG Calculation Caps or Maximums

It is assumed that the electricity demand of the user's project is currently being met by grid energy that requires *some* amount of fossil fuel-based energy generation, which emits GHGs from fuel combustion. In other words, the local electricity provider has an energy intensity factor (lb of CO_2e per MWh) greater than zero. For projects that are served by electricity providers already with a renewable portfolio of 100 percent, this measure could have no reduction on GHG emissions. If the electricity provider is using REC to meet a 100 percent renewable portfolio goal, then some emissions reductions may be achieved. In situations where the electricity from the electricity provider is already carbon free, this measure would increase GHG emissions by requiring additional natural gas consumption for building heating. This measure would still result in the co-benefit of reduced electricity use, enhanced energy security, and reduced urban heat island effect.

Mutually Exclusive Measures

If the user selects Measure E-15, *Require All-Electric Development*, they should exercise caution in quantifying the effect of this measure, given that it was developed assuming the residence would be supplied with natural gas (e.g., space heating).

Example GHG Reduction Quantification

The user reduces building energy emissions by providing a cool roof and walls in place of dark roofs and walls. In this example, the measure would be implemented in BCZ 7 (C) for a single-family home (B) with a fully covered (i.e., 100%) 1 KSF cool roof (G_R), and all building sides of 1 KSF covered in cool materials (H_z or H_N, H_S, H_E, H_W, and H_R). The project is located on a residential street with conventional surrounding buildings and has a canyon aspect ratio of 0.2 for all walls (K_z). Using this information, the SAFs (L_z) can be looked up in Table E-4.2. The electricity and natural gas use changes for the roof (I_R and J_R) and walls (I_T and J_T) can be looked up using the Explorer. The project is in San Diego Gas and Electric's service territory and would begin operation by 2022. It would, therefore, have an electricity carbon intensity of 542 lb CO_2e per MWh (N). In this example, emissions would be reduced by 0.3 MT CO_2e per year.

$$H_T = \mathbf{1\ KSF} + \mathbf{1\ KSF} + \mathbf{1\ KSF} + \mathbf{1\ KSF} = 4\ KSF$$

$$L_T = \left(1.02 \times \frac{\mathbf{1\ KSF}}{4\ KSF}\right) + \left(0.95 \times \frac{\mathbf{1\ KSF}}{4\ KSF}\right) + \left(0.96 \times \frac{\mathbf{1\ KSF}}{4\ KSF}\right) + \left(0.95 \times \frac{\mathbf{1\ KSF}}{4\ KSF}\right) = 0.9$$

$$A = \left\lceil \left(\left(\frac{-0.003\ therm}{yr \cdot m^2} \times \mathbf{100\%} \times \mathbf{1\ KSF}\right) + \left(\frac{-0.005\ therm}{yr \cdot m^2} \times 0.97 \times 4\ KSF\right)\right) \times \frac{117\ lb\ CO_2e}{MMBtu} \times \frac{0.1\ MMBtu}{therm} \times \frac{0.000454\ MT}{lb} \times \frac{92.9\ m^2}{KSF} \right\rfloor$$

$$- \left\lceil \left(\left(\frac{2.383\ kWh}{yr \cdot m^2} \times \mathbf{100\%} \times \mathbf{1\ KSF}\right) + \left(\frac{2.242\ kWh}{yr \cdot m^2} \times 0.97 \times \mathbf{4\ KSF}\right)\right) \times \frac{542\ lb\ CO_2e}{MWh} \times \frac{0.001\ MWh}{kWh} \times \frac{0.000454\ MT}{lb} \times \frac{92.9\ m^2}{KSF} \right\rfloor = \frac{-0.3\ MT\ CO_2e}{yr}$$

Quantified Co-Benefits

While the measure will achieve electricity savings, it can increase fuel consumption and potentially worsen ambient air quality. This measure also has direct climate resiliency benefits. Refer to Measure EH-3, *Install Heat-Reducing Roof*, in Chapter 4, *Assessing Climate Exposures and Measures to Reduce Vulnerabilities*.

Worsened Air Quality

While not quantified in this Handbook, lowered ambient air temperatures as a result of the reduced urban heat island effects (which can be significant if adoption is widespread) can decrease ozone formation, improving air quality.

If natural gas is used for heating, the increase in natural gas fuel consumption from this measure could result in local worsening of air quality. If electric heating is used at the project site, then there would not be an increase in criteria pollutants or worsened air quality. The increase in criteria pollutant emissions (U) resulting from the measure can be calculated as follows.

Energy Savings (Increased Fuel)

The increase in building natural gas consumption (S) and decrease in electricity use (T) achieved by the measure can be calculated as follows.

Natural Gas Increase Formula

$$S = ((I_R \times G_R \times H_R) + (I_T \times L_T \times H_T)) \times R$$

Electricity Reduction Formula

$$T = ((J_R \times G_R \times H_R) + (J_T \times L_T \times H_T)) \times R$$

Criteria Pollutant Emission Increase Formula

$$U = O \times V \times S \times W$$

Criteria Pollutant Emission Increase Calculation Variables

ID	Variable	Value	Unit	Source
Output				
U	Increase in criteria pollutant emissions from building energy	[ ]	ton per year	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
V	Criteria pollutant emission factors of natural gas	Table E-4.5	lb per MMBtu	U.S. EPA 1998
W	Conversion from lb to ton	0.0005	tons per lb	conversion

Further explanation of key variables:

- (V) – Table E-4.5 presents the criteria pollutant emission factors of natural gas for residential and commercial uses (U.S. EPA 1998).
- Please refer to the *GHG Calculation Variables* table above for definitions of variables that have been previously defined.

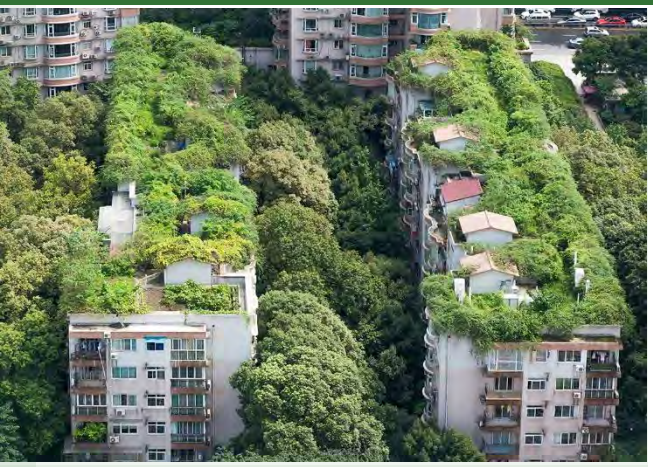
Sources

- California Energy Commission (CEC). 2018. EZ Building Climate Zone Search. Available: https://caenergy.maps.arcgis.com/apps/webappviewer/index.html?id=4831772c00eb4f729924167244bbca22. Accessed: January 2021.
- California Energy Commission (CEC). 2020. *Building Climate Zones*. August. Available: https://caenergy.maps.arcgis.com/home/item.html?id=eaf3158767674e6cb14f4407186d3607. Accessed: January 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)].

Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.

- Levinson, R. 2019. *Using Solar Availability Factors to Adjust Cool-Wall Energy Savings for Shading and Reflection by Neighboring Buildings*. March. Available: https://escholarship.org/content/qt0hf5m90n/qt0hf5m90n.pdf. Accessed: January 2021.
- Levinson, R., G. Ban-Weiss., P. Berdahl., C. Sharon., H. Destaillats., N. Dumas., H. Gilbert., H. Goudey., S. Houzé de l'Aulnoit., J. Kleissl., K. Benjamin., Y. Li, Y. Long, A. Mohegh, N. Nazarian, M. Pizzicotti, P. Rosado, M. Russell, J. Slack, X. Tang, J. Zhang, and W. Zhang. 2019. *Solar-Reflective "Cool" Walls: Benefits, Technologies, and Implementation*. Available: https://doi.org/10.20357/B7SP4H. Accessed: March 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 1998. *AP 42, Fifth Edition, Volume I. Chapter 1: External Combustion Sources. 1.4, Natural Gas Combustion*. July. Available: https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. *Emission Factors for Greenhouse Gas Inventories*. March. Available: https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf. Accessed: March 2021.

E-5. Install Green Roofs in Place of Dark Roofs



GHG Mitigation Potential

Potentially small reduction in GHG emissions from building energy use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Installing green roofs increases resilience by absorbing less heat and keeping buildings cool, increasing the building's adaptive capacity to extreme heat. This also reduces the strain on the overall grid, particularly the risk of power outages during peak loads, and can reduce energy costs. Green roofs have a smaller heat island reduction effect than certified cool roofs but nonetheless are an improvement over conventional roofs.

Health and Equity Considerations

Green roofs provide additional insulation that can keep buildings cooler in the summer and warmer in the winter, reducing energy costs year-round. This can help protect health and increase economic resilience for vulnerable and low-income residents.

Measure Description

This measure will install green roofs in place of dark roofs. Green roofs consist of a layer of vegetation on top of buildings, which provides natural insulation and climate control benefits. This reduces the electricity and natural gas needed to provide cooling and heating, thereby reducing associated GHG emissions.

Subsector

Energy Efficiency Improvements

Scale of Application

Project/Site

Implementation Requirements

See measure description.

Cost Considerations

Green roofs are usually more expensive to install than conventional dark roofs; however, these costs can be quickly offset by reduced energy usage through better insulation, improved stormwater management, and, in some cases, an extended lifespan. Green roof maintenance costs include irrigation, weed control, and fertilizer in order to maintain the vegetation; however, green roofs generally cost substantially less than conventional roofs or cool roofs over a 50-year lifecycle.

Expanded Mitigation Options

Use native plants on the roof for improved ecosystem health, drought-tolerant plants for water conservation, or plant an edible garden for enhanced food security.

GHG Reduction Formula

$$A = D \times [(-E \times G \times I \times J) + (-F \times H \times K \times J)]$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Reduction in GHG emissions from building energy	[ ]	MT CO_2e per year	calculated
User Inputs				
B	Building type	[ ]	text	user input
C	Project location (city)	[ ]	text	user input
D	Roof area	[ ]	KSF	user input
Constants, Assumptions, and Available Defaults				
E	Natural gas savings with measure	Table E-5.1	therm per year per KSF	Sailor et al. 2008
F	Electricity savings with measure	Table E-5.1	kWh per year per KSF	Sailor et al. 2008
G	Carbon intensity of natural gas	Table E-4.5	lb CO_2e per MMBtu	U.S. EPA 2020
H	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
I	Conversion from therm to MMBtu	0.1	MMBtu per therm	conversion
J	Conversion from lb to MT	0.000454	MT per lb	conversion
K	Conversion from kWh to MWh	0.001	MWh per kWh	conversion

Further explanation of key variables:

- (B) – The housing and building types are needed to look up the energy savings for residential and office development (E and F). If the user's building type of interest is not presented in Table E-5.1 in Appendix C, they should exercise caution in extrapolating the results from the listed building types.
- (C) – The project location (i.e., city) is used to look up the energy savings for residential and commercial development (E and F). If the user's city of interest is not presented in Table E-5.1, they should use their judgment to select a listed city that has similar climate and precipitation.
- (E and F) – The Green Roof Energy Calculator is a free, web-based tool developed in 2008 by academic researchers on behalf of the U.S. Green Building Council. The purpose of the tool is to enable architects, developers, and others to obtain quick estimates of how green roof design decisions might affect building energy use. To provide the user with a range of energy savings, the tool was run for the two available building types and five California cities using conservative values for the remainder of the tool inputs. These results are summarized in Table E-5.1. If the user can provide

project-specific values for tool inputs (i.e., growing media depth, leaf area index, irrigation, percent of total roof coverage, roof material albedo), then they should run the tool themselves and use the outputted energy savings in place of the values in Table E-5.1 (Sailor et al. 2008). Additionally, the user can consider calculating their energy savings from this measure using U.S. DOE's EnergyPlus, a more complex, robust model that requires more energy expertise and project inputs (U.S. DOE 2020).

- (G) – The carbon intensity of natural gas was calculated in terms of CO_2e by multiplying the U.S. natural gas combustion emission factors for CO_2, CH_4, and N_2O (U.S. EPA 2020) by the corresponding 100-year GWP values from the IPCC's Fourth Assessment Report (IPCC 2007). Table E-4.5 in Appendix C provides natural gas CO_2e emission factors for residential and commercial uses.
- (H) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year not referenced in Tables E-4.3 and E-4.4), the user should use that specific value in the GHG calculation formula. If the electricity provider is not known, the user may elect to use the statewide grid average carbon intensity.

GHG Calculation Caps or Maximums

It is assumed that the energy demand of the user's project is currently being met by grid electricity that requires *some* amount of fossil fuel–based energy generation and/or onsite natural gas, both of which emit GHGs from fuel combustion. In other words, the local electricity provider has an energy intensity factor (lb of CO_2e per MWh) greater than zero and/or the project consumes natural gas onsite for building energy. For all-electric projects that are served by electricity providers already with a renewable portfolio of 100 percent, this measure could have no reduction in GHG emissions. If the electricity provider is using REC to meet a 100 percent renewable portfolio goal, then some emissions reductions may be achieved. This measure would still result in the co-benefits of reduced electricity use, enhanced energy security, and reduced urban heat island effect.

Mutually Exclusive Measures

If the user selects Measure E-15, *Require All-Electric Development*, they should exercise caution in quantifying the effect of this measure, given that some of the constants and available defaults were developed with the assumption that the building would be supplied with natural gas.

One option for including the quantified emissions reduction from this measure alongside those achieved by Measure E-15 would be to exclude all of the natural gas–related effects from this measure. In other words, (E) should be zeroed out in the above equation. Note that doing this may result in an underestimation of emissions reductions; green roofs provide additional insulation that can keep buildings warmer in the winter, as evidenced by Table E-5.1.

Example GHG Reduction Quantification

The user reduces building energy emissions by providing a green roof in place of a dark roof. In this example, the measure would be implemented in the city of Sacramento (C) for a mid-rise apartment complex (B) that has a roof area of 5 KSF. Therefore, the natural gas savings would be 8.2 therms per year per KSF (E), and the additional electricity savings would be 37.6 kilowatt-hours per year per KSF (F). The project is in Sacramento Municipal Utility District's (SMUD's) service territory and would begin operation by 2022. It would therefore have an electricity carbon intensity of 344 lb CO_2e per MWh (H). The mitigated emissions would be reduced by 0.32 MT CO_2e per year.

$$A = \mathbf{5\ KSF} \times \left[\left(\frac{-8.2\ \text{therm}}{\text{yr·KSF}} \times \frac{117\ \text{lb } CO_2e}{\text{MMBtu}} \times \frac{0.1\ \text{MMBtu}}{\text{therm}} \times \frac{0.000454\ \text{MT}}{\text{lb}}\right) + \left(\frac{-126.7\ \text{kWh}}{\text{yr·KSF}} \times \frac{344\ \text{lb } CO_2e}{\text{MWh}} \times \frac{0.001\ \text{MWh}}{\text{kWh}} \times \frac{0.000454\ \text{MT}}{\text{lb}}\right)\right] = -0.32\ \frac{\text{MT } CO_2e}{\text{yr}}$$

Quantified Co-Benefits

This measure also has direct climate resiliency benefits. Refer to Measure EH-3, Install Heat-Reducing Roof, in Chapter 4, *Assessing Climate Exposures and Measures to Reduce Vulnerabilities*.

Energy and Fuel Savings

The user would decrease the building natural gas consumption (E X D X I) and, depending on the climate zone for the project area, either decrease or increase the electricity use (F X D X K).

Improved Air Quality

The reduction in natural gas fuel consumption from this measure would result in local improvements in air quality because the fuel consumption occurs on site of the project. The reduction in criteria pollutant emissions (L) achieved by the measure can be calculated as follows.

Criteria Pollutant Emission Reduction Formula

$$L = \mathbf{D} \times -E \times M \times I \times N$$

Criteria Pollutant Emission Reduction Calculation Variables

ID	Variable	Value	Unit	Source
Output				
L	Reduction in criteria pollutant emissions from building energy	[ ]	tons per year	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
M	Criteria pollutant emission factors of natural gas	Table E-4.5	lb per MMBtu	U.S. EPA 1998
N	Conversion from lb to ton	0.0005	tons per lb	conversion

Further explanation of key variables:

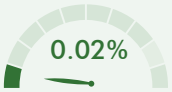
- (M) – Table E-4.5 presents the criteria pollutant emission factors of natural gas for residential and commercial uses (U.S. EPA 1998).
- Please refer to the *GHG Calculation Variables* table above for definitions of variables that have been previously defined.

Sources

- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- Sailor, D., B. Brass, and S. Peck. 2008. *Green Roof Energy Calculator*. Available: https://sustainability.asu.edu/urban-climate/green-roof-calculator/. Accessed: January 2021.
- U.S. Department of Energy. 2020. *EnergyPlus™*. September. Available: https://energyplus.net/. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 1998. *AP 42, Fifth Edition, Volume I. Chapter 1: External Combustion Sources. 1.4, Natural Gas Combustion*. July. Available: https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. *Emission Factors for Greenhouse Gas Inventories*. March. Available: https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf. Accessed: March 2021.

E-6. Encourage Residential Participation in Existing Demand Response Program(s)

GHG Mitigation Potential



Up to 0.02% reduction in GHG emissions from residential building electricity

Co-Benefits (icon key on pg. 34)

Climate Resilience

Strategic energy conservation during demand response events reduces the strain on the overall grid, particularly the risk of power outages during peak loads. It can also reduce energy costs, particularly if extreme heat would otherwise increase these costs.

Health and Equity Considerations

Demand response programs can help residents save money on utility costs and reduce exposure to extreme heat, supporting greater resilience to climate health impacts. This can be especially critical for low-income and vulnerable residents.

Measure Description

This measure will require marketing and promotion of the local utility's manual (i.e., behavioral) demand response program(s) to encourage participation from residents in the project area. Buildings contribute to GHG indirectly through electricity consumption. During demand response events, program users shift or conserve electricity, thereby reducing the associated indirect GHG emissions. Methods of engaging customers in demand response efforts include offering time-based rates, such as time-of-use pricing, critical peak pricing, variable peak pricing, real-time pricing, and critical peak rebates. Users are encouraged to respond to time-based rates or other forms of financial incentives with smart phone app, email, phone call, and/or text notifications.

Subsector

Energy Efficiency Improvements

Scale of Application

Project/Site or Plan/Community

Implementation Requirements

See measure description.

Cost Considerations

The cost of providing the demand response program is borne by the local utility. Property owners will realize cost savings from reduced electricity use.

Expanded Mitigation Options

The electricity reduction cited in the GHG emissions quantification methodology is based on a *manual* demand response program. Residential participation in an *automated* program, which requires smart appliances for the relevant end uses and appliances (e.g., heating and cooling, dishwashers, washing machines), can reduce user fatigue while improving the electricity reduction rates, yielding improved GHG emissions reductions.

GHG Reduction Formula

$$A = -\left(B \times C \times \frac{D}{E}\right)$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from residential electricity	0–0.2	%	calculated
User Inputs				
B	Level of participation	0–100	%	user input
Constants, Assumptions, and Available Defaults				
C	Electricity reduction during demand response event	18	%	CEC 2020
D	Average number of demand response events	100	hours per year	U.S. DOE 2010
E	Hours in a year	8,760	hours per year	conversion

Further explanation of key variables:

- (A) – The output provides the percent reduction in GHG emissions from residential building *electricity*. To determine the percent reduction in GHG emissions from total residential building *energy* (i.e., electricity plus natural gas), the user would need to know the percent of total GHG emissions from electricity. For example, if 40 percent of building energy emissions come from electricity, the percent reduction in GHG emissions from total building energy could be calculated as follows.

  $$A_{energy} = (40\% \times A_{electricity})$$

  Further, to determine the percent reduction in GHG emissions for a project with multiple residential buildings, the user would need to know the percent of total building energy emissions from each building. For example, if 67 percent of building energy emissions come from Building 1 and 33 percent come from Building 2, the percent reduction in GHG emissions from all building energy could be calculated as follows.

  $$A_{energy\_total} = (67\% \times A_{energy\_1}) + (33\% \times A_{energy\_2})$$

- (B) – The level of participation refers to the percentage of households in the project area that enroll in the demand response program.
- (C) – OhmConnect is a demand response provider that challenges its users to reduce consumption during critical energy periods (i.e., events). OhmConnect measures the users' actual consumption against a calculated historical baseline and rewards them for the difference. A study of California OhmConnect users found that, on average, users reduced their energy consumption by 0.15 kWh, or 18 percent, during an

OhmConnect demand response event relative to what they would have consumed without an event (CEC 2020).

- (D) – It was estimated that demand response for managing peak loads involves, at most, 100 hours a year (U.S. DOE 2010). The user should input a project-specific value in the GHG reduction formula, if available.

GHG Calculation Caps or Maximums

It is assumed that the project's electricity demand is currently being met by grid electricity that requires *some* amount of fossil fuel–based energy generation, which emits GHGs from fuel combustion. In other words, the local electricity provider has an energy intensity factor (lb of CO_2e per MWh) greater than zero. For projects that are served by electricity providers already with a renewable portfolio of 100 percent, this measure could have no reduction in GHG emissions. If the electricity provider is using REC to meet a 100 percent renewable portfolio goal, then some emissions reductions may be achieved. This measure would still result in the co-benefits of reduced electricity use and enhanced energy security.

Example GHG Reduction Quantification

The user reduces the residential electricity consumption by providing incentives for expanded participation in an existing demand response program. In this example, the expected level of participation is 100 percent of households in the study area (B). The user would reduce GHG emissions from residential electricity by 0.2 percent.

$$A = -\left(100\% \times 18\% \times \frac{100\ \frac{hr}{yr}}{8{,}760\ \frac{hr}{yr}}\right) = -0.2\%$$

Quantified Co-Benefits

Energy and Fuel Savings

The percent reduction in residential building electricity achieved by the measure is the same as the percent reduction in GHG emissions (A).

Sources

- California Energy Commission (CEC). 2020. *Identifying Effective Demand Response Program Designs for Residential Customers*. November. Available: https://innovation.luskin.ucla.edu/wp-content/uploads/2021/01/Identifying-Effective-Demand-Response-Program-Designs-for-Residential-Customers.pdf. Accessed: October 2021.
- U.S. Department of Energy (U.S. DOE). 2010. *The Smart Grid: An Estimation of the Energy and CO_2 Benefits*. January. Available: https://energyenvironment.pnnl.gov/news/pdf/PNNL-19112_Revision_1_Final.pdf. Accessed: October 2021.

E-7. Require Higher Efficacy Public Street and Area Lighting

GHG Mitigation Potential

Potentially moderate reduction in GHG emissions from street lighting

Co-Benefits (icon key on pg. 34)

Climate Resilience

Installation of more efficient lights can reduce the strain on the overall grid and reduce energy costs.

Health and Equity Considerations

Blue or full spectrum light may increase perceptions of safety but inhibit sleep patterns of nearby residents and reduce night sky visibility. Work with communities to determine appropriate color temperatures.

Measure Description

This measure will require the installation of higher efficacy public street and area lighting in place of typical or existing lamps. Lighting sources contribute to GHG indirectly through the production of the electricity that powers the lights. Installing more efficacious lamps, such as light-emitting diodes (LEDs), will use less electricity while producing the same amount of light, thereby reducing the associated indirect GHG emissions. In a 2012 survey of 212 California cities, 852,000 of the 1,100,000 streetlights (76 percent) were identified as high-pressure sodium lamps, while only 2 percent were LEDs (CLTC 2012).

Subsector

Energy Efficiency Improvements

Scale of Application

Plan/Community

Implementation Requirements

Users may take credit only if they are retrofitting existing street and area lights. This includes streetlights, pedestrian pathway lights, area lighting for parks and parking lots, and outdoor lighting around public buildings.

Cost Considerations

More energy-efficient lighting options are typically more expensive than less efficient ones, leading to greater installation costs. However, the replacement of less efficient lighting with more efficient bulbs reduces energy consumption and thereby reduces energy costs. Additionally, the rated life of more efficient bulbs is typically longer than less efficient ones, which reduces the frequency of replacement costs.

Expanded Mitigation Options

Incorporation of solar fixtures onto the street and area traffic lights would further reduce grid-supplied electricity consumption and associated emissions.

GHG Reduction Formula

$$A = \frac{B_1 \times C_1 - B_2 \times C_2}{B_1 \times C_1}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from outdoor street and area lighting	[ ]	%	calculated
User Inputs				
B_1	Number of existing lighting heads to be replaced	[ ]	lighting heads	user input
B_2	Number of proposed new lighting heads	[ ]	lighting heads	user input
C_1	Average power rating of existing lamp type	[ ]	watts	user input
C_2	Average power rating of proposed lamp type	[ ]	watts	user input
Constants, Assumptions, and Available Defaults				
	None			

Further explanation of key variables:

- (B_1 and B_2) – The number of existing and proposed lighting heads are required in the GHG reduction formula in case the new type of lamp results in less heads needing to be installed.
- (C_1 and C_2) – Lumens are the measure of the amount of light perceived by the human eye. Luminous efficacy is the amount of visible light emitted for a given amount of power. This measure assumes that the replacement lighting would provide the same number of lumens per area as the existing lighting and that only the power rating would change. See Table E-7.1 in Appendix C for a range of typical power ratings and efficacies of various outdoor lamp types (CLTC 2015). These values are for reference only for providing the user a list of existing and replacement lighting options. The user should input project-specific values in the GHG reduction formula, if available.

GHG Calculation Caps or Maximums

It is assumed that the electricity demand of the project's lighting is currently being met by grid electricity that requires *some* amount of fossil fuel–based energy generation, which emits GHGs from fuel combustion. In other words, the local electricity provider has an energy intensity factor (lb of CO_2e per MWh) greater than zero. For projects that are served by electricity providers already with a renewable portfolio of 100 percent, this measure could have no reduction in GHG emissions. If the electricity provider is using REC to meet a 100 percent renewable portfolio goal, then some emissions reductions may be achieved. This measure would still result in the co-benefits of reduced electricity use and enhanced energy security.

Example GHG Reduction Quantification

The user reduces the energy consumption of outdoor lighting by installing higher efficacy lighting. If the number of existing and proposed lighting heads are both 100 (B_1 and B_2), the power rating of the existing high-pressure sodium lamps is 120 watts, and the power rating of the proposed LED lamps is 80 watts, the user would reduce GHG emissions from outdoor lighting by 33.3 percent.

$$A = \frac{100 \text{ heads} \times 120 \text{ watts} - 100 \text{ heads} \times 80 \text{ watts}}{100 \text{ heads} \times 120 \text{ watts}} = -33.3\%$$

Quantified Co-Benefits

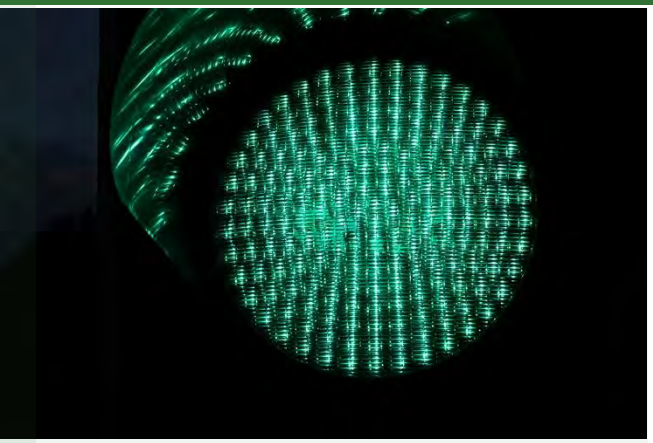
Energy and Fuel Savings

The percent reduction in electricity achieved by the measure is the same as the percent reduction in GHG emissions (A).

Sources

- California Lighting Technology Center (CLTC). 2012. *The State of Street Lighting in California, 2012.* University of California, Davis. February. Available: https://cltc.ucdavis.edu/publication/state-street-lighting-california-2012. Accessed: January 2021.
- California Lighting Technology Center (CLTC). 2015. *2013 Title 24, Part 6 Outdoor Lighting Guide.* University of California, Davis. March. Available: https://cltc.ucdavis.edu/sites/default/files/files/publication/2013-title-24-outdoor-lighting-guide-mar15.pdf. Accessed: January 2021.

E-8. Replace Incandescent Traffic Lights with LED Traffic Lights



GHG Mitigation Potential

Potentially large reduction in GHG emissions from traffic light electricity use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Installation of more efficient lights can reduce the strain on the overall grid and reduce energy costs.

Health and Equity Considerations

LED signal lights last longer than their incandescent counterparts, potentially improving traffic safety as they burn out less frequently.

Measure Description

This measure will replace incandescent traffic lights with more energy-efficient LED traffic lights. Installing LEDs reduces electricity demand and thus results in a reduction in indirect GHG emissions.

Subsector

Energy Efficiency Improvements

Scale of Application

Plan/Community. Not applicable at the Project/Site-scale, unless the development project requires modification of existing roadway infrastructure, including traffic lights.

Implementation Requirements

New traffic lights are required to be LED and meet minimum federal efficiency standards. User may take credit only if they are retrofitting existing incandescent traffic lights. Also, this measure may not be suitable in areas that receive substantial snowfall, which may cover and block light, unless the traffic lights are outfitted with winter-ready designs that prevent snow accumulation

Cost Considerations

LED lights are much more energy-efficient than incandescent lights, and greatly reduce energy consumption and increase cost savings. LED lights are typically more expensive than less efficient incandescent and incur greater costs from the initial purchase. However, the rated life of LEDs is typically longer than that of less efficient bulbs, which reduces the frequency of replacement costs.

Expanded Mitigation Options

Incorporation of solar fixtures onto the traffic lights would further reduce grid-supplied electricity consumption and associated emissions.

GHG Reduction Formula

$A = B \times C$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from traffic light electricity use	0–85	%	calculated
User Inputs				
B	Percentage of incandescent traffic lights in project study area to be retrofitted	0–100	%	user input
Constants, Assumptions, and Available Defaults				
C	Percent reduction in power consumption from LED lights compared to incandescent lights	85	%	U.S. DOE 2004

Further explanation of key variables:

- (B) – This methodology assumes that all the existing traffic lights only use incandescent bulbs. If the existing traffic lights are a mix of incandescent and LED bulbs, the LEDs should be excluded from the total number of lights that is used to determine the percentage for this variable.
- (C) – The percent reduction of 85 percent in power consumption is based on an average incandescent bulb power of 109 watts and an average LED bulb power of 17 watts (U.S. DOE 2004). The user should replace this default with a project-specific percent reduction in power consumption if the user knows the average wattage of the existing incandescent bulbs and/or the proposed LED bulbs.

GHG Calculation Caps or Maximums

It is assumed that the electricity demand of the project's traffic lights is currently being met by grid electricity that requires *some* amount of fossil fuel–based energy generation, which emits GHGs from fuel combustion. In other words, the local electricity provider has an energy intensity factor (lb of CO_2e per MWh) greater than zero. For projects that are served by electricity providers already with a renewable portfolio of 100 percent, this measure could have no reduction in GHG emissions. If the electricity provider is using REC to meet a 100 percent renewable portfolio goal, then some emissions reductions may be achieved. This measure would still result in the co-benefits of reduced electricity use and enhanced energy security.

Example GHG Reduction Quantification

If the user's project includes incandescent traffic lights, the user can reduce traffic light electricity by replacing the lights with LEDs. If all (i.e., 100 percent) of the incandescent lights are replaced with LED lights (B), the user would reduce GHG emissions from electricity used to power the incandescent traffic lights by 85 percent. The example measure emission reduction is calculated below.

$$A = 100\% \times 85\% = 85\%$$

Quantified Co-Benefits

Energy and Fuel Savings

(C) represents the percent energy savings for this measure. The project's electricity use from traffic lights in the study area would be reduced by up to 85 percent.

Sources

- U.S. Department of Energy (U.S. DOE). 2004. *State Energy Program Case Studies: California Says "Go" to Energy-Saving Traffic Lights*. Available: http://www.nrel.gov/docs/fy04osti/35551.pdf. Accessed: January 2021.

E-9. Utilize a Combined Heat and Power System

GHG Mitigation Potential

Potentially small reduction in GHG emissions from CHP energy generation

Co-Benefits (icon key on pg. 34)

Climate Resilience

CHP systems reduce sensitivity to fuel price shocks or scarcity and can contribute to generation capacity, reducing energy costs and the risk of outages. These systems can also provide backup energy to a building if the main grid fails during an extreme weather event.

Health and Equity Considerations

Reduction of natural gas combustion would help improve indoor air quality. However, CHP systems still involve natural gas usage, and thus localized effects of emissions on communities should be reviewed closely.

Measure Description

This measure involves using combined heat and power (CHP) systems in place of separate heat and power (SHP) systems. For the same level of power output, CHP systems use less input energy than traditional SHP generation, resulting in lower CO_2 emissions. In traditional SHP systems, heat created as a by-product is wasted as it is released into the surrounding environment. CHP systems harvest the thermal energy and use it to heat onsite uses or for processes in proximity, which reduces the amount of natural gas or other fuel that would otherwise be combusted for heating or for use in those processes. CHP systems also result in a reduced demand for electricity from the grid, which displaces the CO_2 emissions from the production of electricity from the grid.

Subsector

Energy Efficiency Improvements

Scale of Application

Project/Site

Implementation Requirements

It is possible that certain CHP systems may not be appropriate for certain locations, where the carbon intensity of the electricity provider is relatively low. In these instances, the emissions reduction will be negative, which indicates an emissions increase.

Cost Considerations

CHP systems are more efficient than systems where heat and power are produced separately. As long as the system is located near to where the power and heat are being used, CHP systems are quick and relatively inexpensive to install. Coupled with the energy savings associated with the improved efficiency, CHP systems represent a long-term potential cost savings.

Expanded Mitigation Options

Non-applicable.

GHG Reduction Formula

This section describes how to estimate emissions reductions from utilizing a CHP system to supply energy demands that would otherwise have been provided by separate heat and power systems (e.g., electricity from the grid for uses requiring electricity and boilers for thermal demand). The user should quantify emissions reductions using the U.S. EPA's (2020) CHP Energy and Emission Calculator (CHP Tool), which allows users to estimate the energy savings from displaced electricity and thermal production from 10 CHP technologies: reciprocating engine (rich burn, lean burn, and diesel) microturbine, fuel cell, combustion turbine, boiler/steam turbine, other prime mover, and waste-heat-to-power (power only, and power and thermal).

The user has the option to input project-specific data, such as fuels types, duct burner operation, cooling demand, and boiler efficiencies. The CHP Tool has the capabilities to calculate GHG emissions reduction directly from the use of CHP systems, and the user can choose to use the calculator for that purpose. To ensure consistency with the methods and factors used for other measures in this document, the user can also use the calculator to determine the energy savings and calculate the GHG reductions separately, using the methodology provided in this section.

$$A1 = [(B \times C \times D) + (E \times F) - (G \times F)] \times H$$

$$A2 = \frac{(D + G) - B}{(D + G)}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A1	Reduction in GHG emissions from use of CHP System	[ ]	MT CO_2e	calculated by user or in CHP Tool
A2	Percent reduction in GHG emissions from use of CHP System	[ ]	%	calculated by user or in CHP Tool
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
G	Fuel consumption of CHP system	[ ]	MMBtu per year	calculated in CHP Tool
F	Carbon intensity of commercial natural gas	119	lb CO_2e per MMBtu	U.S. EPA 2020
B	Displaced electricity production from CHP use	[ ]	MMBtu per year	calculated in CHP Tool
C	Conversion from MMBtu to kWh	0.2931	MWh per MMBtu	conversion

ID	Variable	Value	Unit	Source
D	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
E	Displaced thermal production from CHP use	[ ]	MMBtu per year	calculated in CHP Tool
H	Conversion from lb to MT	0.000454	MT per lb	conversion

Further explanation of key variables:

- (A1) – The methodology shown for (A1) involves the use of the fuel consumption results provided by the CHP Tool (Table 1 of the Results tab in the CHP Tool). However, the user can also use the CHP Tool to calculate GHG reductions directly (Table 2 of the Results tab in the CHP Tool). The CHP Tool allows the user to choose an electricity emissions factor (the "displaced electricity generation profile") from a pre-determined list, or it allows the user to enter a custom emission factor. If calculating GHG emissions directly in the CHP Tool, the user should enter a custom emission factor that corresponds to the applicable electricity provider for only CO_2 emissions. The CHP Tool does not allow the user to enter a CO_2e factor.
- (B, D, G) – Standard assumptions to calculate these energy quantities are from EPA's CHP Tool, which can be inputted by the user, are included below. The user should enter project-specific values if available.
  - Operation of 8,760 hours per year.
  - Provides heat only (no cooling).
  - Combusts natural gas fuel (1,028 Btu/ft^3 heat content).
  - No supplementary duct burner.
  - Assumes 4.8 percent transmission loss for displaced electricity (based on Western Interconnect assumptions from the CHP Tool).
  - Assumes thermal demand for a boiler with 80 percent efficiency.

GHG Calculation Caps or Maximums

- All caps and maximums are indicated in the EPA's CHP Tool.
- Because the electric power sector is progressively becoming a zero-carbon source, this measure may not achieve GHG reductions for some combinations of CHP system types, sizes, and other variables inputted into the CHP Tool. In those cases, the CHP Tool will return negative energy savings or emissions reductions, meaning that using a CHP system would result in an increase in energy consumption and emissions relative to using SHP generation. If considering a CHP system to reduce GHG emissions and save energy, the user should ensure that the CHP set-up actually results in reductions.

Example GHG Reduction Quantification

The user's project includes a single unit 600 kW microturbine CHP system fueled by natural gas and used for heating-only with no duct burners. The CHP system is assumed to operate for 8,760 hours per year and is displacing a new gas boiler. Parameters for both the microturbine CHP system and the displaced new gas boiler are assumed from the CHP

Tool. The electricity that is displaced by the CHP system is derived entirely from a natural gas-based powerplant. The electricity provider for the project area is Imperial Irrigation District and the analysis year is 2025. The carbon intensity of electricity is, therefore, 225 lb CO_2e per megawatt-hour (D). The energy quantities calculated from the CHP Tool are displaced electricity production (40,252 MMBtu), displaced thermal production (25,258 MMBtu), and a CHP system consumption of (59,831MMBtu). The example scenario results in a 662 MT CO_2e reduction.

$$A1 = [\left(40{,}252\ \text{MMBtu} \times 0.2931 \frac{\text{MWh}}{\text{MMBtu}} \times 225 \frac{\text{lb } CO_2e}{\text{MWh}}\right) + \left(25{,}258\ \text{MMBtu} \times 119 \frac{\text{lb } CO_2e}{\text{MMBtu}}\right) - (59{,}831\ \text{MMBtu} \times 119 \frac{\text{lb } CO_2e}{\text{MMBtu}})] \times 0.000454 \frac{\text{MT}}{\text{lb}} = \text{-662 MT } CO_2e$$

$$A2 = \frac{(40{,}252\ \text{MMBtu} + 25{,}258\ \text{MMBtu}) - 59{,}831\ \text{MMBtu}}{(40{,}252\ \text{MMBtu} + 25{,}258\ \text{MMBtu})} = 9\%$$

Quantified Co-Benefits

Improved Air Quality

The CHP Tool can calculate reductions in two criteria air pollutants (NO_x and SO_2). To quantify this co-benefit, the user should use the CHP Tool.

Energy and Fuel Savings

To calculate the energy savings for this measure (H), the user should add the displaced electricity production (D) and displaced thermal production (G) from the CHP Tool and then subtract the CHP system energy consumption (B) from the CHP Tool.

Energy Savings Formula

$$H = (D + G) - B$$

Sources

- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. *Combined Heat and Power Energy and Emissions Savings Calculator*. Available: https://www.epa.gov/chp/chp-energy-and-emissions-savings-calculator. Accessed: January 2021.

E-10-A. Establish Onsite Renewable Energy Systems–Generic

GHG Mitigation Potential

Varies

Variable reduction in GHG emissions from building energy use depending on renewable electricity generation compared to building energy consumption

Co-Benefits (icon key on pg. 34)

Climate Resilience

Installing onsite renewable energy systems provides backup generation sources that can contribute to generation capacity and reduce the risk of outages, particularly if an extreme event disrupts the grid. Onsite renewable energy can also reduce energy costs.

Health and Equity Considerations

Onsite renewable energy can provide protection against grid disruptions, which can be critical to protect the health of vulnerable people, such as seniors and those who use electric medical equipment.

Measure Description

This measure requires electricity to be generated from an onsite renewable or zero-emission power system. This displaces the electricity demand that would ordinarily be supplied by the local electricity provider. Electricity generation provided by local electricity providers have varying carbon intensities based on the portfolio of energy sources. Some renewable energy systems, such as fuel cells, may not be completely GHG emissions-free, but may still have lower emissions than the electricity provided by the local electricity provider (unless the electricity provider has a relatively high renewable portfolio), thereby reducing GHG emissions. Zero-emissions power systems, such as PV panels, result in the greatest magnitude of emissions reductions. Onsite renewable systems can also provide back-up power as an alternative to diesel generators in the event of grid power outages or demand response events.

Subsector

Renewable Energy Generation

Scale of Application

Project/Site

Implementation Requirements

Renewable energy systems powered by solar and/or wind should be quantified under Measures E-10-B or E-10-C, respectively.

Cost Considerations

Installation costs for onsite renewable energy generation vary greatly depending on the type of energy system and the size of the installation, but overall, installation costs can be high. These costs are recouped by large cost savings as the property owner can use electricity produced on site instead of purchased from the grid, or even a net profit if excess energy is sold to an electricity provider. Additionally, initial installation costs can be partially offset by credits and rebates meant to encourage renewable energy generation.

Expanded Mitigation Options

Pair with Measure E-23, *Use Microgrids and Energy Storage*, in Table 3-2 to store and then deploy surplus electricity generated from the renewable energy system. This would improve the capacity of the system to displace more grid-supplied electricity, further reducing associated emissions.

GHG Reduction Formula

$$A = \frac{-B}{C} \times \frac{E - D}{E}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from electricity use	0–100	%	calculated
User Inputs				
B	Electricity provided by onsite power system with measure	[ ]	kWh per year	user input
C	Total electricity demand	[ ]	kWh per year	user input
D	Carbon intensity of onsite power system	[ ]	lb CO_2e per MWh	user input
Constants, Assumptions, and Available Defaults				
E	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021

Further explanation of key variables:

- (D) – If the onsite power system is a zero-emission source, then the GHG emission reduction (A) is effectively equivalent to the ratio of electricity from the zero-emission system (B) to the total electricity demand (C). If the onsite power system is not a zero-emission source, then the GHG emission reduction calculation needs to consider the GHG intensity factor of the onsite power system (D) and the local electricity provider (E).
- (E) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year not referenced in Tables E-4.3 and E-4.4), the user should use that specific value in the GHG calculation formula. If the electricity provider is not known, users may elect to use the statewide grid average carbon intensity.

GHG Calculation Caps or Maximums

It is assumed that the electricity demand of the project is currently being met by grid energy that requires *some* amount of fossil fuel–based energy generation, which emits GHGs from fuel combustion. In other words, the local electricity provider has an energy intensity factor (lb of CO_2e per kWh) greater than zero. For projects that are served by electricity providers with a renewable portfolio standard of 100 percent, this measure would effectively have no reduction in GHG emissions, although it would still result in the co-benefit of enhanced energy security.

Example GHG Reduction Quantification

If the user's project consumes electricity from a local electricity provider with a non-zero carbon intensity, the user can reduce the project's emissions from electricity consumption by displacing the electricity demand met by the local electricity provider with an onsite power system. In this example, the onsite power system would provide 2,000 kWh per year (B) at a carbon intensity of 50 lb CO_2e per megawatt-hour (D). The proposed project would have a total electricity demand of 10,000 kWh per year (C). It would be constructed in Southern California Edison's service territory and would begin operation by 2022. Without this measure, the project would, therefore, have an electricity carbon intensity of 351 lb CO_2e per MWh (E). The user would reduce GHG emissions from electricity use by 17 percent.

$$A = \frac{\frac{\text{-2,000 kWh}}{\text{yr}}}{\frac{\text{10,000 kWh}}{\text{yr}}} \times \frac{\frac{\text{351 lb } CO_2e}{\text{MWh}} - \frac{\text{50 lb } CO_2e}{\text{MWh}}}{\frac{\text{351 lb } CO_2e}{\text{MWh}}} = \text{-17\%}$$

Quantified Co-Benefits

Successful implementation of this measure would reduce grid electricity, and a portion of this electricity is supplied by statewide fossil-fueled power plants, which generates criteria pollutants. However, because these power plants are located throughout the state, the reduction in electricity use from this measure will not reduce localized criteria pollutant emissions and are, therefore, not discussed.

Sources

- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.

E-10-B. Establish Onsite Renewable Energy Systems–Solar Power

GHG Mitigation Potential

Varies

Variable reduction in GHG emissions from building energy use depending on renewable electricity generation compared to building energy consumption

Co-Benefits (icon key on pg. 34)

Climate Resilience

Installing onsite renewable energy systems provides backup generation sources that can contribute to generation capacity and reduce the risk of outages, particularly if an extreme event disrupts the grid. Onsite renewable energy can also reduce energy costs.

Health and Equity Considerations

Solar panels may conflict with tree canopies, which reduces temperatures and improves public health; projects should be carefully designed to minimize these conflicts.

Measure Description

This measure requires electricity to be generated from onsite PV systems, displacing the electricity demand that would ordinarily be supplied by the local electricity provider. Electricity generation provided by local electricity providers have varying carbon intensities based on the portfolio of energy sources. Because PV systems generate zero GHG emissions, this measure displaces the emissions that would have been produced had electricity been supplied by the local electricity provider, and thus results in a reduction in GHG emissions. Onsite renewable systems can also provide back-up power as an alternative to diesel generators in the event of grid power outages.

Subsector

Renewable Energy Generation

Scale of Application

Project/Site

Implementation Requirements

See measure description.

Cost Considerations

Installation costs for solar power vary on the type and size of the generator; however, initial costs are still considered high. These costs are recouped by large cost savings as the property owner can use electricity produced on site, or even a net profit if excess energy is sold to an electricity provider. Additionally, initial installation costs can be at least partially offset by credits and rebates meant to encourage renewable energy use. Solar power may require the purchase of additional property large enough to host the generators.

Expanded Mitigation Options

Pair with Measure E-23, *Use Microgrids and Energy Storage*, in Table 3-2 to store and then deploy surplus electricity generated from the renewable energy system. This would improve the capacity of the system to displace more grid-supplied electricity, further reducing associated emissions.

GHG Reduction Formula

$$A = \frac{-B}{C}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from electricity use	0–100	%	calculated
User Inputs				
B	Electricity provided by PV system with measure	[ ]	kWh per year	user input
C	Total electricity demand	[ ]	kWh per year	user input
Constants, Assumptions, and Available Defaults				
	None			

Further explanation of key variables:

- (B) – The amount of electricity generated by a PV system depends on the size and type of the PV system and the location of the project. The user can use a publicly available solar calculator, such as the NREL PVWatts® Calculator, to estimate the size of the PV system needed to generate the desired amount of electricity. The only input required for this calculator is the location (i.e., zip code). Estimates of the amount of electricity that can be generated from 3, 5, and 10 kilowatt PV systems in cities around California are shown in Table E-10-B.1 in Appendix C (NREL 2017). Other calculators include Google's Project Sunroof (Google n.d.) and solar-estimate.org (2021).

GHG Calculation Caps or Maximums

It is assumed that the electricity demand of the user's project is currently being met by grid energy that requires *some* amount of fossil fuel–based energy generation, which emits GHGs from fuel combustion. In other words, the local electricity provider has an energy intensity factor (lb of CO_2e per kWh) greater than zero. For projects that are served by electricity providers with a renewable portfolio standard of 100 percent, this measure would effectively have no reduction in GHG emissions, although it would still result in the co-benefit of enhanced energy security.

Example GHG Reduction Quantification

If the user's project consumes electricity from a local electricity provider with a non-zero carbon intensity, the user can reduce the project's emissions from electricity consumption by displacing the electricity demand met by the local electricity provider with an onsite solar photovoltaic system. If the total electricity demand is 10,000 kWh per year (C), and the solar power system provides 5,000 kWh per year (B), the user would reduce GHG

emissions from electricity use by 50 percent. The example measure emission reduction is calculated below.

$$A = \frac{\frac{-5{,}000\ \text{kWh}}{\text{yr}}}{\frac{10{,}000\ \text{kWh}}{\text{yr}}} = -50\%$$

Quantified Co-Benefits

Successful implementation of this measure would reduce grid electricity, and a portion of this electricity is supplied by statewide fossil-fueled power plants, which generates criteria pollutants. However, because these power plants are located throughout the state, the reduction in electricity use from this measure will not reduce localized criteria pollutant emissions and are, therefore, not discussed.

Sources

- Google. no date. *Project Sunroof*. Available: https://www.google.com/get/sunroof.
- National Renewable Energy Laboratory (NREL). 2017. NREL's PVWatts® Calculator. August. Available: https://pvwatts.nrel.gov/index.php. Accessed: January 2021.
- Solar-Estimate. 2021. Solar Calculator. Available: https://www.solar-estimate.org/residential-solar/solar-panel-calculators. Accessed: January 2021.

E-10-C. Establish Onsite Renewable Energy Systems–Wind Power

GHG Mitigation Potential

Varies

Variable reduction in GHG emissions from building energy, depending on renewable electricity generation compared to building energy consumption

Co-Benefits (icon key on pg. 34)

Climate Resilience

Installing onsite renewable energy systems provides backup generation sources that can contribute to generation capacity and reduce the risk of outages, particularly if an extreme event disrupts the grid. Onsite renewable energy can also reduce energy costs.

Health and Equity Considerations

Consider noise impacts in places with nearby sensitive receptors.

Measure Description

This measure requires electricity to be generated from onsite wind power systems, displacing the electricity demand that would ordinarily be supplied by the local electricity provider. Electricity generation provided by local electricity providers have varying carbon intensities based on the portfolio of energy sources. Since wind turbines generate zero GHG emissions, this measure displaces the emissions that would have been produced had electricity been supplied by the local electricity provider and thus results in a reduction in GHG emissions. Onsite renewable systems can also provide back-up power as an alternative to diesel generators in the event of grid power outages.

Subsector

Renewable Energy Generation

Scale of Application

Project/Site

Implementation Requirements

See measure description.

Cost Considerations

Installation costs for wind power generation vary based on the type and size of the turbine, however, initial costs are still considered high. These costs are recouped by large cost savings as the property owner can use electricity produced on site instead of purchased from the grid, or even at a net profit if excess energy is sold to an electricity provider. Additionally, initial installation costs can be at least partially offset by credits and rebates meant to encourage renewable energy generation.

Expanded Mitigation Options

Pair with Measure E-23, *Use Microgrids and Energy Storage*, in Table 3-2 to store and then deploy surplus electricity generated from the renewable energy system. This would improve the capacity of the system to displace more grid-supplied electricity, further reducing associated emissions.

GHG Reduction Formula

$$A = \frac{-B}{C}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from electricity use	0–100	%	calculated
User Inputs				
B	Electricity provided by wind power system with measure	[ ]	kWh per year	user input
C	Total electricity demand	[ ]	kWh per year	user input
Constants, Assumptions, and Available Defaults				
	None			

Further explanation of key variables:

- (B) – The amount of electricity that can be supplied by wind power is highly dependent on location. To implement this measure, users should consider their project's location and other factors that may determine onsite wind power feasibility, such as cost, neighboring land uses, and local ordinances. The U.S. DOE has resources available for wind energy in California, such as wind speed maps (U.S. DOE n.d.). Additionally, the NREL's Wind Prospector is an interactive mapping tool, where users can determine if their project's location is likely to have suitable wind capacity factors (NREL n.d.).

GHG Calculation Caps or Maximums

It is assumed that the electricity demand of the user's project is currently being met by grid energy that requires *some* amount of fossil fuel–based energy generation, which emits GHGs from fuel combustion. In other words, the local electricity provider has an energy intensity factor (lb of CO_2e per kWh) greater than zero. For projects that are served by electricity providers with a renewable portfolio standard of 100 percent, this measure would effectively have no reduction in GHG emissions, although it would still result in the co-benefit of enhanced energy security.

Example GHG Reduction Quantification

If the user's project consumes electricity from a local electricity provider with a non-zero carbon intensity, the user can reduce the project's emissions from electricity consumption by displacing the electricity demand met by the local electricity provider with an onsite wind power system. If the total electricity demand is 10,000 kWh per year (C), and the wind power system provides 1,000 kWh per year (B), the user would reduce GHG emissions from electricity use by 10 percent. The example measure emission reduction is calculated below.

$$A = \frac{\frac{-1{,}000\ \text{kWh}}{\text{yr}}}{\frac{10{,}000\ \text{kWh}}{\text{yr}}} = -10\%$$

Quantified Co-Benefits

Successful implementation of this measure would reduce grid electricity, and a portion of this electricity is supplied by statewide fossil-fueled power plants, which generates criteria pollutants. However, because these power plants are located throughout the state, the reduction in electricity use from this measure will not reduce localized criteria pollutant emissions and are, therefore, not discussed.

Sources

- National Renewable Energy Laboratory (NREL). No date. *Wind Prospector*. Available: https://maps.nrel.gov/wind-prospector/?aL=MlB4Hk%255Bv%255D%3Dt%26VMGtY3%255Bv%255D%3Dt%26VMGtY3%255Bd%255D%3D1&bL=clight&cE=0&lR=0&mC=40.21244%2C-91.625976&zL=4. Accessed: March 4, 2021.
- U.S. Department of Energy – Office of Energy Efficiency and Renewable Energy (U.S. DOE). No date. *Wind Energy in California*. Available: https://windexchange.energy.gov/states/ca#maps. Accessed: March 4, 2021.

E-11. Procure Electricity from Lower Carbon Intensity Power Supply

GHG Mitigation Potential

Up to 100% of GHG emissions from electricity use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Procuring electricity from lower carbon intensity power supplies can reduce sensitivity to fuel price shocks or scarcity.

Health and Equity Considerations

Reducing demand for electricity from fossil-fuel sources will help to improve air quality at electrical plants currently using fossil fuels.

Measure Description

This measure will commit the project to procuring electricity with a lower carbon intensity than the primary product offered by the local provider (often an investor-owned utility). This would displace the electricity demand that would ordinarily be supplied by the local electricity provider's energy mix. Electricity provided by local electricity providers have varying carbon intensities based on the portfolio of energy sources. Procurement of electricity of a lower carbon intensity would displace the emissions that would have been produced had the electricity been supplied by the default energy mix and thus results in a reduction in GHG emissions. Green power supply options include utility green power products, community choice aggregation, shared renewables (e.g., community solar), and power purchase agreements.

Subsector

Renewable Energy Generation

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

Purchase electricity from a green power supplier, including utility green power products, community choice aggregation, shared renewables (e.g., community solar), and power purchase agreements.

Cost Considerations

The least carbon-intensive fuels are renewable fuels; however, even switching from high carbon-intensity fossil fuels, like coal and petroleum, to lower intensity fossil fuels, like natural gas, represents a cost savings. The costs associated with building renewable energy generating capacity up to a utility scale are high and require constructing large-scale renewable energy plants and power storage facilities. However, the cost of building new carbon intensive power generation plants is similar, if not higher. Renewable energy plants can usually be completed more quickly than a fossil-fueled energy plant, saving construction costs. Renewable energy facilities may also have a significant operational cost savings, as many, like solar and wind, do not require fuel inputs.

Expanded Mitigation Options

Procure electricity from a zero-carbon power supply to eliminate all emissions from building electricity.

GHG Reduction Formula

$$A = \frac{B}{C} - 1$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from electricity	0–100	%	calculated
User Inputs				
B	Average carbon intensity of power supply with green power	[ ]	lb CO_2e per MWh	user input
Constants, Assumptions, and Available Defaults				
C	Carbon intensity of local electricity provider without measure	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021

Further explanation of key variables:

- (B) – The carbon intensity of the green power supply may be available online directly from the power provider and/or indirectly from the relevant state agencies (e.g., CEC, CARB). If publicly unavailable, the user should request this information from the power provider for the year(s) of interest.
- (C) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year not referenced in Tables E-4.3 and E-4.4), the user should use that specific value in the GHG calculation formula. If the electricity provider is not known, users may elect to use the statewide grid average carbon intensity.

GHG Calculation Caps or Maximums

It is assumed that the electricity demand of the user's project is currently being met by grid energy that requires some amount of fossil fuel-based energy generation, which emits GHGs from fuel combustion. In other words, the local electricity provider has an energy intensity factor (lb of CO_2e per kilowatt-hour) greater than zero. For projects that are served by electricity providers already with a renewable portfolio standard of 100 percent, this measure would effectively have no reduction on GHG emissions.

Example GHG Reduction Quantification

The user displaces indirect emissions from electricity by committing the project to procuring power with a lower carbon intensity than the primary local provider. In this example, the green power supply has a carbon intensity of zero (B) because 100 percent of the electricity is from zero-emission energy sources. The project is in the SMUD service territory and

would be operational in 2030. The electricity provider's carbon intensity factor is 224 lb CO_2e per MWh (C). The user would reduce GHG emissions from electricity by 100 percent.

$$A = \frac{0 \frac{\text{lb } CO_2e}{\text{MWh}}}{224 \frac{\text{lb } CO_2e}{\text{MWh}}} - 1 = -100\%$$

Quantified Co-Benefits

Successful implementation of this measure would reduce grid electricity, and a portion of this electricity is supplied by statewide fossil-fueled power plants, which generates criteria pollutants. However, because these power plants are located throughout the state, the reduction in electricity use from this measure will not reduce localized criteria pollutant emissions and are, therefore, not discussed.

Sources

- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.

E-12. Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences

GHG Mitigation Potential

Potentially moderate reduction in GHG emissions from building natural gas

Co-Benefits (icon key on pg. 34)

Climate Resilience

Using alternative types of water heaters that use less fuel can reduce sensitivity to fuel price shocks or scarcity; however, they may decrease resilience if they are the only option available during a power outage. This measure may also power the appliance from the grid rather than from fuel, offering more reliability if the grid has been adapted to climate change or less reliability if the grid has not been adapted.

Health and Equity Considerations

Reduction of natural gas combustion in homes can help reduce indoor pollution.

Measure Description

This measure requires installation of a water heater that is less emissions intensive than a natural gas conventional storage tank water heater in residential developments. Alternatives analyzed in this measure are electric conventional storage tanks, solar water heaters with natural gas backup, and solar water heaters with electric backup. Each alternative reduces GHG emissions in a slightly different way. An electric storage tank heater displaces natural gas consumption with electricity use, replacing more emissions-intensive natural gas with less emissions-intensive electricity. A solar water heater with electric backup reduces GHG emissions by displacing natural gas with zero-emission solar energy when water is heated by the system's solar collectors and grid electricity when the back-up function is utilized. A solar water heater with natural gas backup reduces emissions by displacing natural gas with solar energy when water is heated by the solar collectors.

Subsector

Building Decarbonization

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

Alternative water heaters analyzed in this measure include electric conventional storage tanks, solar water heaters with natural gas backup, and solar water heaters with electric backup.

Cost Considerations

Non-conventional heaters can have high initial and construction costs (e.g., upgrading the electric panel). However, alternatives to natural gas storage tank heaters are more energy efficient and cost less to operate once they are installed. Common alternatives also require less fuel, maintenance, and upkeep than natural gas heaters, leading to additional long-term cost savings.

Expanded Mitigation Options

Pair with Measure E-3-A, *Require Energy Efficiency Residential Boilers,* to reduce energy use from both space heating and water heating, yielding increased GHG reductions. Also, a heat pump is another option for an alternative water heater that is highly efficient, though the associated energy reductions were not quantified as part of this measure (see Measure E-25, *Install Electric Heat Pumps*, in Table 3-2).

GHG Reduction Formula

$A1 = (-E \times C \times G \times I \times J) + (F_1 \times C \times H \times K \times J)$

$A2 = (F_2 - E) \times C \times G \times I \times J$

GHG Calculation Variables

Based on 2019 survey data, approximately 73 percent of California residences use conventional storage tank heaters fueled by natural gas for primary water heating (CEC 2020). Therefore, for the purposes of this measure, natural gas storage tanks are the type of water heater that the user would be displacing.

ID	Variable	Value	Unit	Source
Output				
A1	Reduction in GHG emissions from building energy for electric storage tank heater or solar water heater with electric backup	[ ]	MT CO_2e per year	calculated
A2	Reduction in GHG emissions from building energy for solar water heater with natural gas backup	[ ]	MT CO_2e per year	calculated
User Inputs				
B	Housing type	[ ]	text	user input
C	Number of dwelling units	[ ]	du	user input
Constants, Assumptions, and Available Defaults				
D	Electricity Demand Forecast Zone	Figure E-1.1 Table E-1.1	integer	CEC 2017
E	Fuel consumption for storage tank heater	Table E-12.1	therm per year per du	CEC 2020
F_1	Electricity use for electric storage tank heater or solar water heater with electric backup	Table E-12.1	kWh per year per du	CEC 2020
F_2	Fuel consumption for solar water heater with natural gas backup	Table E-12.1	therm per year per du	CEC 2020
G	Carbon intensity of residential natural gas	117	lb CO_2e per MMBtu	U.S. EPA 2020
H	Carbon intensity of local electricity provider	Table E-4.3 Table E-4.4	lb CO_2e per MWh	CA Utilities 2021
I	Conversion from therm to 1 million Btu (MMBtu)	0.1	MMBtu per therm	conversion
J	Conversion from lb to metric ton (MT)	0.000454	MT per lb	conversion
K	Conversion from kWh to MWh	0.001	MWh per kWh	conversion

Further explanation of key variables:

- (B) – The housing types are needed to look up the energy use by type of heater (F_1 and F_2) in Table E-12.1.
- (D) – The CEC has specified 28 distinct EDFZs in California. Users should refer to Figure E-1.1 in Appendix C to determine the EDFZ for their project. This measure relies on energy consumption data from the year 2019 tied to the CEC's (2020) 2019 RASS. Because data from all 28 EDFZs are not included in the RASS, representative data from similar EDFZs may need to be used. Users should refer to Table E-1.1 for the proxy EDFZ that corresponds with those listed in Table E-12-1.
- (E, F_1, and F_2) – The CEC administered the statewide RASS in 2019. The study yielded energy consumption estimates for 27 electric and 10 natural gas residential end uses, including hot water heaters. Based on this data for the year 2019, the average natural gas and electricity consumption by heater type for each EDFZ and housing type is provided in Table E-12.1 in Appendix C. If the data is unavailable for a specific EDFZ, users may elect to use the statewide averages. If the user is able to provide a project-specific value, then the user should replace the defaults in the GHG calculation formula. CEC's 2019 Building Energy Standards provide detailed equations for this calculation (CEC 2019).
- (G) – The carbon intensity of residential natural gas was calculated in terms of CO_2e by multiplying the U.S. natural gas combustion emission factors for CO_2, CH_4, and N_2O (U.S. EPA 2020) by the corresponding 100-year GWP values from the IPCC's Fourth Assessment Report (IPCC 2007). See Table E-4.5 in Appendix C for more natural gas emission factors.
- (H) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for a future year not referenced in Tables E-4.3 and E-4.4), the user should use that specific value in the GHG calculation formula. If the electricity provider is not known, users may elect to use the statewide grid average carbon intensity.

GHG Calculation Caps or Maximums

Mutually Exclusive Measures

If the user selects Measure E-15, *Require All-Electric Development*, they may not also take credit for this measure (Measure E-12) or Measure E-13, *Install Electric Ranges in Place of Gas Ranges,* which electrify select appliances. Measure E-15 accounts for the combined GHG reductions achieved by each of these measures, as well as the electrification of other end uses. To combine the GHG reductions from Measure E-15 with Measure E-12 or Measure E-13 would be considered double counting.

Example GHG Reduction Quantification

The user reduces building energy emissions by installing in a proposed residential development an alternative type of water heater in place of a natural gas storage tank heater. In this example, 10 single-family homes (B and C) would be constructed in EDFZ 7 (D) with a solar water heater with electric backup. Therefore, the fuel consumption for each

home's storage tank heater would be 260 therms per year (E), and the electricity consumption for a solar water heater with electric backup would be 483 kilowatt-hours per year (F1), based on Table E-12.1. The homes are in Los Angeles Department of Water and Power's service territory and would be constructed by 2022. It would, therefore, have an electricity carbon intensity of 694 lb CO_2e per MWh (H). The mitigated emissions would be reduced by 12.3 MT CO_2e per year.

$$A1 = \left(\frac{\text{-260 therm}}{\text{yr·du}} \times \textbf{10 du} \times \frac{\text{117 lb } CO_2e}{\text{MMBtu}} \times \frac{\text{0.1 MMBtu}}{\text{therm}} \times \frac{\text{0.000454 MT}}{\text{lb}}\right) + \left(\frac{\text{483 kWh}}{\text{yr·du}} \times \textbf{10 du} \times \frac{\text{694 lb } CO_2e}{\text{MWh}} \times \frac{\text{0.001 MWh}}{\text{kWh}} \times \frac{\text{0.000454 MT}}{\text{lb}}\right) = \text{-12.3} \frac{\text{MT } CO_2e}{\text{yr}}$$

Quantified Co-Benefits

Energy and Fuel Savings

Energy use conversion from major natural gas appliances to their equivalent electric replacements tends not to be straightforward given that most significant gas appliances (e.g., water heaters, space heaters, ovens and cooktops) have varying input-to-output efficiencies and losses from product to product. Equivalent electric appliances also have differing efficiencies, and usage patterns for these equivalent appliances may differ in some way. If installing an electric storage tank heater or solar water heater with electric backup (A_1), the user would decrease the building natural gas consumption (E) and increase the electricity use (F_1). If installing a solar water heater with natural gas backup (B_2), the user would decrease the building natural gas consumption (F_2-E).

Improved Air Quality

The reduction in natural gas fuel consumption from this measure would result in local improvements in air quality because the fuel consumption occurs on site of the project. The reduction in criteria pollutant emissions (L_1 and L_2) achieved by the measure can be calculated as follows.

Criteria Pollutant Emission Reduction Formula

Use (L_1) if installing an electric storage tank heater or solar water heater with electric backup. Use (L_2) if installing a solar water heater with natural gas backup.

$$L1 = \text{-E} \times \textbf{C} \times M \times I \times N$$

$$L2 = (F_2 - E) \times \textbf{C} \times M \times I \times N$$

Criteria Pollutant Emission Reduction Calculation Variables

ID	Variable	Value	Unit	Source
Output				
L1	Reduction in criteria pollutant emissions from building energy for electric storage tank heater or solar water heater with electric backup	[ ]	tons per year	calculated
L2	Reduction in criteria pollutant emissions from building energy for solar water heater with natural gas backup	[ ]	tons per year	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
M	Criteria pollutant emission factors of natural gas	Table E-4.5	lb per MMBtu	U.S. EPA 1998
N	Conversion from lb to ton	0.0005	tons per lb	conversion

Further explanation of key variables:

- (M) – Table E-4.5 presents the criteria pollutant emission factors of natural gas for residential and commercial uses (U.S. EPA 1998). For projects in Bay Area Air Quality Management District or South Coast Air Quality Management territory, see the footnote in Table E-4.5 about a regionally specific NO_x emission factor.
- Please refer to the GHG Calculation Variables table above for definitions of variables that have been previously defined.

Sources

- California Energy Commission (CEC). 2017. *California Electricity Demand Forecast Zones*. Available: https://cecgis-caenergy.opendata.arcgis.com/datasets/86fef50f6f344fabbe545e58aec83edd_0/data?geometry=-165.327%2C31.004%2C-72.427%2C43.220. Accessed: June 2021.
- California Energy Commission (CEC). 2019. *Residential Alternative Calculation Method Reference Manual for the 2019 Building Energy Efficiency Standards*. May. Available: https://www.energy.ca.gov/sites/default/files/2020-10/2019%20Residential%20ACM%20Reference%20Manual_ada.pdf. Accessed: January 2021.
- California Energy Commission (CEC). 2020. Excel database with the 2019 Residential Appliance Saturation Study (RASS), provided to ICF. November 13, 2020.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. Emission Factors for Greenhouse Gas Inventories. March. Available: https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf. Accessed: March 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 1998. *AP 42, Fifth Edition, Volume I. Chapter 1: External Combustion Sources*. 1.4, *Natural Gas Combustion*. July. Available: https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf. Accessed: January 2021.

E-13. Install Electric Ranges in Place of Gas Ranges

GHG Mitigation Potential

Potentially small reduction in GHG emissions from building natural gas

Co-Benefits (icon key on pg. 34)

Climate Resilience

Installing electric ranges that use electricity rather than fuel can reduce sensitivity to fuel price shocks or scarcity. Electric ranges also offer more reliability if the grid has been adapted to climate change or less reliability if the grid has not been adapted.

Health and Equity Considerations

Natural gas ranges are a primary sources of residential indoor air pollution (e.g., NOx, CO, and formaldehyde), with the impacts being greater in smaller living spaces and kitchens with inefficient or no vent hoods—disproportionately affecting low-income residents and renters. Replacing natural gas ranges with electric ones thus vastly improves indoor air quality.

Measure Description

This measure requires that residential or commercial developments install an electric range (i.e., cooktop plus oven) in place of a gas range. An electric range displaces natural gas consumption with electricity use, replacing a more emissions-intensive fossil fuel-based source of energy with electricity from the grid that is increasingly transitioning to renewable sources.

Subsector

Building Decarbonization

Scale of Application

Project/Site

Implementation Requirements

The electric range must have an electric or induction cooktop and an electric oven. Because induction cooktops are superior in performance to traditional electric cooktops and comparable to gas, the use of induction cooktops is strongly recommended to help overcome any user hesitancy or preference for gas.

Cost Considerations

Electric cooktops are twice as energy efficient as gas ranges, representing a large cost savings from reduced energy consumption. Electric stoves have similar costs as natural gas stoves and are relatively inexpensive to install. Induction cooktops have higher upfront costs compared to gas ranges but similar cost savings (induction cooktops do not radiate heat, which translates into reduced home cooling costs during warm days). Buyer costs include the purchase of magnetic-based pots and pans (e.g., stainless steel or cast iron) specialized for use on induction cooktops.

Expanded Mitigation Options

Limit gas barbecue grills, which would provide additional GHG mitigation and improved localized air quality.

GHG Reduction Formula

$$A = (-E \times C \times G \times I \times J) + (F \times C \times H \times K \times J)$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Reduction in GHG emissions from building energy	[ ]	MT CO_2e per year	calculated
User Inputs				
B	Housing or building type	[ ]	text	user input
C	Number of du or size of commercial building	[ ]	du or 1,000 gross square feet (KSF)	user input
Constants, Assumptions, and Available Defaults				
D	Electricity Demand Forecast Zone	Figure E-1.1 Table E-1.1	integer	CEC 2017
E	Fuel consumption for natural gas range	Table E-15.1 or Table E-15.2	therm per year per du or therm per year per KSF	CEC 2020, 2021
F	Electricity use for electric cooktop	Table E-15.1 or Table E-15.2	kWh per year per du or kWh per year per KSF	CEC 2020, 2021
G	Carbon intensity of natural gas (commercial/residential)	119/117	lb CO_2e per MMBtu	U.S. EPA 2020
H	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
I	Conversion from therm to MMBtu	0.1	MMBtu per therm	conversion
J	Conversion from lb to MT	0.000454	MT per lb	conversion
K	Conversion from kWh to MWh	0.001	MWh per kWh	conversion

Further explanation of key variables:

- (B) – The housing and building types are needed to look up the energy use by type of cooking appliance (E).
- (D) – The CEC has specified 28 distinct EDFZs in California. Users should refer to Figure E-1.1 in Appendix C to determine the EDFZ for their project. This measure relies on energy consumption data from the year 2019 tied to the CEC's Commercial Forecast and the 2019 RASS (2020, 2021). Because data from all 28 EDFZs are not included in the Commercial Forecast or RASS, representative data from similar EDFZs may need to be used. Users should refer to Table E-1.1 for the proxy EDFZ that corresponds with those listed in Tables E-15.1 and E-15.2.

- (E and F) – The CEC administered the statewide RASS in 2019. The study yielded energy consumption estimates for 27 electric and 10 natural gas residential end uses, including cooking appliances. Based on this data for the year 2019, the average natural gas and electricity consumption by cooking appliance type for each EDFZ and housing type is provided in Table E-15.1 in Appendix C. If the data is missing for the EDFZ, users may elect to use the statewide averages. If the user is able to provide a project-specific value, then the user should replace the defaults in the GHG calculation formula. CEC's 2019 Building Energy Standards provide detailed equations for this calculation (CEC 2019).

  The CEC prepared the Commercial Forecast in October 2019. The Commercial Forecast is generated by a computer model developed by the CEC to forecast electricity and natural gas consumption for commercial building types in California. The data that informs the model includes previous commercial end use surveys, floor space and vacancy estimates (based on econometric and demographic data), adopted building and appliances standards, weather data (cooling and heating degree days), and electricity and natural gas rates. The Commercial Forecast provides energy consumption estimates for 13 commercial end uses, including cooking. Based on this data for 2019, the average statewide natural gas and electricity consumption for cooking appliances for each building type is provided in Table E-15.2. If the user can provide a project-specific value, then the user should replace the defaults in the GHG calculation formula.
- (G) – The carbon intensity of residential and commercial natural gas was calculated in terms of CO_2e by multiplying the U.S. natural gas combustion emission factors for CO_2, CH_4, and N_2O (U.S. EPA 2020) by the corresponding 100-year GWP values from the IPCC's Fourth Assessment Report (IPCC 2007). See Table E-4.5 in Appendix C for more natural gas emission factors.
- (H) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year not referenced in Appendix C), the user should replace the default in the GHG calculation formula. If the electricity provider is not known, users may elect to use the statewide grid average carbon intensity.

GHG Calculation Caps or Maximums

Mutually Exclusive Measures

If the user selects Measure E-15, *Require All-Electric Development*, they may not also take credit for Measure E-12, *Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences,* or this measure (Measure E-13), which electrify select appliances. Measure E-15 accounts for the combined GHG reductions achieved by each of these measures, as well as the electrification of other end uses. To combine the GHG reductions from Measure E-15 with Measure E-12 or Measure E-13 would be considered double counting.

Example GHG Reduction Quantification

The user reduces building energy emissions by installing in the proposed residential development an electric range in place of a natural gas range. In this example, the measure would be implemented for 20 low-rise apartments (C) to be constructed in EDFZ 3 (D).

Therefore, the fuel consumption for a natural gas range would be 21 therms per year per du (E), and the electricity consumption for an electric cooktop per du would be 115 kilowatt-hours per year (F_1). The project is in Pacific Gas & Electric's service territory and would begin operation by 2022. It would, therefore, have an electricity carbon intensity of 206 lb CO_2e per MWh (G). The mitigated emissions would be reduced by 2.0 MT CO_2e per year.

$$A = \left(\frac{-21 \text{ therm}}{\text{yr·du}} \times \mathbf{20\ du} \times \frac{117 \text{ lb } CO_2e}{\text{MMBtu}} \times \frac{0.1 \text{ MMBtu}}{\text{therm}} \times \frac{0.000454 \text{ MT}}{\text{lb}}\right) + \left(\frac{115 \text{ kWh}}{\text{yr·du}} \times \mathbf{20\ du} \times \frac{206 \text{ lb } CO_2e}{\text{MWh}} \times \frac{0.001 \text{ MWh}}{\text{kWh}} \times \frac{0.000454 \text{ MT}}{\text{lb}}\right) = -2.0 \frac{\text{MT } CO_2e}{\text{yr}}$$

Quantified Co-Benefits

While the measure will achieve fuel savings, it will also increase electricity consumption. For more information on the public health effects of gas cooking appliances, refer to the resources available from the Rocky Mountain Institute (Rocky Mountain Institute 2020).

Fuel Savings (Increased Electricity)

Energy use conversion from major natural gas appliances to their equivalent electric replacements tends not to be straightforward given that most significant gas appliances (e.g., water heaters, space heaters, ovens, and cooktops) have varying input-to-output efficiencies and losses from product to product. Equivalent electric appliances also have differing efficiencies, and usage patterns for these equivalent appliances may differ in some way. If installing an electric cooktop, the user would decrease the building natural gas consumption (E) and increase the electricity use (F).

Improved Air Quality

The reduction in natural gas fuel consumption from this measure would result in local improvements in air quality because the fuel consumption occurs on site of the project. The reduction in criteria pollutant emissions (L) achieved by the measure can be calculated as follows.

Criteria Pollutant Emission Reduction Formula

$$L = -E \times C \times M \times I \times N$$

Criteria Pollutant Emission Reduction Calculation Variables

ID	Variable	Value	Unit	Source
Output				
L	Reduction in criteria pollutant emissions from building energy	[ ]	tons per year	calculated
User Inputs				
	None			

Constants, Assumptions, and Available Defaults				
M	Criteria pollutant emission factors of natural gas	Table E-4.5	lb per MMBtu	U.S. EPA 1998
N	Conversion from lb to ton	0.0005	tons per lb	conversion

Further explanation of key variables:

- (M) – Table E-4.5 presents the criteria pollutant emission factors of natural gas for residential and commercial uses (U.S. EPA 1998).
- Please refer to the *GHG Calculation Variables* table above for definitions of variables that have been previously defined.

Sources

- California Energy Commission (CEC). 2017. *California Electricity Demand Forecast Zones*. Available: https://cecgis-caenergy.opendata.arcgis.com/datasets/86fef50f6f344fabbe545e58aec83edd_0/data?geometry=-165.327%2C31.004%2C-72.427%2C43.220. Accessed: June 2021.
- California Energy Commission (CEC). 2019. *Residential Alternative Calculation Method Reference Manual for the 2019 Building Energy Efficiency Standards.* May. Available: https://www.energy.ca.gov/sites/default/files/2020-10/2019%20Residential%20ACM%20Reference%20Manual_ada.pdf. Accessed: January 2021.
- California Energy Commission (CEC). 2020. Excel database with the 2019 Residential Appliance Saturation Study (RASS), provided to ICF. November 13, 2020.
- California Energy Commission (CEC). 2021. Excel database with the 2018-2030 Uncalibrated Commercial Sector Forecast, provided to ICF. January 21, 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- Rocky Mountain Institute. 2020. *Health Effects from Gas Stove Pollution.* May. Available: https://rmi.org/insight/gas-stoves-pollution-health/. Accessed: March 4, 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 1998. *AP 42, Fifth Edition, Volume I. Chapter 1: External Combustion Sources. 1.4, Natural Gas Combustion*. July. Available: https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. *Emission Factors for Greenhouse Gas Inventories*. March. Available: https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf. Accessed: March 2021.

E-14. Limit Wood Burning Devices and Natural Gas/Propane Fireplaces in Residential Development

GHG Mitigation Potential

Potentially large reduction in GHG emissions from wood burning devices

Co-Benefits (icon key on pg. 34)

Climate Resilience

Limiting wood burning and natural gas/propane fireplaces and replacing them with electric appliances can reduce sensitivity to fuel price shocks or scarcity; however, they may decrease resilience if they are the only option available during a power outage. This also offers more reliability if the grid has been adapted to climate change or less reliability if the grid has not been adapted.

Health and Equity Considerations

This may increase winter heating costs for some residents in colder climate zones. Eliminating wood burning and combustion of natural gas and propane in homes can help reduce indoor pollution and greatly reduce outdoor air pollution.

Measure Description

This measure requires committing to not installing any wood burning devices (i.e., woodstoves and fireplaces) or natural gas or propane fireplaces in proposed residential developments. This avoids the combustion of biomass, natural gas, and propane, thereby reducing associated biogenic and non-biogenic GHG emissions. The most efficient alternatives to wood burning devices or gas fireplaces are electric fireplace inserts and electric heat pumps.

Subsector

Building Decarbonization

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

This measure may not be applicable in areas where wood burning devices in new development are already prohibited. In such areas, this measure could be applied for informational purposes, to determine the GHG and air quality benefits in new development achieved by restrictions on wood burning devices. However, users should exercise caution in taking credit for any emissions benefit from this measure in areas where the existing baseline already prohibits wood burning devices.

Cost Considerations

Wood, natural gas, and propane fireplaces use more energy and fuel to heat an area than centralized heating systems and have additional costs to purchase fuel for the fireplace. Electric imitation fireplaces meant for cosmetic purposes are less expensive to install and much more energy efficient. For heat production purposes, portable space heaters that run on electricity have the same benefits in cost reduction and allow the owner to use the same device in multiple locations, saving the cost of installing more units.

Expanded Mitigation Options

Consider electrifying all end uses (e.g., space heating, water heating) by implementing Measure E-15, *Require All-Electric Development*.

GHG Reduction Formula

$$A = -D \times \left[\left(\left((E_1 \times K_1 + E_2 \times K_2 + E_3 \times K_3 + E_4 \times K_4) \times G\right) + F_1 \times L_1 \times H\right) \times N\right) + \left((F_2 \times L_2 + F_3 \times L_3) \times I \times J \times M\right)\right] \times O$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Reduction in GHG emissions from wood burning devices	[ ]	MT CO_2e per year	calculated
User Inputs				
B	Project location	[ ]	air basin, air district, county	user input
C	Housing type	[ ]	multi-family or single-family	user input
D	Number of du	[ ]	du	user input
Constants, Assumptions, and Available Defaults				
E_1	Percent of du with conventional woodstoves	Table E-14.1	%	CA Air Districts 2021
E_2	Percent of du with catalytic woodstoves	Table E-14.1	%	CA Air Districts 2021
E_3	Percent of du with non-catalytic woodstoves	Table E-14.1	%	CA Air Districts 2021
E_4	Percent of du with pellet woodstoves	Table E-14.1	%	CA Air Districts 2021
F_1	Percent of du with wood fireplaces	Table E-14.1	%	CA Air Districts 2021
F_2	Percent of du with natural gas fireplaces	Table E-14.1	%	CA Air Districts 2021
F_3	Percent of du with propane fireplaces	Table E-14.1	%	CA Air Districts 2021
G	Wood mass for stove	Table E-14.1	lb per year	CA Air Districts 2021
H	Wood mass for fireplace	Table E-14.1	lb per year	CA Air Districts 2021
I	Daily usage of fireplace	Table E-14.1	hour per day	CA Air Districts 2021
J	Annual usage of fireplace	Table E-14.1	day per year	CA Air Districts 2021

ID	Variable	Value	Unit	Source
K_1	Carbon intensity of conventional woodstove	Table E-14.2	lb biogenic CO_2e per ton wood burned	U.S. EPA 1996a
K_2	Carbon intensity of catalytic woodstove	Table E-14.2	lb biogenic CO_2e per ton wood burned	U.S. EPA 1996a
K_3	Carbon intensity of non-catalytic woodstove	Table E-14.2	lb biogenic CO_2e per ton wood burned	U.S. EPA 1996a
K_4	Carbon intensity of pellet woodstove	Table E-14.2	lb biogenic CO_2e per ton wood burned	U.S. EPA 1996a
L_1	Carbon intensity of wood fireplace	Table E-14.2	lb biogenic CO_2e per ton wood burned	U.S. EPA 1996b
L_2	Carbon intensity of natural gas	Table E-14.2	lb non-biogenic CO_2e per MMBtu	U.S. EPA 2020
L_3	Carbon intensity of propane	Table E-14.2	lb non-biogenic CO_2e per MMBtu	U.S. EPA 2020
M	Heating rate of natural gas and propane	0.06	MMBtu per hour	SCAQMD 2008
N	Conversion from lb to ton	0.0005	ton per lb	conversion
O	Conversion from lb to MT	0.000454	MT per lb	conversion

Further explanation of key variables:

- (B and C) – The project location and housing type are needed to lookup the percent of du with various types of woodstoves and fireplaces (E_1 through E_4 and F_1 through F_3).
- (E_1 through J) – The percent of du with various types of woodstoves and fireplaces, amount of wood burned by woodstoves and fireplaces, and fireplace usage is based on data supplied by local air districts and state defaults (CA Air Districts 2021). Table E-14.1 in Appendix C presents this information by housing type for each county, air basin, and air district.
- (K_1 through L_3) – The carbon intensity of the various woodstoves and fireplace fuels were calculated in terms of CO_2e by multiplying the emission factors for CO_2, CH_4, and N_2O (U.S. EPA 1996a, 1996b, 2020) by the corresponding 100-year GWP values from the IPCC's Fourth Assessment Report (IPCC 2007). See Table E-14.2 in Appendix C for these emission factors.
- (K_1 through L_1) – GHG emissions from the combustion of wood or biomass are considered biogenic emissions, meaning they are derived from living cells, as opposed to fossil fuels that have been transformed by geological processes. Some protocols do not consider these emissions to be part of an emission inventory. In these instances, users should take care to keep them distinct from non-biogenic emissions caused by natural gas and propane fireplaces (L_2 and L_3).

- (M) – The heating rate of natural gas and propane is based on the upper range provided in the South Coast Air Quality Management District's environmental assessment for Rule 445, Wood Burning Devices (SCAQMD 2008).

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user avoids emission from wood burning devices by eliminating woodstoves and fireplaces from the proposed residential development. In this example, the proposed project would be a 100-unit (D) multi-family housing development (C) located in the Great Basin Valley Air Basin (B). Based on this information, Table E-14.1 can be used to determine the percent of du with various types of woodstoves and fireplaces, the amount of wood burned by woodstoves and fireplaces, and the fireplace usage (E_1 through J). The mitigated emissions would be reduced by -151 MT CO_2e per year.

$$A = \text{-100 units} \times \left[\left(\left(\left(\left(0\% \times \frac{3{,}792 \text{ lb } CO_2e}{\text{ton wood}} + 5\% \times \frac{3{,}277 \text{ lb } CO_2e}{\text{ton wood}} + 5\% \times \frac{3{,}400 \text{ lb } CO_2e}{\text{ton wood}} + 0\% \times \frac{3{,}400 \text{ lb } CO_2e}{\text{ton wood}}\right) \times \frac{3{,}019.2 \text{ lb wood}}{\text{yr}}\right) + 35\% \times \frac{3{,}480 \text{ lb } CO_2e}{\text{ton wood}} \times \frac{3{,}078.4 \text{ lb wood}}{\text{yr}}\right) \times \frac{0.005 \text{ ton}}{\text{lb}}\right) + \left(\left(55\% \times \frac{117 \text{ lb } CO_2e}{\text{MMBtu}} + 0\% \times \frac{141.3 \text{ lb } CO_2e}{\text{MMBtu}}\right) \times \frac{3 \text{ hours}}{\text{day}} \times \frac{82.0 \text{ days}}{\text{yr}} \times \frac{0.06 \text{ MMBtu}}{\text{hour}}\right)\right] \times \frac{0.000454 \text{ MT}}{\text{lb}} = \frac{\text{-151 MT } CO_2e}{\text{yr}}$$

Quantified Co-Benefits

Improved Air Quality

The reduction in wood, natural gas, and propane combustion from this measure would result in local improvements in air quality because the combustion occurs on site of the project. The reduction in criteria pollutant emissions (Q) achieved by the measure would be calculated the same way as the GHG reduction equation, except for the following differences.

- (K_1 through L_3) – Use the criteria pollutant emission factors in Table E-14.2 in Appendix C instead of the GHG emission factors (U.S. EPA 1996a, 1996b, 2015; CARB 2011).
- (N) – Replace (O) with (N) because criteria pollutant emissions are reported as tons of pollutant per year, whereas GHG emissions are reported in units of metric tons.

Energy and Fuel Savings

The reduction in natural gas and propane fuel consumption (P) achieved by this measure, in units of MMBtu per year, can be calculated as follows.

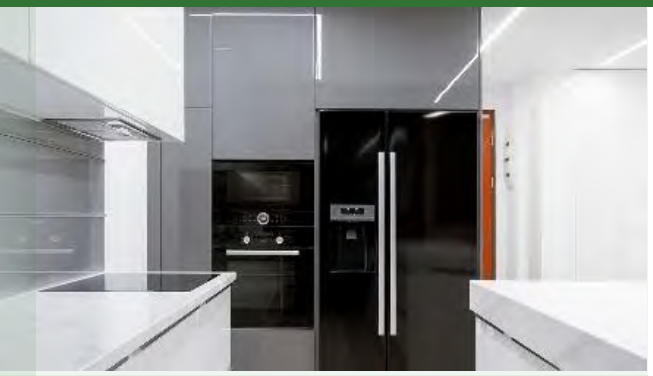
Fuel Reduction Formula

$$P = -D \times (F_2 + F_3) \times I \times J \times M$$

Sources

- California Air Resources Board (CARB). 2011. Section 7.1, *Residential Wood Combustion*. Revised October 2015. Available: https://ww3.arb.ca.gov/ei/areasrc/fullpdf/full7-1_2011.pdf. Accessed: March 2021
- California Air Districts. 2021. Excel database of hearth usage and inventory statistics, provided to the Sacramento Metropolitan Air Quality Management District and ICF. April 1, 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- South Coast Air Quality Management District (SCAQMD). 2008. *Final Environmental Assessment: Proposed Rule 445 – Wood Burning Devices*. February. Available: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2008/final-environmental-assessment-for-proposed-rule-445.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 1996a. *Report on Revisions to 5th Edition AP-42*. Section 1.10, *Residential Wood Stoves*. July. Available: https://www3.epa.gov/ttnchie1/ap42/ch01/bgdocs/b01s10.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 1996b. *Report on Revisions to 5th Edition AP-42*. Section 1.9, *Residential Fireplaces*. July. Available: https://www3.epa.gov/ttnchie1/ap42/ch01/bgdocs/b01s09.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2015. *Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces*. March. Available: https://www.govinfo.gov/content/pkg/FR-2015-03-16/pdf/2015-03733.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. *Emission Factors for Greenhouse Gas Inventories*. March. Available: https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf. Accessed: March 2021.

E-15. Require All-Electric Development



GHG Mitigation Potential

Potentially large reduction in GHG emissions from building energy use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Requiring all-electric development can reduce sensitivity to fuel price shocks or scarcity and offer more reliability if electricity providers have been adapted to climate change. However, this may decrease resilience if the grid has not been adapted to climate change and if there are no non-electric backup options during a power outage.

Health and Equity Considerations

Elimination of natural gas combustion in homes will improve indoor air quality, as natural gas appliances produce pollutants such as NOx, formaldehyde, and CO. Plans, backups, and contingencies should be in place in the event of extended power failure (consider implementing with Measure E-23, *Use Microgrids and Energy Storage*, in Table 3-2).

Measure Description

This measure requires that residential or commercial developments use all-electric appliances and end uses. Using electric instead of natural gas-powered appliances and end uses replaces a more emissions-intensive fossil fuel source of energy with a less emissions-intensive source of energy, electricity from the grid that is increasingly transitioning to renewable sources.

Subsector

Building Decarbonization

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

It is expected that user's building would electrify the most common natural gas end uses—space heating, water heating, and range (i.e., cooktop plus oven). Additional natural gas end uses include dryer, auxiliary heat, pool heat, spa heat, solar water heater with natural gas backup, and miscellaneous, as discussed below under *GHG Calculation Variables*.

Cost Considerations

Although electric appliances for residential and commercial properties sometimes cost more to purchase and install, they are more energy efficient than conventional natural gas appliances. This can lead to long-term cost savings through reduced energy consumption. Electric appliances also usually require less maintenance than conventional appliances.

Expanded Mitigation Options

One of the most efficient ways to provide space heating with electricity is to use heat pumps, which provides increased efficiency relative to traditional electric resistance heating (see Measure E-25, *Install Electric Heat Pumps*, in Table 3-2). The associated energy reduction from heat pumps was not quantified as part of this measure.

GHG Reduction Formula

$$A = (-E \times C \times G \times I \times J) + (F \times C \times H \times K \times J)$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Reduction in GHG emissions from building energy	[ ]	MT CO_2e per year	calculated
User Inputs				
B	Housing or building type	[ ]	text	user input
C	Number of du or size of commercial building	[ ]	du or KSF	user input
Constants, Assumptions, and Available Defaults				
D	Electricity Demand Forecast Zone	Figure E-1.1 Table E-1.1	integer	CEC 2017
E	Existing fuel consumption for natural gas end uses without measure	Table E-15.1 Table E-15.2	therm per year per du or therm per year per KSF	CEC 2020, 2021
F	Additional electricity use for equivalent electrified end uses with measure	Table E-15.1 Table E-15.2	kWh per year per du or kWh per year per KSF	CEC 2020, 2021
G	Carbon intensity of natural gas (commercial/residential)	119/117	lb CO_2e per MMBtu	U.S. EPA 2020
H	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
I	Conversion from therm to MMBtu	0.1	MMBtu per therm	conversion
J	Conversion from lb to MT	0.000454	MT per lb	conversion
K	Conversion from kWh to MWh	0.001	MWh per kWh	conversion

Further explanation of key variables:

- (B) – The housing and building types are needed to look up the energy use for electric and natural gas end uses for residential and commercial development (E and F).
- (D) – The CEC has specified 28 distinct EDFZs in California. Users should refer to Figure E-1.1 in Appendix C to determine the EDFZ for their project. This measure relies on energy consumption data from the year 2019 tied to the CEC's Commercial Forecast and the 2019 RASS (CEC 2020, 2021). Because data from all 28 EDFZs are not included in the Commercial Forecast and RASS, representative data from similar EDFZs may need to be used. Users should refer to Table E-1.1 for the proxy EDFZ that corresponds with those listed in Tables E-15.1 and E-15.2.

- (E and F) – The CEC administered the statewide RASS in 2019. The study yielded energy consumption estimates for 27 electric and 10 natural gas residential end uses. Based on this data for the year 2019, the average natural gas and electricity consumption by end use for each EDFZ and housing type is provided in Table E-15.1. The natural gas end uses included in the RASS and reflected in this measure include space heating, water heating, range/oven, dryer, auxiliary heat, pool heat, spa heat, solar water heater with natural gas backup,[25] and miscellaneous.[26] There are electric equivalent end uses for each of these end uses, with the addition of heat pumps as an option for space heating and the exception of pool heat, which requires a manual user input. Users should only evaluate the end uses applicable to their project. For example, most residences will not be built with spas, and only single-family housing has solar water heaters. A minimum recommendation is that the primary natural gas end uses that are commonly electrified be included—space heating, water heating, and range/oven. If the data is missing for the EDFZ or end use, users may elect to use the statewide averages. If users are able to provide a project-specific value, then they should replace the defaults in the GHG calculation formula.

  The CEC prepared the Commercial Forecast in October 2019. The Commercial Forecast is generated by a computer model developed by the CEC to forecast electricity and natural gas consumption for commercial building types in California. The data that informs the model includes previous commercial end use surveys, floor space and vacancy estimates (based on econometric and demographic data), adopted building and appliances standards, weather data (cooling and heating degree days), and electricity and natural gas rates. The Commercial Forecast provides energy consumption estimates for 13 electric and 6 natural gas commercial end uses. Based on this data for 2019, the average statewide natural gas and electricity consumption by end use for each building type is provided in Table E-15.2. The natural gas end uses included in the Commercial Forecast and reflected in this measure include space heating, cooling, water heating, range/oven, refrigeration, and miscellaneous.[27] Users should only evaluate the end uses applicable to their project. A minimum recommendation is that the primary natural gas end uses that are commonly electrified be included—space heating, water heating, and range/oven. If the data is missing for the EDFZ or end use, users may elect to use the statewide averages. If users are able to provide a project-specific value, then they should replace the defaults in the GHG calculation formula.
- (G) – The carbon intensity of natural gas was calculated in terms of CO_2e by multiplying the U.S. natural gas combustion emission factors for CO_2, CH_4, and N_2O (U.S. EPA 2020) by the corresponding 100-year GWP values from the IPCC's Fourth Assessment Report (IPCC 2007). See Table E-4.5 in Appendix C for more natural gas emission factors.
- (H) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year not referenced in Tables E-4.3 and E-4.4), the user should use that specific value in the

[25] Only allowed for single-family housing.

[26] The RASS "miscellaneous" end use category includes approximately 20 appliances, ranging from portable fans to wine coolers to aquariums. Users should exercise caution in applying the average energy consumption data for this category to their project.

[27] The commercial energy forecast "miscellaneous" end use category includes over 50 equipment types, ranging from specialized medical equipment for hospital buildings to ATM machines for retail buildings to shop tools for warehouses. Users should exercise caution in applying the average energy consumption data for this category to their project.

GHG calculation formula. If the electricity provider is not known, the user may elect to use the statewide grid average carbon intensity.

GHG Calculation Caps or Maximums

Mutually Exclusive Measures

If users select this measure (Measure E-15), they may not also take credit for Measure E-12, *Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences*, or Measure E-13, *Install Electric Ranges in Place of Gas Ranges,* which electrify select appliances. This measure (Measure E-15) accounts for the combined GHG reductions achieved by each of these measures, as well as the electrification of other end uses. To combine the GHG reductions from this measure (Measure E-15) with Measure E-12 or Measure E-13 would be considered double counting.

Example GHG Reduction Quantification

The user reduces building energy emissions by electrifying the proposed development with electric end uses in place of natural gas end uses. In this example, the measure would be implemented at 20 apartments in a high-rise building (C) to be constructed in EDFZ 11 (D). Natural gas end uses without the measure include water heater, primary heat, range/oven, and dryer resulting in 261 therms per year per du (E). The electricity consumption to electrify these end uses would be 2,611 kilowatt-hours per year per du (F_1). The project is in City of Riverside's service territory and would begin operation by 2022. It would therefore have an electricity carbon intensity of 791 lb CO_2e per megawatt-hour (G). The mitigated emissions would be reduced by 9 MT CO_2e per year.

$$A = \left(\frac{-261 \text{ therm}}{\text{yr·du}} \times 20 \text{ du} \times \frac{117 \text{ lb } CO_2e}{\text{MMBtu}} \times \frac{0.1 \text{ MMBtu}}{\text{therm}} \times \frac{0.000454 \text{ MT}}{\text{lb}}\right) + \left(\frac{2{,}611 \text{ kWh}}{\text{yr·du}} \times 20 \text{ du} \times \frac{791 \text{ lb } CO_2e}{\text{MWh}} \times \frac{0.001 \text{ MWh}}{\text{kWh}} \times \frac{0.000454 \text{ MT}}{\text{lb}}\right) = -9 \frac{\text{MT } CO_2e}{\text{yr}}$$

Quantified Co-Benefits

Energy and Fuel Savings

Energy use conversion from major natural gas appliances to their equivalent electric replacements tends not to be straightforward given that most significant gas appliances (e.g., water heaters, space heaters, ovens and cooktops) have varying input-to-output efficiencies and losses from product to product. Equivalent electric appliances also have differing efficiencies, and usage patterns for these equivalent

appliances may differ in some way. If electrifying a building, the user would decrease the building natural gas consumption (E) and increase the electricity use (F).

Improved Air Quality

The reduction in natural gas fuel consumption from this measure would result in local improvements in air quality because the fuel consumption occurs on site of the project. The reduction in criteria pollutant emissions (L) achieved by the measure can be calculated as follows.

Criteria Pollutant Emission Reduction Formula

$$L = -E \times C \times M \times I \times N$$

Criteria Pollutant Emission Reduction Calculation Variables

ID	Variable	Value	Unit	Source
Output				
L	Reduction in criteria pollutant emissions from building energy	[ ]	tons per year	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
M	Criteria pollutant emission factors of natural gas	Table E-4.5	lb per MMBtu	U.S. EPA 1998
N	Conversion from lb to ton	0.0005	tons per lb	conversion

Further explanation of key variables:

- (M) – Table E-4.5 presents the criteria pollutant emission factors of natural gas for residential and commercial uses (U.S. EPA 1998).
- Please refer to the *GHG Calculation Variables* table above for definitions of variables that have been previously defined.

Sources

- California Energy Commission (CEC). 2017. *California Electricity Demand Forecast Zones*. Available: https://cecgis-caenergy.opendata.arcgis.com/datasets/86fef50f6f344fabbe545e58aec83edd_0/data?geometry=-165.327%2C31.004%2C-72.427%2C43.220. Accessed: June 2021.
- California Energy Commission (CEC). 2019. *Residential Alternative Calculation Method Reference Manual for the 2019 Building Energy Efficiency Standards.* May. Available: https://www.energy.ca.gov/sites/default/files/2020-10/2019%20Residential%20ACM%20Reference%20Manual_ada.pdf. Accessed: January 2021.
- California Energy Commission (CEC). 2020. Excel database with the 2019 Residential Appliance Saturation Study (RASS), provided to ICF. November 13, 2020.
- California Energy Commission (CEC). 2021. Excel database with the 2018-2030 Uncalibrated Commercial Sector Forecast, provided to ICF. January 21, 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.

- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 1998. *AP 42, Fifth Edition, Volume I. Chapter 1: External Combustion Sources. 1.4, Natural Gas Combustion*. July. Available: https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. *Emission Factors for Greenhouse Gas Inventories*. March. Available: https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf. Accessed: March 2021.

E-16. Require Zero Net Energy Buildings

GHG Mitigation Potential

Potentially large reduction in GHG emissions from building energy use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Requiring ZNE buildings can reduce sensitivity to fuel price shocks or scarcity and offer more reliability if electricity providers have been adapted to climate change or less reliability if the grid has not been adapted. If the development produces and exports emission-free energy, this increases energy resilience and adds generation capacity to the overall grid, reducing risk of outages.

Health and Equity Considerations

As a ZNE building is likely to exclude or limit natural gas combustion, it would likely improve indoor and regional air quality.

Measure Description

This measure requires the user to operate their building at ZNE. A ZNE building foremost reduces GHG emissions by reducing energy use through more efficient design. Further, the building avoids GHG emissions either by using no emissions-generating energy sources or offsetting the building energy emissions by exporting emission-free energy (typically from onsite renewables). For residential buildings, the user can determine achievement of ZNE performance by entering the project details into the CEC's CBECC-Res 2019 executable file (Wilcox 2020). CBECC-Res 2019 uses the energy design rating, represented by the Time Dependent Valuation (TDV), as a way to express the energy consumption of a building as a rating score index (CEC 2018).

Subsector

Building Decarbonization

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

CEC defines a ZNE Code Building as one where the net energy produced by onsite renewables is equal to the building energy consumption, measured using the CEC's TDV metric. The California Department of General Services defines ZNE more broadly, including not only buildings but campuses, portfolios, and communities (BluePoint Planning 2018).

Cost Considerations

ZNE buildings would have highly variable costs, including building onsite renewable energy, more expensive building materials to improve energy efficiency, and carbon offsets and/or renewable energy credits (RECs). While purchasing RECs may be less costly than building onsite generation, the project would not gain the co-benefits of greater energy resilience and contribution to grid capacity. And while all these costs may be high, the cost savings from reduced energy usage are also substantial.

Expanded Mitigation Options

Instead implement Measure E-17, *Require Renewable Surplus Buildings*, which results in a surplus of renewable energy and therefore increased GHG reductions and co-benefits.

GHG Reduction Formula

A = -100%

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from building energy	100	%	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
	None			

No further explanation of variables.

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The maximum, and, in fact, only percent reduction in GHG emissions from building energy for this measure is 100 percent. This assumes that the net amount of emissions displaced by onsite renewable energy resources is equal to the number of the emissions generated annually by the building electricity use and onsite fuel consumption.

Mutually Exclusive Measures

If the user selects this measure, they may not also select Measure E-17, *Require Renewable Surplus Buildings*, which represents a unique scenario in which the project produces more renewable energy than what is required to offset the emissions generated from energy consumed by the building and would be considered carbon-negative.

Example GHG Reduction Quantification

The user avoids building energy emissions by committing their project building to be ZNE. The user would reduce GHG emissions from building energy by 100 percent.

Quantified Co-Benefits

Energy and Fuel Savings

The percent reduction in electricity from an electricity provider and fuel consumption achieved by the measure is the same as the percent reduction in GHG emissions

(A). This measure, while not resulting in a net reduction in electricity consumption per se, would displace the building electricity from the grid.

Improved Air Quality

Electricity supplied by statewide fossil-fueled or bioenergy power plants generates criteria pollutants. However, because these power plants are located throughout the state and not typically in close proximity to the ZNE building site, the reduction in electricity use from this measure will not reduce localized criteria pollutant emissions.

For projects that are all electric or replace sources of fossil fuel combustion with electric infrastructure, the reduction in onsite fuel consumption from this measure would result in local improvements in air quality because the building fuel combustion occurs on site of the project (e.g., natural gas for space heating or water heating). The percent reduction in GHG emissions (A) is the same as the percent reduction in localized criteria pollutants from building energy achieved by the measure. In other cases, projects may achieve ZNE by offsetting emissions from onsite fuel combustion sources through the export of renewable energy generated to the electric grid. If the project would retain sources of fossil fuel combustion, there would not be a 100 percent reduction in local criteria pollutant emissions. The reduction in criteria pollutant emissions (B) achieved by the measure can be calculated as follows.

Criteria Pollutant Emission Reduction Formula

$$B = -C$$

Criteria Pollutant Emission Reduction Calculation Variables

ID	Variable	Value	Unit	Source
Output				
B	Percent reduction in criteria pollutant emissions from onsite fossil fuel use	[ ]	%	calculated
User Inputs				
C	Percent reduction in onsite fossil fuel use	0–100%	%	user input
Constants, Assumptions, and Available Defaults				
	None			

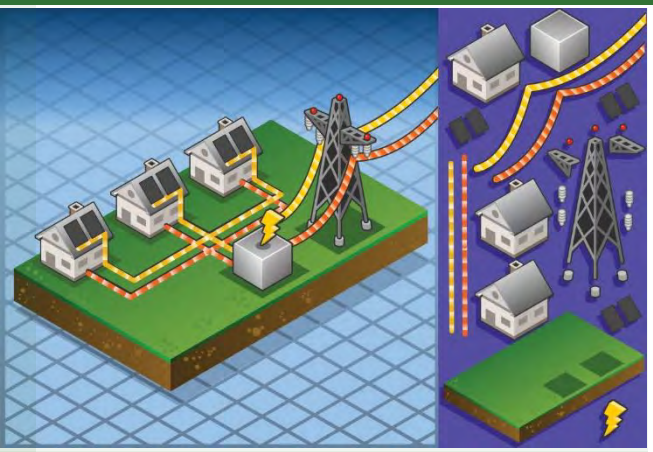
Further explanation of key variables:

- (B and C) – The reduction in criteria pollutant emissions may be less than 100 percent or even 0 percent if the project retains onsite fossil fuel sources (i.e., natural gas, propane) In this situation, the percent reduction in criteria pollutant emissions is equal to the percent reduction in onsite fossil fuel use.
- Please refer to the *GHG Calculation Variables* table above for definitions of variables that have been previously defined.

Sources

- Bluepoint Planning. 2018. *Commercial & District Zero Net Energy Framework*. April. Available: https://4eae5a23-44d0-418e-8d77-0e5a216d92ea.filesusr.com/ugd/cc790b_01490cf012b64cf7b369aab39a3750a9.pdf. Accessed: January 2021.
- California Energy Commission (CEC). 2014. *2013 Integrated Energy Policy Report*. January. Available: https://www.adaptationclearinghouse.org/resources/california-energy-commission-integrated-energy-policy-report.html. Accessed: January 2021.
- California Energy Commission (CEC). 2018. *Building Energy Efficiency Standards for Residential and Nonresidential Buildings for the 2019 Building Energy Efficiency Standards Title 24, Part 6*. December. Available: https://ww2.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdfCEC. Accessed: January 2021.
- Wilcox, B. 2020. *CBECC-Res 2019.1.3*. September. Available: http://www.bwilcox.com/BEES/cbecc2019.html. Accessed: January 2021.

E-17. Require Renewable Surplus Buildings



GHG Mitigation Potential

Potentially large reduction in GHG emissions from building energy use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Requiring renewable surplus buildings can add generation capacity to the overall grid, reducing energy costs and risk of outages.

Health and Equity Considerations

Providing surplus energy back into the grid can reduce the risk of power outages, which underserved communities are more vulnerable to because of disinvestment and historical redlining.

Measure Description

This measure will require that proposed development install onsite renewable energy in an amount that offsets more emissions than the amount generated from the development's electricity use and onsite fuel consumption. Installing zero-emission renewable energy displaces emissions from grid electricity that would otherwise be used, thereby reducing GHG emissions. Implementation of this measure would result in buildings that reduce more GHG emissions than they generate through surplus generation of energy from renewables, sometimes known as *carbon-negative buildings*. The amount of renewable energy required for a building to have net negative GHG emissions is largely determined by the number of emissions from onsite fuel consumption and the carbon intensity of the local electricity provider.

Subsector

Building Decarbonization

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

Onsite renewable energy should be installed in an amount that offsets more emissions than the amount generated from the development's electricity and onsite fuel consumption. The excess renewably energy must be sold to displace non-zero emission grid electricity.

Cost Considerations

The costs associated with building only renewable-surplus structures are very high, as each building will need to be maximally energy efficient and generate renewable energy on site. However, by definition, energy costs would be entirely eliminated, and surplus energy would be sold back to the electricity provider. This is not only a cost savings, but also an additional revenue stream for each building.

Expanded Mitigation Options

When requiring development with surplus renewable generation, a best practice is to also electrify the building (see Measure E-15, *Require All-Electric Development*) so that emissions from onsite fuel consumption, such as natural gas, are eliminated.

GHG Reduction Formula

$$A = B + [(C - D) \times E \times F \times G]$$

$$A_{\%} = \frac{A - (B + C \times E \times F \times G)}{(B + C \times E \times F \times G)}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	GHG emissions from building energy	[ ]	MT CO_2e per year	calculated
$A_{\%}$	Percent reduction in GHG emissions from building energy	>100	%	calculated
User Inputs				
B	Emissions from building onsite fuel consumption	[ ]	MT CO_2e per year	user input
C	Building electricity use	[ ]	kWh per year	user input
D	Onsite renewable energy production	[ ]	kWh per year	user input
Constants, Assumptions, and Available Defaults				
E	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
F	Conversion from lb to MT	0.000454	MT per lb	conversion
G	Conversion from kWh to MWh	0.001	MWh per kWh	conversion

Further explanation of key variables:

- (B) – Emissions from building onsite fuel combustion may come from natural gas, propane, or other fuels. The user should take care to properly quantify these emissions using accepted methodologies (such as CalEEMod). If the project would be an all-electric development (see Measure E-15), then there would be no onsite fuel consumption, and the value for this variable would be zero.
- (C) – It is assumed that the building electricity comes from a non–zero-emission source (e.g., grid electricity with fossil fuel mix). However, if a project would be all-electric, and the local electricity provider supplying the project's electricity sources 100 percent of its electricity from renewable energy sources, then this measure would not reduce building energy emissions, as they would already be zero. The measure would still result in the co-benefit of enhanced energy supply because it adds its energy surplus as additional capacity back to the grid.
- (D) – It is assumed that the onsite renewable energy comes from a zero-emission source (e.g., solar, wind, geothermal, biomass, eligible hydroelectric). See Measures E-10-A through E-10-C for discussion of how to calculate the energy generated from various renewable energy systems. This value should be greater than the value for (C) because the renewable energy generated will need to more than offset the electricity consumed and onsite fuel consumption.

- (E) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year not referenced in Tables E-4.3 and E-4.4), the user should use that specific value in the GHG calculation formula. If the electricity provider is not known, a user may elect to use the statewide grid average carbon intensity.

  Note that the GHG intensity factor of electricity providers will decrease in future years as the electricity providers continue to improve their energy mix to meet the requirements of SB 100 for 50 percent carbon-free electricity by 2025, 60 percent by 2030, and 100 percent by 2045. Accordingly, this measure will reduce fewer and fewer emissions in future years as the energy it displaces becomes cleaner.

GHG Calculation Caps or Maximums

Measure Maximum

($A_{\%}$) The percent reduction in GHG emissions from building energy for this measure should be greater than 100 percent. This is based on the requirement that the displaced electricity emissions from the onsite renewable sources must exceed the combined building energy emissions from electricity and onsite fuel consumption.

Mutually Exclusive Measures

If the user selects this measure, they may not also select Measure E-16, *Require Zero Net Energy Buildings*, which represents a unique scenario in which the project produces an amount of renewable energy that displaces an equal number of emissions from building electricity and onsite fuel consumption (i.e., ZNE).

Example GHG Reduction Quantification

The user constructs onsite renewable energy infrastructure that displaces more emissions than the amount generated from electricity and onsite fuel consumption. In this example, a single-family home would be constructed in Roseville Electric's service territory and would begin operation by 2022. It would therefore have an electricity carbon intensity of 473 lb CO2e per megawatt-hour (E). If the emissions from building onsite fuel consumption are 0.1 MT CO_2e per year (B), the building electricity use is 9,000 KWh per year (C), and the onsite renewable energy production is 16,000 KWh per year (D), the mitigated emissions would be -1.4 MT CO_2e per year, or a reduction of 169 percent.

$$A = \frac{0.1\ \text{MT CO}_2\text{e}}{\text{yr}} + \left[\left(\frac{9{,}000\ \text{kWh}}{\text{yr}} - \frac{16{,}000\ \text{kWh}}{\text{yr}}\right) \times \frac{473\ \text{lb CO}_2\text{e}}{\text{MWh}} \times \frac{0.000454\ \text{MT}}{\text{lb}} \times \frac{0.001\ \text{MWh}}{\text{kWh}}\right] = \frac{\text{-1.4 MTCO}_2\text{e}}{\text{yr}}$$

$$A_{\%} = \frac{\frac{\text{-1.4 MT CO}_2\text{e}}{\text{yr}} - \left(\frac{0.1\ \text{MT CO}_2\text{e}}{\text{yr}} + \frac{9{,}000\ \text{kWh}}{\text{yr}} \times \frac{473\ \text{lb CO}_2\text{e}}{\text{MWh}} \times \frac{0.000454\ \text{MT}}{\text{lb}} \times \frac{0.001\ \text{MWh}}{\text{kWh}}\right)}{\frac{0.1\ \text{MT CO}_2\text{e}}{\text{yr}} + \frac{9{,}000\ \text{kWh}}{\text{yr}} \times \frac{473\ \text{lb CO}_2\text{e}}{\text{MWh}} \times \frac{0.000454\ \text{MT}}{\text{lb}} \times \frac{0.001\ \text{MWh}}{\text{kWh}}} = -169\%$$

Quantified Co-Benefits

Energy and Fuel Savings

This measure, while not resulting in a net reduction in electricity consumption per se, would completely displace the building electricity from the grid (C) and provide surplus generation capacity from onsite renewable sources (D).

Sources

- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.

E-18. Establish Methane Recovery in Landfills

GHG Mitigation Potential

Varies

Variable reduction in GHG emissions from landfill waste decomposition depending on the capture program and system size

Co-Benefits (icon key on pg. 34)

Climate Resilience

Establishing CH_4 recovery provides backup fuels if extreme weather events disrupt main sources of fuel.

Health and Equity Considerations

Combustion of CH_4 may increase local air pollution. Potential effects of combustion emissions on adjacent sensitive receptors needs to be evaluated during project design.

Measure Description

This measure involves the capture and treatment of landfill gas (LFG) emitted from decomposition of organic waste in landfills. Landfill gas contains about 50 percent CH_4 by volume, which has a GWP 25 times that of CO_2. This measure addresses emissions savings from LFG that is captured and either flared or combusted for energy. Flaring LFG will reduce the amount of CH_4 emitted into the atmosphere. Combusting LFG to generate electricity for onsite energy needs reduces GHG emissions in two ways: it reduces direct CH_4 emissions, and it displaces electricity demand and the associated indirect GHG emissions from electricity production. Municipal solid waste management teams should calculate the GHG savings from both flaring and combustion for energy recovery to see the relative benefits for each option.

Subsector

Methane Recovery

Scale of Application

Project/Site

Implementation Requirements

See measure description.

Cost Considerations

Landfills that have no current system for capturing CH_4 would face high installation costs for a CH_4 recovery system. Costs would be much lower for landfills that already have a system for trapping or cleaning captured gases. In California, CH_4 reclaimed from waste could represent a large additional revenue stream for landfills if the gases are managed and sold as offsets or RECs on the Low Carbon Fuel Standard or U.S. Renewable Fuel Standards markets.

Expanded Mitigation Options

Additional reductions may be achieved if the LFG is used as a transportation fuel or injected into a regional natural gas pipeline for downstream uses. Quantitative methods for these alternatives are not specifically addressed by this measure.

GHG Reduction Formula

$A1 = [(G \times O \times L) + (G \times P \times M)] \times Q$

$B = G \times N$

$A2 = B \times R \times S \times T$

$A3 = A1 + A2$

$C = [D \times [E \times I \times J \times F \times K] \times (1 - H)] \times L$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A1	Emissions from LFG flaring or combustion	[ ]	MT CO_2e	calculated
B	Energy savings from flaring or combustion of LFG for energy	[ ]	MMBtu	calculated
A2	Additional emissions from LFG combustion if energy is generated	[ ]	MT CO_2e	calculated
A3	Total emissions from LFG use (flaring and energy use)	[ ]	MT CO_2e	calculated
C	CH_4 generation potential emissions	[ ]	MT CO_2e	calculated
User Inputs				
D	Municipal Solid Waste affected by measure	[ ]	tons	user input
E	CH_4 correction factor	0.6–1	unitless	IPCC 2007
F	Fraction of CH_4 in landfill gas	0.4–0.6	unitless	IPCC 2007
G	LFG flared of combusted for energy	[ ]	standard cubic foot (scf)	U.S. EPA 2018
Constants, Assumptions, and Available Defaults				
H	Oxidation rate	0.10	percent	IPCC 2007
I	Dissolved organic carbon (DOC)	19.8%	percent	CalRecycle 2014
J	Fraction of DOC that is ultimately degraded	0.6	unitless	IPCC 2007
K	Stoichiometric ratio between CH_4 and carbon	16/12	g of CH_4 per g of C	conversion
L	GWP of CH_4	25	unitless	IPCC 2007
M	GWP of N_2O	298	unitless	IPCC 2007
N	Heating value of LFG	0.000485	MMBtu per scf	U.S. EPA 2018

ID	Variable	Value	Unit	Source
O	CH_4 emission factor for LFG combustion	0.001552	g CH_4 per scf	U.S. EPA 2018
P	N_2O emission factor for LFG combustion	0.000306	g N_2O per scf	U.S. EPA 2018
Q	Conversion from g to MT	10^{-6}	MT per g	conversion
R	MWh to MMBTU	3.412142	MWh per MMBtu	conversion
S	Carbon intensity of local electricity provider	Table E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
T	Conversion from lb to MT	0.000454	MT per lb	conversion

Further explanation of key variables:

- (E) – The CH_4 correction factor accounts for CH_4 generation from managed or unmanaged landfills. For example, unmanaged landfills produce less CH_4 from a given amount of waste than managed landfills because a larger fraction of waste decomposes aerobically in the top layers of a landfill.
  - Managed = 1.0
  - Unmanaged (≥5 meter (m) deep) = 0.8
  - Unmanaged (<5 m deep) = 0.4
  - Uncategorized = 0.6
- (C) – The generation potential follows the IPCC 2007 "good practices" guidelines for estimating CH_4 emissions for a landfill that does not have LFG capture technology.
- (F) – The fraction of CH_4 in landfill gas is based on the organic matter content of the landfill. This fraction can range from 0.4 to 0.6, but the default is usually taken as 0.5.
- (I) – CalRecycle published a 2016 study on the composition of California's overall disposed waste stream. From this study, an average California DOC was calculated to determine organic content of waste in landfills.
- (D) – This input is the amount of waste that the user will know will have some amount of LFG capture technology.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

In this example, a user decides to implement an LFG capture program and use the LFG to produce energy to offset utility electricity usage. The landfill contains 1,000 short tons of waste, is managed and has 0.5 fraction of CH_4 in the LFG with a 75 percent collection efficiency. Twenty million scf LFG was combusted. The project is in Redding Electric Utility's service territory and would begin operation by 2024. It would therefore have an electricity carbon intensity of 341 lb CO_2e per MWh (S). This example scenario results in a total net GHG reduction (A3) of 5,126.6 MT CO_2e.

$$A1 = \left[\left(\textbf{20,000,000 scf} \times 0.001552 \frac{g\ CH_4}{scf} \times 25\right) + \left(\textbf{20,000,000 scf} \times 0.000306 \frac{g\ N_2O}{scf} \times 298\right)\right] \times 10^{-6} = 2.6\ MT\ CO_2e$$

$$B = \textbf{20,000,000 scf} \times 0.000485 \frac{MMBtu}{scf} = 9{,}700\ MMBtu$$

$$A2 = 9{,}700\ MMBtu \times 3.412142 \frac{MWh}{MMBtu} \times 341 \frac{lb}{MWh} \times 0.000454 \frac{MT}{lb} = 5{,}124\ MT\ CO_2e$$

$$A3 = 2.6\ MT\ CO_2e + 5{,}124\ MT\ CO_2e = 5{,}126.6\ MT\ CO_2e$$

$$C = \left[\textbf{1,000 tons} \times \left[1 \times 19.8\% \times 0.6 \times \textbf{0.5} \times \frac{16}{12} \frac{g\ CH_4}{g\ C}\right] \times (1 - 0.1)\right] \times 25 = 1{,}782\ MTCO_2e$$

Quantified Co-Benefits

Energy and Fuel Savings

Energy savings from flaring or combustion of LFG for energy are calculated above as (B).

Sources

- CalRecycle 2014. *2014 Disposal-Facility-Based Characterization of Solid Waste in California.* November 4, 2015. Available: https://www2.calrecycle.ca.gov/Publications/Details/1546. Accessed: January 2021.
- Environmental Protection Agency (U.S. EPA). 2018. *Center for Corporate Climate Leadership. Emission Factors for Greenhouse Gas Inventories.* March 9. Available: https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf. Accessed: January 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H. L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.

E-19. Establish Methane Recovery in Wastewater Treatment Plants

GHG Mitigation Potential

Potentially large reduction in GHG emissions from plant operations

Co-Benefits (icon key on pg. 34)

Climate Resilience

Establishing CH_4 recovery provides backup fuels if extreme weather events disrupt main sources of fuel.

Health and Equity Considerations

Combustion of CH_4 may increase air pollution. Potential effects of combustion emissions on adjacent sensitive receptors needs to be evaluated during project design.

Measure Description

This measure requires capturing CH_4 from an existing wastewater treatment plant and either (1) combusting or flaring it to prevent escape into the atmosphere or (2) combusting or flaring it and using the heat to generate electricity for onsite energy needs. Using the combusted CH_4 as an energy source reduces GHG emissions by displacing electricity demand and the associated indirect GHG emissions from electricity production. This measure is most applicable to wastewater treatment plants that have anaerobic digestion infrastructure, which facilitates the biological decomposition of the wastewater and produces the CH_4 that is either flared or harnessed for energy.

Subsector

Methane Recovery

Scale of Application

Project/Site

Implementation Requirements

See measure description. Also, this measure may not be appropriate for wastewater treatment plants that use lagoons to process wastewater.

Cost Considerations

Wastewater treatment plants that have no current system for capturing CH_4 would face high installation costs for a CH_4 recovery system. Costs would be lower for plants that already have a system for trapping or cleaning captured gases. In California, CH_4 reclaimed from wastewater treatment could represent a large additional revenue stream for the plants if the gases are managed and sold as offsets or RECs on the Low Carbon Fuel Standard or U.S. Renewable Fuel Standards markets.

Expanded Mitigation Options

Additional reductions may be achieved if the CH_4 is processed and used as a transportation fuel or injected into a regional natural gas pipeline for downstream uses. Captured waste biogas may also be used to support the production of biodegradable biopolymers, which serve as natural alternatives to conventional plastics.

GHG Reduction Formula

$A1 = C \times [D - (E \times F \times G \times H \times (1 - I) \times J \times K \times L)]$ (Emissions Reduction)

$B = (C \times E \times F \times G \times M \times N \times O)$ (Energy Savings, if applicable)

$A2 = B \times P \times Q \times R$ (Additional Emissions Reduction, if applicable)

$A3 = A1 + A2$ (Total Net Emissions Reduction)

$A4 = \frac{A3}{C \times D}$ (% Reduction)

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A1	Emissions reduction from CH_4 flaring or combustion	[ ]	MT CO_2e	calculated
B	Energy savings from CH_4 capture, combustion and energy generation	[ ]	kWh	calculated
A2	Additional emissions reduction if energy is generated	[ ]	MT CO_2e	calculated
A3	Total net emissions reduction	[ ]	MT CO_2e	calculated
A4	Percent reduction in GHG emissions from wastewater	0-100	%	calculated
User Inputs				
C	Wastewater affected by measure	[ ]	liters	user input
Constants, Assumptions, and Available Defaults				
D	Wastewater emission factor	2.85×10^{-6} or 1.93×10^{-6}	MT CO_2 per liter gal per liter	U.S. EPA 2020
E	Conversion from liters to gal	0.26417	sf per gal	conversion
F	Digester gas	0.01	unitless	U.S. EPA 2020
G	Fraction CH_4	0.65	%	U.S. EPA 2020
H	Density of CH_4	662	g CH_4 per m^3 CH_4	U.S. EPA 2020
I	Destruction efficiency	0.99	unitless	U.S. EPA 2020
J	Conversion from ft^3 to m	0.02832	m^3 per ft^3	conversion
K	Conversion from g to MT	$1e^{-6}$	g per MT	conversion
L	GWP of CH_4	25	unitless	IPCC 2007
M	Heating value of CH_4	1,028	BTU per ft^3 CH_4	ICLEI 2013
N	Conversion from kWh to BTU	0.000293	kWh per BTU	conversion
O	Efficiency factor	0.85	unitless	assumption
P	Conversion from kWh to MWh	0.001	MWh per kWh	conversion

ID	Variable	Value	Unit	Source
Q	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
R	Conversion from lb to MT	0.000454	MT per lb	conversion

Further explanation of key variables:

- (A1) – The emissions calculated for this variable represent the emissions reduction that is achieved from the combustion of CH_4. Combusting the CH_4 prevents it from entering the atmosphere; however, during the combustion process, some fraction of CH_4 is not fully combusted and can leak into the atmosphere. The formula for this variable accounts for the fraction that is not fully combusted.
- (B) – This variable represents the energy savings that result from the combustion of CH_4 and then using the heat produced to generate energy. If CH_4 will only be combusted or flared but not used for energy, then there would not be energy savings for this measure. The user should set this variable to zero if there will be no energy generation.
- (A2) – The emissions reductions calculated for this variable represent the emissions that are offset from the generation of energy from the captured CH_4 instead of from typical fossil fuel sources. Combusting the CH_4 avoids the need for fossil fuel sources of energy that would have been generated in the absence of this measure.
- (A3) – The net emissions reductions achieved by this measure are calculated in this variable.
- (D) – The factors represent the emissions per liter of wastewater that is treated at facilities with either primary treatment or without primary treatment. These values are as follows.
  - Primary treatment factor: 1.93 x 10-6
  - Without primary treatment factor: 2.85 x 10^{-6}
- (E) – The digester gas variable represents the amount of digester gas that is generated per gal of wastewater. The value given here is determined by assumptions from the U.S. EPA's GHG inventory, with the amount of digester gas generated per person per day is 1 cubic foot and the amount of wastewater generated per person per day is 100 gallons (gal) (for publicly owned treatment works). Dividing these values (1/100) is equal to 0.01 cubic feet of digester gas per gal of wastewater.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user implements CH_4 capture and energy generation infrastructure at an existing wastewater treatment plant that processes 100 million liters of wastewater per year. The existing plant currently has primary treatment. The project is in the Silicon Valley Power's service territory, and the selected electricity provider emission factor is for the year 2026 (224 lb CO_2e per MWh) (Q). The example measure emission reduction is calculated below.

$$B = \left(100\times10^{6}\ \text{liters} \times \frac{0.26417\ \text{gal}}{\text{liter}} \times 0.01\frac{\text{ft}^3}{\text{gal}} \times 0.65 \times \frac{1{,}028\ \text{BTU}}{\text{ft}^3\ \text{CH4}} \times \frac{0.000293\ \text{kWh}}{\text{BTU}} \times 0.85\right) = 43{,}962\ \text{kWh}$$

$$A1 = 100\times10^{6}\ \text{liters} \times \left[1.93\times10^{-6}\frac{\text{MT CH}_4}{\text{liter}} - \left(\frac{0.26417\ \text{gal}}{\text{liter}} \times 0.01\frac{\text{ft}^3}{\text{gal}} \times 0.65 \times 662\frac{\text{g CH}_4}{\text{m}^3\ \text{CH}_4} \times (1 - 0.99) \times \frac{0.02832\ \text{m}^3}{\text{ft}^3} \times \frac{10^{-6}\ \text{MT}}{\text{g}} \times 25\right)\right] = 192\ \text{MT CO}_2\text{e}$$

$$A2 = 43{,}962\ \text{kWh} \times 0.001\frac{\text{MWh}}{\text{kWh}} \times 224 \times 0.000454\frac{\text{MT}}{\text{lb}} = 4\ \text{MT CO}_2\text{e}$$

$$A3 = 192\ \text{MT CO}_2\text{e} + 4\ \text{MT CO}_2\text{e} = 196\ \text{MT CO}_2\text{e}$$

$$A4 = \frac{196\ \text{MT CO}_2\text{e}}{100\times10^{6}\ \text{liters} \times 1.93 \times 10^{-6}\frac{\text{MT CO}_2\text{e}}{\text{liter}}} = 102\%$$

Quantified Co-Benefits

Successful implementation of this measure could achieve energy savings if the user's project includes CH_4-based energy generation infrastructure. This quantified co-benefit is derived in the steps above that are necessary to quantify GHG reductions.

Sources

- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- International Council for Local Environmental Initiatives (ICLEI). 2013. *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions. Appendix F: Wastewater and Water Emission Activities and Sources.* Available: https://icleiusa.org/publications/us-community-protocol/. Accessed: January 19, 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018 – Chapter 7. Waste*. Available: https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-chapter-7-waste.pdf. Accessed: January 19, 2021.

Water

Energy used to pump, treat, and convey water generates GHG emissions and is the primary source of GHG emissions within the water sector. The amount of energy required depends on both the volume of water and energy intensity associated with the water source. For example, it generally takes less energy to pump and convey water from a local source than to transport water across long distances. California's water supply is diverse and comprised of groundwater, surface water, and reservoirs, with some water transport occurring over long distances and over varied terrain. Treating water so that it is potable for human use and processing wastewater also generates GHG emissions.

Indirect GHG emissions associated with water use can be decreased by reducing water demand and/or by using a less energy-intensive water source. A project can reduce its indoor water demand by installing low-flow and high-efficiency water fixtures and appliances, such as toilets, showerheads, faucets, clothes washers, and dishwashers. A reduction in outdoor water demand can be achieved by designing water-efficient landscapes that include plants with relatively low watering needs; minimizing areas of water-intensive turf; and installing smart irrigation systems to avoid excessive water use. These and other strategies could be combined into a water conservation strategy with a water reduction performance target. Less energy-intensive water sources include reclaimed and grey water, as well as locally sourced water (e.g., nearby groundwater basins, nearby surface water, and gravity-dominated systems).

Emission reductions achieved by reduced water demand will be directly proportional to the decrease in demand. Use of less energy-intensive water sources will decrease energy-related emissions, but these systems may also require energy to successfully operate. Resources and methods to quantify emissions reductions from measures that reduce water demand and/or target use of a less energy-intensive water source are described in this section. Use the graphic on the right to click on an individual measure to navigate directly to the measure's factsheet.

W-1. Use Reclaimed Non-Potable Water

GHG Mitigation Potential

Potentially small reduction in GHG emissions from outdoor water use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Using reclaimed non-potable water conserves water resources, which will become more strained under climate change, and provides a backup water source should extreme events disrupt current sources. This could also reduce costs associated with obtaining fresh potable water from distant sources.

Health and Equity Considerations

The project will provide appropriate education on non-potable water for project residents/employee.

Measure Description

This measure requires use of reclaimed water for outdoor uses. Reclaimed water is water reused for non-potable uses (e.g., landscape irrigation) after wastewater treatment instead of returning the water to the environment (i.e., discharging into rivers and other bodies of water). Using water after it has been treated requires substantially less energy to deliver it to users than fresh water from distant sources and, therefore, reduces GHG emissions. The use of reclaimed water is typically designated for non-potable uses, such as landscaping and other outdoor uses.

Although wastewater treatment processes have improved, there has been limited implementation of reclaimed water projects for household or potable uses. Furthermore, the treatment of wastewater to produce potable water (often through reverse osmosis) is usually energy-intensive and thus may not result in reduction in energy consumption and associated GHG emissions.

Scale of Application

Project/Site

Implementation Requirements

See measure description.

Cost Considerations

Initial costs of altering a system, whether it is irrigation, plumbing, or cleaning, to use reclaimed non-potable water will vary with the source of the water and the use; however, all applications will have costs associated with installing water collection and distribution infrastructure.

Expanded Mitigation Options

This measure does not include treatment of wastewater for potable uses, although the approach to assessing the potential change in GHG emissions would be the same.

GHG Reduction Formula

$A1 = C1 \times (D - E)$ (Energy savings)

$B1 = A1 \times F \times G \times H$ (Emissions reduction)

$B2 = C2 \times \frac{D-E}{D}$ (Percent emissions reduction)

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A1	Energy savings from using reclaimed water	[ ]	kWh	calculated
B1	GHG reduction from using reclaimed water	[ ]	MT CO_2e	calculated
B2	% GHG reduction from outdoor water use	[ ]	%	calculated
User Inputs				
C1	Amount of water to be used from reclaimed sources	[ ]	acre-feet (AF)	user input
C2	Percentage of water from reclaimed water (relative to total outdoor water demand)	[ ]	%	user input
Constants, Assumptions, and Available Defaults				
D	Electricity for municipally provided water	Table W-1.1	kWh per AF	CPUC 2016
E	Fraction of electricity for reclaimed water	Table W-1.1	kWh per AF	CPUC 2016
F	Conversion from kWh to MWh	0.001	MWh per kWh	conversion
G	Carbon intensity of electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
H	Conversion from pounds (lb) to MT	0.000454	MT per lb	conversion

Further explanation of key variables:

- (C1) – The amount of water to be used from reclaimed water must be provided by the user.
- (D, E) – The water energy-intensity factors are derived from the most recent version of the California Public Utilities Commission (CPUC) Water Energy Calculator and are provided in Table W-1.1 in Appendix C, *Emission Factors and Data Tables* (CPUC 2016). The energy intensity factors rely on region-wide average values for the California Department of Water Resources' (DWR) 10 hydrologic regions. Following wastewater treatment, reclaimed water would be pre-treated (to meet standards) and distributed back to an end use (e.g., city park). Accordingly, the fraction of energy required to provide reclaimed water can be determined by consulting Table W-1.1 and identifying the columns for pre-treatment and water distribution (omit the column for extraction and conveyance).

- (G) – GHG intensity factors for major utilities in California are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by the listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year in which the reclaimed water system would be established), the user should replace these defaults in the electricity consumption GHG calculation formula.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions from water-related electricity by using reclaimed water for non-potable uses in place of fresh water. In this example, the project is in the San Joaquin River hydrologic region and includes the use of 31 AF per year of reclaimed water (C1), which represents 80 percent of the project's total outdoor water demand (C2). The electricity provider for the project area is Turlock Irrigation District and the analysis year is 2027. The carbon intensity of electricity is therefore 296 lb CO_2e per MWh (G).

$$A1 = \mathbf{31\ AF} \times \left(252\frac{kWh}{AF} - 163\frac{kWh}{AF}\right) = 2{,}759\ kWh$$

$$B1 = 2{,}759\ kWh \times 0.001\frac{MWh}{kWh} \times 296\frac{lb\ CO_2e}{MWh} \times 0.000454\frac{MT}{lb} = 0.4\ MT\ CO_2e$$

$$B2 = \mathbf{80\%} \times \frac{\left(252\frac{kWh}{AF} - 163\frac{kWh}{AF}\right)}{252\frac{kWh}{AF}} = 28\%$$

Quantified Co-Benefits

Energy and Fuel Savings

Energy savings (A1) are derived in the steps above that are necessary to quantify GHG reductions.

Water Conservation

This measure would not necessarily change water consumption, but it would result in conservation of fresh water sources by using reclaimed water. This quantity of freshwater savings is equal to the amount of reclaimed water (C1).

Sources

- California Public Utilities Commission (CPUC). 2016. Water-Energy Calculator–Draft Version 1.05. Available: https://www.cpuc.ca.gov/nexus_calculator/. Accessed: January 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.

W-2. Use Grey Water

GHG Mitigation Potential

Potentially small reduction in GHG emissions from outdoor water use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Using grey water conserves water resources, which will become more strained under climate change, and provides a backup water source should extreme events disrupt current sources. This could also reduce costs associated with obtaining fresh potable water from distant sources.

Health and Equity Considerations

The project should provide appropriate education on grey water for project residents and employees.

Measure Description

This measure requires the use of grey water for outdoor uses. *Grey water* is water from sinks, showers, tubs, and washing machines that has not contacted biological pathogens. Grey water offsets freshwater that would need to be extracted or sourced for the same demand, resulting in water and GHG emissions savings. The energy associated with grey water use is essentially negligible as it is used on site for a second time and does not require major pumping equipment or further treatment.

Scale of Application

Project/Site

Implementation Requirements

Grey water should only be used for non-potable applications, such as landscaping and other outdoor uses, because grey water does not undergo water treatment before being used for the second time.

Cost Considerations

Initial costs of altering the plumbing of a property to use grey water will vary with the property type; however, all applications will have costs associated with installing water collection, storage, and distribution infrastructure. These costs would be offset by reductions in freshwater use, as well as reduce energy requirements for water treatment and waste management.

Expanded Mitigation Options

For grey water sourced from sinks, it is best practice not to use water with greasy and oily substances, such as runoff from kitchen sinks with leftover oils, meat scraps, and dairy products.

GHG Reduction Formula

$A1 = (D \times E + D \times F) \times G \times H$ (Water savings, if not known by user)

$B = A1 \times ((I + J) - K)$ (Energy savings)

$C1 = B \times L \times M \times N$ (Emissions reduction)

$C2 = A2$ (Percent emissions reduction)

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A1	Outdoor water savings from using grey water	[ ]	AF	calculated
B	Energy savings from using grey water	[ ]	kWh	calculated
C1	GHG reduction from using grey water	[ ]	MT CO_2e	calculated
C2	% GHG reduction from outdoor water use	[ ]	%	calculated
User Inputs				
A2	Percentage of water from grey water sources (relative to total outdoor water demand)	[ ]	%	user input
D	Number of residents in homes with grey water systems	[ ]	occupants	user input
Constants, Assumptions, and Available Defaults				
E	Gal per day per occupant from showers, bathtubs, and lavatories	25	gal per day per occupant	CA Code 2019
F	Gal per day per occupant for laundry	15	gal per day per occupant	CA Code 2019
G	Days per year	365	days per year	conversion
H	Conversion from gal to AF	$3.07x10^{-6}$	AF per gal	conversion
I	Electricity required for municipally provided water	Table W-1.1	kWh per AF	CPUC 2016
J	Electricity required for wastewater treatment following municipal use	418	kWh per AF	CPUC 2016
K	Fraction of electricity for grey water	0	kWh per AF	assumption
L	Conversion from kWh to MWh	0.001	MWh per kWh	conversion
M	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
N	Conversion from lb to MT	0.000454	MT per lb	conversion

Further explanation of key variables:

- (A1) – If the user knows how much grey water will be used for their project, that amount should be used to determine GHG reductions. If it is not known, however, the formula for A1 can be used to estimate the volume of grey water at residential uses, based on the 2019 California Plumbing Code.
- (I, K, J) – The water energy-intensity factors are derived from the most recent version of the CPUC Water Energy Calculator and are provided in Table W-1.1 in Appendix C (CPUC 2016). The energy intensity factors rely on region-wide average values for DWR's 10 hydrologic regions. Because grey water is reused on site, it avoids energy after initial water consumption for at least once use cycle (i.e., wastewater treatment and extraction, conveyance, pre-treatment, and distribution energy for an equivalent volume of water).
- (M) – GHG intensity factors for major utilities in California are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by the listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year in which the grey water system would be established), the user should replace these defaults in the electricity consumption GHG calculation formula.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions from water-related electricity by using grey water for non-potable uses in place of fresh water. In this example, the project in the South Coast hydrologic region and includes 300 residents. These residents would produce about 13.4 AF of water, which the user has determined is equal to 20 percent of the project's total water demand (A2). The electricity provider for the project area is City of Riverside and the analysis year is 2024. The carbon intensity of electricity is therefore 789 lb CO_2e per MWh (L).

$$A1 = \left(300 \times 25\frac{\text{gal}}{\text{day·resident}} + 300 \times 15\frac{\text{gal}}{\text{day·resident}}\right) \times 365\frac{\text{days}}{\text{year}} \times \left(3.07\times10^{-6}\frac{\text{AF}}{\text{gal}}\right) = 13.4 \text{ AF}$$

$$B = 13.4 \text{ AF} \times \left(\left(1{,}898\frac{\text{kWh}}{\text{AF}} + 418\frac{\text{kWh}}{\text{AF}}\right) - 0\frac{\text{kWh}}{\text{AF}}\right) = 31{,}034 \text{ kWh}$$

$$C1 = 31{,}034 \text{ kWh} \times 0.001\frac{\text{MWh}}{\text{kWh}} \times 789\ \frac{\text{lb } CO_2e}{\text{MWh}} \times 0.000454\frac{\text{MT}}{\text{lb}} = 11.1 \text{ MT } CO_2e$$

$$C2 = 20\%$$

Quantified Co-Benefits

Energy and Fuel Savings

Energy savings (B) are derived in the steps above that are necessary to quantify GHG reductions.

Water Conservation

This measure would not necessarily change water consumption, but it would result in conservation of fresh water sources by using grey water. This quantity of freshwater savings is equal to the amount of grey water (A1).

Sources

- California Plumbing Code. 2019 (CA Code). *Chapter 15 Alternate Water Sources for Nonpotable Applications*. https://up.codes/viewer/california/ca-plumbing-code-2019/chapter/15/alternate-water-sources-for-nonpotable-applications#15. Accessed: January 2021.
- California Public Utilities Commission (CPUC). 2016. Water-Energy Calculator–Draft Version 1.05. Available: *https://www.cpuc.ca.gov/nexus_calculator/*. Accessed: January 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.

W-3. Use Locally Sourced Water Supply

GHG Mitigation Potential

Potentially moderate reduction in GHG emissions from water use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Using locally sourced water provides fewer opportunities for extreme events to disrupt the water source due to shorter traveling times. This could also reduce costs associated with obtaining fresh potable water from distant sources.

Health and Equity Considerations

Locally sourced water may have more contaminants than imported options. For potable uses, carefully consider the water quality of the proposed source.

Measure Description

This measure requires use of local water supplies instead of more distant water supplies. Locally sourced water is typically less energy intensive because it does not need to be moved across long distances (unless locally sourced water requires extensive pretreatment to address water quality concerns). Using locally sourced water can thus avoids the higher GHG emissions from energy consumed to pump and move water through larger infrastructure systems, such as the State Water Project.

Scale of Application

Plan/Community

Implementation Requirements

See measure description.

Cost Considerations

Prioritizing locally sourced water reduces costs associated with the transportation of water to the use location. However, regions that are not already large-scale water producers will most likely require significant investment in water extraction, processing, management, and potentially reuse in order to meet demand.

Expanded Mitigation Options

Install onsite water collection systems, such as a rain barrels or cisterns, for even more local water supply, reducing the associated energy and GHG emissions from water transmission.

GHG Reduction Formula

$A1 = \mathbf{C1} \times (D - \mathbf{E})$ (Energy savings)

$B1 = A1 \times F \times G \times H$ (Emissions reduction)

$B2 = \mathbf{C2} \times \frac{D-\mathbf{E}}{D}$ (Percent emissions reduction)

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A1	Energy savings from using local water	[ ]	kWh	calculated
B1	GHG reduction from using local water	[ ]	MT CO_2e	calculated
B2	% GHG reduction from outdoor water use	[ ]	%	calculated
User Inputs				
C1	Amount of water to be obtained from local sources	[ ]	AF	user input
C2	Percentage of water from local sources (relative to total water demand)	[ ]	%	user input
E	Electricity required to treat and distribute local water	[ ]	kWh/AF	user input
Constants, Assumptions, and Available Defaults				
D	Electricity for municipally provided water	Table W-1.1	kWh per AF	CPUC 2016
F	Conversion from kWh to MWh	0.001	MWh per kWh	conversion
G	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
H	Conversion from lb to MT	0.000454	MT per lb	conversion

Further explanation of key variables:

- (E) – The water energy-intensity factor for the local water source must be defined by the user.
- (D) – The water energy-intensity factors are derived from the most recent version of the CPUC Water Energy Calculator and are provided in Table W-1.1 in Appendix C (CPUC 2016). The energy intensity factors rely on region-wide average values for DWR's 10 hydrologic regions.
- (G) – GHG intensity factors for major utilities in California are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by the listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year in which the project begins local water use), the user should replace these defaults in the electricity consumption GHG calculation formula.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions from water-related electricity by using locally sourced water. In this example, the project is in the South Coast hydrologic region and uses 46 AF per year of water. The user chooses to supply 100 percent of the water for the project (C1, C2) from an alternative local source that has a water energy-intensity of 1,200 kWh per AF (E). The electricity provider for the project area is Burbank Water and Power and the analysis year is 2029. The carbon intensity of electricity is therefore 218 lbs CO_2e per MWh (G).

$$A1 = \mathbf{46\ AF} \times \left(1{,}898\,\frac{\text{kWh}}{\text{AF}} - \mathbf{1{,}200}\ \frac{\mathbf{kWh}}{\mathbf{AF}}\right) = 32{,}108\ \text{kWh}$$

$$B1 = 32{,}108\ \text{kWh} \times 0.001\,\frac{\text{MWh}}{\text{kWh}} \times 218\ \frac{\text{lb}\ CO_2e}{\text{MWh}} \times 0.000454\,\frac{\text{MT}}{\text{lbs}} = 3.2\ \text{MT}CO_2e$$

$$B2 = \mathbf{100\%} \times \frac{1{,}898\,\frac{\text{kWh}}{\text{AF}} - \mathbf{1{,}200}\,\frac{\mathbf{kWh}}{\mathbf{AF}}}{1{,}898\,\frac{\text{kWh}}{\text{AF}}} = 37\%$$

Quantified Co-Benefits

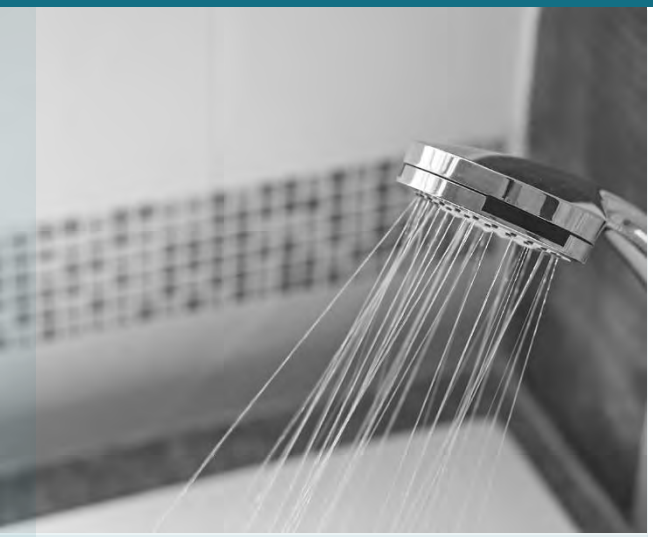
Energy and Fuel Savings

Energy savings (A1) are derived in the steps above that are necessary to quantify GHG reductions.

Sources

- California Public Utilities Commission (CPUC). 2016. Water-Energy Calculator–Draft Version 1.05. Available: https://www.cpuc.ca.gov/nexus_calculator/. Accessed: January 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.

W-4. Require Low-Flow Water Fixtures



GHG Mitigation Potential

Potentially small reduction in GHG emissions from indoor water use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Using low-flow water fixtures conserves water resources, which will become more strained under climate change.

Health and Equity Considerations

Low-flow and high-efficiency water fixtures can help to reduce water utility bill costs for project residents.

Measure Description

This measure requires use of low-flow or high-efficiency water fixtures in residential and non-residential buildings. Low-flow and high-efficiency fixtures may include toilets, urinals, showerheads, faucets, clothes washers, and dishwashers. These fixtures use less water than their traditional counterparts and, therefore, reduce energy and indirect GHG emissions that result from sourcing and transporting fresh water.

Scale of Application

Project/Site

Implementation Requirements

Install low-flow or high-efficiency fixtures that exceed state standards in any of the following: toilets, urinals, showerheads, faucets, clothes washers, and dishwashers.

Cost Considerations

Low-flow water fixtures tend to be slightly more expensive to purchase and install than less efficient models; however, these costs are almost immediately offset by large savings in water and energy consumption.

Expanded Mitigation Options

Install low-flow or high-efficiency water fixtures that perform better than the minimum efficiency standard established by ENERGY STAR, reducing the associated energy use and GHG emissions.

GHG Reduction Formula

$$A1 = \sum (D1 \times Ez \times \frac{Fz-Gz}{Fz}) \text{ or } = \sum (D1 \times Hz) \quad \text{(Water savings)}$$

$$A2 = \frac{A1}{D1} \text{ or } = \frac{D1-D2}{D1} \quad \text{(Percent emissions reduction)}$$

$$B = A1 \times I \times (J + K) \quad \text{(Energy savings)}$$

$$C = B \times L \times M \times N \quad \text{(Emissions reduction)}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A1	Indoor water savings with low-flow fixtures	[ ]	AF	calculated
A2	% reduction in indoor water, energy, and GHG emissions with low-flow fixtures	[ ]	%	calculated
B	Energy savings with low-flow fixtures	[ ]	kWh	calculated
C	GHG reduction with low-flow fixtures	[ ]	MT CO_2e	calculated
User Inputs				
D1	Existing indoor water use	[ ]	gal	user input
D2	Mitigated indoor water use	[ ]	gal	user input (if known)
Hz	% savings of water for end use z	1–100	%	user input (if known)
Constants, Assumptions, and Available Defaults				
Ez	% of indoor water used for end use z	Table W-4.1 Table W-4.2	%	Pacific Institute 2003 and Water Research Foundation 2016
Fz	Current state standard water flow rate for end use z	Table W-4.3 Table W-4.4	variable units	EnergyStar 2021a, 2021b, 2021c, 2021d and CA Green Building Code
Gz	Reduced flow rate for end use z	Table W-4.3 Table W-4.4	variable units	EnergyStar 2021a, 2021b, 2021c, 2021d and CA Green Building Code
I	Conversion from gal to AF	3.07×10^{-6}	AF per gal	conversion

ID	Variable	Value	Unit	Source
J	Electricity for municipally provided water	Table W-1.1	kWh per AF	CPUC 2016
K	Electricity required for wastewater treatment following municipal use	418	kWh per AF	CPUC 2016
L	Conversion from kWh to MWh	0.001	MWh per kWh	conversion
M	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
N	Conversion from lb to MT	0.000454	MT per lb	conversion
z	End use or type of fixture	N/A	-	-

Further explanation of key variables:

- (Ez) – For residential uses, the percentages of indoor water that is typically used for the most common end uses are shown in Table W-4.1 in Appendix C. For non-residential uses, the percentages of total and indoor water that is typically used for the most common end uses are shown in Table W-4.2 in Appendix C. To calculate the water savings for this measure relative to total or indoor use, the user should multiply the savings rate from a given fixture (e.g., kitchen faucet) by the percentage of water that is used in kitchen faucets for a typical residential or non-residential use.
- (Fz) – The current (2019) California Plumbing Code water use flow rates for common fixtures are provided in Table W-4.3 (for residential uses) and Table W-4.4 (for non-residential uses) in Appendix C. The user can use a specific existing flow rate if the flow rate for the end use or fixture differs from the 2019 code.
- (Gz) – The reduced water use flow rate for common fixtures in provided in Table W-4.3 (for residential uses) and Table W-4.4 (for non-residential uses). These reduced rates assume implementation of voluntary measures from the 2019 California Green Building Code or EnergyStar certification, which goes beyond the current (2019) California Plumbing Code. The user can use a specific reduced flow rate if the flow rate for the end use or fixture differs from the rates shown in Tables W-4.3 or W-4.4.
- (Hz) – This variable is the percent water savings from using a fixture with improved water efficiency, relative to the existing rate for that fixture. If the user knows what the percent savings is for their fixtures, the equation above with variable Hz can be used.
- (J) – The water energy-intensity factors are derived from the most recent version of the CPUC Water Energy Calculator and are provided in Table W-1.1 in Appendix C (CPUC 2016). The energy intensity factors assume that all water is treated to potable standards and rely upon region-wide average values for DWR's 10 hydrologic regions.
- (K) – For this measure, water conservation would affect indoor water consumption. Because indoor water is sent to wastewater treatment plants, it is necessary to account for the energy that would be avoided at the wastewater treatment plant. The value of 418 kWh/AF is based on the CPUC Water Energy Calculator (CPUC 2016).
- (M) – GHG intensity factors for major utilities in California are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by the listed electricity provider, or the user is able to provide a project-specific value, the user should replace these defaults in the electricity consumption GHG calculation formula.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions from water-related electricity by requiring low-flow fixtures. In this example, the project is a non-residential office use located in Central Coast hydrologic region with a total indoor water demand of 10 million gal per year (D1). The user is proposing to upgrade the toilets and bathroom faucets per the 2019 California Green Building Code Voluntary Measures. Accordingly, the following assumptions are obtained from Tables W-4.2 and W-4.4 in Appendix C:

- Percent of indoor water used for toilets (Ez) = 48 percent.
- Percent of indoor water used for bathroom faucets (Ez) = 3 percent.
- Current state standard water flow rate for toilets (Fz) = 1.28 gal per flush.
- Current state standard water flow rate for toilets (Fz) = 0.5 gal per minute.
- Reduced water flow rate for toilets (Fz) = 1.12 gal per flush.
- Reduced water flow rate for toilets (Fz) = 0.35 gal per minute.

The project is in the San Francisco Bay hydrologic region, the electricity provider is My Choice Energy (MCE), and the analysis year is 2026. The carbon intensity of electricity is therefore 184 lb CO_2e per MWh (G).

$$A1 = \left[\left(10\times10^6\ \text{gal} \times 48\%(\text{toilet}) \times \frac{1.28(\text{toilet}) - 1.12(\text{toilet})}{1.28(\text{toilet})}\right) + \left(10\times10^6\ \text{gal} \times 3\%(\text{bathroom faucet}) \times \frac{0.5(\text{bathroom faucet}) - 0.35(\text{bathroom faucet})}{0.5(\text{bathroom faucet})}\right)\right]$$

$$= 690{,}000\ \text{gal}$$

$$A2 = \frac{690{,}000\ \text{gal}}{10\times10^6\ \text{gal}} = 7\%$$

$$B = 690{,}000\ \text{gal} \times \left(3.07\times10^{-6}\ \frac{\text{AF}}{\text{gal}}\right) \times \left(695\ \frac{\text{kWh}}{\text{AF}} + 418\ \frac{\text{kWh}}{\text{AF}}\right) = 2{,}358\ \text{kWh}$$

$$C = 2{,}358\ \text{kWh} \times 0.001\ \frac{\text{MWh}}{\text{kWh}} \times 184\ \frac{\text{lb } CO_2e}{\text{MWh}} \times 0.000454\ \frac{\text{MT}}{\text{lb}} = 0.2\ \text{MT } CO_2e$$

Quantified Co-Benefits

Energy and Fuel Savings

Energy savings (B) are derived in the steps above that are necessary to quantify GHG reductions.

Water Conservation

Water savings (A1) are derived in the steps above that are necessary to quantify GHG reductions.

Sources

- California Plumbing Code. 2019 (CA Code). *Chapter 15 Alternate Water Sources for Nonpotable Applications*. https://up.codes/viewer/california/ca-plumbing-code-2019/chapter/15/alternate-water-sources-for-nonpotable-applications#15. Accessed: January 2021.
- California Public Utilities Commission (CPUC). 2016. Water-Energy Calculator–Draft Version 1.05. Available: https://www.cpuc.ca.gov/nexus_calculator/. Accessed: January 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- EnergyStar. 2021a. Clothes Washers Key Product Criteria. Available: https://www.energystar.gov/products/appliances/clothes_washers/key_product_criteria. Accessed: January 2021.
- EnergyStar. 2021b. Commercial Dishwashers Key Product Criteria. Available: https://www.energystar.gov/products/commercial_food_service_equipment/commercial_dishwashers/key_product_criteria. Accessed: January 2021.
- EnergyStar. 2021c. Commercial Kitchen Equipment Calculator. Available: http://www.energystar.gov/buildings/sites/default/uploads/files/commercial_kitchen_equipment_calculator.xlsx. Accessed: January 2021.
- EnergyStar. 2021d. Dishwashers Key Product Criteria. Available: https://www.energystar.gov/products/appliances/dishwashers/key_product_criteria. Accessed: January 2021.
- Pacific Institute. 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California. November. Available: https://pacinst.org/wp-content/uploads/2013/02/waste_not_want_not_full_report3.pdf. Accessed: January 2021.The Water Research Foundation. 2016. Residential End Uses of Water, Version 2. Available: https://www.waterrf.org/research/projects/residential-end-uses-water-version-2. Accessed: January 2021.

W-5. Design Water-Efficient Landscapes

GHG Mitigation Potential

Potentially small reduction in GHG emissions from outdoor water use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Designing water-efficient landscapes conserves water resources, which will become more strained under climate change. In addition, native landscaping can help to support biodiversity and pollinators.

Health and Equity Considerations

Water-efficient landscaping can lower utility costs for project residents, and reduce pesticide and fertilizer run-off, which can affect water quality.

Measure Description

This measure requires the use of landscapes that are water efficient, with lower water demands than required by the DWR 2015 Model Water Efficient Landscape Ordinance (MWELO) (California Code of Regulations [C.C.R.], Title 23, Division 2, Chapter 2.7). Designing water-efficient landscapes for a project site or throughout a community reduces water consumption and thus the corresponding energy and indirect GHG emissions that result from sourcing and transporting fresh water.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

Relative to the maximum allowable water use under the MWELO, users can achieve water savings by reducing lawn sizes, planting vegetation with minimal water needs (e.g., California native species), choosing vegetation appropriate for the climate of the project site or community, or choosing complementary plants that have similar water needs or that can provide shade and/or water to each other.

Cost Considerations

Water-efficient landscapes save money not only through reduced requirements for irrigation, but also require fewer inputs like fertilizer and pesticides and less use of landscaping equipment. Depending on the area of the landscape and the cost of designing it for water efficiency, these cost savings usually recoup the cost of installation and design.

Expanded Mitigation Options

Pair with Measure W-6 for increased outdoor water conservation and GHG reductions. Encourage application of biochar to improve soil quality and enhance carbon sequestration. Incorporate low-impact development practices in the landscape and surrounding area.

GHG Reduction Formula

$$A1 = ([(D \times E) + ((1 - D) \times F)] - (\frac{G}{H} \times E)) \times I \times J \quad \text{(Water savings)}$$

$$A2 = 1 - A1/[((D \times E) + ((1 - D) \times F)) \times I \times J] \quad \text{(Percent emissions reduction)}$$

$$B = A1 \times K \times L \quad \text{(Energy savings)}$$

$$C = B \times M \times N \times O \quad \text{(Emissions reduction)}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A1	Outdoor water savings with water-efficient landscapes	[ ]	gal	Calculated
A2	% reduction in outdoor water, energy & GHG emissions with water-efficient landscapes	[ ]	%	Calculated
B	Energy savings with water-efficient landscapes	[ ]	kWh	Calculated
C	GHG reduction with water-efficient landscapes	[ ]	MT CO_2e	Calculated
User Inputs				
D	Evapotranspiration adjustment factor for maximum allowable water use	0.55 or 0.45	unitless	user input
E	Landscape area	[ ]	sf	user input
F	Special landscape area	[ ]	sf	user input
Constants, Assumptions, and Available Defaults				
G	Plant factor	0 to 1.0	unitless	UC Davis 2021a
H	Irrigation efficiency	0.75 or 0.81	unitless	23 C.C.R. Appendix A
I	Evapotranspiration rate	[ ]	Inches per year	23 C.C.R. Appendix A
J	Conversion from acre-inches/acre to gal/sf	0.62	(gal per sf) per (acre-inch per acre)	conversion
K	Conversion from gal to AF	3.07×10^{-6}	AF per gal	conversion
L	Electricity for municipally provided water	Table W-1.1	kWh per AF	CPUC 2016
M	Conversion from kWh to MWh	0.001	MWh per kWh	conversion

ID	Variable	Value	Unit	Source
N	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
O	Conversion from lb to MT	0.000454	MT per lb	conversion

Further explanation of key variables:

- (A1) – The methodology for calculating water reductions is based on the MWELO. It combines calculations for maximum allowable water use (known as MAWA per the MWELO) and estimated total water use (known as ETWU per the MWELO) into one formula for quantifying water savings.
- (D) – The evapotranspiration adjustment factor for maximum allowable water use is dependent on the project or land use type and is 0.55 for residential uses and 0.45 for non-residential uses.
- (F) – Special landscape area is an area of the landscape dedicated solely to edible plants, recreational areas, areas irrigated with recycled water, or water features using recycled water.
- (G) – In the calculation for water savings, the plant factor is the primary determinant of the magnitude of water savings. The plant factor should be taken from the University of California Davis' Water Use Classification of Landscape Species (WUCOLS) or other professional associations that are approved by DWR. The plant factor ranges from 0 to 0.1 for very low water plants; 0.1 to 0.3 for low water plants; from 0.4 to 0.6 for moderate water use plants; and from 0.7 to 1.0 for high water use plants. The water demands of a particular plant species can vary, depending on the region where the project is located. The region categorizations and plant factors can be found from the WUCOLS plant database (UC Davis 2021a, 2021b).
- (H) – The irrigation efficiency factor depends on the type of irrigation that will be used for the landscape and is 0.75 for spray head irrigation and 0.81 for drip irrigation.
- (I) – The evapotranspiration rate corresponding to the user's location affects how much water savings are achieved. Users can look-up location-dependent evapotranspiration rates from Appendix A of the MWELO (23 C.C.R. Appendix A).
- (L) – The water energy-intensity factors are derived from the most recent version of the CPUC Water Energy Calculator and are provided in Table W-1.1 in Appendix C (CPUC 2016). The energy intensity factors rely on region-wide average values for DWR's 10 hydrologic regions.
- (N) – GHG intensity factors for major utilities in California are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by the listed electricity provider, or the user is able to provide a project-specific value, the user should replace these defaults in the electricity consumption GHG calculation formula.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions from water-related electricity by requiring water efficient landscaping. In this example, the project is a residential use in Crescent City (North Coast hydrologic region). As a residential project, the evapotranspiration adjustment factor is 0.55 (D). Per MWELO, the evapotranspiration rate for Crescent City is 27.7 inches per year (I). The project includes a landscaped area of 1,500 sf (E), which will be landscaped with coyote mint (a low water use plant with plant factor equal to 0.1 [G]) and irrigated with a drip system (H). The project does not include special landscaping area (F). The electricity provider for the project area is PacificCorp, and the analysis year is 2022. The carbon intensity of electricity is, therefore, 1,228 lb CO_2e per MWh (N).

$$A1 = ([(\mathbf{0.55} \times \mathbf{1{,}500\ sf}) + ((1 - \mathbf{0.55}) \times \mathbf{0\ sf})] - (\frac{0.1}{0.81} \times \mathbf{1{,}500\ sf}) \times 27.7\frac{\text{inch}}{\text{yr}} \times 0.62\frac{\left(\frac{\text{gal}}{\text{sf}}\right)}{\left(\frac{\text{acre·in}}{\text{acre}}\right)} = 10{,}988\ \frac{\text{gal}}{\text{yr}}$$

$$A2 = 1 - 10{,}988\frac{\text{gal}}{\text{yr}}/[((\mathbf{0.55} \times \mathbf{1{,}500\ sf}) + ((1 - \mathbf{0.55}) \times \mathbf{0\ sf})) \times 27.7\frac{\text{inch}}{\text{yr}} \times 0.62\frac{\frac{\text{gal}}{\text{sf}}}{\frac{\text{acre·inch}}{\text{acre}}}] = 22\%$$

$$B = 10{,}988\frac{\text{gal}}{\text{yr}} \times \left(3.07{\times}10^{-6}\frac{\text{AF}}{\text{gal}}\right) \times 362\frac{\text{kWh}}{\text{AF}} = 12\frac{\text{kWh}}{\text{yr}}$$

$$C = 12\frac{\text{kWh}}{\text{yr}} \times 0.001\frac{\text{MWh}}{\text{kWh}} \times 1{,}228\ \frac{\text{lb } CO_2e}{\text{MWh}} \times 0.000454\frac{\text{MT}}{\text{lb}} = 0.007\frac{\text{MT } CO_2e}{\text{yr}}$$

Quantified Co-Benefits

Energy and Fuel Savings

Energy savings (B) are derived in the steps above that are necessary to quantify GHG reductions.

Water Conservation

Water savings (A1) are derived in the steps above that are necessary to quantify GHG reductions.

Sources

- California Public Utilities Commission (CPUC). 2016. Water-Energy Calculator–Draft Version 1.05. Available: https://www.cpuc.ca.gov/nexus_calculator/. Accessed: January 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- University of California, Davis (UC Davis). 2021a. *WUCOLS IV Water Use Classification of Landscape Species*. Plant Search Database. Available: https://ucanr.edu/sites/WUCOLS/Plant_Search/. Accessed: January 2021.
- University of California, Davis (UC Davis). 2021b. *WUCOLS IV Water Use Classification of Landscape Species*. Regions. Available: https://ucanr.edu/sites/WUCOLS/WUCOLS_IV_User_Manual/Regions/. Accessed: January 2021.

W-6. Reduce Turf in Landscapes and Lawns

GHG Mitigation Potential

Potentially large reduction in GHG emissions from outdoor water use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Reducing turf conserves water resources, which will become more strained under climate change.

Health and Equity Considerations

Turf is often used for play. For residential or school projects, include play opportunities, build additional public parks nearby, and/or increase access to existing parks or playgrounds. However, turf often requires use of fertilizer (which can be derived from fossil fuels) and herbicides, both of which can affect water quality, and the removal of turf can reduce runoff effects.

Measure Description

This measure would remove or avoid turf grass. Turf grass (i.e., lawn grass) has relatively high-water needs compared to most other types of vegetation. Lowering landscaping water demands by reducing turf size would reduce water consumption and thus the corresponding energy and indirect GHG emissions that result from sourcing and transporting fresh water. Water agencies in California have instituted turf removal programs that provide rebates for residents who reduce the turf area at their homes.

Scale of Application

Project/Site

Implementation Requirements

See measure description.

Cost Considerations

Turf maintenance in landscape and lawns has always been significantly more expensive than a lawn filled with hardier species that are native to the region. As turf requires constant input to be maintained, the cost of transitioning turf to a more sustainable landscape is relatively inexpensive, and both a short- and long-term cost savings may be realized.

Expanded Mitigation Options

Additional GHG emissions savings may be achieved through reduced fertilizer use. The methods to calculate these reductions are not included in the quantification method.

GHG Reduction Formula

$A1 = D \times E \times F \times G \times H$ (Water savings)

$A2 = \frac{F}{I}$ (Percent emissions reduction)

$B = A1 \times J \times K$ (Energy savings)

$C = B \times L \times M \times N$ (Emissions reduction)

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A1	Outdoor water savings from turf reduction	[ ]	gal	calculated
A2	% reduction in GHG emissions from outdoor water use	[ ]	%	calculated
B	Energy savings from turf reduction	[ ]	kWh	calculated
C	GHG emissions reduction from turf reduction	[ ]	MT CO_2e	calculated
User Inputs				
F	Area of turf to be removed	[ ]	sf	user input
I	Total turf area	[ ]	sf	user input
Constants, Assumptions, and Available Defaults				
D	Crop coefficient	0.6 or 0.8 (cool- or warm-season grasses)	unitless	UC Davis 2021a, 2021b
E	Evapotranspiration rate	[ ]	inches per year	MWELO
G	Conversion factor acre-inches/acre to gal/sf	0.62	(gal per sf) per (acre-inch per acre)	conversion
H	Days per year	365	days per year	conversion
J	Conversion from gal to AF	3.07×10^{-6}	AF per gal	conversion
K	Electricity required for municipally provided water	Table W-1.1	kWh per AF	CPUC 2016
L	Conversion from kWh to MWh	0.001	MWh per kWh	conversion
M	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
N	Conversion from lb to MT	0.000454	MT per lb	conversion

Further explanation of key variables:

- (D) – The crop coefficient for turf grasses is represented by two values, one for cool-season grasses (0.6) and one for warm-season grasses (0.8).
- (E) – The evapotranspiration rate corresponding to the user's location affects how much water savings are achieved. Users can look-up location-dependent evapotranspiration rates from Appendix A of the MWELO (23 CCR Appendix A).
- (H) – The water energy-intensity factors are derived from the most recent version of the CPUC Water Energy Calculator and are provided in Table W-1.1 in Appendix C (CPUC 2016). The energy intensity factors rely on region-wide average values for DWR's 10 hydrologic regions.
- (M) – GHG intensity factors for major utilities in California are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by the listed electricity provider, or the user is able to provide a project-specific value, the user should replace these defaults in the electricity consumption GHG calculation formula.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions from water-related electricity by reducing turf grass. In this example, the project is in Lancaster (South Coast hydrologic region), which has evapotranspiration rate of 44.2 inches per day (E). The project will remove 800 sf of turf (F) with warm-season grasses (D). The project's entire turf area is 1,200 sf (I). The electricity provider for the project is Lancaster Choice Energy, and the analysis year is 2022. The carbon intensity of electricity is, therefore, 600 lb CO_2e per MWh (M).

$$A1 = 0.8 \times 44.2 \frac{\text{inch}}{\text{yr}} \times 800\ \text{sf} \times 0.62 \frac{\left(\frac{\text{gal}}{\text{sf}}\right)}{\frac{\text{acre·inch}}{\text{acre}}} = 17{,}539 \frac{\text{gal}}{\text{yr}}$$

$$A2 = \frac{800\ \text{sf}}{1{,}200\ \text{sf}} = 67\%$$

$$B = 17{,}539\ \text{gal} \times \left(3.07 \times 10^{-6} \frac{\text{AF}}{\text{gal}}\right) \times 1{,}898 \frac{\text{kWh}}{\text{AF}} = 102\ \text{kWh}$$

$$C = 102\ \text{kWh} \times 0.001 \frac{\text{MWh}}{\text{kWh}} \times 600 \frac{\text{lb } CO_2e}{\text{MWh}} \times 0.000454 \frac{\text{MT}}{\text{lb}} = 0.03\ \text{MT } CO_2e$$

Quantified Co-Benefits

Energy and Fuel Savings

Energy savings (B) are derived in the steps above that are necessary to quantify GHG reductions.

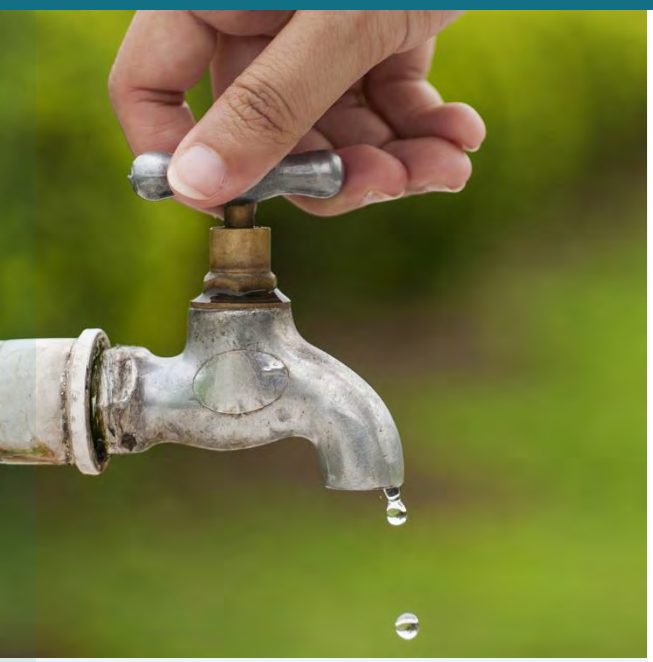
Water Conservation

Water savings (A1) are derived in the steps above that are necessary to quantify GHG reductions.

Sources

- California Public Utilities Commission (CPUC). 2016. Water-Energy Calculator–Draft Version 1.05. Available: https://www.cpuc.ca.gov/nexus_calculator/. Accessed: January 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- University of California, Davis (UC Davis). 2021a. *Turfgrass Crop Coefficients*. Available: https://ucanr.edu/sites/UrbanHort/Water_Use_of_Turfgrass_and_Landscape_Plant_Materials/Turfgrass_Crop_Coefficients_Kc/. Accessed: January 2021.
- University of California, Davis (UC Davis). 2021b. *Water Requirements for Turfgrasses*. Available: https://ucanr.edu/sites/WUCOLS/Water_Requirements_for_Turfgrasses/. Accessed: January 2021.

W-7. Adopt a Water Conservation Strategy



GHG Mitigation Potential

Varies

Variable reduction in GHG emissions from water use

Co-Benefits (icon key on pg. 34)

Climate Resilience

Conserving water reduces the strain on water resources, which is expected to increase under climate change.

Health and Equity Considerations

Ensure strategy includes enough water for outdoor use to maintain and enhance urban tree canopy as much as possible. Water conservation can also help to lower utility costs for project residents.

Measure Description

This measure will establish a water conservation strategy to achieve a reduction in water consumption. The water reduction performance standard is flexible to the users' needs, and in this measure is set as a percent reduction in water consumption relative to a reference condition (e.g., existing conditions, historic year).

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

The strategy should clearly identify the actions that will be undertaken to achieve the performance standard. These actions could include any of the measures presented in this Handbook (Measures W-1 through W-6) or others developed by the user; for example, low-impact development practices to enhance onsite water infiltration and improve stormwater management.

Cost Considerations

A water conservation strategy is a low-cost way to encourage using less water and energy, which in turns saves money. Costs from developing and implementing the strategy are primarily related to staff time and document production. Costs and savings achieved by actions undertaken because of the strategy would vary depending on the action.

Expanded Mitigation Options

Non-applicable

GHG Reduction Formula

$$A = (B \times C) \times D \times E \times F \times G$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	GHG reduction from strategy	[ ]	MT CO_2e	calculated
User Inputs				
B	Water consumption for the reference year	[ ]	AF	user input
C	Performance standard for conservation strategy	[ ]	%	user input
Constants, Assumptions, and Available Defaults				
D	Electricity required for municipally provided water	Table W-1.1	kWh per AF	CPUC 2016
E	Conversion from kWh to MWh	0.001	MWh per kWh	conversion
F	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
G	Conversion from lb to MT	0.000454	MT per lb	conversion

Further explanation of key variables:

- (B) – Water consumption for the project or community for the reference year must be defined by the user.
- (C) – The percent reduction in water consumption relative to the reference condition.
- (D) – The water energy-intensity factors are derived from the most recent version of the CPUC Water Energy Calculator and are provided in Table W-1.1 in Appendix C (CPUC 2016). The energy intensity factors rely on region-wide average values for DWR's 10 hydrologic regions.
- (F) – GHG intensity factors for major utilities in California are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by the listed electricity provider, or the user is able to provide a project-specific value, the user should replace these defaults in the electricity consumption GHG calculation formula.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions by adopting and implementing a water conservation strategy. In this example, the performance standard for the strategy is a 10 percent reduction in existing (2020) water consumption by 2030. Existing water consumption is 1,000 AF, and the project is in the Sacramento River hydrologic region (D) and SMUD service territory. The carbon intensity of electricity is, therefore, 224 lb CO_2e per MWh (F).

$$A = \left(1{,}000\,\frac{AF}{yr} \times 10\%\right) \times 207\,\frac{kWh}{AF} \times 0.001\,\frac{MWh}{kWh} \times 224\,\frac{lb\ CO_2e}{MWh} \times 0.000454\,\frac{MT}{lb} = 2.11\,\frac{MT\ CO_2e}{yr}$$

Quantified Co-Benefits

The co-benefits that are quantifiable (energy and fuel savings, water conservation) are calculated as part of the GHG reduction formula. The abbreviated formulas are also shown below.

Energy and Fuel Savings Formula

$$\frac{MWh}{year} = (B \times C) \times D \times E$$

Water Conservation Formula

$$\frac{AF}{year} = B \times C$$

Sources

- California Public Utilities Commission (CPUC). 2016. Water-Energy Calculator–Draft Version 1.05. https://www.cpuc.ca.gov/nexus_calculator/. Accessed: January 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.

Lawn and Landscaping

Landscaping equipment is the primary source of direct GHG emissions in the lawn and landscaping sector. Landscaping equipment traditionally uses gasoline fuel and releases emissions based on the amount of fuel combusted and emission factor of the engine. Equipment emissions can be reduced by requiring use of zero-emission landscaping equipment (including battery-powered and corded electric equipment) over conventional gasoline-fueled counterparts. The exclusive use of grid electricity to power the equipment eliminates onsite gasoline emissions but increases indirect emissions from electricity generation. However, grid-based emissions are typically less than the emissions from the gasoline-fueled equipment (depending on the source of grid power).

Emissions reductions achieved by zero-emission equipment are determined by finding the difference in emissions between those generated by the replacement power source and those generated by conventional gasoline engines. Emissions for the mitigated scenario may consist of direct emissions from combustion fuel use, and/or indirect emissions from grid electricity. Resources and methods to quantify emissions reductions from a measure requiring zero-emission landscaping equipment are described in this section.

Additional measures that can be undertaken to reduce emissions within the lawn and landscaping sector include ensuring electric yard equipment compatibility and implementing a yard equipment exchange program. Electric yard equipment compatibility is a supporting action for successful implementation of a measure that restricts gasoline landscaping equipment in favor of zero-emission equipment. A yard equipment exchange program would help facilitate community-scale equipment turnover and engine replacement. Please refer to the *Supporting or Non-Quantified GHG Reduction Measures* section at the end of Chapter 3 for additional information.

LL-1. Replace Gas-Powered Landscape Equipment with Zero-Emission Landscape Equipment

GHG Mitigation Potential

Potentially large reduction in GHG emissions from landscaping equipment

Co-Benefits (icon key on pg. 34)

Climate Resilience

Replacing gas-powered landscape equipment with zero-emission landscape equipment can reduce sensitivity to fuel price shocks or scarcity.

Health and Equity Considerations

Consider implementing programs to help disadvantaged business enterprises convert to electric equipment. Reduction or replacement of gasoline-powered equipment reduces localized air pollution.

Measure Description

This measure requires use of zero-emission landscaping equipment over conventional gasoline-fueled counterparts. Equipment types historically powered by gasoline engines covered by this measure include chainsaws, chippers, lawn mowers, leaf blowers/vacuums, riding mowers, tillers, and trimmers (CARB 2020). Replacing gasoline-powered equipment with zero-emission equipment reduces fossil fuel combustion and thus GHG emissions. However, electric equipment results in GHG emissions from the electricity used to charge the equipment. The indirect GHG emissions increase from electricity must be calculated in addition to the GHG emissions reduction from displaced fossil fuel combustion to estimate the total net GHG emissions reduction achieved by this measure.

Scale of Application

Project/Site

Implementation Requirements

For this measure to be successfully implemented, it is helpful for electrical outlets on the exterior of buildings to be accessible so that the corded electric landscaping equipment can be more easily used in different areas, and batteries can be charged if indoor charging is not available. Measure LL-3, *Electric Yard Equipment Compatibility,* in Table 3-2 should, therefore, be considered as a supporting action to this measure.

Cost Considerations

Although the environmental benefits of replacing gas powered landscape equipment are high, so too are the costs. Zero-emission equipment is usually more expensive than conventional gasoline-powered equipment. Once the equipment is purchased, however, there are long-term cost savings in avoided fuel inputs and maintenance.

Expanded Mitigation Options

Users may consider an exchange program to expand penetration of this measure, as outlined in Measure LL-2, *Implement Yard Equipment Exchange Program*, in Table 3-2.

GHG Reduction Formula

$$A = [\mathbf{B} \times C \times (D \times E) \times F1 \times G] - [\mathbf{B} \times C \times D \times \mathbf{F2} \times H]$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	GHG reduction from using plug-in or battery electric equipment	[ ]	MT CO_2e	calculated
User Inputs				
B	Hours of equipment operation	[ ]	hours	user input
F2	Carbon intensity of gasoline equipment	[ ]	g CO_2e per hp-hour	CARB 2020
Constants, Assumptions, and Available Defaults				
C	Load factor of equipment	Table LL-1.1	unitless	CARB 2020
D	Horsepower (hp) of equipment	Table LL-1.1	hp	CARB 2020
E	Conversion from horsepower to MW	0.0007457	MW per hp	conversion
F1	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
G	Conversion from lb to MT	0.000454	MT per lb	conversion
H	Conversion from grams (g) to MT	1×10^{-6}	MT per g	conversion

Further explanation of key variables:

- (C) – The load factor is the average operational level of an engine as a fraction or percentage of the engine manufacturer's maximum rated horsepower (hp). Average load factors of various landscaping equipment are provided in Table LL-1.1 in Appendix C, *Emission Factors and Data Tables* (CARB 2020). If the user can provide an equipment-specific load factor, they should replace the default in the GHG calculation formula.
- (D) – Average hp of various landscaping equipment are provided in Table LL-1.1 in Appendix C (CARB 2020). If the user can provide an equipment-specific hp, the user should replace the default in the GHG calculation formula.
- (E) – Conversion factor assumes that energy requirements and losses are the same for both a fuel-powered engine and a piece of electric equipment.
- (F1) – GHG intensity factors for major California electricity providers are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year not referenced in Appendix C), the user should replace the default in the GHG calculation formula. If the electricity provider is not known, users may elect to use the statewide grid average carbon intensity.
- (F2) – GHG intensity factors for various landscaping equipment can be obtained from CARB's (2020) SORE2020 model.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces lawn and landscaping emissions by replacing fossil fuel combustion with electricity consumption, which generates fewer GHG emissions per unit of activity. In this example, a 5-hp residential gasoline 4-stroke leaf blower (D) that is used 8 hours per day (B) is replaced by an electric-powered equivalent. The average load factor for a 5-hp leaf blower is 0.94 (C). The electricity provider for the project area is CleanPower SF and the analysis year is 2025. The carbon intensity of electricity is, therefore, 80 lb CO_2e per MWh (F1).

$$A = \left(8\ \frac{\text{hours}}{\text{day}} \times 0.94 \times \left[5\ \text{hp} \times 0.0007457\ \frac{\text{MW}}{\text{hp}}\right] \times 80\ \frac{\text{lb } CO_2e}{\text{MWh}} \times 0.000454 \frac{\text{MT}}{\text{lb}}\right) - \left(8\ \frac{\text{hours}}{\text{day}} \times 0.94 \times 5\ \text{hp} \times 635 \frac{\text{g } CO_2e}{\text{hp-hour}} \times 1e^{-6} \frac{\text{MT}}{\text{g}}\right) = -0.02 \frac{\text{MT } CO_2e}{\text{day}}$$

Measure Co-Benefits

Improved Air Quality

Reducing gasoline combustion will also reduce local criteria pollutants. Emission savings can be calculated using the same formula used to quantify GHG reductions (A). Criteria pollutant intensity factors for various landscaping equipment can be obtained from CARB's (2020) SORE2020 model.

Electricity supplied by statewide fossil-fueled or bioenergy power plants will generate criteria pollutants. However, because these power plants are located throughout the state, electricity consumption from equipment charging will not generate localized criteria pollutant emissions. Consequently, for the quantification of criteria pollutant emission reductions, either the electricity portion of the equation can be removed, or the electricity intensity (F1) can be set to zero.

Energy and Fuel Savings

Fossil fuel (gasoline) savings are a product of the equipment fuel efficiency (gal consumed per hour) and the equipment operating time (hours). Fuel intensity factors for various landscaping equipment can be obtained from CARB's (2020) SORE2020 model . Users should multiply the fuel intensity by the equipment operating hours to quantify fuel savings. Increased electricity consumption is calculated as part of the GHG reduction formula. The abbreviated formula is also shown below.

$$\text{MWh} = [\text{B} \times \text{C} \times (\text{D} \times \text{E})]$$

Sources

- California Air Resources Board (CARB). 2020. 2020 Emissions Model for Small Off-Road Engines—SORE2020. Version 1.1. September. Available: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-announcements. Database queried by Ramboll and provided electronically to ICF. September 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.

Solid Waste

CH_4 emissions are generated through the decomposition of organic waste disposed in a landfill. CO_2 is also generated as materials degrade, but these emissions are considered part of the natural carbon cycle of growth and decomposition. The transportation of waste to a landfilling facility also generates emissions from the combustion of fuel to operate the waste-hauling vehicle. In some cases, organic materials that are landfilled do not completely decompose, allowing for biogenic carbon storage that otherwise would not have occurred. In addition, landfills may capture some of the CH_4 generated by organic materials and combust it to generate electricity, thereby avoiding emissions that otherwise would have been emitted to generate electricity (U.S. EPA 2020).

Emissions associated with landfilling can be avoided through the diversion of waste. Alternate waste management pathways include recycling and composting.

- Recycling is the separation and collection of wastes, their subsequent transformation or remanufacture into usable or marketable products or materials, and the purchase of products made from recyclable materials (U.S. EPA 2020). During recycling, emissions are generated from the transportation of waste to recycling facilities and the operation of machinery to process these materials into new, recycled products. Other emissions may be generated during the recycling process through the purification chemicals or agents. At the same time, recycling offsets emissions associated with the virgin production of materials.
- Composting involves bacterial decomposition of organic matter into compost. Emissions result from the transportation and processing of waste at the compost facility, as well as from the decomposition process. At the same time, compost application can help reduce the use of synthetic fertilizers and increase soil carbon storage.

The methodology used in this Handbook to quantify emission reductions from diverting waste from landfills is based on a lifecycle approach that accounts for upstream and downstream emissions associated with the waste management pathways with and without the measure. This is consistent with the methodology developed by the U.S. Environmental Protection Agency (U.S. EPA) (2020). As a result, users are cautioned in how these reductions are compared to operational emissions inventories, which may not include lifecycle emissions. Additionally, the methodology assumes that all disposed waste will be diverted from the landfill. In reality, recycling and composting programs will likely only result in the diversion of a fraction of disposed waste. Users should consider this when calculating the benefits of implementation of waste diversion programs.

Use the graphic to click on an individual measure to navigate directly to the measure's factsheet.

S-1. Institute or Extend Recycling Services

GHG Mitigation Potential

Potentially small reduction in GHG emissions from waste management pathways

Co-Benefits (icon key on pg. 34)

Climate Resilience

Recycling can reduce upstream material extraction and product manufacturing, preserving resources and reducing energy use.

Health and Equity Considerations

Any new recycling facilities should not be constructed near vulnerable or underserved communities.

Measure Description

This measure will institute or extend recycling services to reduce the volume of landfilled waste. Decomposition of certain types of landfilled waste produces CH_4. Increasing waste diversion from landfills therefore reduces GHG emissions. The recycling process generates some emissions, but also reduces upstream emissions from the manufacturing and production of new raw materials and goods.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

See measure description.

Cost Considerations

Expanding recycling services generates costs of collection, processing, and management of the materials to be recycled, and can include the construction of new facilities to process a certain type of material, or transportation for the materials to reach a plant that can accommodate them. However, expanded recycling also reduces costs associated with new material production, waste processing, landfill management, pollution control, and waste-stream GHG emissions.

Expanded Mitigation Options

Waste reduction is as important, if not more so, as waste diversion. Work with building tenants to audit waste streams to identify opportunities for material reduction. For example, organizations may reduce single-use disposal at large events (e.g., concerts) and venues (e.g., stadiums) through partnerships with organizations that provide reusable cups and dishes.

GHG Reduction Formula

$A = [E1 \text{ or } E2] \times D$

$B_Z = A \times F_Z$

$C = \text{Input } B_Z \text{ into U.S. EPA WARM}$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Waste disposed by building type	[ ]	tons	calculated
B	Waste disposed by material type	[ ]	tons	calculated
C	GHG reduction from recycling vs. landfilling waste	[ ]	MT CO_2e	calculated using U.S. EPA WARM
User Inputs				
D	Population	[ ]	resident or employee	user input
Constants, Assumptions, and Available Defaults				
E1	Annual residential waste disposal rates by location	Table S-1.1	tons per resident per year	CalRecycle n.d.(a)
E2	Annual statewide non-residential waste disposal rates by business type	Table S-1.2	tons per employee per year	CalRecycle n.d.(b)
F	Percentage of material z in waste stream	Table S-1.3	%	CalRecycle n.d.(c), 2020
z	Material type (e.g., glass)	N/A	-	-

Further explanation of key variables:

- (C) – U.S. EPA's (2020) Waste Reduction Model (WARM) calculates GHG emissions associated with various waste management practices, including recycling and landfilling. To estimate the GHG benefit of recycling over landfilling, users input the tonnage of waste by material type into the Tons Landfilled column under the "baseline" scenario. The user then inputs the tonnage of waste by material type into the Tons Recycled column under the "alternative management" scenario. If a material type cannot be recycled, the used should input the tonnage for that material into the Tons Landfilled column under the alternative management scenario. The model calculates emissions under the baseline and alternative management scenarios of manufacturing, transportation, and end-of-life landfilling or recycling of waste and shows the net GHG savings in MT CO_2e.
- (E1) – Annual solid waste disposal rates for multi-family and single-family homes are provided in Table S-1.1 in Appendix C, *Emission Factors and Data Tables*.
- (E2) – Annual non-residential waste disposal rates by business type are provided in Table S-1.2 in Appendix C.

- (F) – The composition of disposed waste by material type for residential and non-residential buildings is provided in Table S-1.3 in Appendix C.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions by diverting waste from a landfill to a recycling center. In this example, the project is an Arts, Entertainment, & Recreation business with 100 employees (D).

$$A = 1.94 \frac{\text{tons}}{\text{yr·employee}} \times 100 \text{ employees} = 194 \frac{\text{tons}}{\text{yr}}$$

$$B_{paper} = 194 \frac{\text{tons}}{\text{yr}} \times 21\% = 40.7 \frac{\text{tons}}{\text{yr}}$$

$$B_{glass} = 194 \frac{\text{tons}}{\text{yr}} \times 3\% = 5.8 \frac{\text{tons}}{\text{yr}}$$

$$B_{metals} = 194 \frac{\text{tons}}{\text{yr}} \times 2\% = 3.9 \frac{\text{tons}}{\text{yr}}$$

$$B_{plastic} = 194 \frac{\text{tons}}{\text{yr}} \times 14\% = 27.2 \frac{\text{tons}}{\text{yr}}$$

$$B_{food} = 194 \frac{\text{tons}}{\text{yr}} \times 34\% = 66.0 \frac{\text{tons}}{\text{yr}}$$

$$B_{yard\ trimmings} = 194 \frac{\text{tons}}{\text{yr}} \times 12\% = 23.3 \frac{\text{tons}}{\text{yr}}$$

$$B_{mixed\ organics} = 194 \frac{\text{tons}}{\text{yr}} \times 6\% = 11.6 \frac{\text{tons}}{\text{yr}}$$

$$B_{carpet} = 194 \frac{\text{tons}}{\text{yr}} \times 1\% = 1.9 \frac{\text{tons}}{\text{yr}}$$

$$B_{concrete} = 194 \frac{\text{tons}}{\text{yr}} \times 2\% = 3.9 \frac{\text{tons}}{\text{yr}}$$

$$B_{dimensonal\ lumber} = 194 \frac{\text{tons}}{\text{yr}} \times 1\% = 1.9 \frac{\text{tons}}{\text{yr}}$$

$$B_{fly\ ash} = 194 \frac{\text{tons}}{\text{yr}} \times 1\% = 1.9 \frac{\text{tons}}{\text{yr}}$$

The user inputs the tons of waste by material type (B) into U.S. EPA's WARM in the Tons Landfilled column. The project will recycle all paper (B_{paper}), glass (B_{glass}), and plastic ($B_{plastic}$),

which is assumed in the alternative management scenario. Based on WARM, the project would mitigate up to 202 MT CO_2e by diverting its waste from a landfill to a recycling facility.

Quantified Co-Benefits

None.

Sources

- CalRecycle. n.d.(a) *Residential Waste Stream by Material Type*. Available: https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams. Accessed: April 2021.
- CalRecycle. n.d.(b) *Disposal and Diversions Rates for Business Groups*. Available https://www2.calrecycle.ca.gov/WasteCharacterization/BusinessGroupRates. Accessed: January 2021.
- CalRecycle. n.d.(c) *Business Group Waste Stream Calculator*. Available https://www2.calrecycle.ca.gov/WasteCharacterization/BusinessGroupCalculator. Accessed: January 2021.
- CalRecycle. 2020. *2018 Facility-Based Characterization of Solid Waste in California*. Available https://www2.calrecycle.ca.gov/WasteCharacterization/Study. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. *Waste Reduction Model (WARM), Version 15*. Available: https://www.epa.gov/warm. Accessed: January 2021.

S-2. Implement Organics Diversion Program

GHG Mitigation Potential

Potentially small reduction in GHG emissions from management pathways

Co-Benefits (icon key on pg. 34)

Climate Resilience

Organics diversion programs can increase the amount of compost produced, which can go toward gardens and farms and help improve food and crop production. Compost can also help increase soil carbon storage, which can in turn improve biodiversity and groundwater storage.

Health and Equity Considerations

If possible, work with local food banks and shelters to ensure that edible food goes to people first.

Measure Description

This measure will implement an organics diversion program to reduce the volume of organic waste sent to landfills. An organics diversion program lowers the landfill disposal rate of food waste (both edible and non-edible), food soiled paper, yard waste, and non-hazardous wood waste. Decomposition of organic waste in landfills produces CH_4. Increasing organic waste diversion from landfills thus reduces GHG emissions.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

Waste management practices to support organics diversion may include construction and management of a composting facility (citywide scale), providing residential and business composting pickup services (citywide scale), community outreach (citywide scale and project scale), or providing clearly marked triple bin locations (waste, recycling, composting) (project scale).

Cost Considerations

Implementing organics diversion services, or utility scale composting, generates costs for collection, processing, and management of the materials to be composted, and can include the construction of new composting facilities or transportation for the materials to reach a plant that can accommodate them. However, expanded composting also reduces costs associated with waste processing, landfill management, pollution control, and waste-stream greenhouse gas emissions. The resulting compost can also take the place of fertilizer, saving costs on land management inputs and increasing agricultural yields.

Expanded Mitigation Options

Diversion of edible food to food banks is another viable organics diversion program but is not specifically captured by the current quantitative method for this measure.

GHG Reduction Formula

$A = [E1 \text{ or } E2] \times D$

$B_Z = A \times F_Z$

$C = \text{Input } B_Z \text{ into U.S. EPA WARM}$

Composting can help reduce the use of nitrogen-based fertilizer, which results in GHG emissions during the manufacturing process (which involves use of natural gas) and release of nitrogen dioxide (NO_2) during use. These emissions are not quantified as part of this measure's methodology. Additional GHG reductions may be achieved if the diversion program reduces VMT and associated vehicle emissions. Refer to *Quantified Co-Benefits* below for further discussion.

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Waste disposed by building type	[ ]	tons	calculated
B	Waste disposed by material type	[ ]	Tons	calculated
C	GHG reduction from recycling vs. composting waste	[ ]	MT CO_2e	calculated using U.S. EPA WARM
User Inputs				
D	Population	[ ]	resident or employee	user input
Constants, Assumptions, and Available Defaults				
E1	Annual residential waste disposal rates by location	Table S-1.1	tons per resident per year	CalRecycle n.d.(a)
E2	Annual statewide non-residential waste disposal rates by business type	Table S-1.2	tons per employee per year	CalRecycle n.d.(b)
F	Percentage of material z in waste stream	Table S-1.3	%	CalRecycle n.d.(c), 2020
z	Material type (e.g., glass)	N/A	-	-

Further explanation of key variables:

- (C) – U.S. EPA's (2020) WARM calculates the GHG emission impacts associated with various waste management practices, including recycling and composting. To estimate the GHG benefit of composting over landfilling, users input the tonnage of organic waste by material type into the Tons Landfilled column under the "baseline" scenario. The user then inputs the tonnage of organic waste by material type into the Tons Composted column under the "alternative management" scenario. The model calculates emissions under the baseline and alternative management scenarios of manufacturing, transportation and end-of-life landfilling, or diversion of organic waste and shows the net GHG savings in MT CO_2e.

- (E1) – Annual solid waste disposal rates for multi-family and single-family homes are provided in Table S-1.1 in Appendix C.
- (E2) – Annual non-residential waste disposal rates by business type are provided in Table S-1.2 in Appendix C.
- (F) – The composition of disposed waste by material type for residential and non-residential buildings is provided in Table S-1.3 in Appendix C.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions by diverting organic waste from a landfill. In this example, the project is an Arts, Entertainment, & Recreation business with 100 employees (D).

$$A = 1.94 \frac{\text{tons}}{\text{yr·employee}} \times 100 \text{ employees} = 194 \frac{\text{tons}}{\text{yr}}$$

$$B_{food} = 194 \frac{\text{tons}}{\text{yr}} \times 34\% = 66.0 \frac{\text{tons}}{\text{yr}}$$

$$B_{yard\ trimmings} = 194 \frac{\text{tons}}{\text{yr}} \times 12\% = 23.3 \frac{\text{tons}}{\text{yr}}$$

$$B_{mixed\ organics} = 194 \frac{\text{tons}}{\text{yr}} \times 6\% = 11.6 \frac{\text{tons}}{\text{yr}}$$

The user inputs the tons of waste by material type (B) into U.S. EPA's WARM in the Tons Landfilled column. The project will compost all materials, which is assumed in the alternative management scenario. Based on WARM, this business can mitigate up to 40 MT CO_2e by diverting waste from a landfill to compost facility.

Quantified Co-Benefits

VMT Reductions

Organics diversion programs may reduce waste transfer vehicle VMT if the compost facility is closer to the waste generation source than the landfill. The VMT reduction may be calculated using the following formula.

$$G = (H \times I) - (J \times K)$$

VMT Reduction Calculation Variables

ID	Variable	Value	Unit	Source
Output				
G	Reduction in waste transfer vehicle VMT	[ ]	miles/day	calculated
User Inputs				
H	Daily waste transfer trips without the organics diversion program	[ ]	trips/day	user input
I	Waste transfer trip distance without the organics diversion program	[ ]	miles/trip	user input
J	Daily waste transfer trips under the organics diversion program	[ ]	trips/day	user input
K	Waste transfer trip distance under the organics diversion program	[ ]	miles/trip	user input
Constants, Assumptions, and Available Defaults				
	None			

Further explanation of key variables:

- (H, J) – The user should take care to properly account for all vehicle trips directly affected by implementation of the measure. This value may be the same with and without the diversion program.
- (I, K) – The user should take care to properly account for the full trip distance of the waste transfer vehicle. Note that if the trip distance increases with implementation of the organics diversion program (i.e., K>I), this measure would result in a VMT increase.

Users may translate VMT reductions (or increases) (G) to GHG emissions using emission factors from CARB's (2021) EMFAC model. Users should multiply the VMT reductions (or increases) by the appropriate vehicle emission factors. If the organics diversion program also reduces (or increases) the number of vehicle trips (i.e., J<H or J>H), users should quantify the resulting changes in process emissions using EMFAC.

Improved Air Quality

Composting can produce volatile organic compound (VOC) emissions in and around the composting site. This may result in worsened regional air quality. Increases in VOC emissions may be offset if the organics diversion program reduces waste transfer vehicle VMT. Users may translate VMT reductions (or increases) (G) to criteria pollutant emissions using emission factors from CARB's (2021) EMFAC model. Users should multiply the VMT reductions (or increases) by the appropriate vehicle emission factors. If the organics diversion program also reduces (or increases) the number of vehicle trips (i.e., J<H or J>H), users should quantify the resulting changes in process emissions using EMFAC.

Sources

- California Air Resources Board (CARB). 2021. *EMFAC*. Available: https://arb.ca.gov/emfac/. Accessed: September 2021.
- CalRecycle. n.d.(a) *Residential Waste Stream by Material Type*. Available: https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams. Accessed: April 2021.
- CalRecycle. n.d.(b) *Disposal and Diversions Rates for Business Groups*. Available https://www2.calrecycle.ca.gov/WasteCharacterization/BusinessGroupRates. Accessed: January 2021.
- CalRecycle. n.d.(c) *Business Group Waste Stream Calculator*. Available https://www2.calrecycle.ca.gov/WasteCharacterization/BusinessGroupCalculator. Accessed: January 2021.
- CalRecycle. 2020. *2018 Facility-Based Characterization of Solid Waste in California*. Available https://www2.calrecycle.ca.gov/WasteCharacterization/Study. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. Waste Reduction Model (WARM), Version 15. Available https://www.epa.gov/warm. Accessed: January 2021.

Natural and Working Lands

Natural and working lands may be a GHG sink or source of GHG emissions. For example, trees and other vegetation incorporate carbon into their biomass during their growth phase and thereby can remove a finite amount of carbon from the atmosphere. Carbon can also be stored in soils. These types of natural lands are considered GHG sinks. Other types of lands, on the other hand, such as certain types of agriculture and animal operations, can emit GHGs from a variety of sources and activities.

Measures within the natural and working lands sector aim to either enhance the sequestration capacity of the land or reduce the intensity of emissions from GHG sources. A project can increase the area available for vegetation by converting previously developed land into vegetated open space. Conversions from one type of vegetated land to another may increase or decrease carbon sequestration, depending on the relative sequestration capacities of the land types. Additional ways to increase sequestration may include planting new trees on either developed or undeveloped land. GHG emission from working lands can be reduced through climate-smart farming practices, some of which may increase below- and above-ground carbon storage.

Methods to quantify GHG reductions from natural and working lands measures are inherently complex given the dynamic variables that influence GHG emissions. These methods do not lend to a simplified quantification approach that can be presented in a few pages. Therefore, it is advised users rely on existing tools to quantify GHG reductions as referenced in this section. Additional measures that can be undertaken to reduce emissions within the natural and working lands sector include establishing a local farmer's market or community garden. Please refer to *Supporting or Non-Quantified GHG Reduction Measures* for additional information on these measures.

Use the below graphic to click on an individual measure to navigate directly to the measure's factsheet.

Natural and Working Lands

- N-1. Create New Vegetated Open Space
- N-2. Expand Urban Tree Planting
- N-3. Implement Management Practices to Improve the Health and Function of Natural and Working Lands
- N-4. Require Best Management Practices for Manure Management

N-1. Create New Vegetated Open Space

Photo Credit: Doug Donaldson, March 2017

GHG Mitigation Potential

Varies

Variable reduction in GHG emissions from vegetated open spaces

Co-Benefits (icon key on pg. 34)

Climate Resilience

Creating new vegetated open spaces can reduce the urban heat island effect, mitigate flooding, and improve water quality, as well as provide recreational spaces that improve health and community resilience. Vegetated open space can also provide wildlife habitat and corridors for wildlife migration in the face of increasing temperatures and changing precipitation patterns.

Health and Equity Considerations

Prioritize open space creation in communities that have the lowest level of access to parks, gardens, and open spaces.

Measure Description

This measure would convert previously developed areas to vegetated open spaces. By creating new vegetated areas from previously settled land, the project would sequester CO_2 that would not have been captured without the land conversion. Trees and other vegetation also incorporate carbon into their biomass during their growth phase (stored carbon).

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

Implementation must involve conversion of cleared areas to vegetated open spaces. This measure does not give any GHG reduction for the preservation of existing lands.

Cost Considerations

Upfront costs of creating more green spaces will depend on how the land is currently being used and how much construction is required to make it suitable. However, vegetated open spaces can achieve cost savings from improved storm water management, and can also reduce the incidence and cost of heat exposure and pollution-related illnesses.

Expanded Mitigation Options

A best practice for creating new open spaces is to ensure the habitat type(s) are native or will thrive in the local climate.

GHG Reduction Formula

RePlan

Users are directed to the California Strategic Growth Council's (2021) *RePlan: Regional Conservation and Development Planning Tool* (RePlan). RePlan provides an estimate of total stored carbon throughout California. The tool was developed using CARB's Natural and Working Lands (NWL) inventory method. Users can identify total stored carbon across five geographic scales: statewide, ecoregion, county, watershed, and user-drawn polygon for a specific area. Based on the scale selected, RePlan returns the metric tons (equivalent to megagrams, as used by RePlan) of stored carbon per hectare (ha). The carbon storage value is representative of current conditions, per CARB's inventory and the analysis conducted by the Strategic Growth Council. The result is not an annual accumulation value or sequestration rate.

Users converting previously developed areas to vegetated open spaces can use RePlan to obtain estimated total ecosystem carbon storage on parcels within the same general area of the project that contain similar land cover types. RePlan can also be used to estimate existing stored carbon (if any) on the project site that will be converted to the new land cover type. Existing stored carbon on the project site should be subtracted from the estimated carbon storage of the future land use type.

Alternative Quantification Method

RePlan integrates the latest planning and environmental data to support robust quantification of carbon storage throughout the state. The tool is aligned with California's conservation, resource management, and development objectives. While RePlan is recommended as the primary quantification tool for this measure, users may consult the below equation and method to generate a high-level estimate of stored soil carbon plus above and belowground biomass carbon pools, which can serve as an estimate of total CO_2 stored.

$$A = [(B_C \times C_C) + (B_S \times C_S \times D)] \times E$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	CO_2 benefit from new land cover type (soil and above and belowground carbon storage)	[ ]	MT CO_2e per year (over accumulation period)	calculated
User Inputs				
B_C	Hectare (Ha) of land-by-land cover type	[ ]	ha	user input
B_S	Ha of land by soil type	[ ]	ha	user input
Constants, Assumptions, and Available Defaults				
C_C	Annual above and belowground biomass carbon accumulation by land cover type	Table N-1.1	MT carbon per ha per year	CARB 2021a
C_S	Annual soil carbon accumulation by soil type and land use type	Table N-1.2	MT carbon per ha per year	CARB 2020a

ID	Variable	Value	Unit	Source
D	Soil carbon gain from conversion from settlements to vegetated land	30	%	CARB 2020a
E	Molecular weight ratio of CO_2 to carbon	44/12	MT CO_2 to MT carbon	assumed

Further explanation of key variables:

- (A) – If the existing land use type currently generates CO_2e or includes soil carbon plus above or belowground stored carbon, those emissions should be added or removed, respectively, from the CO_2e reduction quantified under this measure.
- (B_C) – The land cover types are based on those defined in CARB's NWL inventory.
- (B_S) – The soil types and land use types are based on those defined in CARB's *Benefits Calculator Tool for Agricultural Lands Conservation* (CARB 2020a). The soil type for the project area can be obtained from UC Davis' SoilWeb (UC Davis n.d.). CARB's *Agricultural Lands Conservation Easement Quantification Methodology* provides detailed instructions for using this tool (CARB 2020b).
- (C_C) – Average annual above or belowground stored carbon accumulation rates per ha of land cover type and air basin are provided in Table N-1.1 in Appendix C, *Emissions Factors and Data Tables*. These rates include above and belowground carbon storage in biomass pools. They were developed by CARB (2021a) from their NWL inventory. The rates have been annualized over the following accumulation periods.
  - Forest = 60 years. This is the median project duration under the California Climate Investments Forest Health Quantification Method for the California Department of Forestry and Fire Protection's Forest Health Program. The median project duration represents one stand rotation, which is the typical time to harvest (CARB 2021b).
  - Grasslands = 20 years. This represents the typical amount of time for restored grasslands on former agricultural sites to accumulate the same amount of biomass carbon as native grasslands (Matamala et al. 2008).
  - Shrublands = 35 years. This rate represents the average frequency of wildfires in Southern California Chaparral systems (Luo et al. 2007).
- (C_S) – Average annual soil carbon accumulation rates per ha of land use type are provided in Table N-1.2 in Appendix C (CARB 2020a). The rates have been annualized over a 20-year accumulation period, consistent with IPCC's (2006) GHG inventory framework.

GHG Calculation Caps or Maximums

None. If the existing land use cover currently includes stored carbon, and that value exceeds that of the new land cover type, this measure may result in a GHG emissions increase.

Example GHG Reduction Quantification

The user reduces GHG emissions by converting 20 ha of developed area to Broadleaf Forest (B_C) with a Spodosols (B_S) soil type. The project is in the Lake Tahoe Air Basin where the resulting annual average above and belowground biomass carbon accumulation per ha is 1.69 MT (C_C). The annual average carbon stock per ha is 5.89 MT (C_S). The resulting CO_2e reduction is 254 MT per year.

$$A = \left[\left(20\ \text{ha} \times 1.69\ \frac{\text{MT carbon}}{\text{ha·yr}}\right) + \left(20\ \text{ha} \times 5.89\ \frac{\text{MT carbon}}{\text{ha·yr}} \times 30\%\right)\right] \times \frac{44}{12}\frac{\text{MT } CO_2}{\text{MT carbon}} = 254\ \frac{\text{MT } CO_2e}{\text{yr}}$$

Quantified Co-Benefits

None quantified. Depending on the land cover type created, successful implementation of this measure could achieve improved air quality, improved public health, and improved ecosystem health.

Sources

- California Air Resources Board (CARB). 2020a. *Benefits Calculator Tool for Agricultural Lands Conservation*. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/alc_tool_final_2020.xlsx. Accessed: March 2021.
- California Air Resources Board (CARB). 2020b. *Agricultural Lands Conservation Easement Quantification Methodology*. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/alc_qm_final_2020.pdf. Accessed: March 2021.
- California Air Resources Board (CARB). 2021a. Carbon Accumulation Values for Major Cover Types for Each California Air Basin. Database provided to ICF in March 2021.
- California Air Resources Board (CARB). 2021b. *Quantification Methodology Forest Restoration & Management California Climate Investments*. March. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/Draft%20FRM%20FY20-21%20QM.pdf. Accessed: March 2021.
- California Strategic Growth Council. 2021. *RePlan: Regional Conservation and Development Planning Tool*. Available: https://replan-tool.org/#. Accessed: March 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Chapter 4, Forest Land. Available: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_04_Ch4_Forest_Land.pdf. Accessed: March 2021
- Luo, H., W. Oechel, S. Hastings, R. Zulueta, Y. Qia., and H. Kwon. *Mature Semiarid Chaparral Ecosystems can be a Significant Sink for Atmospheric Carbon Dioxide*. Available: https://doi.org/10.1111/j.1365-2486.2006.01299.x. Accessed: March 2021.
- Matamala, R., J. Jastrow, R. Miller, R. and C. Garten. 2008. *Temporal Changes in C and N Stocks of Restored Prairie: Implications for C Sequestration Strategies*. September. Available: https://doi.org/10.1890/07-1609.1. Accessed: March 2021.
- University of California, Davis (UC Davis). n.d. SoilWeb: An Online Soil Survey Browser. Available: https://casoilresource.lawr.ucdavis.edu/gmap/. Accessed: March 2021.

N-2. Expand Urban Tree Planting

GHG Mitigation Potential

Varies

Variable reduction in GHG emissions from urban tree planting

Co-Benefits (icon key on pg. 34)

Climate Resilience

Planting trees provides more shade, reducing the urban heat island effect and localized health impacts of higher temperatures. Trees can also help to improve stormwater management and air quality and support mental health and social resilience.

Health and Equity Considerations

Tree planting should be prioritized in areas that have lower levels of existing canopy. Tree-planting programs should be designed in collaboration with residents. This ensures not only that community preferences are considered, but that the community feels ownership over the trees and is more likely to participate in long-term tree care. Trees should be selected according to local preferences, such as avoiding high-pollen trees that may exacerbate allergies.

Measure Description

This measure requires tree planting in urban areas. Planting trees sequesters CO_2 while the trees are actively growing, thereby reducing GHGs. The amount of CO_2 sequestered depends on the type of tree and the duration of the active growing period. Urban trees may also provide shade, which can reduce the urban heat island effect and building cooling demands. Buildings that use less electricity for air conditioning reduce energy consumption and associated indirect GHG emission.

Given many parts of California are in dry climates, the selection of tree type is critical to minimize the use of additional water. Trees that have high water demands that are met through GHG-intensive water (such as water transported over long distances) can impact the amount of GHG reductions achieved by this measure. Nonetheless, even during times of drought, trees help to provide multiple benefits to communities, and state agencies as well as natural resource organizations have emphasized repeatedly the importance of watering and maintaining trees during droughts.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

See measure description.

Cost Considerations

Upfront costs of planting more urban trees will depend on how the land is currently being used and how much maintenance and assistance in growing the trees will need to be successful. However, urban trees can reduce the incidence and cost of heat exposure and pollution-related illnesses by reducing the urban heat island effect and filtering pollutants from the air and soil.

Expanded Mitigation Options

Best practices for urban tree planting programs include selecting native tree species that require minimal water and maintenance, planting low-biogenic VOC emitting and low-allergen trees, and appropriately distancing trees from buildings, especially in high fire areas.

GHG Reduction Formula

Users are directed to the U.S. Forest Service (USFS) (2021) i-Tree Planting tool. The i-Tree Planting tool quantifies increased carbon sequestration from urban tree planting using species-based biomass equations that account for user defined site-specific variables and tree growth rates. The tool also quantifies GHG reductions from energy savings (e.g., kWh), if applicable.

While simplified quantification methods for increased carbon sequestration resulting from urban tree planting have been used in the past, this Handbook does not recommend their application given the number and dynamic nature of variables that can influence the amount of CO_2 reduced. Tools like i-Tree Planting comprehensively account for these variables, enabling users easily to calculate the approximate benefits from individual trees.

The i-Tree Planting tool is available at: https://planting.itreetools.org/.

Depending on the scale of the project, users may also wish to consult other i-Tree tools, including i-Tree Design (https://design.itreetools.org/), i-Tree Canopy (https://canopy.itreetools.org/), and i-Tree County (https://county.itreetools.org/). Users may consult the Climate Action Reserves' *Urban Tree Planting Project Protocol* (CAR 2014) or CARB's *Quantification Methodology for Urban and Community Forestry Program* (CARB 2020).

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	CO_2 sequestered over project lifetime	[ ]	lb CO_2	calculated
B	CO_2 reduced from building energy savings over project lifetime	[ ]	lb CO_2	calculated
User Inputs				
C	Project state/province	[ ]	address	user input
D	Project county/division	[ ]	Text	user input
E	Project city	[ ]	Text	user input
F	Project lifetime	1–99	Years	user input
G	Tree mortality over project lifetime	0–100	%	user input
H	Tree species planted by the project	[ ]	species name	user input*
I	Diameter breast height of each tree	[ ]	Inches	user input*
J	Distance to the nearest building	[ ]	Feet	user input*
K	Direction of tree from the building	[ ]	degrees	user input*
L	Building vintage	[ ]	Text	user input*
M	Building climate controls	[ ]	Text	user input*
N	Tree condition	[ ]	Text	user input*
O	Tree exposure to sunlight	[ ]	Text	user input*
Constants, Assumptions, and Available Defaults				
Q	Carbon intensity of local electricity provider	Table E-4.3 Table E-4.4	lb CO_2e per MWh	CA Utilities 2021
R	Carbon intensity of natural gas	117	lb CO_2e per MMBtu	TCR 2020

* Inputs provided through a drop-down menu.

Further explanation of key variables:

- (A and B) – The GHG reductions are presented over the project lifetime. If users are seeking an annualized value, they will need to divide this result by the assumed project lifetime (F).
- (F) – Trees sequester CO_2 while the trees are actively growing. The i-Tree Planting tool will project the benefits for up to 99 years into the future. The tool defaults to 40 years.
- (G) – The i-Tree Planting tool will incorporate tree mortality into the projected benefits.
- (I) – The diameter of the trunk measured at 4.5 feet above the ground.
- (J) – For trees that will be planted to shade buildings, enter the distance class to the nearest building (0–19 feet, 20–39 feet, 40–59 feet, > 60 feet). Note that this could be a building on an adjacent site. The i-Tree tool will not calculate shade benefits (i.e., energy savings) for trees more than 60 feet away from the building.
- (K) – General direction of the tree from the building (e.g., north 0 degrees). This input can be ignored if the tree is more than 60 feet from the building.
- (L) – The age of the building affects its energy efficiency and therefore the potential benefits the trees can bring. Available inputs are built after 1980, built 1950–1980, and built before 1950. If the specific age of the building in unknown, the user can input the typical age of buildings for the area where the user is working. This input can be ignored if the tree is more than 60 feet from the building.
- (M) – Trees can only have an impact on energy use in buildings where energy is used to heat or cool. Available inputs are heating and air conditioning (A/C), heat only, A/C only, and none. If the climate controls of the building are unknown, the user can input the option that is most common for the area where the user is working. This input can be ignored if the tree is more than 60 feet from the building.
- (N) – The condition of the trees will affect how well they grow and thus future benefits. Available inputs are excellent, good, fair, poor, critical, dying, and dead. New plantings are likely to be excellent.
- (O) – The exposure to sunlight affects both how the trees grow and the degree to which a new tree adds shade to a building. Available inputs are full sun, partial shade, and full shade.
- (Q) – GHG intensity factors for major California utilities are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for a future year not referenced in Tables E-4.3 or E-4.4), the user should use that specific value. If the electricity provider is not known, the user may elect to use the statewide grid average carbon intensity or rely on the i-Tree Planting default.
- (R) – The carbon intensity of natural gas was calculated in terms of CO_2e by multiplying the U.S. natural gas combustion emission factors for CO_2, CH_4, and N_2O (TCR 2020) by the corresponding 100-year GWP values from the IPCC's Fourth Assessment Report (IPCC 2007). See Table E-4.5 in Appendix C for more natural gas emission factors.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces emissions by planting shade trees at a new home site. In this example, the project is in the City of Sacramento (E)/Sacramento County (D)/California (C). The electricity provider for the project area is SMUD, and the analysis year is 2022. The carbon intensity of electricity is, therefore, 344 lb CO_2e per megawatt-hour (Q). The project lifetime is 40 years (F) and expected tree morality 10 percent (G). The project will plant two (P) live oaks (H) with a diameter breast height of 4 inches (I). The trees are 0 to 19 feet from the nearest building (J) and oriented east 90 degrees (K). The building was built between 1950 and 1980 (L) and includes heat and A/C (M). The tree condition is excellent (N) and has full sunlight (O). Based on these inputs to the i-Tree Planting tool, over the project lifetime, the trees would sequester 16,045 lb of CO_2 and reduce 6,787 lb of CO_2 from building energy savings. This totals 22,832 pounds of CO_2, or 571 pounds CO_2 per year (based on 40-year project lifetime).

Quantified Co-Benefits

The i-Tree tool outputs electricity savings (kWh), fuel savings (MMBtu), avoided runoff (gallons), and criteria pollutant emissions reductions (pounds). All values are over the project lifetime. Note that depending on user inputs, the measure may result in increased fuel consumption (MMBtu) from building shading in the winter.

Sources

- California Air Resources Board (CARB). 2020. *Quantification Methodology for Urban and Community Forestry Program*. California Climate Investments. Version 2.0. January. Available: https://ww2.arb.ca.gov/sites/default/files/classic//cc/capandtrade/auctionproceeds/calfire_ucf_finalqm_012820.pdf?_ga=2.67722641.1011230202.1624305360-1883459709.1621467679. Accessed: June 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- Climate Action Reserve. 2014. *Urban Tree Planting Project Protocol*. Version 2.0 June. Available: https://www.climateactionreserve.org/wp-content/uploads/2014/07/Urban_Tree_Planting_Project_Protocol_V2.0.pdf. Accessed: June 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- The Climate Registry (TCR). 2020. *2020 Default Emission Factor Document*. April. Available: https://www.theclimateregistry.org/wp-content/uploads/2020/04/The-Climate-Registry-2020-Default-Emission-Factor-Document.pdf. Accessed: January 2021.
- U.S. Forest Service (USFS). 2021. i-Tree Planting Calculator. Available: https://planting.itreetools.org/. Accessed: January 201.

N-3. Implement Management Practices to Improve the Health and Function of Natural and Working Lands

GHG Mitigation Potential

Varies

Variable reduction in GHG emissions from natural and working lands

Co-Benefits (icon key on pg. 34)

Climate Resilience

Improving the health and function of natural and working islands can reduce the urban heat island effect and flooding and improve water quality, as well as provide recreational spaces that improve health and community resilience. Improving natural and working lands can also provide habitat in which wildlife can live and through which it can migrate in the face of increasing temperatures and changing precipitation patterns.

Health and Equity Considerations

Some management practices can reduce the use of pesticides and herbicides, which can reduce exposure to farmworkers and their families.

Measure Description

This measure covers a broad range of management strategies aimed at improving the overall health and functionality of natural and working lands as a mechanism for increasing carbon sequestration and reducing GHG emissions. Management practices may include those that change ecosystem carbon exchange rates (e.g., cultivated land soil conservation, use of biochar) and those that involve land cover changes.

Scale of Application

Plan/Community

Implementation Requirements

Note that this measure is only applicable to users with land management authority.

Cost Considerations

Overall, improved land management reduces net expenses drastically. Practices designed for maximum land health reduce costs related to inputs, irrigation, and damage from extreme weather, and preserve ecosystems and animal life.

Expanded Mitigation Options

See the *GHG Reduction Formula* section below for online tools to quantify GHG reductions from various conservation practices and management strategies. For agricultural applications, consider developing a Carbon Farm Plan to comprehensively evaluate all elements of your land management strategy.

GHG Reduction Formula

Users are directed to the U.S. Department of Agriculture (2021) COMET-Planner Tool (COMET-Planner) and USFS (2021) Forest Vegetation Simulator (FVS). COMET-Planner is a California-specific tool that was developed for the California Department of Food and Agriculture Heathy Soils Program. COMET-Planner should be used to quantify GHG reductions from conservation practices on cropland, orchard and vineyards, and grazing land. The FVS should be used to quantify GHG reductions from forest management.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces emissions by implementing grazing management to improve irrigated pasture conditions. The user consults COMET-Planner to quantify the estimated reductions. The project is in Napa County. The user selects "Grazing" for the agricultural system, "Prescribed Grazing" for the conservation practice standard, and "Grazing Management to Improve Irrigated Pasture Condition" for the conservation practice implementation. The practice would be applied to 25 acres. Based on these inputs, the user will reduce GHG emissions by 2 MT CO_2e per year (USDA 2021).

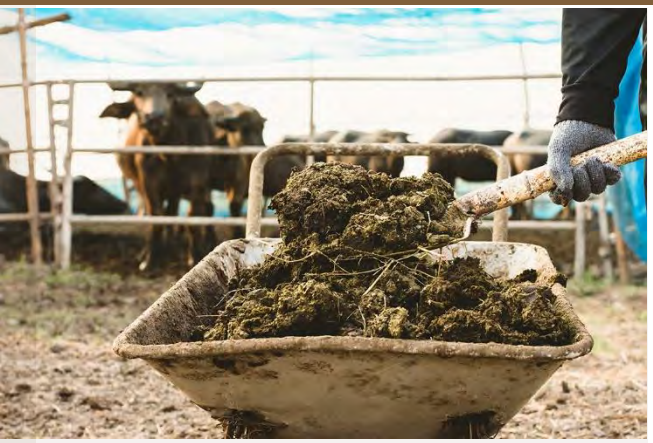
Quantified Co-Benefits

None quantified. Depending on the management strategy, successful implementation of this measure could achieve improved air quality, water conservation, improved public health, and improved ecosystem health.

Sources

- U.S. Department of Agriculture (USDA). 2021. COMET-Planner. Available: http://www.comet-planner-cdfahsp.com/. Accessed: March 2021.
- U.S. Forest Service Forest (USFS). 2021. Forest Vegetation Simulator (FVS). Available: https://www.fs.fed.us/fvs/index.shtml. Accessed: March 2021.

N-4. Require Best Management Practices for Manure Management



GHG Mitigation Potential

Varies

Variable reduction in GHG emissions from manure management practices

Co-Benefits (icon key on pg. 34)

Climate Resilience

Improving manure management can improve water and air quality, thereby improving community health and resilience. Depending on the alternative management practice, it can also increase the amount of compost produced, which can go toward gardens and farms and help improve soil health as well as food and crop production.

Health and Equity Considerations

Fertilizer and manure are major causes of groundwater contamination in California, especially in the Central Valley. Improved manure management can help to improve water quality for rural and vulnerable communities.

Measure Description

This measure will require best management practices for the management of manure from livestock. Well-managed pasture systems and aerobic dry composting systems tend to have lower emissions, while anaerobic wet handling systems generate more CH_4. This measure is thus intended for manure collection systems that are currently managed by anaerobic decomposition of manure volatile solids stored in a lagoon or other predominantly liquid anaerobic environment. Utilizing alternative practices to manage manure results in reduced agriculture emissions from livestock by decreasing the amount of volatile manure solids that are stored in wet, anaerobic conditions.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

Emission reductions can only be quantified for projects with existing manure management practices that include the anaerobic decomposition of manure volatile solids stored in a lagoon or other predominantly liquid anaerobic environment.

Cost Considerations

Incorporating best practices for manure management may entail initial costs to build the related storage and processing ability. Cost savings come in the form of reduced need for inputs like fertilizer if the manure is used on site and avoided water pollution and greenhouse gas emissions.

Expanded Mitigation Options

See the *GHG Reduction Formula* section below for tools to quantify GHG reductions from various alternative manure management practices.

GHG Reduction Formula

Users are directed to CARB's (2021) *Benefits Calculator Tool for the Alternative Manure Management Program* (AMMP tool). The AMMP tool quantifies GHG reductions from livestock manure management based on user-entered parameters, including the livestock type, number of cattle, the type of existing manure collection system, and the user's chosen alternative type of manure collection system. The AMMP tool is only applicable to users who have existing manure management practices that include the anaerobic decomposition of manure volatile solids stored in a lagoon or other predominantly liquid anaerobic environment.

The user can choose from many alternative manure management practices, such as pasture-based management, and various methods of solid separation and scrape conversion. The tool also quantifies GHG reductions from energy savings (e.g., MWh, diesel fuel gallons), if applicable.

Because of the wide range of manure management practices, which corresponds to GHG calculations that have many user-entered variables that influence the amount of GHGs reduced, this Handbook recommends that users use the AMMP tool directly. Tools like AMMP comprehensively account for these variables, enabling users easily to calculate the approximate benefits that each manure management practice will achieve.

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	GHGs reduced from alternative manure management	[ ]	MT CO_2e	calculated
User Inputs				
B	Project county	[ ]	text	user input
C	Type of alternative manure management practice to be adopted	[ ]	text	user input
D	Existing livestock by category	[ ]	text & number of livestock	user input
E	Existing manure collection practices	[ ]	text	user input
F	Existing number of months livestock spend at pasture	0–12	months	user input
G	Existing solid-separation and secondary solid separation	[ ]	text	user input
H	Existing storage/treatment practice for separated solids	[ ]	text	user input
I	Specification of milk produced, if applicable	[ ]	%	user input
J	Existing electricity consumption from manure management activities	[ ]	MWh per year	user input
K	Existing diesel fuel consumption from manure management activities	[ ]	gallons per year	user input
L	Alternative number of months livestock spend at pasture	0–12	months	user input

ID	Variable	Value	Unit	Source
M	Alternative solid-separation and secondary solid separation	[ ]	text	user input
N	Estimated alternative electricity consumption from alternative manure management activities	[ ]	MWh per year	user input
O	Estimated alternative diesel fuel consumption from alternative manure management activities	[ ]	gallons per year	user input
P	List of stationary and mobile sources associated with manure management activities	[ ]	text	user input
Constants, Assumptions, and Available Defaults				
	None			

Further explanation of key variables:

- (A) – The GHG reductions achieved by the implementation of alternative manure management practices are calculated by the AMMP tool. On the GHG Summary tab of the AMMP tool, the GHG reduction is given for a 5-year period. Thus, if the user would like to know the annual number of reductions, that value can be found on the For Technical Reviewers tab of the tool, or by simply dividing the 5-year reduction by 5.

  For more information on the inputs for the AMMP tool, users should refer to the AMMP tool user guide, which provides technical details on the input parameters of the tool (CARB 2019).

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user's livestock operation in Sonoma County (B) currently has 400 lactating dairy cows in freestalls, 100 dry cows, and 100 grazing heifers (D). The current manure management technique has a flush system for freestalls and milking parlors (E), and all cattle are at pasture for 9 months per year (F, L). There is no solid separation currently, and this will not change for the alternative practices (G, H, M). The current energy consumption is 200 MWh per year of electricity (J) and 600 gallons per year of diesel fuel (K). The average milk production is 55 lbs per day per cow, with 3.75 percent milk fat, 3 percent true protein, and 4.9 percent lactose (I). The alternative manure management practice will involve the installation of a new compost bedded pack barn (C). With the alternative manure management practices, electricity consumption will be reduced to 150 MWh per year (N), and diesel consumption will increase to 1,200 gallons per year (O). Based on these inputs, the user will reduce GHG emissions by 2,720 MT CO_2e for five years, or 544 MT CO_2e per year. This example is taken from the AMMP tool user guide (CARB 2019).

Quantified Co-Benefits

The AMMP tool calculates criteria pollutant reductions (lb), fuel savings (gallons of diesel), and soil health benefits (tons of compost production). All values are over a 5-year project life.

Sources

- California Air Resources Board (CARB). 2019. *User Guide–California Department of Food and Agriculture Alternative Manure Management Program*. Available: https://ww2.arb.ca.gov/sites/default/files/classic//cc/capandtrade/auctionproceeds/cdfa_ammp_finaluserguide_2-8-19.pdf. Accessed: January 2021.
- California Air Resources Board (CARB). 2021. CCI Quantification, Benefits, and Reporting Materials. Available: https://ww2.arb.ca.gov/resources/documents/cci-quantification-benefits-and-reporting-materials. Accessed: January 2021.

Construction

Equipment and vehicles are the primary sources of GHG emissions in the construction sector. Construction equipment typically operates on construction sites and includes off-road sources like cranes, bulldozers, forklifts, and tractors. Vehicles are used for personnel, material, and equipment transport, as well as onsite material supply movement. Construction equipment and vehicles traditionally use diesel or gasoline fuel and release emissions based on the amount of fuel combusted and the emission certification level of the engine.

Equipment and vehicle emissions can be reduced by using engines that emit fewer pollutants for the same amount of work. This is typically equipment and vehicles powered by electricity or cleaner fuels (e.g., compressed natural gas, renewable diesel). The exclusive use of grid electricity by electric equipment and vehicles eliminates the diesel emissions at the site but increases indirect electricity emissions. However, grid-based emissions are typically less than the emissions from the diesel-fueled equipment (depending on the source of grid power). Hybrid-powered equipment and vehicles would decrease but not eliminate fuel use. The electricity for hybrid engines is self-generated, so it would not increase grid-based electrical generation and the associated emissions unless the equipment has plug-in capability. Likewise, depending on the fuel type, cleaner-fuel equipment and vehicles would decrease but not eliminate combustion emissions.

Emissions reductions achieved by electric-powered and cleaner-fuel equipment and vehicles are determined by finding the difference in emissions between those generated by the replacement power source and those generated by conventional fossil-fueled engines. Emissions for the mitigated scenario may consist of direct emissions from combustion fuel use, and/or indirect emissions from grid electricity. Resources and methods to quantify emissions reductions from measures that target cleaner-fuel equipment are described in this section. Measures that reduce vehicle fuel consumption through idling restrictions and local contractor provisions are also discussed. Use the below graphic to click on an individual measure to navigate directly to the measure's factsheet.

C-1-A. Use Electric or Hybrid Powered Equipment

Photo Credit: Granite Construction, March 2019

GHG Mitigation Potential

Potentially large reduction in GHG emissions from construction equipment

Co-Benefits (icon key on pg. 34)

Climate Resilience

Using electric- or hybrid-powered equipment can reduce sensitivity to fuel price shocks or scarcity. However, using all-electric equipment may decrease resilience if they are the only option available during a power outage.

Health and Equity Considerations

This measure will not only reduce air pollution for surrounding communities but also for onsite workers.

Measure Description

This measure requires use of electric- or hybrid-powered construction equipment over conventional diesel-fueled counterparts. Replacing diesel-powered equipment with electric or hybrid-electric equipment reduces fossil fuel combustion and thus GHG emissions. However, all-electric equipment results in GHG emissions from the electricity used to charge the equipment. The indirect GHG emissions increase from electricity must be calculated in addition to the GHG emissions reduction from displaced fossil fuel combustion to estimate the total net GHG emissions reduction achieved by this measure if using all-electric equipment. A variation of this measure is described in Measure C-1-B, *Use Cleaner-Fuel Equipment*.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

Note that while this measure discusses offroad equipment used for construction, this measure can also be implemented for other offroad equipment applications (e.g., agriculture, industrial).

Cost Considerations

Electric- or hybrid-powered equipment tends to be more expensive to purchase and install than conventional models powered by fossil fuels. These costs may be offset by savings in fuel use and maintenance.

Expanded Mitigation Options

Pair with Measure E-10, *Procure Electricity from Lower Carbon Intensity Power Supply*, to ensure that the energy supplied to power the electrified equipment has a lower carbon intensity than the local grid, thereby further reducing GHG emissions. Consider using portable batteries to support and extend implementation of this measure at more remote sites.

GHG Reduction Formula

$$A1 = (C \times D \times F \times G1 \times H) - (C \times D \times \mathbf{G2} \times I)$$

$$A2 = C \times D \times E \times \mathbf{G2} \times I$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A1	GHG reduction from using electric equipment	[ ]	MT CO_2e	calculated
A2	GHG reduction from using hybrid equipment	[ ]	MT CO_2e	calculated
User Inputs				
B	Fuel type of existing equipment	[ ]	text	user input
C	Hours of equipment operation	[ ]	hours	user input
G2	Carbon intensity of fossil-fueled equipment	[ ]	g CO_2e per hp-hour	CARB 2021
Constants, Assumptions, and Available Defaults				
D	Horsepower of equipment	Table C-1-B.1	hp	CARB 2021
E	Percent fuel reduction of hybrid equipment compared to conventional equipment	10	%	Holian and Pyeon 2017
F	Conversion from horsepower to MW	0.0007457	MW per hp	conversion
G1	Carbon intensity of local electricity provider	Tables E-4.3 and E-4.4	lb CO_2e per MWh	CA Utilities 2021
H	Conversion from lb to MT	0.000454	MT per lb	conversion
I	Conversion from g to MT	1 e^{-6}	MT per g	conversion

Further explanation of key variables:

- (B) – The fuel type of the existing equipment is used to obtain the carbon intensity of the equipment (G2) from OFFROAD.
- (D) – Average hp of various construction equipment are provided in Table C-1-B.1 in Appendix C, *Emission Factors and Data Tables* (CARB 2021). If the user can provide an equipment-specific hp, they should replace the default in the GHG calculation formula.
- (E) – The percent fuel reduction is used in this formula as a proxy for the percent activity reduction that would be expected with hybrid construction equipment. Based on a survey of 12 models of heavy construction equipment from 10 different manufacturers, hybrid construction equipment reduced fuel use by 10 to 45 percent, with an average of 28 percent (Holian and Pyeon 2017). To be conservative, the low end of the range is cited. If the user can provide an equipment-specific hp, the user should replace the default in the GHG calculation formula. If the user knows the make and model of the construction equipment used, the user should replace the default in the GHG calculation formula.

- (F) – Conversion factor assumes that energy requirements and losses are the same for both a fuel-powered engine and an electrically-charged engine.
- (G1) – GHG intensity factors for major California utilities are provided in Tables E-4.3 and E-4.4 in Appendix C. If the project study area is not serviced by a listed electricity provider, or the user is able to provide a project-specific value (i.e., for the future year not referenced in Appendix C), the user should replace the default in the GHG calculation formula. If the electricity provider is not known, the user may elect to use the statewide grid average carbon intensity.
- (G2) – GHG intensity factors for various construction equipment can be obtained from CARB's (2021) OFFROAD model. Note that the OFFROAD emissions rates are inclusive of equipment load. Therefore, the GHG reduction equation does not include a multiplier for load factor.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces construction equipment emissions by replacing fossil fuel combustion with electricity consumption, which generates fewer GHG emissions per unit of activity. In this example, a 158-hp diesel excavator (D) that is used 8 hours per day (C) is replaced by an electric-powered equivalent. A 158-hp excavator has a carbon intensity of 530 g CO_2e per hp-hour (G2). The electricity provider for the project area is Silicon Valley Clean Energy, and the analysis year is 2025. The carbon intensity of electricity is, therefore, 5 lb CO_2e per megawatt-hour (G1).

$$A1 = \left(8\ \frac{\text{hours}}{\text{day}} \times 158\ \text{hp} \times 0.0007457\ \frac{\text{MW}}{\text{hp}} \times 5\ \frac{\text{lb CO}_2\text{e}}{\text{MWh}} \times 0.000454 \frac{\text{MT}}{\text{lb}}\right) - \left(8\ \frac{\text{hours}}{\text{day}} \times 158\ \text{hp} \times 530\ \frac{\text{g CO}_2\text{e}}{\text{hp-hour}} \times 1e^{-6} \frac{\text{MT}}{\text{g}}\right) = -0.7 \frac{\text{MT CO}_2\text{e}}{\text{day}}$$

Quantified Co-Benefits

Improved Air Quality

Reducing fossil-fuel combustion will also reduce local criteria pollutants. Emission savings can be calculated using the same formula used to quantify GHG reductions (A1 and A2). Criteria pollutant intensity factors for various construction equipment can be obtained from CARB's (2021) OFFROAD model.

Electricity supplied by statewide fossil-fueled or bioenergy power plants will generate criteria pollutants. However, because these power plants are located throughout the state, electricity consumption from equipment charging will not generate localized criteria pollutant emissions at the equipment source. Consequently, for the quantification of criteria pollutant emission reductions, either

the electricity portion of the equation can be removed, or the electricity intensity (G2) can be set to zero.

Energy and Fuel Savings

Fossil fuel savings are a product of the equipment fuel efficiency (gallons consumed per hour) and the equipment operating time (hours). Fuel intensity factors for various construction equipment can be obtained from CARB's OFFROAD model. Users should multiply the fuel intensity by the equipment operating hours to quantify fuel savings.

Increased electricity consumption for electric equipment is calculated as part of the GHG reduction formula (A1). The abbreviated formula is also shown below.

$$MWh = C \times D \times F$$

Sources

- California Air Resources Board (CARB). 2021. OFFROAD2017–ORION. Available: https://arb.ca.gov/emfac/emissions-inventory. Database queried by Ramboll and provided electronically to ICF. September 2021.
- California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021.
- Holian, M., and J. Pyeon. 2017. *Analyzing the Potential of Hybrid and Electric Off-Road Equipment in Reducing Carbon Emissions from Construction Industries*. Mineta Transportation Institute. September. Available: https://transweb.sjsu.edu/sites/default/files/1533-analyzing-the-potential-of-hybrid-and-electric-off-road-equipment-in-reducing-carbon-emissions-from-construction-industries-research-brief.pdf. Accessed: January 2021.

C-1-B. Use Cleaner-Fuel Equipment

Photo Credit: TruckPR, April 2017

GHG Mitigation Potential

Potentially small reduction in GHG emissions from construction equipment

Co-Benefits (icon key on pg. 34)

Climate Resilience

Using cleaner fuel equipment allows for fuel redundancy and can reduce sensitivity to price shocks or scarcity in conventional fuels.

Health and Equity Considerations

While most alternative fuels reduce both GHG and criteria pollutants, a few may increase criteria pollutant emissions. The most prominent example of this is biodiesel, which generally results in higher NOx emissions, but lower PM emissions compared to conventional diesel.

Measure Description

This measure requires use of cleaner-fueled construction equipment over conventional diesel- or gasoline-fueled counterparts. Depending on the fuel type, equipment type, and horsepower, equipment may emit fewer GHG for the same amount of work as equivalent diesel- or gasoline-fueled engines. A variation of this measure is described in Measure C-1-A, *Use Electric or Hybrid Powered Equipment*. Compressed natural gas (CNG) is specifically addressed in the quantification method for this measure, although users could expand to cover additional fuel types, such as renewable diesel.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

Note that while this measure discusses offroad equipment used for construction, this measure can also be implemented for other offroad equipment applications (e.g., agriculture, industrial).

Cost Considerations

Equipment powered by cleaner-fuels tend to be more expensive to purchase and install than less clean models. These costs may be offset by savings in fuel use and maintenance.

Expanded Mitigation Options

Other cleaner fuels available for use in construction equipment include renewable diesel, biodiesel, and hydrogen fuel cells. These fuels are not specifically captured by the current quantitative method for this measure.

GHG Reduction Formula

$$A = ((C \times D \times E2) - (C \times D \times E1)) \times F$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	GHG reduction from using cleaner-fuel equipment	[ ]	MT CO_2e	calculated
User Inputs				
B	Fuel types of existing and cleaner-fuel equipment	[ ]	text	user input
C	Hours of equipment operation	[ ]	hours	user input
E1	Carbon intensity of existing equipment	[ ]	g CO_2e per hp-hour	CARB 2021
E2	Carbon intensity of cleaner-fuel equipment	[ ]	g CO_2e per hp-hour	CARB 2021
Constants, Assumptions, and Available Defaults				
D	Horsepower of equipment (diesel, gasoline, and CNG equipment)	Table C-1-B.1	hp	CARB 2021
F	Conversion from g to MT	1 e^{-6}	MT per g	conversion

Further explanation of key variables:

- (A) – Depending on the fuel type, equipment type, and horsepower, the cleaner-fuel equipment may emit more GHGs than an equivalent gasoline- or diesel-fueled engine. The user should take care to consider the potential criteria pollutant co-benefits against possible GHG increases from the use of a cleaner fuel.
- (B) – The fuel type of the existing and cleaner-fuel equipment is used to obtain the carbon intensity of the equipment (E1 and E2) from CARB's (2021) OFFROAD.
- (D) – Average hp of various construction equipment are provided in Table C-1-B.1 in Appendix C (CARB 2021). If the user can provide an equipment-specific hp, they should replace the default in the GHG calculation formula.
- (E1 and E2) – GHG intensity factors for various construction equipment by fuel type can be obtained from CARB's (2021) OFFROAD model. Note that the OFFROAD emissions rates are inclusive of equipment load. Therefore, the GHG reduction equation does not include a multiplier for load factor.

GHG Calculation Caps or Maximums

None. If the emissions rate for the cleaner-fuel equipment exceeds that of the diesel- or gasoline-powered counterpart, this measure may result in a GHG emissions increase.

Example GHG Reduction Quantification

The user reduces construction equipment emissions by replacing gasoline or diesel combustion with CNG or renewable diesel consumption, which may generate fewer GHG emissions per unit of activity, depending on the piece of equipment and horsepower. In this example, a fleet of 23-hp diesel aerial lifts (D) that are used 40 hours per day (C) in 2022 is replaced by CNG-fueled equivalents. A 23-hp diesel aerial lift has a carbon intensity of 851g CO_2e per hp-hour (E1). The CNG-fueled equivalent has a hp of 19 and carbon intensity of 675g CO_2e per hp-hour (E2).

$$A = \left(\left(40\frac{\text{hours}}{\text{day}} \times 19 \text{ hp} \times 675\frac{\text{g } CO_2e}{\text{hp-hour}}\right) - \left(40\frac{\text{hours}}{\text{day}} \times 23 \text{ hp} \times 851\frac{\text{g } CO_2e}{\text{hp-hour}}\right)\right) \times 1e^{-6}\frac{\text{MT}}{\text{g}} = -0.3\frac{\text{MT } CO_2e}{\text{day}}$$

Quantified Co-Benefits

Improved Air Quality

Depending on the fuel type, equipment type, and horsepower, the cleaner-fuel equipment may emit more criteria pollutants than an equivalent gasoline- or diesel-fueled engine. Emission changes can be calculated using the same formula used to quantify GHG reductions (A). The carbon intensity factors (E1 and E2) should be replaced in the formula with the corresponding criteria pollutant intensity factors, which can be obtained from CARB's OFFROAD model.

Energy and Fuel Savings

This measure would displace use of fossil fuel (gasoline or diesel) with a cleaner fuel type (CNG). Total fuel consumption is a product of the equipment fuel efficiency (gallons consumed per hour) and the equipment operating time (hours). Fuel intensity factors for various construction equipment can be obtained from CARB's OFFROAD model. Users should multiply the fuel intensity factor by the equipment operating hours to quantify fuel changes for the existing and cleaner-fuel equipment.

Sources

- California Air Resources Board (CARB). 2021. OFFROAD2017–ORION. Available: https://arb.ca.gov/emfac/emissions-inventory. Database queried by Ramboll and provided electronically to ICF. September 2021.

C-2. Limit Heavy-Duty Diesel Vehicle Idling

GHG Mitigation Potential

Potentially small reduction in GHG emissions from construction vehicles

Co-Benefits (icon key on pg. 34)

Climate Resilience

Limiting vehicle idling saves fuels and can reduce sensitivity to price shocks or fuel scarcity.

Health and Equity Considerations

This measure will not only reduce air pollution for surrounding communities but also for onsite workers.

Measure Description

This measure limits heavy-duty vehicle idling beyond current regulatory restrictions. The Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling prohibits diesel-fueled commercial motor vehicles of more than 10,000 pounds from idling the vehicle's primary engine for 5 minutes at a single location (13 CCR Section 2485). There are some exceptions to the regulation, such as positioning or providing a power source for equipment or operations, such as lift, crane, pump, drill, hoist, or other auxiliary equipment. Reduction in idling time beyond the regulation would further reduce fuel consumption and thus emissions. Reducing idling benefits the health of construction workers as well as nearby residents and workers.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

The construction site manager should develop an enforceable mechanism that monitors the idling time to ensure compliance with this measure. Note that while this measure discusses heavy-duty vehicles used for construction, this measure can also be implemented for other vehicle applications (e.g., agriculture, industrial).

Cost Considerations

There are no initial costs associated with this measure. Restricting vehicle idling time beyond regulation will reduce fuel consumption, leading to long-term cost savings.

Expanded Mitigation Options

Pair with Measure T-30, *Use Cleaner-Fuel Vehicles,* to reduce the carbon intensity of fuels combusted during idling.

GHG Reduction Formula

$$A = (B - D) \times C \times E \times F \times G \times H$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	GHG reduction from idling limit	[ ]	MT CO_2e	calculated
User Inputs				
B	Idle restriction with measure implementation	[ ]	minutes/period	user input
C	Vehicle trips	[ ]	trips	user input
Constants, Assumptions, and Available Defaults				
D	Idle limit without the measure	5	minutes/period	13 CCR Section 2485
E	Idle periods per trip	2	period/trip	assumption
F	Vehicle idling emission factor	[ ]	g/idle hours	CARB 2021
G	Conversion from minutes to hour	0.0167	hours per minute	conversion
H	Conversion from g to MT	1 e^{-6}	MT per g	conversion

Further explanation of key variables:

- (A) – Emissions reductions are quantified per vehicle idling period. Daily emissions reductions can be quantified if the number of idling periods per day is known.
- (B) – The measure-imposed idle restriction must exceed the idle limit without the measure (D).
- (C) – Idle restrictions are imposed on vehicles idling at a single location. Vehicles may make multiple trips to that location or make trips to different locations but still be subject to the idling limit. Users should define the number of trips the vehicle will make for the analysis period (e.g., per day, per year).
- (D) – The Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling limits diesel-fueled commercial motor vehicle idling time to 5 minutes at a single location, with exceptions for some vehicles with auxiliary equipment powered by the primary engine. The user should determine the appropriate idling limit without the measure for such exempted vehicles.
- (E) – The quantification method assumes the vehicle will idle twice per trip at a single location: once during vehicle shutdown from the inbound trip and once during vehicle warmup for the outbound trip. Users should apply a different factor if the number of idle periods per trip is known.
- (F) – GHG intensity factors for diesel-fueled heavy vehicle idling can be obtained from CARB's (2021) EMFAC model.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces vehicle idling emissions by enforcing an idling period of 3 minutes (B). In this example, a heavy-duty truck is regulated under the Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling. The idling limit without the measure is therefore 5 minutes at a single location (D). The vehicle has a gross vehicle weight of 35,000 pounds and will operate at a construction site in Los Angeles County in 2023. The vehicle will make 10 trips to the construction site per day (C). The idling carbon intensity is 6,375 g CO_2e per idle hour (F).

$$A = \left(3 \frac{\text{idle min}}{\text{period}} - 5 \frac{\text{idle min}}{\text{period}}\right) \times 10 \frac{\text{trips}}{\text{day}} \times 2 \frac{\text{period}}{\text{trip}} \times 6{,}375 \frac{\text{g}}{\text{idle·hr}}$$

$$\times 0.0167 \frac{\text{hr}}{\text{min}} \times 1e^{-6} \frac{\text{MT}}{\text{g}} = <\text{-}0.1 \frac{\text{MT } CO_2e}{\text{day}}$$

Quantified Co-Benefits

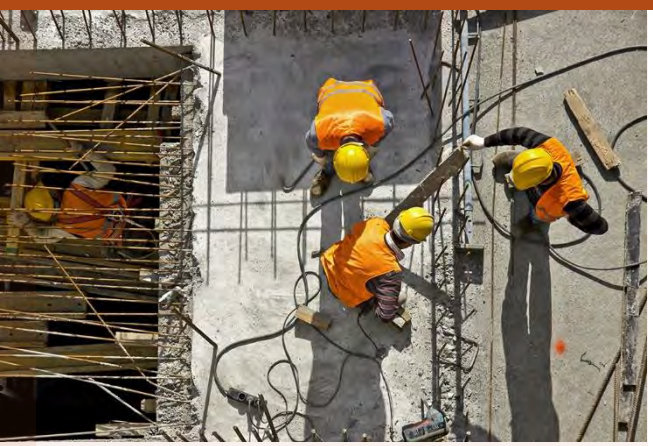
Improved Air Quality

Reducing fossil-fuel combustion from idling restrictions will also reduce local criteria pollutants. The reduction in criteria pollutant emissions can be calculated using the GHG reduction formula, where (F) represents the criteria pollutant intensity factors obtained from CARB's (2021) EMFAC model.

Sources

- California Air Resources Board (CARB). 2021. *EMFAC*. Available: https://arb.ca.gov/emfac/. Accessed: September 2021.

C-3. Use Local Construction Contractors



GHG Mitigation Potential

Varies

Variable reduction in GHG emissions from construction worker vehicles

Co-Benefits (icon key on pg. 34)

Climate Resilience

Reducing worker commute trip lengths saves fuels and can reduce sensitivity to price shocks or fuel scarcity.

Health and Equity Considerations

Refer to Measure IEP-1, *Local Labor and Apprenticeships (Construction)*, in Chapter 5.

Measure Description

This measure requires use of local construction contractors. Contracting construction work with a local company reduces VMT associated with construction employee commute distances and, therefore, reduces emissions from vehicle fuel combustion. Local hire provisions may cover the entire workforce or a percentage of the workforce based on the project size or employment type.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

Local hiring requirements should be expressed in the contractor bid specifications. Note that this measure is specific to local hire provisions for employees reporting to the construction site. Measure C-4, *Use Local and Sustainable Building Materials*, requires use of local building materials, which can reduce VMT and emissions from vendor and delivery trips.

Cost Considerations

Local and skilled workforce provisions can promote economic development, channeling some of the economic value of development directly to the community in which it is building. Decreased worker commute times and fuel savings may generate additional discretionary funds. Reduced car use may decrease the need for infrastructure spending on road maintenance.

Expanded Mitigation Options

Local workforce provisions may increase the likelihood of employee commute trips by transit, walking, or biking. Potential GHG reductions from mode shift are not reflected in the quantification methodology. Partner with local transit agencies to provide discounted transit passes to further incentivize alternative transportation.

Consider additional provisions for workforce training to bolster development of skilled trades and further economic growth. Requirements may include workers who have graduated from a Joint Labor Management apprenticeship training program approved by the State of California or who have at least as many hours of on-the-job experience in the appliable craft or are registered in an apprenticeship training program.

GHG Reduction Formula

$$A = (B - D) \times C \times E \times F \times G$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	GHG reduction from using local construction contractors	[ ]	MT CO_2e	calculated
User Inputs				
B	Distance provision of local hiring requirement	[ ]	miles/one-way trip	user input
C	Number of employees	[ ]	employees	user input
Constants, Assumptions, and Available Defaults				
D	Countywide average one-way employee commute trip distance	Table C-3.1	miles/one-way trip	2015 CSTMD
E	Employee trips per day	2	trips per employee	assumption
F	Vehicle emission factor	[ ]	g CO_2e per mile	CARB 2021
G	Conversion from g to MT	1 e^{-6}	MT per g	conversion

Further explanation of key variables:

- (B) – The local hire provision should specify the maximum average one-way travel distance for contracted staff.
- (C) – The number of employees required to report to the construction site and subject to the provision must be provided by the user.
- (D) – The average countywide vehicle trip lengths from the 2015 California Statewide Travel Demand Model (CSTDM) are provided in Table C-3.1 in Appendix C. The data are for home-based-work trips by traffic analysis zone averaged to the county level.
- (E) – The quantification method assumes all employees will make both an inbound and outbound trip per day.
- (F) – Users should obtain the carbon intensity of employee commute vehicles from CARB's (2021) EMFAC model. Employee commute vehicles are generally classified as light-duty automobiles (LDA) and trucks (light-duty truck class 1 [LDT1] and 2 [LDT2]). Users may obtain a weighted carbon intensity of these vehicle types using a 25/50/25 percent mix of LDA, LDT1, and LDT2, respectively. Alternatively, users may apply different weightings of vehicle fleet mixes if project-specific information is available.

GHG Calculation Caps or Maximums

(B<D). For implementation of this measure to result in a GHG reduction, the maximum average allowable travel distance must be less than the average countywide vehicle trip length assumed in the calculation.

Example GHG Reduction Quantification

The user reduces employee commute emissions by requiring all contracted employees to be located within a certain distance of a construction project. In this example, the construction project requires 100 employees per day (C) and is in Alameda County, where the average countywide home-based-work vehicle trip length from the 2015 CSTDM is 11.98 miles (D). The contractor agreement requires all staff reporting to the construction site to reside no more than 10 miles from the project (B). The weighted average carbon intensity for employee commute vehicles in Alameda County for the analysis year from EMFAC is 281 grams per mile (F).

$$A = \left(10 \frac{\text{miles}}{\text{trip}} - 11.98 \frac{\text{miles}}{\text{trip}}\right) \times 100 \frac{\text{employees}}{\text{day}} \times 2 \frac{\text{trips}}{\text{employee}}$$

$$\times 281 \frac{\text{g } CO_2e}{\text{mi}} \times 1e^{-6} \frac{\text{MT}}{\text{g}} = 0.1 \frac{\text{MT } CO_2e}{\text{day}}$$

Quantified Co-Benefits

VMT Reductions

Contracting construction work with a local company reduces construction employee commute VMT. The reduction in VMT can be calculated using the GHG reduction formula with the exception that (F and G) should be replaced with a value of 1 or otherwise be removed from the equation.

Energy and Fuel Savings

This measure will achieve vehicle fuel savings by reducing employee commute VMT. Total fuel consumption is a product of the vehicle fuel efficiency (gallons consumed per mile) and miles traveled. Fuel intensity factors can be obtained from CARB's (2021) EMFAC model. Users should multiply the vehicle fuel intensity factor by the VMT reduction (see above) to quantify fuel savings.

Improved Air Quality

Reducing fossil-fuel combustion from a local hire provision will also reduce local criteria pollutants. The reduction in criteria pollutant emissions can be calculated using the GHG reduction formula, where (F) represents the criteria pollutant intensity factors obtained from CARB's (2021) EMFAC model.

Sources

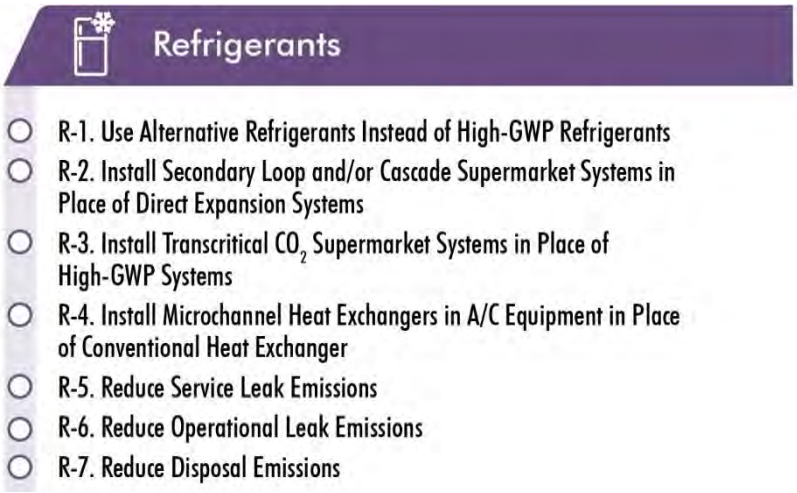
- California Air Resources Board (CARB). 2021. *EMFAC*. Available: https://arb.ca.gov/emfac/. Accessed: September 2021.

Refrigerants

Refrigerants are substances used in equipment for cooling and heating purposes. Most of the refrigerants used today are HFCs or blends thereof. HFCs are the third generation of synthetic fluorinated chemicals and were used to replace ozone depleting refrigerants. However, HFCs are potent GHGs that often have high GWP values. Different types of refrigeration equipment are used by different types of land uses. For example, an office may use various types of A/C equipment, while a supermarket may use both A/C equipment and refrigeration equipment.

All equipment that uses refrigerants has a charge size (i.e., quantity of refrigerant the equipment contains), and an operational refrigerant leak rate, and each refrigerant has a GWP that is specific to that refrigerant. The GWPs of common refrigerants are presented in Table R-1.1 in Appendix C, *Emissions Factors and Data Tables*. For purposes of calculating refrigerant emissions in this Handbook, the equipment charge sizes and leak rates have been determined for relevant land use and equipment types. This information is presented in Tables R-1.2 through R-1.5 in Appendix C.

Emissions from equipment can be reduced by decreasing the charge size and/or leak rate, or replacing the baseline refrigerant with a lower GWP refrigerant. The quantification method for all refrigerant measures, except Measure R-7, address emissions generated during equipment operation. Measure R-7 reduces emissions from the disposal of refrigeration and A/C equipment at the end of its lifetime. The quantification approach for Measure R-7 includes lifecycle considerations (i.e., downstream emissions) and, as a result, emission reductions from this measure should not be compared to the emission reductions calculated for other refrigeration measures in this Handbook, which do not include lifecycle emissions.



Use the graphic to click on an individual measure to navigate directly to the measure's factsheet.

R-1. Use Alternative Refrigerants Instead of High-GWP Refrigerants

GHG Mitigation Potential

Up to a 100% reduction in GHG emissions during operation

Co-Benefits (icon key on pg. 34)

Climate Resilience

Climate resilience benefits vary by alternative refrigerant; for example, use of NH_3 can reduce energy consumption, thereby reducing the strain on the overall grid, particularly the risk of power outages during peak loads. Reduced energy consumption would also reduce energy costs, particularly if extreme heat would otherwise increase these costs.

Health and Equity Considerations

Evaluate the entire lifecycle impact of alternative refrigerants and avoid those that will degrade into persistent chemicals harmful to the environment. Equipment should be installed in locations with adequate space and/or ventilation in accordance with U.S. EPA and CARB recommendations.

Measure Description

This measure replaces high-GWP refrigerants with lower-GWP refrigerants (e.g., natural refrigerants such as CO_2, ammonia [NH_3], and hydrocarbons, or next generation low-GWP synthetic refrigerants like hydrofluoroolefin-1234yf) in refrigeration and A/C equipment. When emitted into the atmosphere, high-GWP refrigerants (e.g., HFCs) absorb significantly more heat than CO_2 on a mass basis, resulting in larger global warming effects. Shifting to lower-GWP refrigerants reduces the potency of refrigerant leaks, decreasing GHG emissions on a CO_2e basis.

Scale of Application

Project/Site

Implementation Requirements

See measure description.

Cost Considerations

Implementation may require retrofitting existing equipment or purchasing new equipment, which may result in high initial capital costs. Alternative refrigerants, if synthetic and patented, may cost more than conventional refrigerants. Natural, non-patented refrigerants may cost less. Costs differences are expected to decrease over time with increased availability and commercialization of alternative refrigerants. Savings may also be achieved through increased energy efficiency of a refrigerant system using an alternative refrigerant.

Expanded Mitigation Options

Evaluate the entire lifecycle impact of alternative refrigerants and avoid those that will degrade into persistent chemicals harmful to the environment so as to improve local air quality, public health, and ecosystem health. Ensure that Clean Air Act and other regulations are followed during refrigerant disposal.

GHG Reduction Formula

$$A = \frac{(B \times C \times G) - (D \times E \times F)}{(D \times E \times F)}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from refrigerant emissions	0–100	%	calculated
User Inputs				
B	Total alternative refrigerant charge size	[ ]	kg	user input
C	Annual leak rate of equipment with alternative refrigerant	[ ]	%	user input
Constants, Assumptions, and Available Defaults				
D	HFC refrigerant charge size	Tables R-1.2 through R-1.5	kg	U.S. EPA 2016
E	Annual leak rate of equipment with HFC refrigerant	Tables R-1.2 through R-1.5	%	U.S. EPA 2016
F	GWP of HFC refrigerant	Table R-1.1	unitless	IPCC 2007
G	GWP of alternative refrigerant	Table R-1.1	unitless	IPCC 2007 and WMO 2018

Further explanation of key variables:

- (B, D) – The equipment charge size is the total quantity of refrigerant installed in the refrigeration or A/C equipment. The charge size may be the same for equipment using HFC and alternative refrigerants, or it may differ. Default charge sizes for equipment with HFC refrigerants are provided in Tables R.1-2 through R-1.5 in Appendix C. If the user can provide a project-specific value, they should replace the default quantity of refrigerant installed in the GHG reduction formula. Charge size for alternative refrigerants would vary by equipment type. In the case where the alternative charge size is not known, the corresponding HFC refrigerant charge size may be used as a substitute.
- (C, E) – Based on industry data, the average annual leak rates for the given equipment type, including operational and servicing leak rates for the equipment throughout the year. The leak rate may be the same for equipment using HFC and alternative refrigerants, or it may differ. Default leak rates for equipment with HFC refrigerants are provided in Tables R.1-2 through R-1.5 in Appendix C. These are average values and may vary with specific systems. Leak rates for alternative refrigerants would vary by equipment type. In the case where the alternative leak rate is not known, the corresponding HFC refrigerant leak rate may be used as a substitute.
- (F, G) – The GWP measures the contribution to global warming from the release of one unit of the given refrigerant relative to CO_2 on a 100-year time horizon. The GWPs of common refrigerants and alternatives are provided in Table R-1.1 in Appendix C.

GHG Calculation Caps or Maximums

This measure has a maximum GHG emissions reduction of 100 percent.

Example GHG Reduction Quantification

The user reduces high-GWP emissions by replacing a high-GWP refrigerant with a lower-GWP refrigerant alternative. In this example, a 60,000-sf supermarket has a conventional direct expansion system with 1,360 kg (D) of R-404A and a total leak rate of 33 percent (E). The supermarket also has A/C equipment with 13 kg (D) of R-410A and a total leak rate of 8 percent (E). The GWPs of R-404A and R-410A are 3,922 and 2,088 (F), respectively. The user replaces R-404A with R-448, a refrigerant with a GWP of 1,387 (G), and R-410A with R-407C, a refrigerant with a GWP of 1,774 (G). The charge sizes and leak rates for the alternative equipment would be the same as the high-GWP counterpart. Note that the A/C refrigerant transition from R-410A to R-407C is included for illustrative purposes and that this transition in supermarkets is not currently happening in practice. This would reduce GHG emissions from the refrigeration and A/C systems at the supermarket by 65 percent.

$$A = \frac{((\mathbf{1{,}360\ kg} \times \mathbf{33\%} \times 1{,}387)+(\mathbf{13\ kg} \times \mathbf{8\%} \times 1{,}774)) - ((1{,}360\ \text{kg} \times 33\% \times 3{,}922)+(13\text{kg} \times 8\% \times 2{,}088))}{((1{,}360\ \text{kg} \times 33\% \times 3{,}922)+(13\ \text{kg} \times 8\% \times 2{,}088))} = -65\%$$

Quantified Co-Benefits

Energy and Fuel Savings

Depending on system type and refrigerant selected, successful implementation of this measure could result in energy savings or energy penalties (U.S. EPA 2019). This co-benefit cannot be quantified for the purposes of this general methodology.

Sources

- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2016. Accounting Tool to Support Federal Reporting of Hydrofluorocarbon Emissions: Supporting Documentation. October 2016. Available: https://www.epa.gov/sites/production/files/2015-09/documents/hfc_emissions_accounting_tool_supporting_documentation.pdf. Accessed: May 2021.
- World Meteorological Organization (WMO). 2018. *Scientific Assessment of Ozone Depletion: 2018, Global Ozone Research and Monitoring Project*. Report No. 58, 5886 pp., Geneva, Switzerland.

R-2. Install Secondary Loop and/or Cascade Supermarket Systems in Place of Direct Expansion Systems

GHG Mitigation Potential

Up to a 100% reduction in GHG emissions during operation

Co-Benefits (icon key on pg. 34)

Climate Resilience

Increased energy efficiency in refrigeration systems can reduce the strain on the overall grid, particularly the risk of power outages during peak loads. Increased efficiency can also reduce energy costs, particularly if extreme heat would otherwise increase these costs.

Health and Equity Considerations

Non-applicable

Measure Description

This measure replaces conventional direct expansion systems in supermarkets with indirect systems such as secondary loop and cascade systems. Currently, direct expansion systems are the most used refrigeration system type in supermarkets in the U.S. (U.S. EPA 2016). Whereas direct expansion systems circulate one refrigerant from the machinery room out to the store and back to the machinery room, indirect systems employ a primary and secondary refrigerant or heat transfer fluid (U.S. EPA 2016, 2019). In secondary loop systems, the primary refrigerant remains in the machine room and cools the secondary fluid, which is then pumped throughout the store to cool products. Another type of indirect system is a cascade system, which contains two refrigeration systems that share a common heat exchanger. These systems often use HFCs, NH_3, or hydrocarbons as the primary refrigerant. Often water mixed with glycol is used as the secondary heat transfer fluid in secondary loop systems; CO_2 is often used as the second refrigerant in cascades. By either confining HFCs to the machinery room as the primary refrigerant or removing HFCs entirely (as in NH_3 and hydrocarbon systems), these systems require significantly lower refrigerant charge and have lower leak rates than conventional direct expansion systems (U.S. EPA 2013a, 2019). Decreasing the refrigerant charge and leak rates results in a reduction of potential direct GHG emissions.

Scale of Application

Project/Site

Implementation Requirements

See measure description.

Cost Considerations

While both secondary loop and cascade supermarket systems have a higher initial cost over traditional systems, minimized costs associated with rechanging systems due to reduced leakage and energy efficiency improvements may provide a net cost savings over the lifetime of the systems.

Expanded Mitigation Options

Pair with Measure R-1, *Use Alternative Refrigerants Instead of High-GWP Refrigerants*, for increased GHG reductions in supermarket refrigerant systems.

GHG Reduction Formula

$$A = \frac{[(B \times F \times H)+(C \times F \times I)] - (D \times E \times G)}{D \times E \times G}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from refrigerant emissions	0–100	%	calculated
User Inputs				
B	Equipment charge size of secondary loop and/or cascade system	[ ]	kg	user input
C	Equipment charge size of secondary refrigerant in secondary loop and/or cascade system	[ ]	kg	user input
Constants, Assumptions, and Available Defaults				
D	Equipment charge size of conventional direct expansion system	1,633	kg	U.S. EPA 2013a
E	Annual leak rate of conventional direct expansion system	25	%	U.S. EPA 2013b
F	Annual leak rate of secondary loop and/or cascade system	5–15	%	U.S. EPA 2013a
G	GWP of HFC refrigerant	Table R-1.1	unitless	IPCC 2007 and WMO 2018
H	GWP of HFC refrigerant	Table R-1.1	unitless	IPCC 2007 and WMO 2018
I	GWP of refrigerant	Table R-1.1	unitless	IPCC 2007 and WMO 2018

Further explanation of key variables:

- (B) – The equipment charge size is the total quantity of the primary refrigerant installed in refrigeration or A/C equipment.
- (C) – The equipment charge size is the total quantity of the secondary refrigerant installed in refrigeration or A/C equipment.
- (D) – Based on industry data, the equipment charge size of a conventional direct expansion system is 1,633 kg. If the user can provide a project-specific value, they should replace the default conventional direct expansion system charge size in the GHG reduction formula.
- (E and F) – Based on industry data, the average annual leak rates for the given equipment type, including operational and servicing leak rates for the equipment

throughout the year. Leak rates are provided as averages and may vary with specific systems.

- (G, H, and I) – The GWP of the refrigerant measures the contribution to global warming from the release of one unit of the given refrigerant relative to CO_2 on a 100-year time horizon. The GWP of common refrigerants and alternatives is provided in Table R-1.1 in Appendix C.

GHG Calculation Caps or Maximums

This measure has a maximum GHG emissions reduction of 100 percent.

Example GHG Reduction Quantification

The user reduces high-GWP refrigerant emissions by replacing a conventional direct expansion system in a supermarket with a secondary loop system. In this example, the conventional direct expansion system refrigerant is R-404A, which has a GWP of 3,922 (G). The direct expansion system equipment charge size of 1,633 kg (D) is assumed. The charge size for the primary refrigerant (R-407A) in the secondary loop system is 1,145 kg (B) and the GWP is 2,107 (H). The charge size for the heat transfer fluid refrigerant using water is 1,145 kg (C) with a GWP of 0 (I). Implementation of this project would reduce GHG emissions from the refrigeration system at this supermarket by 77 percent.

$$A = \frac{((1{,}145\ \text{kg} \times 15\% \times 2{,}107) + (1{,}145\ \text{kg} \times 15\% \times 0)) - (1{,}633\ \text{kg} \times 25\% \times 3{,}922)}{(1{,}633\ \text{kg} \times 25\% \times 3{,}922)} = -77\%$$

Quantified Co-Benefits

Energy and Fuel Savings

Successful implementation of this measure could achieve energy savings. While historically secondary loop and/or cascade systems have reduced energy efficiency, the past 15 years of development have resulted in energy efficiency improvements ranging from 0.5 percent to 35 percent compared to conventional direct expansion systems (U.S. EPA 2013a; Pan et al. 2020). Note that this range of values is a historical average and that, unlike the GHG reduction formula, the energy savings cannot be precisely quantified using a predictive formula for the purposes of this methodology.

Sources

- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- Pan, M., H. Zaho, D. Liang, Y. Zhu, Y. Lian, and G. Bao. 2020. *A Review of the Cascade Refrigeration System*. May. Available: https://www.mdpi.com/1996-1073/13/9/2254/pdf. Accessed: January 2021.

- U.S. Environmental Protection Agency (U.S. EPA). 2013a. *Global Mitigation of Non-CO_2 Greenhouse Gases: 2010–2030*. September. Available: https://www.epa.gov/sites/production/files/2016-06/documents/mac_report_2013.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2013b. *The GreenChill Partnership. Refrigerant Leak Prevention through Regular Maintenance*. September. Available: https://www.epa.gov/sites/production/files/2013-12/documents/gc_preventativemaintenance_20130913.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2016. *Advanced Refrigeration*. November 2016. Available: https://www.epa.gov/greenchill/advanced-refrigeration. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2019. *Global Non-CO_2 Greenhouse Gas Emission Projections & Marginal Abatement Cost Analysis: Methodology Documentation*. U.S. EPA Office of Atmospheric Programs, EPA-430-R-19-012, Washington, DC, September 2019. Available: https://www.epa.gov/sites/production/files/2019-09/documents/nonco2_methodology_report.pdf. Accessed: January 2021.
- World Meteorological Organization (WMO). 2018. *Scientific Assessment of Ozone Depletion: 2018, Global Ozone Research and Monitoring Project*. Report No. 58, 5886 pp., Geneva, Switzerland.

R-3. Install Transcritical CO_2 Supermarket Systems in Place of High-GWP Systems

GHG Mitigation Potential

Up to a 99.9 percent reduction in GHG emissions during operation

Co-Benefits (icon key on pg. 34)

Climate Resilience

Climate resilience benefits vary by climate; in cooler and more dry climates, a CO_2 transcritical system can be at parity or more energy efficient than conventional direct expansion systems. Increased energy efficiency in refrigeration systems can reduce the strain on the overall grid, particularly the risk of power outages during peak loads. Increased efficiency can also reduce energy costs, particularly if extreme heat would otherwise increase these costs.

Health and Equity Considerations

Non-applicable

Measure Description

This measure replaces conventional direct expansion systems in supermarkets with CO_2 transcritical systems. Whereas direct expansion systems typically use a high-GWP refrigerant, CO_2 transcritical systems use CO_2, which has a GWP of 1 and a lower leakage rate than typical conventional direct expansion systems. By reducing annual leak rates and replacing high-GWP refrigerants with CO_2, these systems result in a reduction of potential direct GHG emissions. CO_2 transcritical systems operate at high pressures but otherwise operate similarly to conventional direct expansion systems. Typically, the charge size of these systems is comparable to conventional direct expansion systems. CO_2 transcritical systems work most efficiently in cooler climates; but can also be used in warmer climates (Belusko et al. 2019; U.S. EPA 2019). Transcritical CO_2 systems can be used in all California climate zones given California's latest building codes require the use of specialized equipment to ensure that energy penalties are minimized.

Scale of Application

Project/Site

Implementation Requirements

See measure description.

Cost Considerations

Transcritical CO_2 supermarket systems carry a high initial cost over traditional systems. However, CO_2 systems have a lower operating cost, mainly due to the cost of CO_2 being much lower than the cost of conventional refrigerants.

Expanded Mitigation Options

Measure is a subset of Measure R-1, *Use Alternative Refrigerants Instead of High-GWP Refrigerants*, which should be selected for increased GHG reductions in supermarket refrigerant systems.

GHG Reduction Formula

$$A = \frac{(E \times G \times \mathbf{B}) - (D \times F \times C)}{D \times F \times C}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from refrigerant emissions	0–99.9	%	Calculated
User Inputs				
B	Equipment charge size of CO_2 transcritical system	[ ]	kg	user input
Constants, Assumptions, and Available Defaults				
C	Equipment charge size of conventional direct expansion system	1,633	kg	U.S. EPA 2019
D	Annual leak rate of conventional direct expansion system	25	%	U.S. EPA 2013
E	Annual leak rate of CO_2 transcritical system	15	%	U.S. EPA 2019
F	GWP of HFC refrigerant	Table R-1.1	unitless	IPCC 2007
G	GWP of alternative refrigerant (CO_2)	1	unitless	IPCC 2007

Further explanation of key variables:

- (B) – The equipment charge size is the total quantity of refrigerant installed in refrigeration or A/C equipment.
- (C) – Based on industry data, the equipment charge size of a conventional direct expansion system is 1,633 kg. If the user can provide a project-specific value, they should replace the default conventional direct expansion system charge size in the GHG reduction formula.
- (D and E) – Based on industry data, the average annual leak rates for the given equipment type are provided. This includes operational and servicing leak rates for the equipment throughout the year. Leak rates are provided as averages and may vary with specific systems.
- (F and G) – The GWP of the refrigerant measures the contribution to global warming from the release of one unit of the given refrigerant relative to CO_2 on a 100-year time horizon. The GWP of common refrigerants and alternatives is provided in Table R-1.1 in Appendix C.

GHG Calculation Caps or Maximums

This measure has a maximum GHG emissions reduction of 99.9 percent.

Example GHG Reduction Quantification

The user reduces high-GWP emissions by replacing a conventional direct expansion system with a CO_2 transcritical system in a supermarket. In this example, the conventional direct expansion system refrigerant is R-404A, which has a GWP of 3,922 (G), and a charge size of 1,633 kg (D). The charge size for a CO_2 transcritical system is also 1,633 kg (B) and it has a 15 percent leak rate (F). Implementation of this project would reduce GHG emissions from the refrigeration system at this supermarket by 99.9 percent.

$$A = \frac{(15\% \times 1 \times \mathbf{1{,}633\ kg}) - (25\% \times 3{,}922 \times 1{,}633\ kg)}{25\% \times 3{,}922 \times 1{,}633\ kg} = -99.9\%$$

Quantified Co-Benefits

Energy and Fuel Savings

Successful implementation of this measure could achieve energy and fuel savings. Depending on the climate in which a CO_2 transcritical system is installed, energy efficiency can show improvements up to 10 percent (U.S. EPA 2019). These improvements decrease, or become negative, in warmer and more humid climates (U.S. EPA 2019; Belusko et al. 2019). Note that, unlike the GHG reduction formula, the energy savings cannot be precisely quantified using a predictive formula for the purposes of this methodology.

Sources

- Belusko, M., R. Liddle, A. Alemu, E. Halawa, and F. Bruno. 2019. *Performance Evaluation of a CO_2 Refrigeration System Enhanced with a Dew Point Cooler*. Energies 12, 1079. March. Available: https://www.mdpi.com/1996-1073/12/6/1079. Accessed: May 2021.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2013. *The GreenChill Partnership. Refrigerant Leak Prevention through Regular Maintenance*. September. Available: https://www.epa.gov/sites/production/files/2013-12/documents/gc_preventativemaintenance_20130913.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2019. *Global Non-CO_2 Greenhouse Gas Emission Projections & Marginal Abatement Cost Analysis: Methodology Documentation*. U.S. EPA Office of Atmospheric Programs, EPA-430-R-19-012, Washington, DC, September 2019. Available: https://www.epa.gov/sites/production/files/2019-09/documents/nonco2_methodology_report.pdf. Accessed: January 2021.

R-4. Install Microchannel Heat Exchangers in A/C Equipment in Place of Conventional Heat Exchanger

GHG Mitigation Potential

Up to a 35.0% reduction in GHG emissions during operation

Co-Benefits (icon key on pg. 34)

None

Climate Resilience

Non-applicable

Health and Equity Considerations

Microchannel heat exchangers can reduce noise produced by the condenser fan.

Measure Description

This measure replaces conventional heat exchangers in A/C equipment (e.g., unitary A/C) with microchannel heat exchangers (MCHX). Whereas conventional heat exchangers use single or multiple large-diameter tubes to transfer heat in A/C equipment, MCHX use a series of small tubes. A/C equipment using MCHX require 35 percent to 40 percent less refrigerant than those using conventional heat exchangers (U.S. EPA 2019). The reduction in refrigerant charge in A/C equipment results in a reduction of potential GHG emissions.

Scale of Application

Project/Site

Implementation Requirements

See measure description.

Cost Considerations

MCHX have a lower overall equipment cost compared to conventional heat exchangers. Long-term maintenance costs are comparable.

Expanded Mitigation Options

Pair with Measure R-1 *Use Alternative Refrigerants Instead of High-GWP Refrigerants*, for increased GHG reductions in A/C equipment.

GHG Reduction Formula

A = -B

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from refrigerant emissions	35	%	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
B	Assumed charge size reduction due to MCHX	35	%	U.S. EPA 2019

Further explanation of key variables:

- (B) – Based on industry data, the percent reduction in charge size obtained from using MCHX in A/C equipment is provided as an average reduction across A/C equipment.

GHG Calculation Caps or Maximums

This measure has a maximum GHG emissions reduction of 35 percent.

Example GHG Reduction Quantification

The user reduces high-GWP emissions replacing a conventional heat exchanger in A/C equipment with MCHX. Implementation of this project would reduce GHG emissions from the A/C equipment by 35 percent.

A = -35%

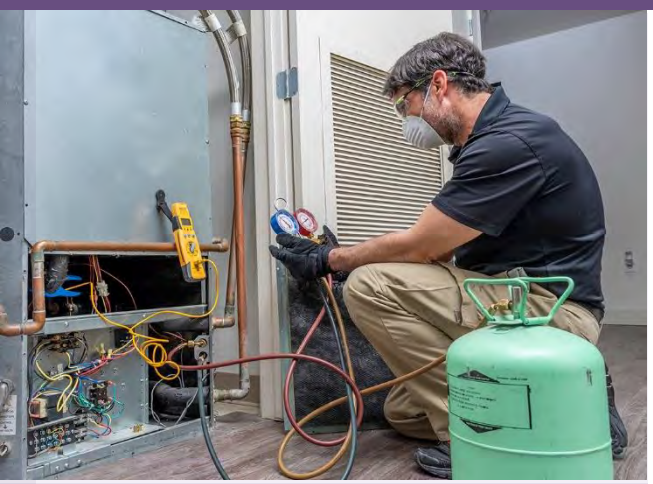
Quantified Co-Benefits

None.

Sources

- U.S. Environmental Protection Agency (U.S. EPA). 2019. *Global Non-CO_2 Greenhouse Gas Emission Projections & Marginal Abatement Cost Analysis: Methodology Documentation*. U.S. EPA Office of Atmospheric Programs, EPA-430-R-19-012, Washington, DC, September 2019. Available: https://www.epa.gov/sites/production/files/2019-09/documents/nonco2_methodology_report.pdf. Accessed: January 2021.

R-5. Reduce Service Leak Emissions



GHG Mitigation Potential

Up to 95.0% reduction in GHG emissions during servicing

Co-Benefits (icon key on pg. 34)

None

Climate Resilience

Non-applicable

Health and Equity Considerations

Non-applicable

Measure Description

This measure reduces emissions of refrigerants during equipment servicing by employing improved refrigerant servicing technologies and practices. It is estimated that recovering refrigerants can reduce emissions in servicing by up to 95 percent (U.S. EPA 2019). Through implementation of refrigerant recovery, overall service GHG emissions can be reduced. Equipment should only be serviced by qualified technicians certified under Section 608 of the Clean Air Act and who also hold an active California contractor's license in accordance with California's Refrigerant Management Program (CARB 2020). Under CARB regulations, technicians must make a recovery attempt using refrigerant recovery or recycling equipment for that type of appliance and refrigerant type before opening the appliance to atmospheric conditions. Implementing more widespread and thorough refrigerant recovery practices while servicing refrigeration and A/C systems would go beyond regulatory requirements.

Scale of Application

Project/Site

Implementation Requirements

Require that all appliances are serviced by a qualified technician who must make a recovery attempt using refrigerant recovery or recycling equipment for each appliance and refrigerant type before opening the appliance to atmospheric conditions, in accordance with existing state and federal regulations.

Cost Considerations

Costs associated with reducing service leak emissions may include installation of leak detection systems and increased staff time to monitor and maintain the system. The benefit of reducing leak emissions depends on the price of the refrigerant and the quantity of leaked refrigerant. Because many refrigerants carry a high cost, detecting and repairing leaks is expected to provide a net cost savings and will also allow for quick and accurate servicing.

Expanded Mitigation Options

Non-applicable.

GHG Reduction Formula

$$A = \frac{B - C}{C}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from service emissions	0–95.0	%	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
B	Equipment service leak rate with measure	2	%	U.S. EPA 2020
C	Equipment service leak rate without measure	Tables R-1.2 through R-1.5	%	U.S. EPA 2016

Further explanation of key variables:

- (B) – The updated service leak rate of the equipment after improved technology and/or practices. Leak rates vary between equipment types. A service leak rate of 2 percent can be assumed in the event project-specific information is not available (U.S. EPA 2020). The user should replace this default in the GHG reduction formula if the user is able to provide a project-specific equipment leak rate.
- (C) – The service leak rate of the equipment.

GHG Calculation Caps or Maximums

This measure has a maximum GHG emissions reduction of 95.0 percent.

Example GHG Reduction Quantification

The user reduces service emissions by increasing refrigerant recovery during servicing. In this example, the user operates a commercial A/C and heat pump at a restaurant. The current service leak rate is 4 percent (C). The improved servicing leak rate of the equipment (B) is 2 percent, reducing GHG emissions by 50 percent.

$$A = \frac{2\% - 4\%}{4\%} = -50\%$$

Quantified Co-Benefits

None.

Sources

- California Air Resource Board (CARB). 2020. *Refrigerant Management Program: Service Technicians & Contractors*. Available: https://ww2.arb.ca.gov/our-work/programs/refrigerant-management-program/rmp-service-technicians-contractors. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2016. *Accounting Tool to Support Federal Reporting of Hydrofluorocarbon Emissions: Supporting Documentation*. October 2016. Available: https://www.epa.gov/sites/production/files/2015-09/documents/hfc_emissions_accounting_tool_supporting_documentation.pdf. Accessed: May 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2019. *Global Non-CO_2 Greenhouse Gas Emissions Projections & Marginal Abatement Cost Analysis: Methodology Documentation*. September 2019. Available: https://www.epa.gov/sites/production/files/2019-09/documents/nonco2_methodology_report.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2018. Stationary Refrigeration Leak Repair Requirements*. Available: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2018. Accessed: January 2021.

R-6. Reduce Operational Leak Emissions

GHG Mitigation Potential

Up to 99.9% reduction in GHG emissions during operation

Co-Benefits (icon key on pg. 34)

None

Climate Resilience

Non-applicable

Health and Equity Considerations

Non-applicable

Measure Description

This measure reduces emissions from leakage of refrigerants during operation, decreasing emissions of refrigerants. A typical food retail store leaks an estimated 25 percent of refrigerants, or approximately 1,000 pounds annually (U.S. EPA 2013). Currently, under Section 608 of the Clean Air Act, corrective action must be taken when an appliance with a full charge of 50 or more pounds is discovered to be leaking ozone depleting substances that exceeds the applicable trigger rate. The trigger rate for industrial process refrigeration is 30 percent, commercial refrigeration 20 percent, and comfort cooling and all other appliances is 10 percent. Through implementing leak detection technology and preventative maintenance measures, leakages can be resolved before reaching trigger rates, thus significantly reducing GHG emissions (U.S. EPA 2020).

Scale of Application

Project/Site

Implementation Requirements

Under California's Refrigerant Management Program, leak inspections are required monthly for large refrigeration systems, quarterly for medium systems, and annually for small systems (CARB 2020). When reducing leak emissions, best practices include regularly conducted visual inspections to ensure no leakages occur. If a leak does occur, repairs must be made within 14 days of detection (CARB 2020).

Cost Considerations

Costs associated with reducing operational leak emissions may include installation of leak detection systems and increased staff time to monitor and maintain the detection system. The benefit of reducing leak emissions depends on the price of the refrigerant and the quantity of leaked refrigerant. Because many refrigerants carry a high cost, detecting and repairing leaks is expected to provide a net cost savings.

Expanded Mitigation Options

Non-applicable.

GHG Reduction Formula

$$A = \frac{B - C}{C}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from leak emissions	0–99.9	%	calculated
User Inputs				
B	Improved equipment leak rate with measure	[ ]	%	user input
Constants, Assumptions, and Available Defaults				
C	Annual equipment leak rate without measure	Tables R-1.2 through R-1.5	%	U.S. EPA 2016

Further explanation of key variables:

- (B) – The improved leak rate of the equipment after leak detection, leak repair, and leak prevention measures have been implemented. This varies on a case-by-case basis due to differences in equipment and leak control technologies used.
- (C) – The annual operational leak rate of the equipment.

GHG Calculation Caps or Maximums

This measure has a maximum GHG emissions reduction of 99.9 percent.

Example GHG Reduction Quantification

The user reduces operational leak rates by installing leak detection technology and increasing regular maintenance of the equipment. In this example, the user operates refrigeration and condensing units at a supermarket. The current operational leak rate is 25 percent (C) and the updated leak rate of the equipment (B) is decreased to 20 percent annually. Implementation of this project would reduce GHG emissions from the refrigeration and condensing units at this supermarket by 20 percent.

$$A = \frac{(20\% - 25\%)}{25\%} = -20\%$$

Quantified Co-Benefits

None.

Sources

- California Air Resource Board (CARB). 2020. *Refrigerant Management Program: Service Technicians & Contractors*. Available: https://ww2.arb.ca.gov/our-work/programs/refrigerant-management-program/rmp-service-technicians-contractors. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2013. *The GreenChill Partnership. Refrigerant Leak Prevention through Regular Maintenance*. September 2013. Available: https://www.epa.gov/sites/production/files/2013-12/documents/gc_preventativemaintenance_20130913.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2016. *Accounting Tool to Support Federal Reporting of Hydrofluorocarbon Emissions: Supporting Documentation*. October 2016. Available: https://www.epa.gov/sites/production/files/2015-09/documents/hfc_emissions_accounting_tool_supporting_documentation.pdf. Accessed: May 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2020. *Global Non-CO_2 Greenhouse Gas Emissions Projections & Marginal Abatement Cost Analysis: Methodology Documentation*. September 2019. Available: https://www.epa.gov/sites/production/files/2019-09/documents/nonco2_methodology_report.pdf. Accessed: January 2021.

R-7. Reduce Disposal Emissions

GHG Mitigation Potential

Up to a 99.9% reduction in GHG emissions during disposal

Co-Benefits (icon key on pg. 34)

None

Climate Resilience

Non-applicable

Health and Equity Considerations

Non-applicable

Measure Description

This measure reduces emissions from the disposal of refrigeration and A/C equipment at the end of its lifetime. Safe disposal requirements are included in U.S. EPA regulations (40 C.F.R. 82(F)) under Section 608 of the Clean Air Act, as well as under California's Refrigerant Management Program. These requirements are designed to minimize refrigerant emissions when equipment is disposed. Refrigerants must be properly recovered using U.S. EPA-certified refrigerant recovery equipment, meaning that a least 90 percent of the refrigerant must be recovered if the compressor is operating, and at least 80 percent must be recovered otherwise (U.S. EPA 2019).

Scale of Application

Project/Site

Implementation Requirements

This measure aims to capture the remaining amount of refrigerant that is not mandated to be recovered. Refrigerants must be reclaimed by an U.S. EPA-certified reclaimer for reuse or destroyed using approved destruction methods (U.S. EPA 2018).

Cost Considerations

The main cost is labor associated with hiring a technician to complete the recovery work.

Expanded Mitigation Options

Smaller equipment tends to have the highest disposal leak rates. Target this measure to small equipment to maximize GHG reductions.

GHG Reduction Formula

$$A = \frac{B - C}{C}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from disposal emissions	0–99.9	%	calculated
User Inputs				
B	Improved equipment disposal emissions rate with measure	[ ]	%	user input
Constants, Assumptions, and Available Defaults				
C	Equipment disposal emissions rate without measure	At least 20	%	U.S. EPA 2018

Further explanation of key variables:

- (B) – The improved disposal emissions rate of the equipment after implementation of improved refrigerant recovery technologies.
- (C) – The disposal emission rate of refrigeration and A/C equipment. Refrigerant must be properly recovered using U.S. EPA-certified refrigerant recovery equipment, meaning that at least 80 percent must be recovered (U.S. EPA 2018). This means the regulated disposal emissions rate would be at least 20 percent. The actual achieved-in practice rate may be much higher than this minimum requirement and could exceed 50 percent. The user should replace this default in the GHG reduction formula if they are able to provide a project-specific value.

GHG Calculation Caps or Maximums

(B<C) In order for implementation of this measure to result in a GHG reduction, the improved equipment disposal emission rate must be less than the 20 percent required by federal and state regulations. For residential equipment, reducing disposal emissions from over 50 percent to 25–30 percent is considered adequate.

Example GHG Reduction Quantification

The user reduces disposal emissions by implementing more technologically advanced refrigerant recovery systems. The initial disposal rate of the equipment (C) is 20 percent and the improved disposal emission rate with the project (B) is 10 percent. Implementation of this project would reduce disposal emissions by 50 percent.

$$A = \frac{(10\% - 20\%)}{20\%} = -50\%$$

Quantified Co-Benefits

None.

Sources

- U.S. Environmental Protection Agency (U.S. EPA). 2018. *Responsible Appliance Disposal (RAD) Program: Guidance for Existing and Prospective Partners*. August 2018. Available: https://www.epa.gov/sites/production/files/2018-08/documents/rad-guidance-document.pdf. Accessed: January 2021.
- U.S. Environmental Protection Agency (U.S. EPA). 2019. *Global Non-CO_2 Greenhouse Gas Emissions Projections & Marginal Abatement Cost Analysis: Methodology Documentation*. September 2019. Available: https://www.epa.gov/sites/production/files/2019-09/documents/nonco2_methodology_report.pdf. Accessed: January 2021.

Miscellaneous

This sector includes several measures that will reduce GHG emissions through the implementation of novel or offsite projects defined by the user. The general quantification framework for three measures is outlined in this section, although all require users to identify the expected GHG reductions that will be achieved by the measures. Use the below graphic to click on an individual measure to navigate directly to the measure's factsheet. *Supporting or Non-Quantified GHG Reduction Measures* includes two additional measures in the miscellaneous sector that target environmentally responsible purchasing and funding for incentives.

M-1. Establish a Carbon Sequestration Project

GHG Mitigation Potential

Varies

Variable reduction in GHG emissions

Co-Benefits

Varies

Climate Resilience

Climate resilience benefits vary by sequestration project; for example, investing in a tree-planting project could provide heat reduction, flood prevention, and ecosystem benefits to areas surrounding the project.

Health and Equity Considerations

Local carbon sequestration projects should be prioritized, if possible, to create local co-benefits in pollution reduction and job creation. Consider including a local hiring provision (see *Inclusive Economy* measures in Chapter 5, *Measures for Advancing Health and Equity*).

Measure Description

This measure will establish a carbon sequestration project. Carbon emissions are sequestered by embedding the carbon in a structure that will hold the emissions and keep them out of the atmosphere. Sequestration can happen through biological, chemical, or physical processes.

Scale of Application

Project/Site and Plan/Community.

Implementation Requirements

Projects might include (a) geologic sequestration or carbon capture and storage techniques in which CO_2 from point sources, such as power plants and fuel processing plants, is captured and injected underground; (b) novel techniques involving advanced chemical or biological pathways; or (c) technologies yet to be discovered.

Cost Considerations

Carbon sequestration projects can cover a wide range, with the high-cost option being constructing carbon capture and storage facilities. The potential for these projects to achieve long-term costs savings depends on the type and project-specific circumstance.

Expanded Mitigation Options

Non-applicable.

GHG Reduction Formula

$A = -B$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	GHG reduction from sequestration project	[ ]	MT CO_2e	calculated
User Inputs				
B	Amount of CO_2e sequestered	[ ]	MT CO_2e	user input
Constants, Assumptions, and Available Defaults				
	None			

Further explanation of key variables:

- (B) – The amount of the sequestration must be defined by the user and should be quantified using a published carbon offset protocol or one of the California Climate Investments quantification methodologies.[28]

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions by funding and implementing a carbon sequestration project. In this example, a biomass plant is revitalized to use oxy-combustion technology to capture CO_2 from the biomass waste gasification process. The project achieves an annual emissions reduction of 1,500 MT CO_2e.

$$A = -1{,}500 \ \frac{\text{MT } CO_2e}{\text{yr}}$$

Quantified Co-Benefits

Depending on the type, a sequestration project could achieve improved air quality, water conservation, or improved ecosystem health. The protocol used to quantify GHG reductions by the user may include methodologies or recommendations for quantifying these co-benefits.

Sources

- None.

[28] CARB approved compliance offset protocols for various project types are available on CARB's website here: https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/compliance-offset-protocols.

M-2. Establish Offsite Mitigation

GHG Mitigation Potential

Variable reduction in GHG emissions

Co-Benefits

Varies

Climate Resilience

Climate resilience benefits vary by offsite mitigation project; for example, investing in a community energy efficiency retrofit program could reduce electricity consumption, minimizing risks of a power outage during peak loads. These programs could also reduce energy costs, particularly if extreme heat would otherwise increase these costs. If the program reduces residential or commercial natural gas consumption, it could reduce consumer sensitivity to fuel price shocks or scarcity.

Health and Equity Considerations

Local offsite projects should be prioritized, if possible, to create local co-benefits in pollution reduction and job creation. Consider including a local hiring provision (see *Inclusive Economy* measures in Chapter 5, *Measures for Advancing Health and Equity*).

Measure Description

This measure will reduce GHG emissions by funding and implementing emissions reduction actions that are not directly associated with the project or located on the project site. These actions could occur within the surrounding community, or elsewhere in the city, county, state, nation, or globe. This measure should only be pursued when all possible onsite measures have been implemented or deemed infeasible. Local reductions (i.e., reductions from GHG reduction projects nearest to the project) should be prioritized, to the extent feasible.

The geographic priority for offsite reductions should be as follows: in the community affected by the project, within nearby communities with existing disproportionate burdens, within the general nearby community, within the region, within California, and then outside California.

If GHG reduction credits (including carbon offsets) are purchased for a project, it is recommended that all GHG credits/offsets, including those outside of California, meet the six criteria defined in *17 C.F.R. Section 95802*, which are used in the California Cap and Trade System, which are that the credit/offset must be "real, additional, quantifiable, permanent, verifiable, and enforceable." All use of GHG reduction credits should be from sources that follow rigorous protocols and third-party verification.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

This measure should only be pursued as a last resort when all possible onsite measures have been implemented or deemed infeasible.

Cost Considerations

Offsite mitigation projects can cover a wide range, from low-cost options like financing community building energy efficiency improvements to high-cost options like funding utility-scale renewable energy infrastructure. The potential for these projects to achieve long-term costs savings depends on the type and project-specific circumstance.

Expanded Mitigation Options

Non-applicable.

GHG Reduction Formula

$A = -B$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	GHG reduction from the offsite mitigation	[ ]	MT CO_2e	calculated
User Inputs				
B	Amount of CO_2e reduced by the mitigation	[ ]	MT CO_2e	user input
Constants, Assumptions, and Available Defaults				
	None			

Further explanation of key variables:

- (B) – The amount of the GHG reduction achieved by the offsite mitigation must be defined by the user. Users should establish a method for registering and verifying the GHG emissions reduction and ensure it meets the six offset criteria defined in *17 C.F.R. Section 95802*. These criteria ensure the mitigation would not subsidize or take credit for emissions reductions that would have occurred regardless of the mitigation.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions by funding and implementing offsite mitigation. In this example, the user collaborates with a non-profit organization to fund removal of dead, diseased, and dying trees, which are converted to transportation fuels through pyrolysis. The project achieves an annual emissions reduction of 500 MT CO_2e.

$$A = -500 \frac{\text{MT } CO_2e}{\text{yr}}$$

Quantified Co-Benefits

Depending on the type, offsite mitigation projects may have no co-benefits or achieve a considerable number. For example, offsite mitigation projects that involve removing or retrofitting combustion sources could achieve improved air quality, energy and fuel savings, and improved public health.

Sources

- None.

M-3. Implement an Innovative Strategy for GHG Mitigation

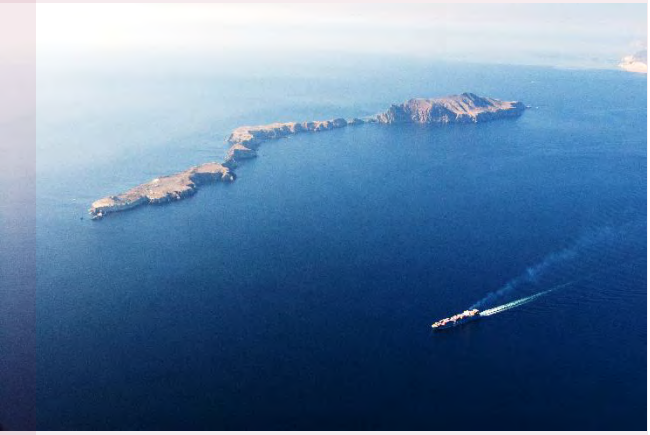


Photo Credit: Robert Schwemmer, July 2009

GHG Mitigation Potential

Varies

Variable reduction in GHG emissions

Co-Benefits

Varies

Climate Resilience

Climate resilience benefits would vary by the strategy; however, any strategies that reduce costs; improve air, water quality, or public health; increase system redundancy or reliability; reduce water use; or reduce the urban heat island would have resilience benefits.

Health and Equity Considerations

Similar to climate resilience benefits, any health and equity benefits would depend on the specific strategy and actions taken.

Measure Description

This measure will develop and implement a novel strategy to reduce GHG emissions at the project site or off site. This measure may incorporate technologies which have yet to be developed at the time of the publication of this Handbook. Alternatively, this measure may also bring together multiple measures from this Handbook into a cohesive program or mechanism to facilitate the reduction of GHG emissions, such as development of a "VMT bank" that offers community-scale VMT measures that would not otherwise be available to individual land use projects.

It is recommended that all strategies or projects implemented under this measure meet the six criteria defined in *17 C.F.R. Section 95802*, which are used in the California Cap and Trade System, which are that the GHG reductions must be "real, additional, quantifiable, permanent, verifiable, and enforceable." Quantification of emission reductions achieved by new strategies or projects should be from sources that follow rigorous protocols and third-party verification.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

See measure description.

Cost Considerations

A GHG mitigation strategy may be a low-cost way for a local government to encourage emission reduction activities across many levels of a community. Costs from developing and implementing the strategy are primarily related to staff time and document production. Costs and savings achieved by the strategy would vary depending on the action.

Expanded Mitigation Options

Non-applicable.

GHG Reduction Formula

$A = -B$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	GHG reduction from the strategy	[ ]	MT CO_2e	calculated
User Inputs				
B	Amount of CO_2e reduced	[ ]	MT CO_2e	user input
Constants, Assumptions, and Available Defaults				
	None			

Further explanation of key variables:

- (B) – The amount of the GHG reduction achieved by the mitigation strategy must be defined by the user. To take quantifiable credit for this measure, the user must provide detailed and substantial evidence showing the quantification and verification of the GHG emissions reduction.

GHG Calculation Caps or Maximums

None.

Example GHG Reduction Quantification

The user reduces GHG emissions by funding and implementing an innovative GHG reductions strategy. In this example, the lead agency for a new development project collaborates with a local air quality management district and CARB to fund a project that achieves an annual emissions reduction of 2,000 MT CO_2e.

$$A = -2{,}000 \ \frac{\text{MT } CO_2e}{\text{yr}}$$

Quantified Co-Benefits

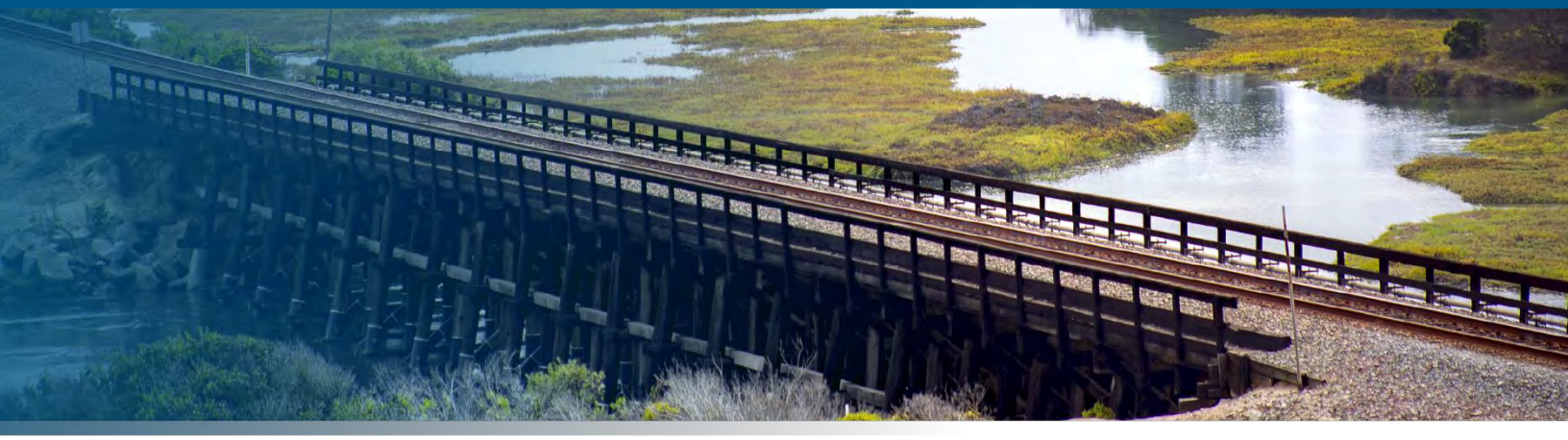
Depending on the type, mitigation projects may result in none of the identified co-benefits or achieve several of them. For example, mitigation projects that involve removing or retrofitting combustion sources could achieve improved air quality, energy and fuel savings, and improved public health. This quantification methodology does not quantify the co-benefits from these projects.

Sources

- None.

Assessing Climate Exposures and Measures to Reduce Vulnerabilities

CHAPTER 4



Introduction

This chapter provides a method to assess the potential benefits of different climate risk reduction measures at the project level. The climate exposures, sensitivities, and adaptive capacities of a project or asset all influence their vulnerabilities to current and expected impacts of climate change. This chapter presents a step-by-step process to identify and score these variables. These scores should be used to establish an initial vulnerability score, which will allow users to identify priority vulnerabilities, as well as measures to reduce these vulnerabilities. This chapter also provides descriptions of climate vulnerability reduction measures and guidance for assessing adaptive benefits of selected measures.

Climate change has already profoundly affected California's natural resources, communities, and infrastructure, and will continue to do so in the future. Existing and future developments must consider climate change in their planning processes to adequately prepare for anticipated hazards and risks. This chapter guides users through estimating their project's site- or regional-level climate vulnerability, as well as selecting risk reduction measures to address those vulnerabilities.

B3 Attach #1 of 3

The *Adaptation Planning Guide* (APG) is the state's comprehensive guidance for assessing climate vulnerability at the local level. The APG is hosted on the California's Governor's Office of Planning and Research's (OPR) Resilient-CA website, where additional materials and local adaptation case studies can also be found. Resilient-CA is regularly updated as new climate vulnerability assessments are completed. To ensure alignment with the state's overall approach to vulnerability assessments, this chapter follows the structure and processes outlined in the APG, which was last revised in 2020 (OPR 2020).

The guidance presented in this chapter should be used as a starting point to help users understand and begin to analyze potential climate vulnerabilities. The methodology should not replace a full climate vulnerability assessment performed using the APG or other resources. Moreover, the scores alone should not be used to define or communicate the climate risks for a project. A climate vulnerability score of 5, for example, does not mean that a project will face certain climate catastrophe. Similarly, a score of 1 does not mean that a project will not face any climate hazards. The purpose of the Handbook scoring method is to aid users in prioritizing the most significant climate risks so that they can select appropriate risk reduction measures for their project. Users seeking a more thorough or tailored analysis should refer to the APG, the Resilient-CA website, or other resources (provided later in this chapter).

Assessing Climate Vulnerability and Risk Reduction

The step-by-step process detailed in this chapter is outlined below.

1. *Establish Initial Vulnerability Score* – this step guides the user through a high-level assessment of the contributing elements to a project's climate vulnerabilities, including exposure, sensitivity, and existing adaptive capacity to projected climate hazards. Steps for establishing the vulnerability score are as follows.
    a. Determine exposure score.
    b. Determine sensitivity score.
    c. Determine adaptive capacity score.
    d. Develop overall vulnerability score.
2. *Select Measures and Assess Vulnerability Reduction* – after establishing the initial vulnerability score, this step guides the user through selecting measures that can effectively reduce climate vulnerabilities. It also provides guidance for determining measure costs and benefits. Steps identifying and assessing vulnerability reduction measures are as follows.
    a. Select climate risk reduction measures.
    b. Identify adaptation benefits.
    c. Identify adaptation co-benefits.

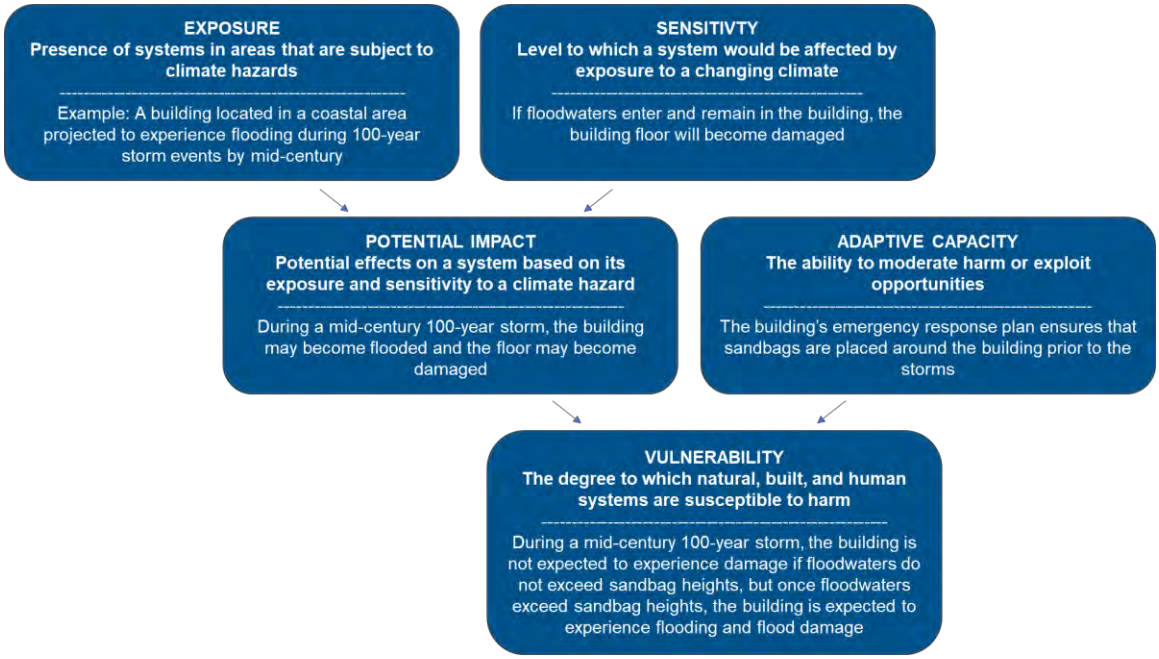
B3 Attach #1 of 3

Initial Vulnerability Score

Climate hazards, such as sea level rise, wildfire, flooding, and heat waves, will increasingly affect projects and project sites. The climate vulnerability of a project refers to the extent to which a project site or community is susceptible to harm from these climate hazards. In this step, users will establish a baseline for the current and projected vulnerabilities from climate hazards.

Developing an overall vulnerability score consists of combining three elements: exposure, sensitivity, and adaptive capacity. Figure 4-1 from the *California Adaptation Planning Guide* shows how these elements combine to determine climate vulnerability (Cal OES 2020).

Figure 4-1. Vulnerability Assessment Process in California Adaptation Planning Guide (Source: California's Governor's Office of Emergency Services 2020)



The following sub-steps provide guidance on developing scores to assess a project's exposure, sensitivity, and adaptive capacity. Users should first score these three components separately, using guidance provided below in the form of maps, tables, and guiding questions. Users will carry out the vulnerability scoring process in the following way.

1. Score the project's exposure to each climate hazard on a scale of 1 to 5.
2. Score the project's sensitivity to each climate hazard on a scale of 1 to 5.
3. Rate the project's adaptive capacity to each hazard using the ranking system of Low, Low–Med, Med, Med–High, and High. (Adaptive capacity is not scored from 1 to 5 to avoid confusion as the numeric scale for this component would be reversed from the scale for exposure and sensitivity.)

4. Average the project's exposure and sensitivity scores to develop a potential impact score for each climate hazard from 1 to 5.
5. Combine the potential impact scores and adaptive capacity ratings to develop a vulnerability score for each climate hazard from 1 to 5.
6. Select the highest-scoring vulnerabilities to address as priority climate vulnerabilities.

This section also provides a *use case example* for a hypothetical affordable housing project in Los Angeles County to illustrate these sub-steps and how to arrive at a final vulnerability score. Users can follow along the example to understand how the scoring system works, what kind of project characteristics may justify a score, and how users can use their final vulnerability score to choose adaptation measures.

Determine Exposure Score

This section guides the user through the following sub-steps to determine the exposure score.

1. Identify key climate hazards based on the project site location.
2. Select initial regional exposure scores.
3. Refine initial regional exposure scores.

The following sections provide a high-level exposure map and accompanying table for users to identify key climate hazards. Guiding questions and resources to define the exposure score from 1 to 5 (with 1 being the least exposed and 5 being the most exposed) are then presented.

Identify Key Climate Hazards

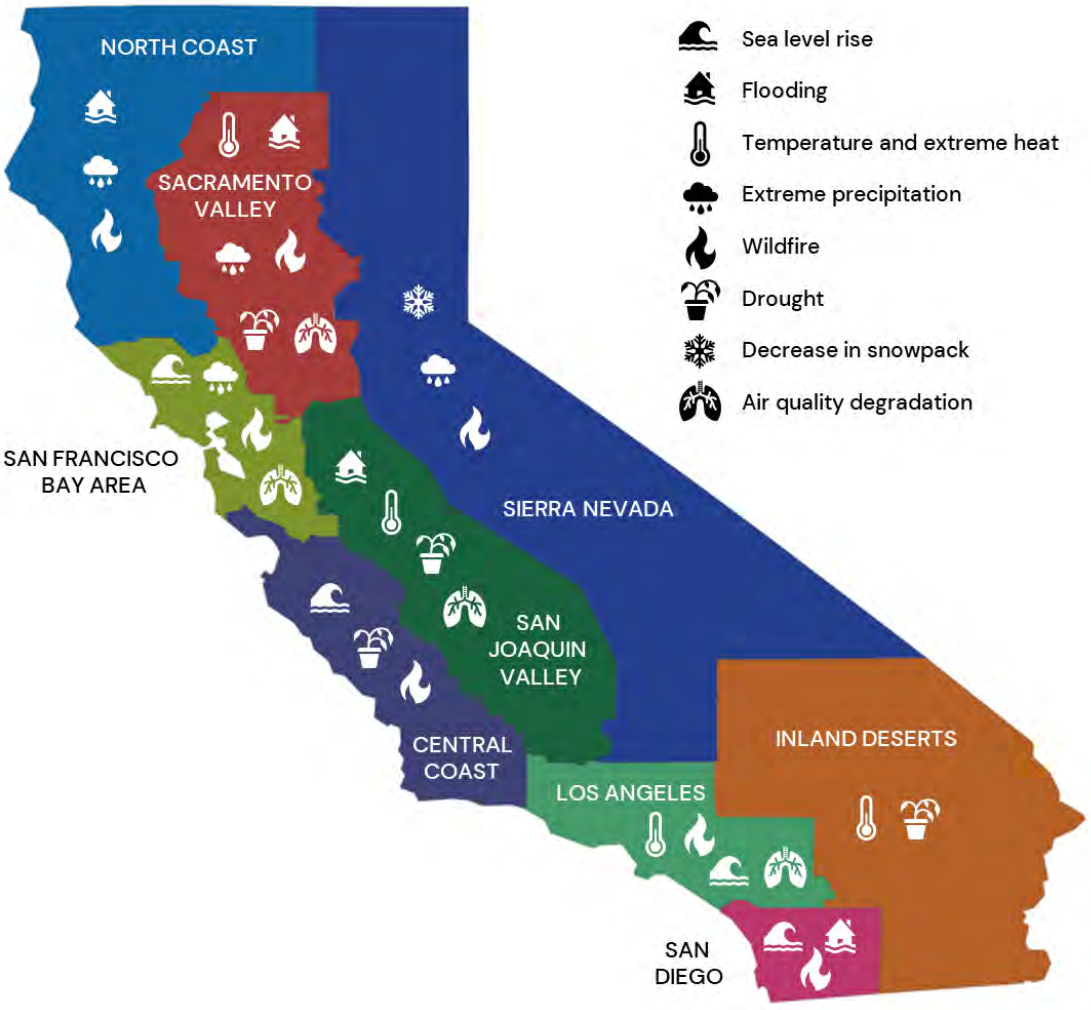
Figure 4-2 shows the nine main climate regions of California as identified in the *California Fourth Climate Change Assessment* (Bedsworth et al. 2018).

Identify the climate region in which the user's project is located (Figure 4-2).

Use Case Example: The project is in the Los Angeles Region.

B3 Attach #1 of 3

Figure 4-2. Illustrative Climate Hazards in Nine Climate Regions of California under the California Fourth Climate Change Assessment



Select Initial Regional Exposure Scores

For each of the nine regions, the *California Fourth Climate Change Assessment* identifies the most significant climate hazards, summarized in Table 4-1, along with initial regional exposure scores that allow users to screen for the hazards of greatest concern to their geography. These initial regional scores are based on an analysis of Cal-Adapt and the *California Fourth Climate Change Assessment's* summaries of the most relevant climate hazards in each region. Where given, a range reflects how much the vulnerability to climate change can vary within that region. For example, sea level rise does not occur everywhere in San Francisco (score of 1), but it can be a significant vulnerability (score of 5) for coastal areas.

B3 Attach #1 of 3

Locate the climate region for the user's project in Table 4-1 and record the initial regional exposure score for each hazard.

Table 4-1. Initial Regional Climate Hazard Exposure Values [a]

Region	Sea Level Rise	Flooding	Temperature and Extreme Heat	Extreme Precipitation	Wildfire	Drought	Decrease in Snowpack	Air Quality Degradation
Central Coast	1–5	1–2	1–5	1–5	1–5	3–4	1–2	1–2
Inland Deserts	N/A	1–2	1–5	1–5	1–5	3–5	1–2	2–4
Los Angeles	1–5	1–3	1–5	1–5	1–5	4–5	2–3	3–5
North Coast	1–5	2–3	1–5	1–5	1–5	3–4	3–4	1–2
Sacramento Valley	N/A	3–4	1–5	1–5	1–5	3–4	2–3	3–4
San Diego	1–5	2–3	1–5	1–5	1–5	3–4	1	3–4
San Francisco Bay Area	1–5	2–4	1–5	1–5	1–5	2–4	2–4	3–4
San Joaquin Valley	N/A	2–3	1–5	1–5	1–5	3–5	2–4	2–3
Sierra Nevada	N/A	3–4	1–5	1–5	1–5	3–4	5	1–3

[a] Within the CalEEMod tool, some hazards (sea level rise, temperature and extreme heat, extreme precipitation, and wildfire) are evaluated in regional quantiles using Cal-Adapt data; to ensure consistency between this Handbook and CalEEMod, these four hazards have a score range of 1 to 5 here. The score range for the remaining four hazards (flooding, drought, decrease in snowpack, and air quality degradation) are based on a comparison of relevant hazards summarized in the *California's Fourth Climate Assessment* regional reports.

Use Case Example: The following climate hazards and initial regional exposure scores are applicable for the Los Angeles region.

- Sea level rise: 1–5
- Flooding: 1–3
- Temperature and extreme heat: 1–5
- Extreme precipitation: 1–5
- Wildfire: 1–5
- Drought: 4–5
- Decrease in snowpack: 2–3
- Air quality degradation: 3–5

Based on these initial regional scores, significant region-wide climate hazards for the Los Angeles region include sea level rise, temperature and extreme heat, extreme precipitation, wildfire, drought, and air quality degradation.

B3 Attach #1 of 3

Refine Initial Regional Exposure Scores

Where Table 4-1 offers a range (e.g., 1–3) for a climate hazard exposure score, users can refine that range to a single score that is more specific to a project location. Table 4-2 provides key questions and considerations users could use to refine their exposure scores for their region. For example, a user with a site in the San Francisco Bay Area within the Coastal Zone Boundary that has experienced coastal flooding in the past should consider a "5" hazard rating for sea level rise.

Table 4-2 also indicates whether each question refers to a project area's past or potential future climate exposure. This distinction is important because susceptibility to climate hazards in the past is one factor indicating susceptibility to climate hazards in the future. However, the lack of past exposure does not mean future climate hazards will also be the same. As the climate changes, the frequency and severity of climate impacts increase, and climate risk areas extend beyond historic boundaries. Users should keep this in mind as they refine the initial exposure scores.

Table 4-2. Guidance Questions for Refining Initial Climate Hazard Exposure Scores

Past vs. Future	Question	User Answer	Exposure Score
Sea Level Rise			
Past	Has the project area experienced flooding in the past?	Yes	High
		No	Low–Med
Future	Is the project area projected to experience flooding under future sea level rise?	Yes	High
		No	Low–Med
Flooding			
Past	Is the project located in a 100-year Federal Emergency Management Agency (FEMA) floodplain?	Yes	High
		No	Low
Past	Is the project located in a 500-year FEMA floodplain?	Yes	Med
		No	Low
Past	Has the project area experienced flooding in the past?	Yes	High
		No	Low–Med
Future	Is the project area projected to experience an expansion in flood risk areas, increased flood depths, or increased extreme precipitation events?	Yes	High
		No	Low–Med
Temperature and Extreme Heat			
Past	Is the project located in an urban heat island? (Is the project located in a dense urban or suburban environment?)	Yes	High
		No	Med
Future	Is the project area projected to have higher projected temperature and extreme heat values compared to the region as a whole?	Yes	High
		No	Low–Med
Extreme Precipitation			
Past	Has the project area experienced extreme precipitation (e.g., over the 95th percentile) in the past?	Yes	High
		No	Low–Med
Future	Is the project area projected to have higher extreme precipitation values or changes in extreme precipitation compared to the region as a whole?	Yes	High
		No	Low–Med

B3 Attach #1 of 3

Past vs. Future	Question	User Answer	Exposure Score
Wildfire			
Past	Is the project located in the wildland–urban interface (WUI) (as defined by CAL FIRE hazard and/or county WUI maps)?	Yes	High
		No	Low
Past	Is the project in or near an area that experiences high wind events?	Yes	High
		No	Low–Med
Past	Is the project area composed of vegetation that could serve as significant wildfire fuel?	Yes	High
		No	Low–Med
Past	Has the project area experienced wildfire in the past?	Yes	High
		No	Low-Med
Future	Is the project area projected to have higher wildfire risk compared to the region as a whole?	Yes	High
		No	Low–Med
Drought			
Past	Has or does the project area's local government impose water conservation requirements beyond the statewide requirements?	Yes	High
		No	Low-Med
Past	Has the project area experienced curtailments in water deliveries from local surface or groundwater sources in the past?	Yes	High
		No	Low-Med
Past	Has the project area ever been identified in a state drought emergency declaration?	Yes	High
		No	Low-Med
Future	Is the project area projected to experience an increase in the frequency or severity of drought in the future?	Yes	High
		No	Low-Med
Decrease in Snowpack			
Past	Does the project rely on annual snowfall directly (e.g., recreation facility relying on snow)?	Yes	High
		No	Low-Med
Past	Does the project depend on water sources that vary annually based on snowpack?	Yes	Med
		No	Low
Future	Is the project area projected to experience a decrease in future snowpack?	Yes	High
		No	Low-Med
Air Quality Degradation			
Past	Is the project area within a nonattainment area for federal or state ambient air quality standard?	Yes	High
		No	Low
Past	Is the project area within 0.25 mile of a major freeway?	Yes	High
		No	Low
Past	Is the project area within 0.25 mile of a major industrial zone or logistics center?	Yes	High
		No	Low
Past	Is this project area within the WUI?	Yes	High
		No	Low
Future	Is the project area projected to experience a decrease in future air quality due to climate change (e.g., due to increased smoke from wildfires)?	Yes	High
		No	Low-Med

When refining the exposure score, it may be useful to refer to climate projection tools to consider climate hazard exposure in the specific area where the project will be located. Users are also encouraged to consult any local climate vulnerability assessments, local hazard mitigation plans, or other climate planning documents for their region or project area. The following resources provide additional guidance on understanding climate exposures, as well as exposure maps, that can be used to further refine the exposure score. In some cases, selecting a refined exposure score may require users to make certain assumptions or judgements.

- **CalEEMod**: This model provides an exposure mapping tool that is based on data from Cal-Adapt and the Coastal Storm Modeling System (CoSMoS) (mentioned below).[29]
- Cal-Adapt: This is the official statewide climate hazard mapping tool. Use this tool to assess exposure to temperature, precipitation, and wildfire-related hazards by location.
- Our Coast, Our Future: A web visualization tool based on data from CoSMoS. Use this tool to assess exposure to sea level rise and coastal flooding hazards.
- Adaptation Planning Guide (APG): The California Governor's Office of Emergency Services (Cal OES) provides detailed guidance for conducting vulnerability studies that can help users expand on the baseline assessment here.
- Integrated Climate Adaptation and Resiliency Program (ICARP) Adaptation Clearinghouse: OPR's official database of adaptation case studies and technical reports. Users can search the ICARP database to look for detailed vulnerability assessments covering the project site.
- Caltrans 2019 Climate Change Vulnerability Assessments: The California Department of Transportation (Caltrans) has conducted climate change vulnerability assessments for each of its 12 regions. While the focus is on resilience of the state highway system, the climate hazard analysis and recommendations can be generalized to other land uses and projects. Each region also has an interactive map that provides localized climate impact projections.

Answer the questions in Table 4-2 to refine the climate hazard exposure ranges and obtain a single score for each climate hazard.

Use Case Example: The Los Angeles project is an affordable housing building located in a highly urban area. Table 4-3 shows the initial regional exposure ranges per hazard outlined above, as well as refinements to the initial regional scores with justifications.

[29] This version of CalEEMod is still in development and will be released in 2022.

B3 Attach #1 of 3

Table 4-3. Refined Exposure Scores and Justifications for Use Case Example

Climate hazard	Initial Regional Exposure Range	Refined Exposure Score	Justification for Refined Exposure Score
Sea Level Rise	1–5	1	The project is not located within an area previously subject to coastal flooding and is not in an area with projected future sea level rise.
Flooding	1–3	1	The project is not located within any Federal Emergency Management Agency flood zones or within future flood risk areas determined from local flood risk studies sourced from the Resilient-CA website.
Temperature and Extreme Heat	1–5	5	The project is in an urban heat island and in an area projected to become hotter in the future.
Extreme Precipitation	1–5	2	The project area has experienced few extreme precipitation events in the past and is not in an area projected to experience extreme precipitation in the future.
Wildfire	1–5	2	The project is not located in the wildland-urban interface or in an area projected to experience an increase in wildfire risk in the future.
Drought	4–5	5	The project relies on water that comes from imported sources and is in an area highly vulnerable to increased frequency and severity of drought in the future.
Decrease in Snowpack	2–3	3	The project relies on water that comes from imported sources that will face increased future risk under climate change.
Air Quality Degradation	3–5	5	The project is located near a major freeway and in a non-attainment area for the federal 8-hour ozone standard.

Determine Sensitivity Score

This section guides the user through determining the sensitivity score. The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. There are multiple aspects of sensitivity to consider.

- **Physical**: How sensitive the project may be to physical damage from climate hazards. For example, wildfire can impair the structural integrity of buildings through incineration and exposure to extreme temperatures. Historical data on events for the project site and similar projects can provide insights for how sensitive the project may be to physical effects from different hazards.
- **Operational**: How sensitive the project may be to disruptions of regular operations from climate hazards. For example, flooding along roads may disrupt public transportation operations. Historical data on events for the project site, similar projects,

and critical interconnections (e.g., local energy utilities, transportation networks) will be helpful in understanding potential operational disruptions.

- **Safety**: How sensitive populations associated with a project may be to different climate hazards. For example, apartments in urban areas may become hot and not cool down easily during extreme heat events due to urban heat island effects, endangering the health of residents. Some projects may serve populations that are more vulnerable to climate hazards, such as hospitals or nursing homes.

The questions below allow the user to understand how project specifics and site historical data can help provide insights to the sensitivities of a project to climate hazards. Some of the questions, such as those on populations served by the project or project elements vulnerable to physical impacts, are specific to the project type and the user's knowledge of the project. Other questions may require the Handbook user to access existing reports for the project area. For example, historical data on hazard impacts for the project area and similar projects may be found in local hazard mitigation plans or through engaging local community planners and decision makers.

Users can take an average of their scores across the four questions below to obtain an overall sensitivity score. However, users do not necessarily need to weigh the four questions below equally. A user may, for example, weigh the question on vulnerable populations much higher than the other questions if that is the project priority. Similarly, questions below are not meant to be all-encompassing in capturing the different aspects of climate sensitivity. Users may find there are other characteristics of their project not listed below that also have a factor in determining the project's climate sensitivity. The following questions serve as guidance in helping a user think through and understand their project's climate sensitivity and address the most sensitive parts. This is important to note particularly if the scores for each question vary widely, such as projects that are not very physically sensitive to a hazard but may have highly sensitive operations.

Answer the following four questions to assign the project a sensitivity score of 1 to 5 for each climate hazard.

B3 Attach #1 of 3

Question #1. How have similar projects to the user's and the project site been impacted by past extreme climate events?

Score Spectrum

- ○ Similar projects and the project area have experienced little to no effects from this hazard.
- ○ Similar projects and the project area have faced damage from this hazard that may have been major and/or permanent but does not significantly affect the project.
- ○ Similar projects and the project area have faced catastrophic damage from this hazard that resulted in permanent effects and significantly altered the project's functionality and local community.

Question #2. Does the project include elements that are susceptible to physical damage from the climate hazards (either at their historic or projected levels)?

Score Spectrum

- ○ The project has no elements that are susceptible to physical damage from this hazard, including projected severity over the project lifetime.
- ○ The project has some elements that may be physically damaged by the hazard as projected over its lifetime, but they are not significant to the functionality of the project.
- ○ The project relies significantly on elements that are likely to be physically damaged by the hazard as projected to occur over its lifetime.

Question #3. If the project includes an operational component (e.g., a utility), how might that be affected by the climate hazards (either at their historic or projected levels)?

Score Spectrum

- ○ The project does not contain an operational component that is likely to be affected the hazard.
- ○ The project has an operational component, but it will only face minor disruptions from the hazard.
- ○ The project has a significant operational component that will be affected by this hazard.

Question #4. Does the project serve vulnerable populations who may be particularly sensitive to certain climate hazards (e.g., a nursing home) at their historic and projected levels?

Score Spectrum

- ○ The project is not likely to serve any vulnerable populations.
- ○ The project serves the public, some of whom may be vulnerable populations.
- ○ The project almost exclusively serves vulnerable populations.

Use Case Example: The Los Angeles affordable housing project does not have a significant operational component, nor does it house many fragile systems. However, it is

B3 Attach #1 of 3

a residence that serves a vulnerable population. We will give it the following sensitivity scores with justifications (Table 4-4).

Table 4-4. Sensitivity Scores and Justifications for Use Case Example

Climate Hazard	Question #1. (Impact of Past Events)	Question #2. (Elements Prone to Historic or Projected Damage)	Question #3. (Operations Vulnerable to Historic or Projected Hazards)	Question #4. (Populations Vulnerable to Historic or Projected Hazards)	Final Sensitivity Score
Sea Level Rise	1—Sea level rise impacts have not occurred in this location in the past	2—Building is slightly elevated, so inundation not likely to infiltrate units	3—Apartment operations may face minor disruptions from inundation, particularly if flooding occurs at a level not seen in the past	4—Serves low-income populations that may be sensitive to inundation from sea level rise, particularly if flooding occurs at a level not seen in the past	3
Flooding	4—Similar projects have faced damage or inaccessibility from flooding	2—Building is slightly elevated, so inundation not likely to infiltrate units	4—Apartment operations and access may face minor disruptions from inundation, particularly if flooding occurs at a level not seen in the past	4—Serves low-income populations that may be sensitive to flooding, particularly if flooding occurs at a level not seen in the past	4
Temperature and Extreme Heat	5—Other apartment buildings around this location have been affected by extreme heat in the past	2—Electrical equipment inside may be sensitive to extreme heat, but overall building is not	4—Cooling equipment may fail more frequently due to working outside of original design parameters	5—Serves low-income residents who may be especially sensitive to extreme heat due to cost of energy bills and lack of nearby access to cool locations and weatherization resources/services	5
Extreme Precipitation	1—Similar projects have not faced significant impacts from extreme precipitation	1—Project may experience light wear and tear, but no elements are highly sensitive to extreme precipitation	2—Apartment operations may face mild disruptions from extreme precipitation, particularly if rainfall occurs at an intensity level not seen in the past	3—Serves low-income residents who may face slight sensitivity to extreme precipitation, particularly if rainfall occurs at an intensity level not seen in the past	2
Wildfire	1—Wildfires have not occurred in this location in the past	4—Building may face damage from wildfire	4—Wildfire would affect apartment operations, particularly if wildfire occurs at a level not seen in the past; high building occupancy also makes this project sensitive	5—Serves low-income residents who may be highly sensitive to wildfire, particularly if wildfire occurs at a level not seen in the past	4

Climate Hazard	Question #1. (Impact of Past Events)	Question #2. (Elements Prone to Historic or Projected Damage)	Question #3. (Operations Vulnerable to Historic or Projected Hazards)	Question #4. (Populations Vulnerable to Historic or Projected Hazards)	Final Sensitivity Score
Drought	Unknown past impacts	2—Project does not have abundant landscaping that requires water	1—Drought unlikely to affect operations	2—Serves low-income residents who may be slightly sensitive to drought, particularly if drought occurs at a level not seen in the past	2
Decrease in Snowpack	Unknown past impacts	1—No elements prone to damage from decrease in snowpack	1—Decrease in snowpack unlikely to affect operations	1—Residents unlikely to be affected by decrease in snowpack	1
Air Quality Degradation	4—Other apartment buildings around this location have been affected by air quality degradation in the past	1—No elements prone to damage from air quality degradation	1—Air quality degradation unlikely to affect operations	5—Serves low-income residents who may be highly sensitive to air quality degradation due to cost of healthcare and lack of nearby access to clean air locations	4

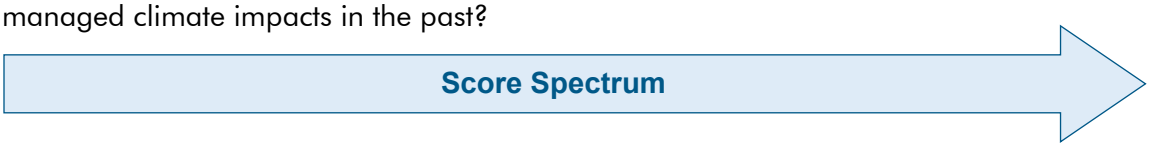
Determine Adaptive Capacity Rating

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. For example, a housing development with heating, ventilation, and air conditioning (HVAC) throughout the building will provide residents with cooling and air filtration against projected increases in heat waves and smoke from wildfire events. Identifying the adaptive capacity of a proposed project will help users understand the degree to which vulnerabilities may be addressed before taking adaptation actions.

Rather than use a numerical score, users will rate their adaptive capacity on a spectrum from Low to High. Like sensitivity, users can take an average of their scores amongst the four questions below to obtain an overall adaptive capacity score, but users do not need to weigh them equally and the questions provided do not necessarily capture all aspects of adaptive capacity.

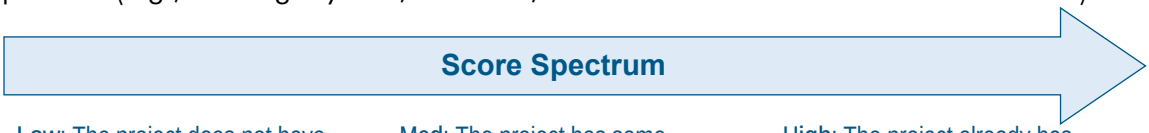
Answer the following four questions to assign the project an adaptive capacity rating of Low, Low–Med, Med, Med–High, or High for each climate hazard.

Question #1. How have similar projects or other developments in the project area managed climate impacts in the past?



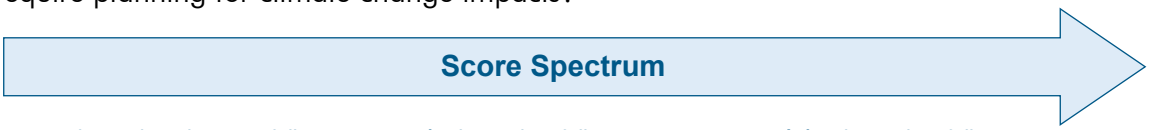
Low	Med	High
Low: Similar projects and developments in the project area were not able to manage climate impacts or required significant cost/effort in doing so.	Med: Similar projects and developments in the project area required a fair amount of cost and effort to manage climate impacts.	High: Similar projects and developments in the project area adapted to climate impacts with little cost and effort.

Question #2. Does the project have design elements that may mitigate climate impacts planned (e.g., drainage system, cool roof, modifications that can be made over time)?



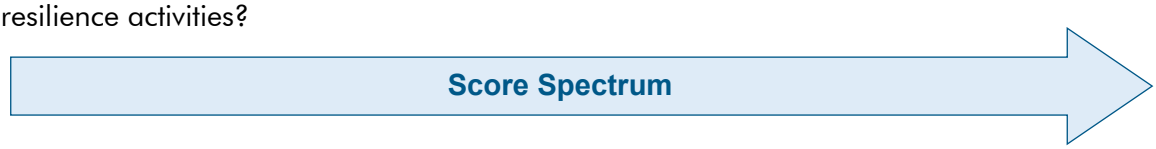
Low	Med	High
Low: The project does not have any elements that may mitigate climate impacts.	Med: The project has some elements that partially address the most relevant climate hazards.	High: The project already has elements that address the climate hazard of most relevance.

Question #3. Are there already policies and standards that the project incorporates (e.g., local community or state climate resilience planning and design requirements) that require planning for climate change impacts?



Low	Med	High
Low: The project does not follow any standards related to planning for climate change impacts.	Med: The project follows some standards related to planning for climate change impacts.	High: The project follows many standards that incorporate climate change considerations into design.

Question #4. Can the project qualify for or access funding for climate adaptation and resilience activities?



Low	Med	High
Low: The project has no access to funding related to climate adaptation activities.	Med: There is some funding available for climate adaptation, but the project would still require additional funding beyond that to finance adaptation.	High: There is plenty of funding available for climate change adaptation activities.

Use Case Example: The Los Angeles affordable housing project will follow the latest building safety standards but does not have access to abundant funding for climate adaptation activities. We will give it the following adaptive capacity ratings with justifications (Table 4-5).

B3 Attach #1 of 3

Table 4-5. Adaptive Capacity Scores and Justifications for Use Case Example

Climate Hazard	Question #1. (Impact of Past Events)	Question #2. (Elements that Mitigate Climate Hazards)	Question #3. (Climate Change Standards)	Question #4. (Climate Change Funding)	Final Adaptive Capacity Score
Sea Level Rise	High—Sea level rise has not been an issue in this location	Low–Med—Building managers could put out sandbags or temporary flood barriers, but these would be less effective in permanent inundation scenarios	Not applicable—Building does not follow any sea level rise standards since it is not located on a coast	Low—Little funding for climate adaptation activities	Med
Flooding	Low–Med—Similar projects have struggled to manage flood impacts	Med–High—Building managers could put out sandbags or temporary flood barriers and have pumps in low-lying areas	High—Building follows flood standards	Low—Little funding for climate adaptation activities	Med–High
Temperature and Extreme Heat	Low—Extreme heat has been an issue in this area for apartments	Low–Med—project is not currently designed to have air conditioning	High—Building follows latest standards	Low—Little funding for climate adaptation activities	Low–Med
Extreme Precipitation	High—Similar projects have held up well against extreme precipitation	High—Project has well-sealed windows and doors as well as a stormwater capture system	High—Building follows latest standards	Low—Little funding for climate adaptation activities	High
Wildfire	Low–Med—Wildfires are not a big issue in this location but apartments that do burn from structure fires do not have much adaptive capacity	Low—Project does not have many elements that mitigate wildfire risks	High—Building follows latest wildfire protection standards	Low—Little funding for climate adaptation activities	Low–Med
Drought	High—Apartments in this area have fared well against past droughts	High—Project is served by a utility that draws from multiple water sources to aid resilience	Not applicable for this hazard	Low—Little funding for climate adaptation activities	High

B3 Attach #1 of 3

Climate Hazard	Question #1. (Impact of Past Events)	Question #2. (Elements that Mitigate Climate Hazards)	Question #3. (Climate Change Standards)	Question #4. (Climate Change Funding)	Final Adaptive Capacity Score
Decrease in Snowpack	High—This hazard has not been an issue in the past	High—Few impacts expected from this hazard	Not applicable for this hazard	Low—Little funding for climate adaptation activities	High
Air Quality Degradation	Med—Apartments in this area have applied some cost and effort to manage this issue	Low–Med—This project does not have air filters that allow individual operability	High—Building follows latest standards	Low—Little funding for climate adaptation activities	Med

Develop Potential Impacts Score

The exposure and sensitivity scores for each climate hazard should be averaged to develop potential impacts scores. If the result is a decimal score (e.g., 2.5), round up or down using best judgment of the potential impacts from that climate hazard on the user's project.

Calculate the project's potential impact scores by averaging the scores for exposure and sensitivity.

Use Case Example: Table 4-6 shows the potential impact score for each climate hazard and the associated justification.

Table 4-6. Potential Impacts Scores and Justifications for Use Case Example

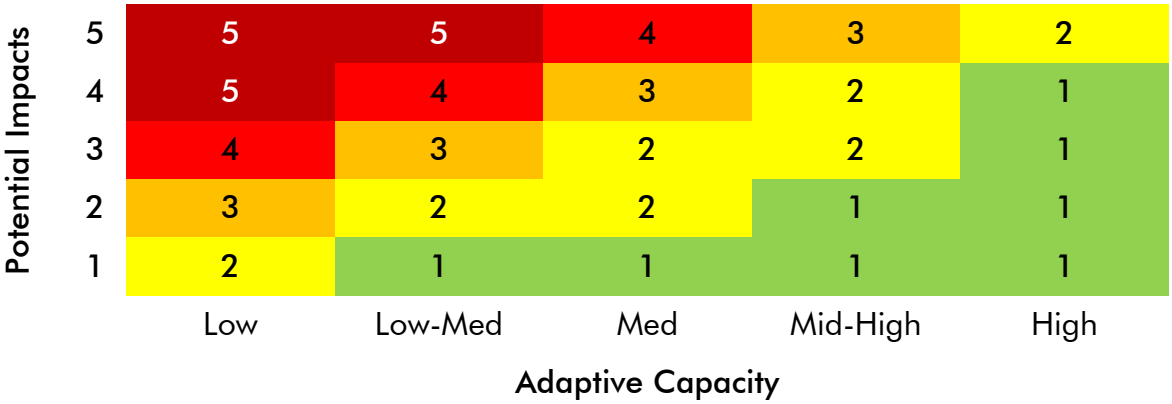
Climate Hazard	Exposure Score	Sensitivity Score	Potential Impact Score & Justification (if not a whole number)
Sea Level Rise	1	3	2
Flooding	1	4	2 (rounded down from 2.5); flooding is not a big concern in this area
Temperature and Extreme Heat	5	5	5
Extreme Precipitation	2	2	2
Wildfire	2	4	3
Drought	5	2	4 (rounded up from 3.5); drought impacts on water supply may become more significant, particularly when also considering extreme heat
Decrease in Snowpack	3	1	2
Air Quality Degradation	5	4	5 (rounded up from 4.5); air quality is a major issue in Los Angeles and residents are highly sensitive

Develop Overall Vulnerability Score

The potential impacts and adaptative capacity assessments should be combined to obtain an overall vulnerability score for each climate hazard. Figure 4-3 provides a matrix to convert the results of the two assessments into a single score. Users should locate their potential impacts score (1 to 5) in the first column and their adaptive capacity rating (low to high) in the bottom row. The intersection between these two data points is the resulting vulnerability score for the climate hazard.

Use the results from the potential impacts and adaptive capacity assessment to develop an overall vulnerability score for each climate hazard.

Figure 4-3. Vulnerability Score Matrix

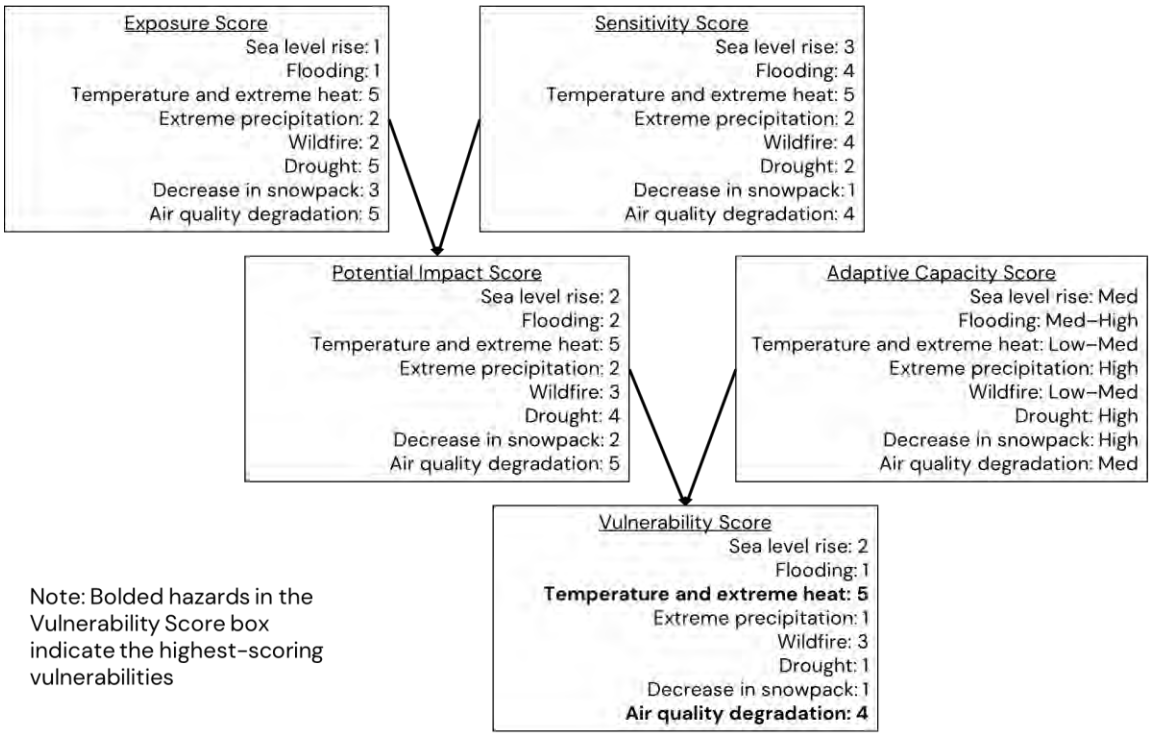


Note: Color coding indicates severity of the score, with green cells showing the lowest (least vulnerable) scores and dark red showing the highest (most vulnerable).

Use Case Example: Figure 4-4 shows how the exposure and sensitivity scores were combined to develop the potential impacts score, and then how the potential impacts score and adaptive capacity rating were combined to develop the overall vulnerability score for each climate hazard.

B3 Attach #1 of 3

Figure 4-4. Hypothetical Exposure, Sensitivity, Potential Impact, Adaptive Capacity, and Vulnerability Scores for An Affordable Housing Unit in Los Angeles



Select Highest-Scoring Vulnerabilities

From the previous sub-steps, users should now have a climate vulnerability score between 1 and 5 for the following climate hazards.

1. Sea level rise.
2. Flooding.
3. Temperature and extreme heat.
4. Extreme precipitation.
5. Wildfire.
6. Drought.
7. Decrease in snowpack.
8. Air quality degradation.

Next, users should choose the priority climate hazards based on the final vulnerability scores. These priority hazards will be the focus for reducing vulnerabilities through adaptation measures in the following section.

Use Case Example: Figure 4-4 shows the vulnerability scores for the Los Angeles housing project example. Because the project scored a 5 for Temperature and Extreme Heat and a 4 for Air Quality Degradation, we will select these two as priority climate hazards.

B3 Attach #1 of 3

It may be helpful to use a vulnerability score threshold (e.g., all hazards exceeding a score of three) for identifying priority climate hazards. This threshold may depend on the user's risk tolerance. For example, if a user has a high risk tolerance, the user may only wish to look at adaptation measures for climate hazards for which there was a vulnerability score of 4 or above. If the user has a lower risk tolerance, the user may wish to also consider addressing climate hazards for which the user's vulnerability score was 3 or above.

Once the user has chosen the priority climate risks that the user wants to address, the user can begin to choose and analyze adaptation measures.

Estimating Risk Reduction and Co-Benefits from Adaptation Measures

Following a similar process to establish a baseline vulnerability score, this section outlines steps that Handbook users can take to identify the reduction in vulnerability associated with specific adaptation measures. With this information, users can better prioritize and select adaptation actions to manage climate risks threatening their project. Users should consider priority climate risks and project budget in assessing measures and their benefits. Refer to *Climate Risk Reduction Measures* for a comprehensive list of potential measures.

Identify Adaptation Benefits

The following steps provide guidance on assessing the impact of a measure on overall vulnerability. Users can follow these steps using the worksheet provided in Appendix D, *Climate Vulnerability Worksheets*.

After selecting a climate hazard from the identified priority climate hazards, users will determine risk reduction from an adaptation measure in the following steps.

1. Identify the extent of the measure's reduction of potential impacts.
    a. Determine the exposure reduction.
    b. Determine the sensitivity reduction.
    c. Assess the overall effect of the measure on potential impacts on a scale of 0–4 reduction points (No effect, Low, Medium, High, and Very High).
2. Evaluate the extent to which the measure bolsters adaptive capacity on a scale of 0–4 reduction points (No effect, Low, Medium, High, and Very High).
3. Estimate impacts on the vulnerability score by considering the measure's effect on reducing exposure and sensitivity (i.e., potential impacts), and increasing adaptive capacity.

Use Case Example: The proposed affordable housing unit being developed in Los Angeles has a high vulnerability to temperature and extreme heat (5) and low-medium adaptive capacity. The developer elects to incorporate adaptation solutions by improving the

building envelope efficiency to protect against extreme heat, such as by installing well-sealed doors and windows, adding window treatments such as solar shades, and increasing shading through enhanced landscaping.

The following section outlines guiding questions and applies the framework to adaptation measures for the use case discussed above. Measures may impact all the components of vulnerability to a hazard, or only target exposure, sensitivity, and/or adaptative capacity.

Determine Exposure Reduction

As discussed in the section *Determine Exposure Score*, the primary driver of exposure is location. A project's proximity to areas susceptible to a hazard will affect the extent to which the project will be subjected to a climate hazard. For example, a project located in a flood zone or in the WUI will be exposed to flooding and wildfire, respectively. While location primarily drives exposure, Handbook users can use adaptation actions to lessen the degree to which a project is exposed to a hazard. The degree to which an adaptation measure lessens the amount of exposure determines its exposure reduction. The following guiding questions can help users determine the extent to which a measure lowers exposure to a specific hazard.

- How does the measure remove exposure (e.g., relocating a project)?
- How much does the measure change the project design to reduce future exposure (e.g., raising a building to reduce flood exposure)?
- Does the measure change post-construction operations and management to reduce future exposure (e.g., wildfire fuel removal or management)?

Use Case Example: Enhancing building envelope efficiency does not change the location or otherwise reduce the exposure of the project. It instead reduces its sensitivity (see *Determine Sensitivity Reduction* section). Not all measures apply to each component of vulnerability.

In this use case example, exposure from the priority hazards of extreme heat and impaired air quality cannot be avoided without physically relocating the project, which is not feasible. The project developer can seek to reduce vulnerabilities by decreasing sensitivity or increasing adaptive capacity through adaptation measures.

Determine Sensitivity Reduction

To lower sensitivity, a measure must reduce the degree to which a project is affected by exposure to a hazard. The following guiding questions can support users in determining the extent to which a measure decreases harm to a project.

- How much does the measure mitigate the hazards' effect on fragile or critical components of the project (e.g., cooling systems for equipment sensitive to overheating)?
- Does the measure lower the hazard's effect on individuals, particularly members of vulnerable populations (e.g., greater access for underserved populations to parks)?

B3 Attach #1 of 3

- Does the measure lower the impact to an operational component affected by the climate hazard (e.g., conduct regular cleaning and maintenance of storm drains along key roadways)?

Use Case Example: The measure reduces how severely building occupants will experience extreme heat. Given that the project is for affordable housing, the measure also has the potential to provide protection from heat events for those in vulnerable communities. Overall, the measure has a low sensitivity reduction.

Determine Potential Impact Reduction

To qualitatively determine the degree to which the measure reduces potential impacts from a climate hazard, Handbook users should consider the extent to the which the measure lowers each component of the potential impacts score (i.e., sensitivity and exposure). Then, users should combine the benefits of the measure's mitigation of sensitivity and exposure to determine the net effect using the following reduction rating scale.

0 = No Effect

1 = Low

2 = Medium

3 = High

4 = Very High

Points associated with the scale (0–4) will be used to assess vulnerability reductions. However, no measure, with the exception or relocating a project, can completely remove the threat from a particular climate hazard with a defined geographic footprint (e.g., floodplain). Measures mitigate, rather than remove, potential impacts from a hazard. The extent to which a measure will lower potential impacts from a climate hazard depends on the Handbook user's project.

Use Case Example: The building envelope enhancement measure has no effect on exposure to the hazard but has a relatively low effect on reducing building occupants' sensitivity to increased temperature and heat events. Combined, the measure provides a low potential impacts reduction rating (which results in a one-point reduction).

Identify Adaptive Capacity Gains

Adaptation measures can also increase a project's adaptive capacity. A measure provides adaptive capacity benefits if it improves the project's capacity to take advantage of opportunities or mitigate the hazard's consequences. These guiding questions support Handbook users in considering how a measure bolsters adaptive capacity.

- Does the measure add climate resilient components to the project (e.g., drainage system, cool roof)?
- Does the measure incorporate policies or standards that account for climate change (e.g., adopt or update heat emergency plan)?

B3 Attach #1 of 3

- How does the measure improve the project's management of climate hazards (e.g., incorporating projected changes in precipitation and flooding into planned wastewater systems)?
- Does the measure reduce how project users are exposed to the hazard (e.g., using a notification system to provide evacuation information)?

After evaluating the measure's impacts using the guiding questions, the user should determine the net effect of the measure on adaptive capacity using the following rating increase scale.

0 = No Effect

1 = Low

2 = Medium-Low

3 = High

4 = Very High

Points associated with the scale (0–4) will be used to assess adaptive capacity gains. As with potential impacts, no measure can increase adaptive capacity to the extent to which overall vulnerability is eliminated. Rather, measures can only strengthen a project's overall adaptive capacity score.

Use Case Example: The building envelope enhancement measure improves adaptive capacity and climate resilience because it protects occupants more effectively from heat events and keeps cool air inside the building. Overall, the measure has a medium increase rating for adaptive capacity (which result in a 2-point increase).

Estimate Measure's Effect on Overall Vulnerability

After evaluating the measure's effect on potential impacts and adaptive capacity, the user can estimate the extent to which the measure reduces overall vulnerability. To determine a measure's overall reduction of overall vulnerability, the user should do the following.

1. Subtract the points associated with the potential impact reduction rating (0–4) from the existing potential impact score to get a net potential impacts score.
2. Add the points associated with the adaptive capacity increase rating (0–4) to the existing adaptive capacity score to get a net adaptive capacity score.

By adopting a measure, the Handbook user can move the project down and right in the vulnerability matrix (see Figure 4-5) as the measure lowers potential impacts and increases adaptive capacity respectively. The evaluation of net changes in potential climate impact and adaptive capacity scores help guide the user in considering the extent to which a measure can decrease the overall vulnerability of a project.

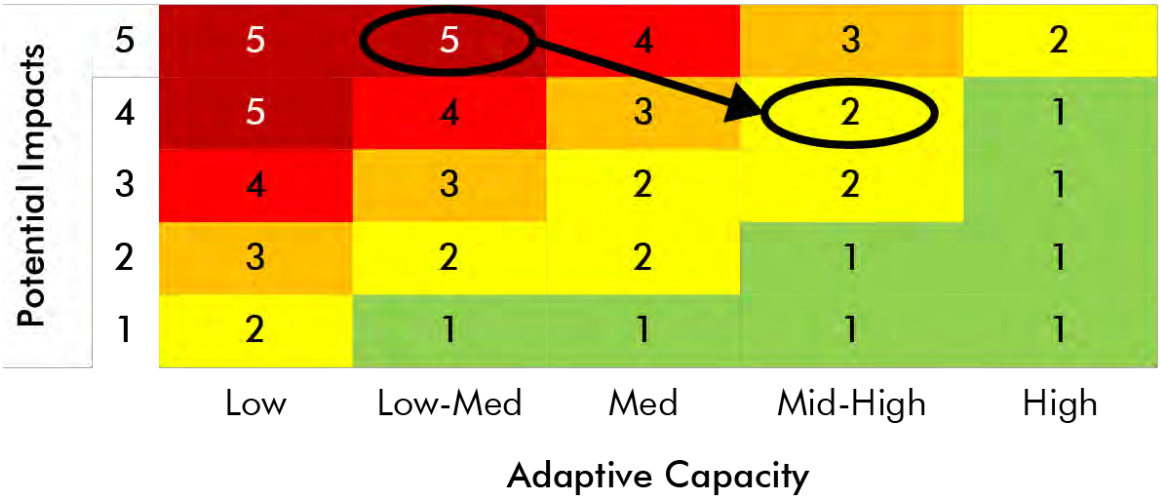
The Handbook user should remember that the rating points act as a guide to estimate the overall effect of an adaptation measure on vulnerability and are not an absolute determination of the measure's effect on the project's vulnerability. The Handbook user

B3 Attach #1 of 3

should apply this process with careful consideration. For example, if a project has a potential impacts score of 4, and the measure has a high potential impacts reduction rating (3 reduction points), the net potential impacts score could be 1. However, the Handbook user might believe that the project could be considerably affected by a hazard despite adopting the measure and determine the net potential impacts score is 2. The example below highlights how a Handbook user can follow the process as a guide to determine the project's overall vulnerability score after applying a measure.

Use Case Example: The measure provides a low potential impacts reduction rating (1 reduction point) and a medium adaptive capacity increase rating (2 addition points). Given the project started at a vulnerability score of 5, the measure reduces the project's vulnerability score to a 2, as seen in Figure 4-5.

Figure 4-5. Vulnerability Score Matrix for Use Case Example



Identify Adaptation Co-Benefits

Adaptation measures may also result in co-benefits for a project, as shown in *Climate Risk Reduction Measures*. Possible co-benefits include improved air quality, energy and fuel savings, VMT reductions, water conservation, enhanced pedestrian or traffic safety, improved public health, improved ecosystem health, enhanced energy security, enhanced food security, and social equity. Some of these co-benefits are qualitative, while others are quantifiable. Chapter 3, *Measures to Reduce GHG Emissions,* includes methodologies to estimate measures' co-benefits specifically related to energy and fuel savings, VMT reductions, and water conservation. Additionally, the California Air Resources Board provides an expansive set of methodologies to evaluate co-benefits (CARB n.d.).

B3 Attach #1 of 3

Climate Risk Reduction Measures

This section includes 99 potential climate risk reduction measures. All measures include the following descriptors.

- **Climate Hazard**: Identifies the climate hazard(s) for which the measure reduces risk. Most measures address multiple climate hazards. Hazards include sea level rise, flooding (coastal and inland), temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.
- **Climate Risk Reduction Benefit**. Describes which aspect of overall vulnerability the measure addresses. Each measure could have one or more of the following risk reduction benefits.
  - **Reduces exposure**: Reduces the presence of project elements in areas that are subject to climate hazards.
  - **Reduces sensitivity**: Reduces the degree to which a project element would be affected by exposure to a changing climate.
  - **Increases adaptive capacity**: Increases the ability of a project element to moderate harm or take advantage of risk reduction opportunities.
- **Potential Co-Benefits**. Describes the anticipated co-benefits achieved by the measure.
- **Action Type**. Identifies the required project action to successfully implement the risk reduction measure. Options include the following.
  - **Infrastructure Improvements and Projects**: Involves physically altering a current design or developing a new project element to address climate risks. These projects could range from minor (e.g., changing appliances) to major (e.g., sea wall).
  - **Education, Outreach, Coordination**: Involves initiating or expanding partnerships with relevant organizations, including intentional community engagement to communicate or share information that is culturally and linguistically appropriate, and expanding awareness with the public.
  - **Evaluation**: Involves conducting new or updated assessments to improve data/information, input, or feedback.
  - **Operational**: Involves changes to or development of new operational and maintenance protocols.
  - **Plans, Regulations, and Policy Development**: Involves developing or revising policies, plans, regulations, or guidelines, which will have project-level benefits if implemented.
  - **Programmatic**: Involves creating new or expanding existing programs, activities, or initiatives.

Table 4-7 identifies the risk reduction measures and their descriptors. Each measure is listed alphanumerically with the hazard serving as the letter code (e.g., SLR = sea level rise). For simplicity and ease of tabular review, the measure descriptors have been abbreviated as follows:

- Dark blue shaded rows identify the **climate hazard** for each group of measures, while light blue shaded rows identify the **action type** applicable to the measures that follow.

B3 Attach #1 of 3

Within the *Infrastructure Improvements and Projects* action type, an asterisk (*) is used to denote activities with extensive infrastructure investments that may require designing and constructing new project elements.

- The **scale of application** is abbreviated as one of the following:
  - P/S = Project/Site
  - P/C = Plan/Community.
  - All = Project/Site and Plan/Community.

  Project/Site refers to measures that reduce risk at the scale of a parcel, employer, or development project. *Plan/Community* refers to measures that reduce risk at the scale of a neighborhood (e.g., specific plan), corridor, or entire municipality (e.g., city or county-level).
- The **climate risk reduction benefit** columns identify how the measure reduces climate vulnerability, where:
  - ● = may be achieved by the measure.
  - ○ = likely not achieved by the measure.
- Remaining columns identify applicable **co-benefits**, where:
  - ● = achieved by the measure.
  - ⊙ = may be achieved by the measure depending on local implementation specifics.
  - ○ = not achieved by the measure.

Table 4-7, below, includes a more detailed description of each measure.

Table 4-7. Summary of Climate Risk Reduction Measures and Descriptors

#	Measure Title	Scale of Application	Risk Reduction Benefit			Co-Benefits									
			Reduces Exposure	Reduces Sensitivity	Increases Adaptive Capacity	Improved Air Quality	Energy and Fuel Savings	Vehicle Miles Traveled Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
Multiple Hazards															
Infrastructure Improvements and Projects															
MH-1.	Strengthen Energy Infrastructure*	P/C	0	2-4	0	●	○	○	○	○	○	○	●	○	⊙
MH-2.	Use Climate-Resilient Design for Infrastructure	P/C	0	1-3	1-3	○	○	○	⊙	●	⊙	○	○	○	○
MH-3.	Coordinate Redundant Transportation Access*	P/C	0	0	2-4	○	○	○	○	●	⊙	○	○	○	○
MH-4.	Strengthen Building Structures	P/S	0	1-3	0	○	○	○	○	○	○	○	○	○	○
MH-5.	Use Green Infrastructure for Stormwater Management*	All	2-3	0	1-3	○	○	○	●	○	○	●	○	○	○
MH-6.	Upgrade Water Systems*	P/C	0	0	2-3	○	○	○	●	○	○	●	○	○	○
MH-7.	Construct Water Storage Facilities*	P/C	0	0	2-3	○	○	○	○	○	○	○	○	○	○
MH-8.	Decrease Road Vulnerability to Landslides	All	0	1-3	0	○	○	○	○	○	○	○	○	○	○
Education, Outreach, Coordination															
MH-9.	Support Business Resiliency	P/C	0	0	1-3	○	○	○	○	○	○	○	○	○	●
MH-10.	Implement Community-wide Climate Change Outreach Program	P/C	0	0	1-3	○	○	○	○	○	○	○	○	○	●
MH-11.	Encourage/Actively Engage Community in Local Planning	P/C	0	0	1-2	○	○	○	○	○	●	○	○	○	●
MH-12.	Enhance Community Network Support	P/C	0	0	1-2	○	○	○	○	○	○	○	○	○	●
MH-13.	Support Local Food Systems	All	0	0	1-2	○	○	○	○	○	●	○	○	●	●

#	Measure Title	Scale of Application	Risk Reduction Benefit			Co-Benefits									
			Reduces Exposure	Reduces Sensitivity	Increases Adaptive Capacity	Improved Air Quality	Energy and Fuel Savings	Vehicle Miles Traveled Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
MH-14.	Maintain Trails and Parks	P/C	0	1-2	1-2	○	○	○	○	○	●	○	○	○	●
MH-15.	Identify Alternative Activities in Climate Sensitive Recreation Areas	All	0	0	1-3	○	○	○	○	○	○	○	○	○	○
Evaluation															
MH-16.	Identify At-Risk Transportation Corridors	P/C	0	0	1-3	○	○	○	○	●	○	○	○	○	○
MH-17.	Identify Alternative Routes for Transit Service	P/C	0	0	1-3	○	○	⊙	○	●	○	○	○	○	⊙
Operational															
MH-18.	Maintain Soil Health	All	0	1-2	1-2	○	○	○	○	○	○	●	○	●	○
MH-19.	Stabilize Burned Slopes in Key Assets	All	0	1-2	0	○	○	○	○	○	○	○	○	○	○
MH-20.	Improve Medical Facility Preparedness	P/C	0	0	1-4	○	○	○	○	○	○	○	○	○	○
MH-21.	Ensure Homeless Services' Availability in Hazardous Conditions	P/C	0	1-3	2-4	○	○	○	○	○	●	○	○	○	●
MH-22.	Improve Poor Drainage	All	0	1-3	0	○	○	○	○	○	●	○	○	○	○
Plans, Regulations, and Policy Development															
MH-23.	Landscape with Climate Considerations	All	0	1-2	0	○	○	○	●	○	○	●	○	○	○
MH-24.	Develop Climate Emergency/Business Resilience Plan	All	0	0	1-3	○	○	○	○	○	○	○	○	○	○
MH-25.	Revise Emergency Plans	P/C	0	0	1-3	○	○	○	○	○	○	○	○	○	○
MH-26.	Integrate Climate Change Considerations into Public Safety and Emergency Planning	All	1-3	1-3	1-4	○	○	○	○	○	○	○	○	○	●
MH-27.	Provide Greater Affordable Housing Options	P/C	0	1-2	1-3	○	○	○	○	○	●	○	○	○	●

#	Measure Title	Scale of Application	Risk Reduction Benefit			Co-Benefits									
			Reduces Exposure	Reduces Sensitivity	Increases Adaptive Capacity	Improved Air Quality	Energy and Fuel Savings	Vehicle Miles Traveled Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
MH-28.	Transition to Climate-Smart Energy	All	0	2-3	2-3	○	○	○	○	○	○	○	●	○	○
MH-29.	Identify Climate Hazard Overlay Zones	All	2-4	1-3	1-3	○	○	○	○	○	○	○	○	○	○
MH-30.	Establish Community Resilience Hubs	P/C	0	0	2-3	○	○	○	○	○	○	○	○	○	●
MH-31.	Improve Transportation Maintenance	P/C	0	1-3	0	○	○	○	○	●	○	○	○	○	○
MH-32.	Establish Urban Tree Management Plan	All	1-2	1-2	0	●	●	○	○	○	●	●	○	○	●
MH-33.	Implement Park and Natural Resources Protection	P/C	1-2	1-2	0	○	○	○	●	○	○	●	○	○	○
MH-34.	Implement Integrated Watershed Management	P/C	1-4	0	0	○	○	○	●	○	○	●	○	○	○
MH-35.	Increase Parks in Underserved Communities	P/C	1-2	2-3	0	○	○	○	○	○	●	○	○	○	●
MH-36.	Decentralize and Localize Energy Production and Storage	All	0	1-3	2-4	●	○	○	○	○	○	○	●	○	●
Programmatic															
MH-37.	Develop Climate Hazard Notification System	P/C	0	0	1-3	○	○	○	○	○	●	○	○	○	●
MH-38.	Integrate Climate into Health Programs	P/C	0	0	1-4	○	○	○	○	○	●	○	○	○	●
MH-39.	Implement Pervious and Climate-Smart Surfaces	All	0	1-3	0	⊙	●	○	●	○	⊙	●	○	○	○
MH-40.	Address Energy/Water Efficiency Funding Barriers	P/C	0	1-2	1-3	○	●	○	●	○	○	○	○	○	●
MH-41.	Expand Urban Greening/Agriculture	P/C	1-2	1-2	1-2	⊙	○	○	⊙	○	●	○	○	●	●
MH-42.	Provide Vaccinations for Changed Transmission Vectors	P/C	0	1-2	1-3	○	○	○	○	○	●	○	○	○	●

#	Measure Title	Scale of Application	Risk Reduction Benefit			Co-Benefits									
			Reduces Exposure	Reduces Sensitivity	Increases Adaptive Capacity	Improved Air Quality	Energy and Fuel Savings	Vehicle Miles Traveled Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
Sea Level Rise and Coastal Flooding/Erosion															
Infrastructure Improvements and Projects															
SLR-1.	Implement Engineering Solutions*	All	2-4	0	0	○	○	○	○	○	○	○	○	○	○
SLR-2.	Raise Building Floor Elevations	P/S	2-4	1-4	0	○	○	○	○	○	○	○	○	○	○
SLR-3.	Implement Natural Coastline Infrastructure*	All	1-4	0	2-3	○	○	○	○	○	○	●	○	○	○
SLR-4.	Strengthen Building Against Flood	P/S	0	2-3	0	○	○	○	○	○	○	○	○	○	○
SLR-5.	Use Moveable Infrastructure	P/S	0	2-3	0	○	○	○	○	○	○	○	○	○	○
Evaluation															
SLR-6.	Develop Adaptive Management Plan	All	0	0	2-4	○	○	○	○	○	○	○	○	○	●
Plans, Regulations, and Policy Development															
SLR-7.	Require Consideration of Sea Level Rise for New Development	All	2-4	2-4	0	○	○	○	○	○	○	○	○	○	○
SLR-8.	Develop Setbacks	All	1-3	0	0	○	○	○	○	○	○	○	○	○	○
SLR-9.	Develop Regional Sediment Management	All	0	1-2	2-3	○	○	○	○	○	○	●	○	○	○
SLR-10.	Sell off High-Risk Area Development Rights	All	1-3	0	2-3	○	○	○	○	○	○	○	○	○	○
SLR-11.	Site Outside Coastal Hazard Zone	All	2-4	0	0	○	○	○	○	○	○	○	○	○	○
SLR-12.	Limit Basements in Flood Zones	P/S	0	2-3	0	○	○	○	○	○	○	○	○	○	○
SLR-13.	Provide Removal Options in Flood Zones	All	1-2	1-3	0	○	○	○	○	○	○	○	○	○	○
SLR-14.	Coordinate with Regional Planning Efforts	All	1-3	1-3	1-3	○	○	○	○	○	○	○	○	○	○
SLR-15.	Alert Public of Storm Surge Risk	P/C	0	1-2	0	○	○	○	○	○	○	○	○	○	○

#	Measure Title	Scale of Application	Risk Reduction Benefit			Co-Benefits									
			Reduces Exposure	Reduces Sensitivity	Increases Adaptive Capacity	Improved Air Quality	Energy and Fuel Savings	Vehicle Miles Traveled Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
Extreme Precipitation and Inland Flooding															
Infrastructure Improvements and Projects															
EP-1.	Incorporate Runoff Projections in Hydrologic Designs	All	1-3	0	0	○	○	○	○	○	●	●	○	○	○
EP-2.	Install Stormwater Outfall Pumps/Lift Station for Water Drainage	All	0	1-3	0	○	○	○	○	○	●	●	○	○	○
EP-3.	Install Stormwater Cistern/Retention Basin	All	0	1-3	0	○	○	○	●	○	○	○	○	○	○
EP-4.	Waterproof Operational Equipment	All	0	2-4	0	○	○	○	○	○	○	○	○	○	○
EP-5.	Upgrade Wastewater Systems	All	0	0	2-3	○	○	○	●	○	○	●	○	○	○
Plans, Regulations, and Policy Development															
EP-6.	Site Outside Floodplain	All	2-4	0	0	○	○	○	○	○	○	○	○	○	○
Operational															
EP-7.	Maintain Stormwater Infrastructure on Key Routes	All	0	1-2	0	○	○	○	○	●	○	○	○	○	○
Wildfire															
Infrastructure Improvements and Projects															
WF-1.	Implement Fire-Safe Landscaping	All	0	1-2	0	●	○	○	○	○	●	●	○	○	○
WF-2.	Install Fire Suppression Systems and Improve Structural Strength	P/S	0	1-3	0	●	○	○	○	○	●	○	○	○	○
WF-3.	Strengthen Vulnerable Assets in High Wildfire Risk Areas*	All	0	2-4	0	○	○	○	○	○	○	○	○	○	○

#	Measure Title	Scale of Application	Risk Reduction Benefit			Co-Benefits									
			Reduces Exposure	Reduces Sensitivity	Increases Adaptive Capacity	Improved Air Quality	Energy and Fuel Savings	Vehicle Miles Traveled Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
Education, Outreach, Coordination															
WF-4.	Educate on Wildfire Resistant Landscaping	P/C	0	0	1-2	○	○	○	○	○	●	○	○	○	○
WF-5.	Site Outside Wildland-Urban Interface (WUI)	All	2-4	0	0	○	○	○	○	○	●	○	○	○	○
Evaluation															
WF-6.	Designate and Strengthen Wildfire Emergency Routes	P/C	0	0	1-3	○	○	○	○	○	●	○	○	○	●
WF-7.	Develop Fire Risk Assessment for New Development	All	1-2	1-2	0	○	○	○	○	○	●	○	○	○	○
Operational															
WF-8.	Implement Fuel Management	All	2-3	0	0	●	○	○	○	○	●	○	○	○	○
WF-9.	Install Air Filters	All	0	1-3	1-2	●	○	○	○	○	●	○	○	○	○
WF-10.	Adopt WUI Building Standards	All	0	1-3	1-2	○	○	○	○	○	●	○	○	○	○
Temperature/Extreme Heat															
Infrastructure Improvements and Projects															
EH-1.	Install Green Infrastructure*	All	1-3	1-3	0	●	⊙	○	○	○	●	●	○	○	●
EH-2.	Provide Heat Mitigation for Public Walkways and Transit Stops	All	2-4	0	0	●	○	○	○	○	●	○	○	○	●
EH-3.	Install Heat-Reducing Roof	All	2-3	0	0	●	●	○	○	○	●	○	○	○	●
EH-4.	Enhance Building Envelope Efficiency	P/S	0	0	1-3	●	●	○	○	○	●	○	○	○	⊙
EH-5.	Upgrade to Efficient Equipment/Infrastructure	All	0	0	1-3	○	●	○	○	○	○	○	○	○	○

#	Measure Title	Scale of Application	Risk Reduction Benefit			Co-Benefits									
			Reduces Exposure	Reduces Sensitivity	Increases Adaptive Capacity	Improved Air Quality	Energy and Fuel Savings	Vehicle Miles Traveled Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
EH-6.	Install Refillable Water Stations	All	0	0	1-2	○	○	○	○	○	●	○	○	○	●
EH-7.	Install Equipment Cooling System	All	0	2-3	0	○	●	○	○	○	○	○	○	○	○
EH-8.	Use Alternative Pavement Surfaces	All	0	1-2	0	○	●	○	○	○	○	○	○	○	○
EH-9.	Expand Urban Tree Canopy	All	1-2	1-2	0	●	●	○	○	○	●	○	○	○	⊙
EH-10.	Install Covered Parking	P/S	0	0	1-2	●	○	○	○	○	●	○	○	○	○
Education, Outreach, Coordination															
EH-11.	Work with Schools to Reduce Heat Exposure	P/C	1-3	1-3	0	○	○	○	○	○	●	○	○	○	●
Plans, Regulations, and Policy Development															
EH-12.	Provide Backup Power for Cooling Centers	All	0	1-2	1-3	○	○	○	○	○	●	○	○	○	●
EH-13.	Develop Heat Emergency Plan	P/C	0	0	2-4	○	○	○	○	○	●	○	○	○	●
Programmatic															
EH-14.	Develop Low-Income Energy Programs	P/C	0	1-2	2-3	○	●	○	○	○	●	○	○	○	●
EH-15.	Provide Low-Income Air Conditioning	All	0	2-4	2-4	○	○	○	○	○	●	○	○	○	●
EH-16.	Establish a Shuttle System to Cooling Centers	P/C	0	1-2	2-3	○	○	○	○	○	●	○	○	○	●
Drought															
Infrastructure Improvements and Projects															
D-1.	Install Water Efficient Appliances	P/S	0	0	1-3	○	○	○	●	○	○	○	○	○	●
D-2.	Install Water Reuse Infrastructure	P/S	0	0	1-3	○	○	○	●	○	○	○	○	○	○

#	Measure Title	Scale of Application	Risk Reduction Benefit			Co-Benefits									
			Reduces Exposure	Reduces Sensitivity	Increases Adaptive Capacity	Improved Air Quality	Energy and Fuel Savings	Vehicle Miles Traveled Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
Education, Outreach, Coordination															
D-3.	Install Drought Resistant Landscaping	P/S	0	1-2	1-2	○	○	○	●	○	○	○	○	○	○
D-4.	Educate on Water Conservation	P/C	0	0	1-2	○	○	○	●	○	○	○	○	○	○
D-5.	Outreach to Educate About Recycled Water Safety	P/C	0	0	1-2	○	○	○	●	○	○	○	○	○	○
D-6.	Build Alternatives Forms of Water Recreation	All	0	0	1-2	○	○	○	○	○	○	○	○	○	○
Plans, Regulations, and Policy Development															
D-7.	Diversify Water Supply Sources	P/C	0	0	2-4	○	○	○	○	○	●	○	○	○	●
D-8.	Develop Groundwater Sustainability Plan	P/C	0	0	2-4	○	○	○	○	○	○	●	○	○	○
D-9.	Implement Local Water Recycling	All	0	0	1-4	○	○	○	●	○	○	○	○	○	○

Climate hazard abbreviations: MH = multiple hazards; SLR = sea level rise; F = flooding; EH = temperature/extreme heat; EP = extreme precipitation; WF = wildfire; D = drought; DS = decrease in snowpack; AQ = air quality degradation.

For action type, major infrastructure improvements and projects are noted with an asterisk (*).

Scale of application column abbreviations: P/S = Project/Site; P/C = Plan/Community; All = Project/Site and Plan/Community.

Risk reduction benefit and co-benefits columns symbols: ● = may be achieved by the measure; ☉ = may be achieved by the measure depending on local implementation specifics; ○ = likely not achieved by the measure.

B3 Attach #1 of 3

Table 4-8 provides an overview of each measures' descriptions and benefits. These measures are organized by the climate hazard(s) that they address. Measures that can help reduce risk to multiple hazards (categorized as "Multiple Hazard Measures") are presented first. Most climate risk reduction measures fall under this category, followed by measures that address individual climate hazards or, in some cases, two similar hazards (e.g., extreme precipitation and flooding). The measure descriptions broadly summarize the measure at a high level. Where applicable, an implementation example is provided.

Table 4-8. Description of Climate Risk Reduction Measures

Climate Risk Reduction Measures
Multiple Hazards
MH-1. Strengthen Energy Infrastructure. Strengthen energy infrastructure systems against damage from climate-related effects and expand redundancy in the energy network. For example, retrofit infrastructure components; ensure redundant energy systems (e.g., backup generators, multiple transmission lines feeding a given area). Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, and wildfire.
MH-2. Use Climate-Resilient Design for Infrastructure. Use the best available science and resilient design features in infrastructure to improve resiliency to extreme climate events. For example, special sealants and other materials on roadways can help prevent roadways from softening during extreme heat. Another example to maintain a state of good repair, minimize breaks, and ensure structural integrity in the face of climate change hazards is to use high density polyethylene (HDPE) pipes, which are less expensive and easier to install than metal cast iron pipes. Other resilient design features include choosing appropriate materials for wildfire-prone areas and treating critical outdoor infrastructure pieces to be heat-resistant. Infrastructure reinforcement, stormwater improvements and drainage upgrades, and pumping and water storage facilities can also be installed to increase resiliency to flooding and wave action by coastal storms. Design features should be incorporated to match asset vulnerabilities. The California Department of Transportation (Caltrans) completed a vulnerability assessment of its assets by district, which can serve as a useful resource (Caltrans 2020). Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, and wildfire.
MH-3. Coordinate Redundant Transportation Access. Coordinate with regional transportation agencies to ensure redundancy of critical transportation routes to allow for continued access and movement in the event of an emergency. Have multiple points of ingress and egress to improve evacuation and emergency response access. Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, and wildfire.
MH-4. Strengthen Building Structures. Ensure building structure is strengthened against severe weather impacts through building design. Relevant Hazards: Flooding, extreme precipitation, and wildfire.
MH-5. Use Green Infrastructure for Stormwater Management. Use green infrastructure to reduce stormwater volume and enhance stormwater capture and infiltration. For example, low-impact development, such as the installation of bioretention elements in parking lots and on the street margin, can be implemented through landscape codes, green street standards, and off-site standards. Other examples include rainwater harvesting, permeable pavements, and bioswales. Relevant Hazards: Flooding, extreme precipitation, and drought.

B3 Attach #1 of 3

Climate Risk Reduction Measures

MH-6. Upgrade Water Systems.

Upgrade water systems to accommodate projected changes in water quality and availability. For example, wells and intake systems may be too shallow to effectively pull enough water supplies from groundwater aquifers and surface water bodies, higher levels of water contaminants may exceed the capacity of water treatment systems, and water storage tanks may not be able to hold enough water to meet demand if there is a supply interruption. In all these cases, the water system could be upgraded to address the risk.

Relevant Hazards: Flooding and drought.

MH-7. Construct Water Storage Facilities.

Construct additional water storage facilities and improve existing facilities to augment surface and groundwater supplies that can capture excess flows and add protections against flooding and high stormwater flow events. For example, install a dedicated groundwater recharge facility for utilizing excess flows in wet years.

Relevant Hazards: Flooding, extreme precipitation, drought, and decrease in snowpack.

MH-8. Decrease Road Vulnerability to Landslides.

Use retaining walls, slope stabilization techniques, and other strategies to make roads less vulnerable to landslides, mudflows, and erosion. Emphasize resiliency for roads and trails that are on or below steep slopes and have a history of being damaged or blocked by landslide events and affected by erosion.

Relevant Hazards: Extreme precipitation, and wildfire.

MH-9. Support Business Resiliency.

Collaborate with local and regional partners to support business resiliency through preparedness education, trainings, and resources. Target support to small businesses, minority-owned business, and businesses in underserved communities.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, air quality degradation.

MH-10. Implement Community-wide Climate Change Outreach Program.

Collaborate with local, regional, state, and federal partners to develop a community-wide outreach program to educate a diverse community on how to prepare for and recover from climate change effects. An example program would be a climate preparedness outreach program focused on vulnerable populations that provides information on staying healthy and safe during hazardous events.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.

MH-11. Encourage/Actively Engage Community in Local Planning.

Explore opportunities to incorporate resident empowerment, leadership, and decision-making such as training programs, guided reviews of plans, neighborhood scans, and mapping activities as part of resident-led planning. For example, fund or solicit participation from schools, faith-based communities, neighborhood-based groups, health equity or environmental justice groups, and businesses in climate resilience planning. Allow and encourage residents to be the decisionmakers in planning.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.

B3 Attach #1 of 3

Climate Risk Reduction Measures

MH-12. Enhance Community Network Support.

Support and strengthen community social networks and other assets to build climate resilience. For example, support community-driven efforts by assisting with outreach, and learning from and disseminating best practices developed by community groups or local jurisdictions (Deas, Hoverter, & DeWeese 2017).

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.

MH-13. Support Local Food Systems.

Support local farmers and local food network. Increase access to healthy food markets, farmer's markets, and other local food sources. Encourage community gardens.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.

MH-14. Maintain Trails and Parks.

Collaborate with local and regional partners to provide robust trail and park maintenance to prevent and respond to damage from the effects of climate change. For example, park management agencies can strengthen and stabilize park buildings and trails to prevent future damage. Additionally, park resilience can be furthered with overlapping green infrastructure and stormwater measures such as detention/retention ponds and basins and decreasing impermeable surfaces to naturally capture and treat stormwater flows.

Relevant Hazards: Temperature/extreme heat, flooding, extreme precipitation, and wildfire.

MH-15. Identify Alternative Activities in Climate Sensitive Recreation Areas.

Coordinate with owners of winter recreation areas and water recreation areas to support additional recreational activities that are less dependent on snowpack and water levels. For example, alternative forms of recreation could include biking and hiking trails on skiing mountains during the summer season, or ropes courses and other alternative recreational activities at water recreation sites.

Relevant Hazards: Temperature/extreme heat, drought, and decrease in snowpack.

MH-16. Identify At-Risk Transportation Corridors.

Coordinate with community members, transportation agencies, and private entities to identify local and regional transportation, transit, and active transportation corridors that are at-risk from the effects of climate change. Prioritize further climate risk reduction actions for these routes.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, and extreme precipitation.

MH-17. Identify Alternative Routes for Transit Service.

Coordinate with regional transit providers to identify and communicate to the public alternative routes and stops and other redundancies in the transportation network if normal infrastructure is damaged or closed because of extreme events.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, and extreme precipitation.

MH-18. Maintain Soil Health.

Maintain and improve soil health. For example, increase soil organic matter to improve soils' water-holding capacity, soil structure, and water infiltration, and to reduce erosion (use cover crops and mixes, native grasses, crop or livestock residues, compost, mulch, biochar, or other organic amendments).

Relevant Hazards: Temperature/extreme heat, drought, and decrease in snowpack.

Climate Risk Reduction Measures
MH-19. Stabilize Burned Slopes in Key Areas. Stabilize burned slopes located above developed areas, important infrastructure, or key transportation corridors as soon as possible after a wildfire event. Relevant Hazards: Extreme precipitation and wildfire.
MH-20. Improve Medical Facility Preparedness. Work with local medical providers and hospitals to ensure that medical facilities are prepared to meet any increased demand because of hazardous events. For example, this could be stocking up on specific medical supplies for local emergencies or working with emergency management agencies to have medical professionals and supplies at emergency shelter locations. Training could also be provided to medical staff to help improve recognition of new and emerging diseases in expanded geographies. Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.
MH-21. Ensure Homeless Services' Availability in Hazardous Conditions. Coordinate with local homeless services to ensure that emergency shelters are available during extreme heat events, poor air quality events, severe weather events, and other highly hazardous conditions. Ensure that people experiencing homelessness are made aware of these resources. Work with social care organizations to distribute necessities. Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.
MH-22. Improve Poor Drainage. Identify and remedy poor drainage areas to reduce disease risk from stagnant water. Relevant Hazards: Flooding and temperature/extreme heat.
MH-23. Landscape with Climate Considerations. Encourage landscaping projects to use plants that will continue to be viable in the area under long-term climate conditions. For example, update landscape ordinances and other applicable standards to include plants that are resistant to drought and extreme heat. Relevant Hazards: Temperature/extreme heat, drought, and decrease in snowpack.
MH-24. Develop Climate Emergency/Business Resilience Plan. For large commercial developments, develop a climate emergency/business resilience plan. Relevant Hazards: Flooding, extreme precipitation, and wildfire.
MH-25. Revise Emergency Plans. Revise emergency management plans, programs, and activities to account for changing hazard profiles and their consequences. Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.
MH-26. Integrate Climate Change Considerations into Public Safety and Emergency Planning. Integrate climate change risk reduction considerations into general plan Safety Elements, Local Hazard Mitigation Plans, public safety document, and all phases of emergency planning. A potential resource for implementing this measure is the Coastal Plan Alignment Compass (OPR n.d.). Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.

B3 Attach #1 of 3

Climate Risk Reduction Measures

MH-27. Provide Greater Affordable Housing Options.

Facilitate affordable housing options outside of hazardous zones for all residents.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.

MH-28. Transition to Climate-Smart Energy.

Transition to climate-smart sources of energy. For example, move away from vulnerable sources like hydroelectric, refineries and seaports, centralized power generation facilities that rely on long-range transmission infrastructure; move toward renewable and decentralized energy sources with storage capacity for variations in daily/seasonal demands.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, and wildfire.

MH-29. Identify Climate Hazard Overlay Zones.

Identify and establish climate hazard overlay zones for consideration during zoning and development of general and project site plans. Users can start by looking at hazard zone maps in existing general plans, as these maps have already been developed due to regulatory requirements. Available resources to identify climate hazard zones include the *Adaptation Planning Guide*, OPR's General Plan Guidelines, Cal-Adapt, the *Ocean Protection Council's 2018 Sea-Level Rise Guidance*, and the Integrated Climate Adaptation and Resilience Program Adaptation Clearinghouse.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, and wildfire.

MH-30. Establish Community Resilience Hubs.

Establish resilience hub locations in neighborhoods throughout the community. For example, develop existing community centers into cooling/clean air centers.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, wildfire, and air quality degradation.

MH-31. Improve Transportation Maintenance.

Update transportation maintenance protocols to incorporate climate vulnerabilities.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, and wildfire.

MH-32. Establish Urban Tree Management Plan.

Establish policies and management plans to develop urban forests and incentivize the use of best practices for the long-term maintenance and preservation of urban trees.

Relevant Hazards: Temperature/extreme heat, flooding, extreme precipitation, wildfire, and air quality degradation.

MH-33. Implement Park and Natural Resources Protection.

Develop coastal management plan to protect park infrastructure and natural resources. For example, the plan could include protecting existing open space adjacent to the coast, restoring dune habitat to increase the resilience of beaches, using soft or natural solutions for protecting structures facing flooding or inundation, require mitigation for impacts to public access, and the retrofitting or relocation of recreation and visitor-serving facilities. Develop equivalent plans for parks at risk of wildfire or inland flooding.

Relevant Hazards: Sea level rise, wildfire, and flooding.

MH-34. Implement Integrated Watershed Management.

Reduce flood and drought risk through integrated watershed management. For example, a healthy watershed maintains wetland areas as flood mitigation and maintains undeveloped natural areas, promoting soil health to blunt flood impacts and to assure greater resilience to drought.

Relevant Hazards: Flooding and drought.

B3 Attach #1 of 3

Climate Risk Reduction Measures

MH-35. Increase Parks in Underserved Communities.

Increase access for underserved populations to parks, which can provide relief against extreme heat and flooding. Identify park-poor communities and ensure that new urban parks and trail systems are within walking distance to high-density infill, homes, and offices.

Relevant Hazards: Flooding and temperature/extreme heat.

MH-36. Decentralize and Localize Energy Production and Storage.

Increase local, decentralized renewable energy production and energy storage capacity to improve energy independence. For example, remove reliance on long-range transmission electricity infrastructure that may start wildfires by installing micro-grids, local renewable energy generation, and battery storage. Create municipal energy utilities and/ or form electric co-ops between rural jurisdictions for more local control over infrastructure and energy supply.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.

MH-37. Develop Climate Hazard Notification System.

Develop a notification system for natural hazards that provides early warnings and evacuation notifications. Ensure that the system can be deployed across multiple scales, is responsive to community needs, and reaches vulnerable populations.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.

MH-38. Integrate Climate into Health Programs.

Integrate climate change and health equity into traditional public health programs and core functions.

Relevant Hazards: Sea level rise, flooding, temperature/extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation.

MH-39. Implement Pervious and Climate-Smart Surfaces.

Encourage and incentivize the use of pervious and climate-smart landscaped surfaces to reduce the urban heat island effect, catch stormwater, and lower overall water use.

Relevant Hazards: Flooding, temperature/extreme heat, and drought.

MH-40. Address Energy/Water Efficiency Funding Barriers.

Address programmatic, funding, and financing barriers for energy/water efficiency retrofits for low-income households and small businesses. Coordinate with local and tribal governments to provide low-income and disadvantaged community energy efficiency and demand response services.

Relevant Hazards: Temperature/extreme heat, drought, and decrease in snowpack.

MH-41. Expand Urban Greening/Agriculture.

Collaborate with community-based organizations to develop or expand urban greening and urban agriculture programs. For example, urban greening can include adding trees, parks, green infrastructure, and other green elements to a neighborhood. Urban agriculture includes community gardens or small farms within urban areas of a community.

Relevant Hazards: Flooding, temperature/extreme heat, and air quality degradation.

MH-42. Provide Vaccinations for Changed Transmission Vectors.

Ensure that free or reduced-cost vaccinations for vector-borne diseases are widely available.

Relevant Hazards: Flooding and temperature/extreme heat.

B3 Attach #1 of 3

Climate Risk Reduction Measures
Sea Level Rise and Coastal Flooding/Erosion
SLR-1. Implement Engineering Solutions. Build a seawall or offshore reefs to protect the project. Build levees to reduce flooding. Consider jetties and groins.
SLR-2: Raise Building Floor Elevations. Ensure buildings have raised finished floor elevations.
SLR-3. Implement Natural Coastline Infrastructure. Use natural shoreline protection methods, such as beach nourishment, living shorelines, and dune restoration, where feasible.
SLR-4. Strengthen Buildings Against Flood. Strengthen buildings against flooding using dry or wet floodproofing techniques.
SLR-5. Use Moveable Infrastructure. Incorporate modular components in the building design to allow the project to move away from coastal flooding and erosion zones.
SLR-6. Develop Adaptive Management Plan. Develop an adaptive management plan to address the long-term impacts of sea level rise. In the plan, include an assessment of local vulnerability, including infrastructure such as roads and water reclamation facilities, buildings in the inundation areas, and ecosystems. For example, adaptive management techniques can include flexible adaptation pathways. Adaptation pathways are a planning approach that address uncertainty by considering multiple possible futures and analyzing the robustness and flexibility of various options across those futures.
SLR-7. Require Consideration of Sea Level Rise for New Development. Require accounting of sea level rise in all applications for new development in shoreline areas. Ensure that all applications for new development account for projected sea level rise and provide adequate protection (e.g., setback, armoring). For example, require applications develop a vulnerability and risk reduction plan that uses the *Ocean Protection Council Sea-Level Rise Guidance*. Provide guidance for applicants in considering most suitable sea level rise scenarios in planning.
SLR-8. Develop Setbacks. Develop adequate setbacks for new development. For example, ensure structures are set back far enough inland from the beach or bluff edge such that they will not be endangered by erosion (including sea level rise induced erosion) over the life of the structure, without the use of a shoreline protective device.
SLR-9. Develop Regional Sediment Management. Develop a regional sediment management program including strategies designed to allow the use of natural processes to solve engineering problems.
SLR-10. Sell off High-Risk Area Development Rights. Allow landowners in high-risk areas to sell their development rights. In conjunction, designate areas for increased density in a community for this.
SLR-11. Site Outside Coastal Hazard Zone. Select sites outside of coastal hazard zone or coordinate with long-term community managed retreat plans. Develop plans allowing for coastal inundation in defined areas.

B3 Attach #1 of 3

Climate Risk Reduction Measures
SLR-12. Limit Basements in Flood Zones. Limit basements and first floor habitable space in flood zones and keep critical assets (such as major electrical infrastructure) on higher floors.
SLR-13. Provide Removal Options in Flood Zones. Analyze options for removal of the structure or critical assets connected to the structure when planning and designing new development in flood zones.
SLR-14. Coordinate with Regional Planning Efforts. Coordinate with regional agencies on developing policies and/or plans where project-level solutions alone may not be able to mitigate sea level rise risk.
SLR 15. Alert Public of Storm Surge Risks. Include signage to warn people about flooding during storms and king tides. Provide materials to visitors and communities on risks of storms and king tides.
Extreme Precipitation and Inland Flooding
EP-1. Incorporate Runoff Projections in Hydrologic Designs. Incorporate projected increases in runoff into site-specific hydrologic design. Account for uncertainty in future runoff due to potential changes in precipitation, where past data is not a reliable predictor of future events.
EP-2. Install Stormwater Outfall Pumps/Lift Station for Water Drainage. Install stormwater outfall pumps/lift stations to drain water from the system if outfalls were to become submerged.
EP-3. Install Stormwater Cistern/Retention Basin. Build or enhance stormwater cisterns or retention basins.
EP-4. Waterproof Operational Equipment. Protect mechanical, electrical, and other key operational equipment from flooding at critical facilities/locations by dry proofing or wet proofing facilities.
EP-5. Upgrade Wastewater Systems. Upgrade wastewater systems to accommodate projected changes in precipitation and flooding. For example, enhance wastewater system capacity to prepare for increased flows and strengthen facilities against extreme events.
EP-6. Site Outside Floodplain. Select site outside the floodplain. If not completely possible, keep most climate-sensitive elements of the project outside the floodplain.
EP-7. Maintain Stormwater Infrastructure on Key Routes. Conduct regular cleaning and maintenance of storm drains and other stormwater infrastructure assets along key roadways, especially in advance of the rainy season. Improve storm drain capacity in areas where ponding is regularly observed.

B3 Attach #1 of 3

Climate Risk Reduction Measures
Wildfire
WF-1. Implement Fire-Safe Landscaping. Implement fire-safe landscaping. A toolkit for fire-safe landscaping is available online (IBHS n.d.).
WF-2. Install Fire Suppression Systems and Improve Structural Strength. Install fire suppression systems in high fire risk locations. Incorporate hardening and strengthening aspects into structure design and material selection, such as tile roofs and mesh in attic vents to prevent ember sparks.
WF-3. Strengthen Vulnerable Assets in High Wildfire Risk Areas. Strengthen vulnerable assets in high wildfire risk areas. For example, replace wooden electricity distribution poles with steel poles.
WF-4. Educate on Wildfire Resistant Landscaping. Provide information to homeowners about statutory vegetation management requirements (CAL FIRE 2019a) and promote defensible space to slow fire spread in forested and wildland-urban interface (WUI) areas. For example, send educational materials encouraging homeowners to create fire-resistant zones with stone walls, patios, decks and roadways. Similarly, promote the use of rock, mulch, flower beds and gardens as ground cover for bare spaces and as effective firebreaks. Additional resources are available from CAL FIRE (CAL FIRE 2019b).
WF-5. Site Outside WUI. Direct site selection outside of the WUI, the zone where development meets wildland areas, including fire hazard severity zones as mapped by CAL FIRE. (Some Counties also have WUI maps.) If not able to site outside the WUI and/or fire hazard severity zones, implement other fire-safe management, such as creating defensible space or carrying out fuel management.
WF-6. Designate and Strengthen Wildfire Emergency Routes. Identify and mark emergency routes or recommend additional roads in the wildland-urban interface in case of evacuations. Provide advanced public education on evacuation routes and deliver emergency evacuation orders and warnings. Make all notices and guidelines accessible in multiple languages. Ensure redundancy in evacuation routes.
WF-7. Develop Fire Risk Assessment for New Development. Develop a fire risk assessment for all new development within fire hazard severity zones or the WUI.
WF-8. Implement Fuel Management. Carry out fuel (i.e., live vegetation or dead biomass) removal/management techniques, such as fuel breaks, in the WUI and in the wildfire influence zone. Conduct controlled/prescribed burns to mitigate wildfire risk.
WF-9. Install Air Filters. Encourage the installation of air filters to protect against indoor air quality impacts during wildfire smoke exposure events.
WF-10. Adopt WUI Building Standards. Recommend in Local Responsibility Areas that households adopt WUI Building Standards and consider using WUI-approved construction materials if they are in High and Moderate Fire Hazard Severity Zones.

Climate Risk Reduction Measures
Temperature/Extreme Heat
EH-1. Install Green Infrastructure. Install green infrastructure to increase shading and reduce heat impact. For example, green streets and pocket parks.
EH-2. Provide Heat Mitigation for Public Walkways and Transit Stops. Collaborate with public works departments and regional transit providers to increase shading and heat-mitigating materials on pedestrian walkways and transit stops. For example, build bus shelters or plant trees at bus stops to provide shade for waiting passengers.
EH-3. Install Heat-Reducing Roof. Install green roofs, cool roofs, or other high-albedo or heat reducing roofs.
EH-4. Enhance Building Envelope Efficiency. Improve building envelope efficiency to protect against extreme heat. For example, install well-sealed doors and windows or window treatments such as solar shades. May also include passive cooling design/architecture.
EH-5. Upgrade to Efficient Equipment/Infrastructure. Upgrade equipment and infrastructure to be more energy-efficient to minimize stress on the electrical grid.
EH-6. Install Refillable Water Stations. Install refillable water stations at parks, trailheads, community centers, and sport courts/fields with available water supplies to encourage proper hydration and protection against heat-related illnesses.
EH-7. Install Equipment Cooling System. Provide cooling systems for equipment sensitive to overheating.
EH-8. Use Alternative Pavement Surfaces. Use alternative pavement surfaces (to reduce rutting, cracking, heat impacts, etc.) when resurfacing roads, critical intersections, multi-use paths, and city parking lots.
EH-9. Expand Urban Tree Canopy. Develop or expand urban tree canopy to help cool urban environments.
EH-10. Install Covered Parking. Install a form of covered parking, such as trees or solar panels, that mitigates heat islands and reduces off-gassing from cars.
EH-11. Work with Schools to Reduce Heat Exposure. Provide education, partnership, and other support to local schools to reduce outdoor exposure during extreme heat events.
EH-12. Provide Backup Power for Cooling Centers. Ensure that facilities used as cooling centers are equipped with backup power supplies, including onsite renewable energy generation and energy storage systems as feasible.
EH-13. Develop Heat Emergency Plan. Adopt or update heat emergency plan. Ensure that the needs of vulnerable and remote populations are accounted for in the plan.

B3 Attach #1 of 3

Climate Risk Reduction Measures
EH-14. Develop Low-Income Energy Programs. Work to coordinate energy-related programs that target low-income communities with broader climate risk reduction efforts.
EH-15. Provide Low-Income Air Conditioning. Provide reduced-cost, energy-efficient air conditioning systems to low-income households.
EH-16. Establish a Shuttle System to Cooling Centers. Establish a shuttle system to operate during extreme heat events with specific pickup points and provide access to local cooling centers for persons who are unable to drive or lack access to a vehicle.
Drought
D-1. Install Water Efficient Appliances. Install water-efficient appliances, such as water-efficient faucets and pipe fixtures.
D-2. Install Water Reuse Infrastructure. Install infrastructure that encourages water reuse, such as greywater appliances and stormwater capture.
D-3. Install Drought Resistant Landscaping. Install pervious and landscaped surfaces to reduce heat island effects and improve groundwater recharge. Installation may include the use of native, arid ecosystem plants as well as water-smart technologies, such as drip irrigation.
D-4. Educate on Water Conservation. Educate the public on and encourage water conservation behavior. For example, running education campaigns or having information available at a community center.
D-5. Outreach to Educate About Recycled Water Safety. Initiate public outreach to encourage acceptance of recycled potable water sources.
D-6. Build Alternatives Forms of Water Recreation. Work with owners of water recreation sites to begin installing alternative forms of recreation that are less dependent on water levels.
D-7. Diversify Water Supply Sources. Diversify water supply sources to have backup sources during drought when some water supplies (e.g., surface water) may be scarce to ensure all communities have access to water. For example, increase sourcing from groundwater or local recycled water.
D-8. Develop Groundwater Sustainability Plan. Work with local water utilities, agencies, and stakeholders to comply with or develop a groundwater sustainability plan.
D-9. Implement Local Water Recycling. Implement local water recycling, either decentralized at residential/commercial facilities, or centralized at larger community facilities.

B3 Attach #1 of 3

References

Bedsworth, L., D. Cayan, G. Franco, L. Fisher, S. Ziaja. (California Governor's Office of Planning and Research, Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission). 2018. Statewide Summary Report. *California's Fourth Climate Change Assessment*. Publication number: SUMCCCA4-2018-013.

CAL FIRE. 2019a. *More from Cal Fire*. Available: https://www.readyforwildfire.org/more/fire-safety-laws/. Accessed: May 2021.

CAL FIRE. 2019b. *Prepare for Wildfire*. Available: https://www.readyforwildfire.org/prepare-for-wildfire/get-ready/fire-resistant-landscaping/. Accessed: May 2021.

California Air Resources Board (CARB). No Date. *California Climate Investments Co-benefit Assessment Methodologies*. Available: https://ww2.arb.ca.gov/resources/documents/cci-methodologies. Accessed: May 2021.

California Department of Transportation (Caltrans). 2020. *2019 Climate Change Vulnerability Assessments*. Available: https://dot.ca.gov/programs/transportation-planning/2019-climate-change-vulnerability-assessments. Accessed: January 2021.

California Governor's Office of Planning and Research (OPR). No Date. *Topics: Plan Alignment*. Available: https://resilientca.org/topics/plan-alignment/?orgtypes=federal. Accessed: May 2021.

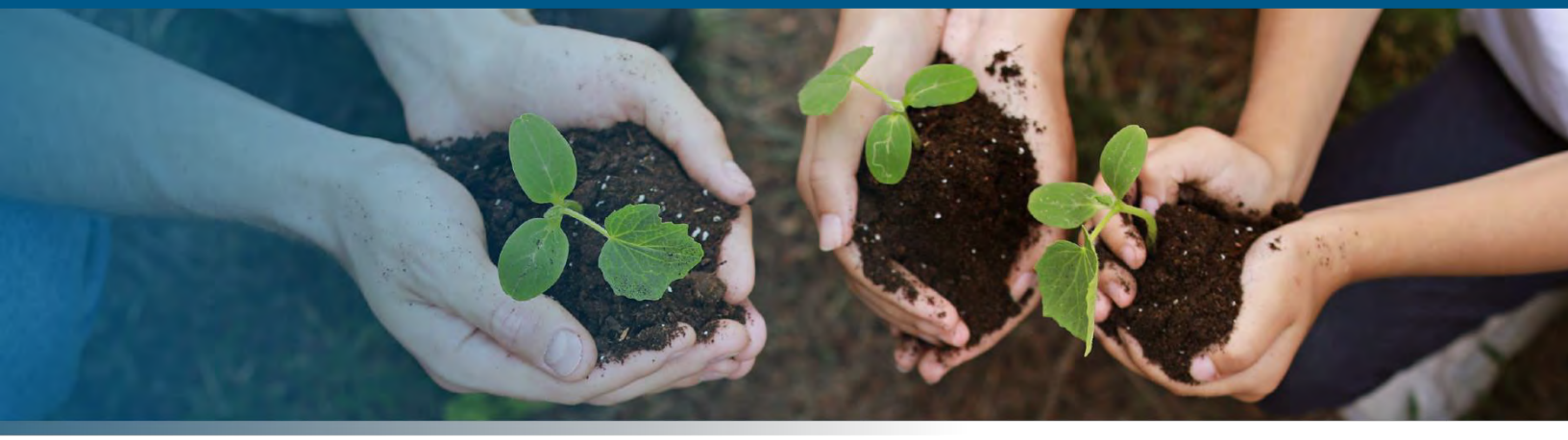
California Governor's Office of Emergency Services (Cal OES). 2020. California Adaptation Planning Guide. June. Available: https://www.caloes.ca.gov/HazardMitigationSite/Documents/CA-Adaptation-Planning-Guide-FINAL-June-2020-Accessible.pdf. Accessed: July 2021.

Deas, M., Grannis, J., Hoverter, S., & DeWeese, J. 2017. *Opportunities for Equitable Adaptation in Cities (Rep.)*. Washington DC: Georgetown Climate Center. Available: https://www.georgetownclimate.org/files/report/GCC-Opportunities_for_Equitable_Adaptation-Feb_2017.pdf. Accessed: January 2021.

Insurance Institute for Business & Home Safety (IBHS). No Date. *Wildfire Ready*. Available: https://disastersafety.org/wildfire/wildfire-ready/. Accessed: May 2021.

Measures for Advancing Health and Equity

CHAPTER 5



Introduction

California may be the world's fifth-largest economy, but there is a vast disparity in health, economic, and wellbeing outcomes across our state. We may have gleaming towns in the golden hills, but we also have communities in the shadows of refineries and oilfields, in agricultural valleys and arid deserts, facing high housing costs and low wages, drinking contaminated groundwater, and breathing air that is of some of the worst quality in the United States.

All this is not by chance. Such discrepancies are driven by land use planning decisions, which have in turn led to inequities in the social determinants of health—the characteristics of built environments, social networks, and economic opportunities that lead neighboring census tracts and communities to have vastly different life expectancies and health outcomes. Yet location only tells part of the story: Race and racism have had a profound influence on where people in the United States live, how they live, and how their communities are shaped and built.

The history of land use planning in California is inextricably rooted in exclusion and structural racism—starting with the centuries-long forced displacement of Native Californians and dispossession of Native lands. The first zoning ordinances were passed in the late nineteenth century in Modesto and San Francisco to restrict where Chinese residents

B3 Attach #1 of 3

could live and where laundries owned by Chinese residents could operate (Chou 2014; Fan 2015). The 1913 and 1920 Alien Land Laws of California banned Asian immigrants, especially those from Japan, as well as their U.S.-born children, from owning agricultural land in California. During the New Deal, federal agencies designated immigrant communities and communities of color, particularly Black communities, as hazardous for investment—redlined on a map—while predominantly white neighborhoods were greenlined. Armed with these maps, federal housing agencies refused to insure mortgages in redlined communities, while lenders denied mortgages to Black residents, leading to systemic, compounding divestment from communities of color. At the same time, racial zoning, racial covenants, and terror campaigns restricted housing choice and prohibited people of color from buying homes in desirable suburban communities. Redevelopment and freeway construction further targeted communities of color, whose mere presence was used as evidence of blight and lower property values. These neighborhoods were either placed next to, or targeted with, sources of pollution such that even today, people of color breathe dirtier air than their white counterparts (Lloyd 2021).

The consequences of redlining and other deliberately racist housing practices can still be felt today. Formerly redlined neighborhoods continue to be ravaged by predatory lending and housing insecurity, and 87 percent of San Francisco's formerly redlined neighborhoods remain low-income (Hernandez 2009). Home values and household incomes are nearly twice as high in predominantly white neighborhoods than in communities of color (Menendian, Gailes, and Gambhir 2021). Redlining has denied homeownership to generations of people of color—excluding them from one of the primary means of wealth accumulation in the U.S.—and denied lines of credit to businesses, barring communities of color from equitably sharing in the decades of twentieth-century prosperity. The cascading consequences are far-reaching, affecting every facet of life from the distribution of environmental pollution burdens and public goods and services to school and education funding and opportunity access.

This persistent and pervasive racism and discrimination is not only economically inequitable, but actively erodes the health and longevity of communities of color. The stress alone of experiencing lifelong racism and discrimination leads to worsened physical and mental health outcomes (Bichell 2017). Furthermore, communities of color and low-income, marginalized, and immigrant communities have been excluded from the many social determinants critical to supporting healthy, thriving, prosperous lives. To reverse the harms of decades of divestment, communities must have the power and capacity to access these resources.

Our planning systems have created and entrenched these unfair outcomes—and so it is not only necessary but also appropriate for our planning systems to provide restitution. This situation, built over hundreds of years and embedded in the laws, finance, economy, transportation, public health, education, governing processes, and buildings of California, can only be addressed in the same manner it was created: one decision at a time. Equity and health cannot be considered separately from land use planning and zoning, and land use decisions are never undertaken in a neutral vacuum but must co-exist in conversation with the aggressions of the past. Each budget, each project, each approval, each building,

B3 Attach #1 of 3

each job, each school, each tree, each road, each ordinance, each loan, each salary, must be designed and realized in a manner that is more inclusive, fair, and equitable.

Purpose

This chapter seeks to provide a non-exhaustive list of measures, examples, and resources to aid proponents, lead agencies, and communities to make the planning, approval, construction, and operation of projects more inclusive and the outcomes of these projects more equitable.

These measures seek to promote health equity, defined in state code as "efforts to ensure that all people have full and equal access to opportunities that enable them to lead healthy lives" (Health and Safety Code 131019.5).

These measures are also intended to support progress toward racial equity, or "when race can no longer be used to predict life outcomes and outcomes for all groups are improved" (GARE 2015). More specifically, achieving health and racial equity requires ensuring that all communities have full access to safe and affordable homes, education, good jobs, walkable neighborhoods, clean air and water, green spaces, healthy food, and mobility choices—as well as freedom from discrimination, and the capacity and empowerment to participate in and influence civic processes.

Finally, these measures are intended to support inclusion of and solidarity with marginalized, underrepresented, and vulnerable communities, including people of all race and ethnic groups; low-income people; people who are incarcerated and those who have been incarcerated; people who are unhoused; people who are undocumented; people with disabilities; people with mental health conditions; children; youth and young adults; seniors; immigrants and refugees; people who are limited-English proficient; women; gender-expansive people; and lesbian, gay, bisexual, transgender, queer/questioning, intersex, asexual, and other gender identities (LGBTQIA+) communities.

Statewide Goals and Policies

Through the various levers of government, the State of California seeks to elevate the centrality of health, equity, and environmental justice as a goal and priority. With the continued evolution of California Environmental Quality Act (CEQA) caselaw, health and equity are becoming recognized parts of the environmental review process. The courts have long held that "[P]ublic participation is an 'essential part of the CEQA process'" (Laurel Heights II (1993) 6 Cal.4th 1112 at 1123), and as such, it should be meaningful. Beyond outreach, the potential impacts of land use decisions that must be considered have increased to include "urban decay impacts" (Bakersfield Citizens for Local Control v. City of Bakersfield (2004) 124 Cal.App.4th 1184) and impacts on human health (Sierra Club v. County of Fresno (Friant Ranch, L.P.) (2018) 6 Cal.5th 502).

Beyond CEQA contexts, the legislature is recognizing the failures of current systems to address inequity. In 2012, Senate Bill (SB) 535 (de Léon) acknowledged the disproportionate burden of environmental pollution on California's disadvantaged

B3 Attach #1 of 3

communities, and accordingly required them to be prioritized for emissions reduction projects funded by cap-and-trade proceeds. This led to the State of California's development of CalEnviroScreen, a tool that identifies disadvantaged communities, defined as census tracts ranking in the top 25 percentile for environmental burdens and socioeconomic conditions. In 2016, the legislature expanded funding prioritization to include low-income communities with the passage of Assembly Bill (AB) 1550 (Gomez).

Also, in 2016, SB 1000 (Leyva) required local jurisdictions to identify communities that are disproportionately burdened by environmental justice issues within their boundaries, and address environmental justice in their general plans. This includes developing goals and policies to reduce pollution exposure, reduce unique or compounded health risks, promote safe and sanitary homes, and prioritize the needs of disadvantaged communities, among other focus areas. In addition, the Community Air Protection Program and other initiatives authorized by AB 617 (Garcia) aim to develop community-driven planning to reduce air pollution locally. Starting in 2018, air districts began working with community-led steering committees to implement air monitoring and emissions reduction projects in communities experiencing some of California's most severe air pollution impacts.

Looking forward, it is anticipated that the state will continue to prioritize environmental justice and health and racial equity in its environmental and climate programs. Project proponents and jurisdictions are encouraged to take the lead and embrace placing the healthy and equitable treatment of their residents front and center.

Using this Chapter

This chapter is divided into two parts: *process measures* focus on facilitating greater community participation and decision-making in the process of land use planning, and *outcome measures* focus on enhancing the project features and operational practices that advance equity-supportive outcomes.

Process measures are further grouped into three categories. We recommend starting with the community-centered development category for strategies to help the project align with community priorities and needs, ideally through a collaborative process working side by side with community-based organizations (CBOs). The inclusive engagement category is crucial to all phases of project development to ensure that outreach is inclusive, accessible, culturally competent and respects community experience and capacity. Finally, the accountability section is intended to provide community members with methods to hold project proponents accountable for their commitments.

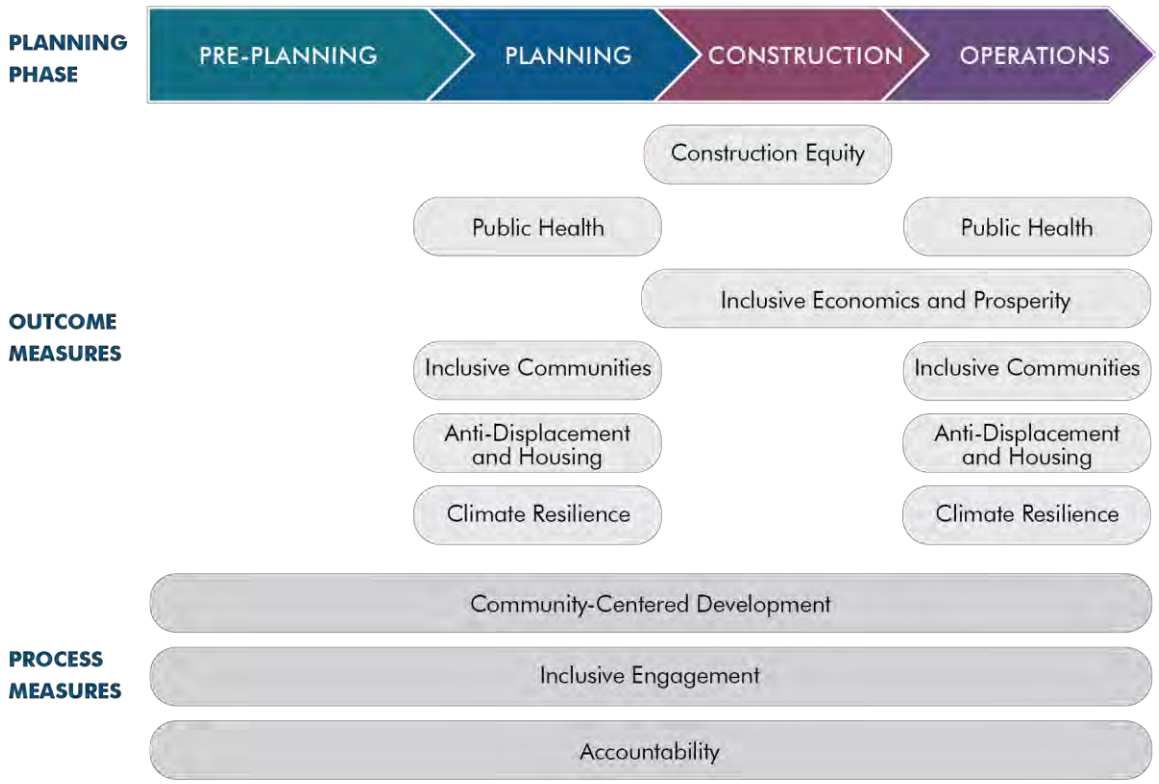
The outcome measures comprise six categories, each pertaining to a desired outcome area. Construction equity measures focus on reducing the air quality, traffic, noise, and other impacts of construction for the surrounding community. Public health and air quality

B3 Attach #1 of 3

measures aim to improve the health outcomes of project residents as well as nearby neighborhoods. The inclusive economics and prosperity measures aim to ensure that the economic benefits of new development are shared equitably, particularly for underserved and marginalized communities. The inclusive communities category seeks to ensure that projects are designed to be inclusive, accessible, and supportive for all people. The anti-displacement and housing measures aim to increase affordable housing and protect residents from displacement. Finally, the climate resilience category complements the larger set of climate adaptation measures in Chapter 4, *Assessing Climate Exposures and Measures to Reduce Vulnerabilities*, with three additional strategies to enhance resilience in vulnerable communities.

Critically, equity as a process remains essential to the outcome measures: all community members should be able to participate meaningfully in the development and decision-making around desired project outcomes and features. Thus, users should refer to the process section for guidance around community priorities, inclusive engagement, and accountability. Providing open, inclusive engagement throughout project development, for example, can support community members to give feedback at any phase. Figure 5-1 demonstrates how process measures should be considered throughout planning and illustrates how outcome measures can be integrated into specific planning phases.

Figure 5-1. Equity Measures by Planning Phase



B3 Attach #1 of 3

Measures involving outreach or engagement can be done voluntarily by the proponent or imposed as a requirement by the local jurisdiction as part of the outreach process. Measures involving design features, construction practices, or operational practices should be incorporated as a condition of approval, mitigation measure, or part of a developer agreement. In general, the project proponent will be responsible for undertaking most measures, with a select few implemented by lead agencies, local jurisdictions, or community groups and coalitions.

The nine measure categories are illustrated in Figure 5-2. Users may click on an individual measure to navigate directly to the description of that measure. Each measure description includes applicability guidelines, implementation considerations, a discussion of how the measure impacts various equity outcomes, case study examples, and resources. Each of the process measures also pose a key question to guide users in their thinking and to help determine if they are implementing the measure both in letter and spirit.

Figure 5-2. Navigation Tree for Equity Measures

Process Measures

COMMUNITY-CENTERED DEVELOPMENT

- CCD-1. Consult Pre-existing Community Knowledge/Priorities
- CCD-2. Conduct a Stakeholder Analysis and Develop a Community-Centered Outreach Plan
- CCD-3. Conduct a Community Needs Assessment
- CCD-4. Conduct Community Asset Mapping
- CCD-5. Establish a Community Benefits Agreement

INCLUSIVE ENGAGEMENT

- IE-1. Prioritize Outreach to Communities of Color and Underserved Groups
- IE-2. Establish or Join a Community Project Steering Committee
- IE-3. Elevate Voices of Underrepresented Groups in Project Direction and Outreach
- IE-4. Inclusive Community Meetings
- IE-5. Provide Education on Essential Topics Related to Project
- IE-6. Conduct an Equity Assessment with Community Project Steering Committee

ACCOUNTABILITY

- A-1. Use Participatory Budgeting
- A-2. Establish Incentive and Penalty Provisions for Community Priorities
- A-3. Evaluate Project Performance with Community Project Steering Committee/Community Based-Organizations
- A-4. Establish Clear Points of Contact
- A-5. Public Disclosure of Project Commitments

Outcome Measures

CONSTRUCTION EQUITY

- CE-1. Create a Construction Plan with Community Input
- CE-2. Ensure Active Modes Access During Construction
- CE-3. Post a Clear, Visible Enforcement and Complaint Sign
- CE-4. Portable Indoor Air Filtration for Nearby Residents During Construction
- CE-5. Air Quality Monitoring and Response Plan
- CE-6. Provide Funds to Businesses Impacted by Construction Activities

PUBLIC HEALTH AND AIR QUALITY

- PH-1. Establish Vegetative Barriers to Reduce Pollution Exposure
- PH-2. Increase Urban Tree Canopy and Green Spaces
- PH-3. Highly Rated Air Filtration
- PH-4. Create Healthful, Sustainable Indoor Spaces
- PH-5. Provide Equitable Food Access and Food Justice

INCLUSIVE ECONOMICS & PROSPERITY

- IEP-1. Local Labor and Apprenticeships (Construction)
- IEP-2. Local Labor and Apprenticeships (Operations)
- IEP-3. Contract with Diverse Suppliers
- IEP-4. Use of Locally/Regionally Manufactured Products and Materials
- IEP-5. Higher Wage and Working Condition Standards

INCLUSIVE COMMUNITIES

- IC-1. Invests in Local Arts and Culture to Affirm Community Identity
- IC-2. Adopt Design Standards
- IC-3. Promotes Accessibility
- IC-4. Enhanced Open and Green Spaces
- IC-5. Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets
- IC-6. Create Non-Standard Commercial or Retail Spaces
- IC-7. Equal Access to Building Amenities
- IC-8. Enhanced Access to Community Resources

ANTI-DISPLACEMENT AND HOUSING

- AH-1. Support Community Land Trusts
- AH-2. Promote Affordable Housing in Transit-Rich Areas
- AH-3. Protection for Existing Tenants of Redevelopment Projects
- AH-4. Incorporates Permanent Supportive Housing
- AH-5. Make Housing Units Permanently Affordable
- AH-6. Support the Formation of Collective Ownership Models. Limited-Equity Housing Cooperatives or Mutual Housing Associations
- AH-7. No Net Loss of Affordable Housing Units/One-For-One Affordable Housing Policies

CLIMATE RESILIENCE

- CR-1. Adapt and Re-use Vacant Lots for Green Infrastructure
- CR-2. Support the Development and Operations of Community Resilience Centers
- CR-3. Passive Survivability

B3 Attach #1 of 3

The measures presented in this chapter provide broad guidelines and best practices and should be tailored to the needs and characteristics of individual communities. Project proponents should respect community experts, build upon existing work done in the community, and provide compensation to CBOs in return for their knowledge, networks, and labor.

Development of this chapter relied greatly upon the City University of New York's *Equitable Development Guidelines,* and the guidance and feedback from TAC members.

While the challenge of dismantling structural racism cannot be tackled by one project alone, it is hoped that these measures help to provide support and momentum toward building more equitable communities.

Process Measures

While California provides various ways for the public to engage and participate in the land use development process, these channels and the systems by which local government operates are often exclusionary of underresourced, historically marginalized, and underrepresented communities. As a result, their perspectives are frequently overlooked from decision-making, risking furthering structural inequities and the concentrations of locally unwanted uses, gentrification, displacement, and the erosion of community.

This section provides strategies and best practices to help re-imagine the role of community members in land use development. The aim is to transition to a community-centered process in which the community determines their needs and priorities and is empowered to work closely with lead agencies and project proponents to achieve these goals. These measures encourage the meaningful involvement and participation of CBOs and other community stakeholders from the outset of the development process, continuing through project completion to ensure accountability. The outcome will be a project that prioritizes community desires and needs, uplifts the perspectives of underserved and marginalized residents, and helps to support healthier, more equitable communities.

While many of these measures emphasize involving the community in the design, mitigation, and approval process, users of this guide are encouraged to *build community capacity* and *acknowledge structural inequities*. Wealthier communities have greater capacity and access to act on their interests, while historically marginalized communities lack similar resources, a reality overlooked by one-size-fits-all outreach processes. Indeed, vulnerable communities must often labor *more* on their own behalf to advocate for the rights and amenities that are provided to wealthier communities as a matter of course. Regardless, all communities should have the opportunity for meaningful engagement and participation that respects their time and circumstances. An equitable engagement process asks the project proponent or lead agency to provide additional resources, assistance, and opportunities in some communities, so *all* residents can participate meaningfully.

Engagement is not counted in hours spent in meetings, but how the project changes and reacts in dialogue with the needs and priorities of the community. For engagement to be

meaningful, the community must be able to effect change and shape outcomes and processes, not merely provide feedback to be filed away.

Although this process may be more labor-intensive at the outset, in the long term it can lead to a project that is supported by the community both in the development phase and in its operational lifetime. Equity is not a barrier in project development, nor a box to be checked, but rather an opportunity and a continuous practice to build a more inclusive, prosperous community. The process measures that follow focus on centering around community needs, inclusive engagement, and accountability.

Community-Centered Development (CCD)

This section focuses on measures designed to promote community-driven planning and highlight community priorities, with the aim of ensuring that issue and priority identification starts from the community. True equity arises from a community-centered, collaborative approach to identify and understand community concerns and priorities and create solutions together. Measures here represent crucial first steps foundational to achieving these goals and should be incorporated prior to the initial planning phase of project development.

Photo Credit: City of West Hollywood / Jon Viscott, February 2020

These measures recommend consulting existing priority identification efforts before developing new efforts. It is important for project proponents to be mindful of community engagement fatigue, as some underserved and underrepresented communities have been part of numerous neighborhood studies and community engagement projects – without ever seeing resulting change. To avoid placing excess burden on communities, proponents should first consult existing studies and plans and align the project proposal with their recommendations and identified goals. However, only consulting prior studies and plans is not sufficient to understanding community concerns; in every process the community must have the opportunity to express their concerns directly to those responsible for planning.

Thus, other measures in this section offer practices when pre-existing knowledge may be sparse or not accepted by existing community members. These measures call for project proponents to thoroughly research community priorities and consult with local CBOs' knowledge and expertise. Finally, the last measure calls for project proponents to formalize identified community priorities into a community benefits agreement.

B3 Attach #1 of 3

CCD-1. Consult Pre-Existing Community Knowledge/Priorities

As a first step, before embarking on more extensive community outreach, the project should consult existing neighborhood and community plans or studies, such as community needs assessments, community asset mapping, and neighborhood plans. By recognizing and understanding the work that has already been done, project proponents have a greater opportunity to address community concerns and needs that have already been identified. Proponents also demonstrate respect for the existing wisdom and lived experiences of the community. Additionally, consulting existing knowledge helps avoid engagement fatigue for already-burdened communities. If existing knowledge is outdated, not accessible, or not aligned with community priorities, conduct a community needs assessment to identify specific community needs.

Key Question: Is the project in alignment with existing plans accepted by the community?

Applicability

Applicable to all projects. Projects in greenfields or smaller jurisdictions may need to rely on general, regional, or state planning efforts.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning

Dimensions of Equity

Because a given community's priorities can range widely, this measure has the potential to impact all dimensions of equity, depending on project context.

Implementation Considerations

Project proponents should prioritize community-led and community-generated plans and documents. Examples of these can range from a local school class project on proposals for a nearby vacant lot, a business improvement district visioning their main corridor, a community health needs assessment, or a full economic development and housing plan drafted by a CBO.

Government plans originate at different levels of government: California has 58 counties, 482 cities, and 3,300 special districts, including air, water, transit, and park districts. Additionally, councils of governments, joint powers authorities, metropolitan planning organizations and regional transportation planning agencies will often have controlling plans with various levels of community outreach and acceptance. These plans may be in conflict, offering differing perspectives on the locations of future bus corridors, bike lanes, housing densities, or development intensities. Areas of disagreement should be explored

B3 Attach #1 of 3

with the community to better understand priorities. In addition, plan priorities should be ground-truthed with community members.

When consulting these plans, be mindful of who led their development, whose perspectives are included, and whose are missing. Some communities, including those historically marginalized, may be underrepresented in existing documents and resources. Evaluate the methodologies of these documents to determine their degree of representativeness. For example, a specific plan may have held two to three public meetings, while a community-led effort may have attended multiple events and meetings held by hard-to-reach communities. If the perspectives of vulnerable populations are absent or excluded, conduct additional outreach to ensure their insights are incorporated into the project.

As the project progresses into later phases, the proponent should hold open communications with community members to evaluate the project's continued alignment with identified community priorities.

Example

Focused around a 5-square-mile area encompassing Chinatown, southwest Fresno, and parts of downtown Fresno, the Transform Fresno project is comprised of 22 projects that tackle affordable housing, energy efficiency upgrades, solar panel installation, tree planting, bike lanes and trails, urban gardening and farming, parks, and clean transportation. In its community engagement plan, Transform Fresno examined its local community's history with community engagement and other project plans. Specifically, Transform Fresno highlighted the *City of Fresno General Plan*, *Southwest Fresno Specific Plan*, *Downtown Neighborhoods Community Plan*, and *Fulton Corridor Specific Plan*. Additionally, local CBOs involved with these plans were recognized in the community engagement plan. This information was used to leverage existing relationships within the community and help guide the community engagement plan (Raimi + Associates 2019).

Related Measures

- CCD-3. Conduct a Community Needs Assessment
- CCD-4. Conduct a Community Asset Mapping

CCD-2. Conduct a Stakeholder Analysis and Develop a Community-Centered Outreach Plan

Based on the evaluation of existing plans, the project proponent may identify engagement gaps and accordingly must conduct a stakeholder analysis to fully understand the project's potential impact on residents and ensure that no stakeholders have been left out. A stakeholder analysis strives to identify stakeholders, recognize the degree of influence of different groups, and prioritize those who have been historically overlooked and excluded when it comes to land use planning and local development. A stakeholder analysis can uncover why community members are interested in a project and potential obstacles to a project's success according to community knowledge. A project proponent may also wish

B3 Attach #1 of 3

to conduct the stakeholder analysis prior to conducting a community needs assessment or asset mapping to ensure that it engages fully with residents traditionally left out of planning decisions.

It is advised that project proponents contract with CBOs on a stakeholder analysis to recognize the value of local knowledge and expertise, and work with a partner that community members trust and recognize. In addition, working with multiple CBOs may offer the most complete analysis, as different organizations serve different demographics.

Once stakeholders have been identified, the project proponent should undertake tailored outreach efforts to underrepresented groups to uplift their voices and invite them to participate in the development process. Project proponents should invite and compensate CBOs and community leaders to develop a community outreach plan together. This approach increases the inclusivity of outreach efforts by leveraging existing CBO networks. An inclusive outreach effort can increase the representation and participation of underrepresented community members in decision-making spaces, which is critical to achieving a more community-focused development process. Furthermore, tapping into community knowledge can elevate important outreach considerations otherwise overlooked. The project proponent should be mindful of outreach fatigue and consider best strategies to facilitate community participation and reduce barriers; see the *Inclusive Engagement* section for outreach strategies.

A community-focused outreach plan includes the following key components.

- Scheduled public involvement timeframes:
  - Outreach events, meetings, and other methods of community engagement.
- Identified stakeholders (from stakeholder analysis plan), underrepresented communities, and other audiences to include.
- Defined goals, outcomes, and performance metrics.
- Identified opportunities for public involvement that are accessible and convenient.
- Timeframe for reporting project progress and data on agreed-upon equity and project performance metrics.

Key Questions: Who is affected by the project? Which groups are not represented in the project development process? What outreach activities can help to support and encourage underrepresented communities to participate?

Applicability

Applicable to all projects.

B3 Attach #1 of 3

Scale and Timing

- Scale: Project/Site or Neighborhood/City
- Timing: Planning

Dimensions of Equity

By increasing stakeholder representation and prioritizing vulnerable stakeholders and their concerns, a project can help improve the translation between community concerns and project development. An outreach strategy developed in collaboration with CBOs and community leaders can enhance community member representation, capture feedback, and elevate residents' voices. These critical elements help promote *racial equity* in outreach efforts and enhance community *self-determination* during project development.

Implementation Considerations

- Many stakeholders have few advocates and may be easily left out of community decision-making processes. Thus, it is highly important to work with trusted CBOs that serve underrepresented and marginalized communities.
- Compensate CBOs for their time and expertise, just as one would with consultants.
- There are a variety of approaches to conducting a stakeholder analysis, and CBOs may have their own preferred methodology.
- The outreach strategy must incorporate a variety of different formats to reach a diverse range of residents. Specify roles and responsibilities for each member involved with the outreach strategy. Schedule engagement activities throughout the project's development and implementation to ensure adequate public involvement when resolving issues that might arise during any point in project development.
- Community outreach does not end with the planning phase and is essential across all stages of the project. Consider revisiting the outreach plan at regular intervals to ensure that community input is consulted throughout the project development process.

Example

The Transform Fresno initiative outlined goals to include the full spectrum of stakeholders to be informed, engaged, and take project development-related leadership and guidance roles. Transform Fresno emphasized community-led transformation and listened to residents to identify key barriers to participation for hard-to-reach communities. Community members were given the opportunity to provide suggestions on how to overcome such barriers and to facilitate broad community participation.

In collaboration with community members, Transform Fresno identified several underrepresented target groups: the Latinx, Black, and Asian populations; young children; older people; people with low educational attainment; people living in poverty; people with limited English proficiency; and workers commuting to the project area. Next, Transform Fresno identified barriers to participation associated with each group, such as limited mobility, concerns over deportation, and historical lack of trust in government.

B3 Attach #1 of 3

Engagement activities and strategies to mitigate these barriers were highlighted including hosting/attending an arts and culture event, translation services, door-to-door canvassing, and providing introductory education on issues. Finally, to ensure full opportunity for engagement, Transform Fresno identified additional community partners with established ties to underrepresented groups such as Fresno Barrios Unidos, Tenants Together, senior centers, and local businesses.

In creating its outreach strategy, Transform Fresno actively leveraged CBO relationships while creating space for the inclusion of new community partners. The initiative recognized numerous local civic organizations and advocacy groups such as Fresno Building Healthy Communities, West Fresno Family Resource Center, and Centro la Familia. The City of Fresno used this strong civic infrastructure to guide its proposal for the Transformative Climate Communities Implementation Grant and to create a Community Engagement Collaborative. Anyone who lived, worked, or owned property in the project area was encouraged to participate. Community partners were tapped to engage community members in ways to help connect projects to people.

For its outreach strategy, Transform Fresno clearly identified roles of each party involved and paired them with outreach methods and tangible deliverables. For instance, the outreach strategy calls for the Direct Outreach Community Partner to print materials for distribution, maintain a volunteer interest database, maintain an online community engagement calendar, and administer surveys (Raimi + Associates 2019).

Related Measures

- CCD-3. Conduct a Community Needs Assessment
- CCD-4. Conduct a Community Asset Mapping

CCD-3. Conduct a Community Needs Assessment

Photo Credit: City of West Hollywood / Jon Viscott, December 2017

If existing knowledge on community priorities is outdated, lacks detail, or does not represent the perspectives of marginalized groups, the project proponent should contract with CBOs or other partners to conduct a community needs assessment. A needs assessment asks community members what they see as the most important needs for their group or community. Community needs can vary endlessly, from providing childcare to improving local infrastructure; therefore, needs assessments uncover the key priorities for a local community. Furthermore, needs assessments help engage stakeholders before project development begins.

B3 Attach #1 of 3

Ideally, the needs assessment should be led by a CBO, other community group, property business improvement district, or local jurisdiction. The format of a community needs assessment can take a variety of shapes including surveys, conversations, workshops, charettes, crowdsourced mapping, and focus groups. While the needs assessment is likely to be far broader than the scope of individual projects, the needs surfaced and opportunities identified can help to inform and address project design, as well as the conditions of approval from the lead agency.

Additionally, it is crucial to analyze the benefits and burdens changes and investments have on vulnerable populations. Here, a project proponent analyzes a community needs assessment to explore how a project addresses a community's communicated priorities, who and what is impacted by project development, and how to mitigate negative effects and align a project more closely with community priorities.

Key Question: How can the project be designed to help address community needs and priorities?

Applicability

Community and neighborhood planning efforts, as well as very large development projects in areas where this work has not been done.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning

Dimensions of Equity

Successful community needs assessments allow communities to communicate their individual priorities and then see development projects address them. This process helps promote a community's capacity for *self-determination* and can enhance *racial equity*.

Implementation Considerations

- Timing: Allow enough time to collect responses early during the project planning process.
- A local agency, CBO, or other local group should lead the needs assessment, but the project proponent should provide funding or compensation to support the effort.
- A good needs assessment must represent the perspectives and voices of all community members, including those of historically marginalized communities, communities of color, hard-to-reach groups, immigrants, undocumented residents, seniors, and youth. Consider who may be overlooked by online surveys or other outreach methodologies, as well as languages, internet literacy, typical work schedules, outreach fatigue, and other potential barriers to participation. Best practices include meeting community

B3 Attach #1 of 3

members where they are, attending meetings of existing neighborhood organizations, and conducting pop-ups at existing community events, gatherings, and festivals.

- Compensate community members for their time, expertise, and local knowledge. Compensation can also help to support broad and more diverse participation.
- Demonstrate clearly to the local community how the feedback provided is being used to inform the project design.
- Make the community needs assessment publicly available.

Example

The San Diego County Community Action Partnership's 2016 community needs assessment demonstrates key components of a comprehensive community needs assessment: detailed community demographic data, robust community engagement, and actionable next steps rooted in community input. In gathering demographic information, the Community Action Partnership (a public agency within San Diego County's Health and Human Services Agency) examined age, gender, race/ethnicity, primary language spoken, residents in labor force and their occupations, and poverty thresholds. Other additional demographic information projects should consider include families with young children, members of the LGBTQIA+ community, and undocumented residents.

Community Action Partnership contracted with Community Health Improvement Partners, a local non-profit, to seek community input on priorities for services. Six local CBOs also participated as subcontractors to help enhance outreach to low-income communities. This demonstrates the good practice of partnering directly with CBOs and paying them for their time, services, community knowledge, relationships, and expertise. Community forums (with live polling features) were held in communities with high concentrations of poverty to amplify their concerns. Surveys (paper and digital) were used to identify and rank community priorities countywide. Outreach materials and content were translated and interpreted as needed into Spanish, Arabic, and Vietnamese.

The results of the needs assessment informed the *2018–2019 County of San Diego Community Action Plan*, which helps to direct the use of Community Service Block Grants as well as other funding, including applying for additional funds to enhance services for low-income communities. (San Diego County Health and Human Services Agency 2017).

Related Measures

- CCD-1. Consult Pre-existing Community Knowledge/Priorities
- CCD-4. Conduct Community Asset Mapping

CCD-4. Conduct Community Asset Mapping

Community asset mapping identifies the people, places, institutions, and services in a community that aim to improve residents' quality of life. Examples of community assets include local gardens, schools, CBOs, hospitals, and parks. They can also include cultural assets such as arts groups, public art, and places of traditional, heritage, or historical value. The format of a community asset map can vary from an actual map that locates

B3 Attach #1 of 3

physical assets to a database that organizes a neighborhood's social, economic, and institutional assets. Creating a community asset map not only builds local capacity and knowledge base but also reveals gaps and areas where a project proponent might be able to enhance levels of service or meet missing needs through their project.

Key Question: What are the existing assets, resources, and strengths in this community, and what gaps and opportunities remain to be filled?

Applicability

Community and neighborhood planning efforts, as well as projects costing $250 million or more in areas where this work has not been done.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning

Dimensions of Equity

Identifying and collating community assets helps build a community's *social resilience* by revealing neighborhood resources. Furthermore, publicly available community asset mappings can help promote *community ownership*. They can also help to identify valued assets and resources to be protected from climate change and other hazards.

Implementation Considerations

- Gather feedback from a large sample of residents to capture as many assets as community members can identify. A large sample is also important as people will have different perspectives on what they view as contributing positively to their community.
- Consider the frequency at which assets are identified by community members.
- Make the community asset map publicly available so this knowledge can be dispersed across the community and used by future projects.

Example

California early childhood services and advocacy organization First 5 LA initiated the Best Start effort to develop community-based solutions to ensure neighborhoods are safe, healthy, and happy places for children. As part of its community assessment report, the organization conducted asset mapping to engage community members in identifying existing resources and to help clarify focus areas for new efforts.

During the community asset mapping sessions, residents and service providers engaged in facilitated conversations about the resources, supports, strengths, and concerns in their

community. Participants used color-coded stickers to identify resources on large, printed maps, and were also encouraged to include additional information from their perspectives. All maps were then compiled into a single community asset map that identified fresh food outlets, hospitals, clinics, public schools, places of learning, children's play areas and public transportation. The community also identified unsafe places, sources of pride, and opportunities for change. Key findings from the East LA Best Start Community Asset Map revealed that the area has numerous public hospitals, clinics, and parks, but the community also identified areas for improvement for these assets.

Resources

- Alabama Youth Justice Alliance and the Southern Poverty Law Center: *Unlocking Your Community's Hidden Strengths*.
- *Participatory Asset Mapping—A Community Research Lab Toolkit*.

Related Measures

- CCD-1. Consult Pre-existing Community Knowledge/Priorities

CCD-5. Establish a Community Benefits Agreement

Community benefits agreements (CBAs) are project-specific, legally enforceable contracts between project proponents and the community that explicitly describe the benefits a project agrees to fund or implement in the community. CBAs help ensure residents, particularly those in low-income areas, receive the economic and other benefits from development projects. These contracts help amplify community priorities and outline direct, specific actions for a project proponent to contribute improvements to the local community. CBAs can be particularly important in areas where a new project may increase the risk of gentrification. Sometimes, but not always, community members may support the project in exchange for a CBA, while other projects clearly note that participation in the CBA does not imply community support.

Key Question: What steps can the project take to mitigate potential negative effects on the nearby community, and how can it ensure its benefits flow equitably to underrepresented or marginalized community members?

Negotiating CBAs

Importantly, CBAs are negotiated before a development project goes to the jurisdiction for approval. Typically, a CBA is then integrated into the development agreement signed by the project proponent and the jurisdiction—allowing the CBA to be enforced by local officials and community groups.

B3 Attach #1 of 3

CBAs are typically negotiated between a project proponent (i.e., a developer) and a coalition representing a range of community members. It is essential that community groups are authentically representative of the local community to establish the legitimacy of the CBA. CBA negotiations should be transparent and open to as many community groups as possible. All proceedings and agreements should be made publicly available. Following these strategies can help ensure that the project proponent is not intentionally selecting groups with which to negotiate.

When drafting benefits and commitments for a CBA, be sure to address the following questions (Gross, LeRoy, and Janis-Aparicio 2005):

- What is the time frame for the commitment to be fulfilled?
- How will performance be measured?
- Who will monitor performance?
- How and when will information on performance be made available?
- What will happen if the commitment is not fulfilled?

Enforcement

Establishing strong enforcement mechanisms in a Community Benefits Agreement is an essential step for accountability. Effective enforcement measures must lead to real consequences, should a project proponent fail to meet expectations. While each CBA may differ in its enforcement approach depending on project context and location, examples of effective enforcement measures include the following (Santacroce and Weber 2007):

- *Rescission*: Canceling a contract or incentive agreement if terms are not met; Terminates the incentive agreement in the event of non-performance.
  - Important consideration: Note that if rescission is the only remedy in the CBA, the project can breach the agreement mid-term and leave the public with little value.
- *Clawback*: Recovery of all or part of costs if specified goals are not met.
- *Recalibration*: Adjustment of terms to reflect changing conditions; allows agreement to be flexible and not completely terminated if certain aspects change.
- *Liquidated Damages/Monetary Damages*: Additional charges for non-performance; may be proportional to the project proponent's failure.
- *Revocation* of land transfers or land sales.
- *Injunctive Relief:* Court order requiring an entity to do or to refrain from doing a specified act; allows parties to turn to courts to enforce CBA deliverables.
- *Debarment and suspension:* Prohibits the non-compliant company from receiving incentives in the future and/or conducting business with the public agency in the event of a breach; typically in state statute.

B3 Attach #1 of 3

Applicability

This measure is recommended for projects costing at least $250 million, particularly those proposed in census tracts where median household income is below the California Department of Housing and Community Development's 80 percent of area median household income definitions; considered as disadvantaged according to CalEnviroScreen; ranked in the lowest 25th percentile of the Healthy Places Index; designated as a federal opportunity zone; or another metric of income and advantage as determined by the local jurisdiction.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning

Dimensions of Equity

The benefits derived from CBAs can vary across different projects and communities. CBAs have been used to promote workforce development, affordable housing, and green space for underserved communities. Due to their roots in the needs of individual communities, CBAs serve as potent tools to promote *community ownership* and *self-determination*.

Implementation Considerations

Successful CBAs in the long-term require a large, diverse, and organized coalition of groups with strong ties to communities to ensure communities' interests are well-represented. The coalition must stay involved and hold project proponents accountable beyond implementation.

It is essential that CBAs have transparent timeframes for deliverables and include a set of enforcement mechanisms to ensure accountability. A strong CBA has a transparent, inclusive, and accessible process throughout its creation.

Clearly define expectations, roles, and responsibilities for each party included in a CBA. Only assign provisions to organizations that are experienced in the subject matter and have the capacity to meet responsibilities.

Private agreements between community coalitions and a private project developer are free from legal constraints that typically apply to government conditions on development projects. To become enforceable by local officials, CBAs can be incorporated into a development agreement signed between the proponent and local government.

The CBA should establish project progress monitoring systems and clear processes of how to address negative impacts produced by project development.

Other best practices include the following (Gross, LeRoy, and Janis-Aparicio 2005).

- CBA clearly states when a provision kicks in.
- CBA identifies parties and the specific obligations of each.

B3 Attach #1 of 3

- CBA outlines a clear timeframe for commitment fulfillment.
- Strong monitoring, oversight, and reporting processes are key elements to of robust enforcement mechanisms.
  - Establish affirmative reporting requirements.
  - Ensure monitoring body has the authority and capacity to investigate complaints of noncompliance through strategies such as records inspection.
  - Required reports should be published at least once per year with a specified due date and be made publicly available.
- Make enforcement mechanisms applicable to third parties and successors of each party to ensure long-term accountability.
  - Contract chains: To ensure obligations transfer to subsequent parties, set up systems that provide enforcement throughout project development and operational phases.
    - » Each business is informed of and agrees to the applicable substantive requirements.
    - » Each business agrees that it will include these requirements in other contracts it enters.
    - » Each business agrees that the community groups, the local government, or affected individuals can enforce the requirements.
- Incorporate the CBA into a development agreement to authorize local government monitoring or enforcement.
- In the event of a CBA breach, specify which other clauses will remain in effect after the contract violation.
- Set up a remedy system to provide opportunities for mediation in the event of a breach.

Examples

2001 Los Angeles Staples CBA

The Figueroa Corridor Coalition for Economic Justice—a broad coalition of over 30 community-based groups, including Strategic Actions for a Just Economy (SAJE), Los Angeles Alliance for a New Economy, and Coalition L.A, as well as hundreds of individuals—successfully negotiated a strong CBA with the $4.2 billion mixed-use Los Angeles Sports and Entertainment District development. The benefits include the following (Partnership for Working Families 2015a):

- Funding to assess community park & recreation needs, and $1 million for park and recreational facilities to meet those needs.
- 70 percent of jobs created in the project will pay the City of Los Angeles's living wage, and consultation with the coalition on selection of tenants.
- Job training and a local hiring program for low-income individuals and those displaced by the project.
- Affordable housing increased to 20 percent of new housing, and a commitment of seed money for other affordable housing projects.
- Standards for responsible contracting and leasing decisions.

B3 Attach #1 of 3

A coalition member (SAJE) is responsible for monitoring and tracking compliance. Outcomes have been successful: the developer has met most benefits and exceeded some, such as continuing the local hiring policy beyond the first 5 years. Because the CBA was approved by the City and entered into the development agreement, it is enforceable by both the City of Los Angeles and community groups.

Building on its successes and movement-building, the Figueroa Corridor Coalition has since evolved into United Neighbors in Defense Against Displacement (UNIDAD) and negotiated many other CBAs to ensure that development is equitable and inclusive, and that local communities will directly benefit (Pastor et al. 2015).

Kingsbridge Armory/National Ice Center CBA, New York

In April 2013, the Knightsbridge Armory Redevelopment Alliance (KARA), a coalition of 25 different local community groups, entered a CBA regarding the redevelopment of the Kingsbridge Armory into a National Ice Center in the Northwest Bronx. The developer, KNIC Partners, agreed to the following outlined in the CBA:

- Contributions to the community:
  - $8 million toward building approximately 52,000 square feet of community space used in any way to which KARA agrees.
  - $1 million per year for in-kind access to ice center facilities, including discounted rates for school children who receive free school lunch.
  - 1 percent of annual gross ice-rink rental revenue up to $25 million, plus 2 percent of any revenue above $25 million for community issues.
- Local hiring, training, and prevailing wages:
  - At least 51 percent of jobs designated for Bronx residents.
  - At least 25 percent of construction employees must be residents who were formerly incarcerated or are currently unemployed or underemployed.
  - Living wages indexed to inflation.
- Local procurement: Majority of all needed goods and services for the development and operation of the ice center would be sourced from local businesses and minority- and women-owned businesses in the Bronx.
- Environmental practices:
  - Developers pledged to attain a Leadership in Energy & Environmental Design (LEED) certification of silver or higher for the project.
  - Developers pledged to incentivize public transportation use, mitigate pollution, and ensure healthy indoor air quality.
  - Developers pledged to provide green space for 20 percent of the whole project site.
  - Developers pledged to provide $10,000 per year to train residents in skills required for work with alternative-energy-generation systems.
- New school construction: If the developer decides to develop an adjoining property, the developer agreed to apply for approval to develop a surrounding area for a school.
- Community involvement: Established a Community Advisory Council as a legal oversight body.

B3 Attach #1 of 3

Crucial to the support of this CBA is the high degree of community representation provided by the 25 different local community organizations that helped draft the agreement (De Barbieri 2017; Partnership for Working Families 2015b).

Oakland Army Base: West Gateway Operations Jobs Policy

In 2012, as part of the Oakland Army Base Project, a comprehensive set of jobs policies were developed and agreed upon by project developers, City of Oakland staff, City Councilmembers, and a broad community coalition, Revive Oakland!. These jobs policies were included as terms of the Lease Disposition and Development Agreement made between Oakland and the project developers (Partnership for Working Families 2015c).

To help enforce its resident and disadvantaged worker hiring measures, the Oakland Army Base West Gateway Operations Job Policy outlines clear consequences for the failure of an employer to meet associated requirements. If a large employer fails to comply with the hiring requirements, the employer will pay the City liquidated damages in the amount of $5,000 per job short of the set hiring targets. The Operations Job Policy also details how these damages are to be spent by the City: to support training, referral, monitoring, or technical assistance to advance resident and disadvantaged worker hiring policies (City of Oakland 2012).

Resources

The Partnership for Working Families' *Community Benefits Agreements—A Framework for Success* provides an online step-by-step guide to building a community benefits agreement.

Related Measures

- CCD-3. Conduct a Community Needs Assessment

Inclusive Engagement (IE)

Photo Credit: Port of San Francisco, September 2017

As the previous section touched on the topic of making use of existing community knowledge and priorities, this section seeks to build upon such findings and ensure local communities are heard, represented, and given opportunities to make decisions. Throughout the planning, construction, and operations phases, project proponents should seek to incorporate opportunities for community-led decision making as thoroughly as possible. These steps not only help legitimize the project with community members but can also yield valuable information crucial to a project's long-term success.

B3 Attach #1 of 3

Figure 5-3 presents the spectrum of public engagement, which provides a framework for evaluating the degree of community participation, leadership, and empowerment in a public engagement process. Figure 5-3 was adapted from Equity Matters (2015). The spectrum of public engagement was developed originally by the International Association of Public Participation (IAP2) and has since been refined and adapted by advocacy groups, such as the Facilitating Power & Movement Strategy Center.

Figure 5-3. IAP2 Spectrum of Public Engagement

	INFORM	CONSULT	DIALOGUE	COLLABORATE	DIRECT
DESCRIPTION	Project proponent or local jurisdiction initiates outreach and uses a variety of channels to inform community on project development.	Project proponent or local jurisdiction gathers information from the community to inform projects; obtains community feedback on analysis, alternatives, and /or decisions.	Project proponent or jurisdiction engages community to shape priorities and plans; directly works with community throughout process to understand and consider community issues and concerns.	Community and project proponent or jurisdiction share in decision-making authority to co-create solutions together. Partner with community in each aspect of planning, including initial development of alternatives and preferred solution.	Community takes leading role in decision-making and determining strategy with participation and technical assistance from project proponent or lead agency. The community or public has final decision-making.
EXAMPLE	Proponent-led presentations, factsheets, and flyers.	Proponent-led interviews, public meetings, surveys, and focus groups.	Proponent- or agency-led interactive workshops and forums.	Ongoing interactions between community and project proponent in a proponent-led format. Establishing a community advisory/steering committee. Consensus-building efforts, participatory decision-making.	Ongoing interactions between community and project proponent in a community-led format, with support from project or lead agency. Participatory budgeting. Decision-making powers delegated to community advisory/steering committee.

Many interactions between government agencies or project proponents and the community or the public remain at the *informed* or *consulted* level. These interactions can be more one-sided and passive, with community testimony unable to affect real change in project design or policy, and there is often a lack of follow-up with the community to share how their input has been used. Consequently, communities may feel wearied by a constant stream of requests for input with few tangible improvements.

This section offers strategies to help move community engagement from *informed* to *collaborate* or *direct,* and to ensure that community members from diverse backgrounds have ample opportunity to communicate their priorities and concerns and participate in planning and decision-making activities. Government agencies and proponents should actively listen, learn, acknowledge past shortcomings, and make space for community perspectives in plans and documents. Increasing direct participation from community members can help to build equity, community ownership, and local capacity, providing

communities with greater determination over how their environments are designed, built, and developed.

IE-1. Prioritize Outreach to Communities of Color and Underserved Groups

Photo Credit: Capital Region Climate Readiness Collaborative, April 2018

This measure looks at specific strategies to incorporate when attempting to reach underserved groups. Make direct, targeted efforts to reach communities of color and underresourced groups to increase their opportunities for participation/engagement. Consult with community leaders and a variety of CBOs with relationships in the community to determine effective outreach approaches.

Engagement strategies should be diverse and include multiple modes of communication, such as online posts, social media content, posters and flyers, and advertisements in multiple languages across different radio stations, television stations, and newsletters and magazines that are popular amongst target groups. Engagement strategies can also include attending meetings and events hosted by CBOs, other local organizations, and neighborhood associations. Pop-up events across different neighborhoods can also be effective in reaching underrepresented groups.

When engaging with the public, proponents should be mindful of differing levels of subject matter expertise. Proponents should be prepared to provide community members education and background materials on subject matter to facilitate greater understanding and confidence. Proponents should also be prepared to direct community members to resources for additional support. These strategies are far from all-inclusive, and project proponents and community members are encouraged to incorporate strategies based on what works best for their specific communities.

Key Question: How can the project proponent make sure that low-income, underserved, and marginalized communities and communities of color are not excluded from the project development processes?

Applicability

Applicable to all projects.

B3 Attach #1 of 3

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning, construction, operations

Dimensions of Equity

Explicit efforts to reach communities of color and frontline groups not typically represented in decision-making structures is an important step in the process of inclusive outreach. Inclusive outreach can lead to a greater *racial justice and equity, community ownership,* and *self-determination* by reducing inequities in representation and decision-making authority.

Implementation Considerations

- Partner with community leaders and/or a CBO. Leverage their networks and relationships to reach groups.
- Outreach is not a one-off, check-the-box exercise, but should be conducted across all phases of project development to increase community input, feedback, and participation.
- Go *to* the community, instead of expecting them to attend another meeting whose importance may not be clear: Ask to get on the agenda of existing community and other local meetings and go to community events.
- Create a welcoming atmosphere and honor the community's history and lived experiences.
- Genuinely listen to community concerns. Be aware that community members may raise a range of issues with the project proponent or local agency; participating staff should be prepared to listen to and acknowledge all concerns and bring information back to the appropriate departments or agencies.
- Develop a long outreach timeframe to reach as many communities as possible.
- Make use of multiple channels and modes of communication to disperse information and updates to a broad audience.
- Employ multilingual content to be more inclusive, for example working with local Spanish (or other language) community newspapers, radio stations, or newsletters.
- Technological platforms are powerful tools to reach broad audiences. However, they should not be the sole outreach method as different groups have different levels of access to technology. Make use of traditional media sources such as television and radio, as well as flyers and posters at popular community locations (e.g., community center, library, local grocery). Physical outreach events at public spaces (when safe) are also highly encouraged.
- Provide incentives for feedback and engagement that would be of value to residents. Provide compensation for CBO and community partner assistance.
- Be conscious and respectful of cultures and norms.

B3 Attach #1 of 3

Examples

Somali Health Board, King County

King County, Washington, has developed a model of community health boards to help improve health in immigrant communities, who may face language, cultural, and other barriers in accessing health care and health information. Based on input from Somali leaders on improving outreach to their communities, in 2011 the King County Department of Public Health helped to create a community advisory board consisting of Somali health professionals and community leaders. Unlike outside government agencies, the Somali Health Board can effectively outreach to Somali immigrant communities in King County, providing health information and education with a cultural lens and from a position of trust (Ali 2018). It also advocates on behalf of the community, develops partnerships with local health services and systems, and grows community leaders. The model has led to the development of other community-led health boards, including those serving the African-American, Eritrean, Ethiopian, Vietnamese, Cambodian, Arab/Iraqi, and Pacific Islander communities (Public Health – Seattle & King County 2019). The health boards operate independently as non-profits but have liaisons with the county public health department.

San Francisco Municipal Transportation Agency Bayview Community-Based Transportation Plan

The Bayview Community-Based Transportation Plan (Bayview CBTP) is a project developed for the Bayview-Hunters Point community in the southeast corner of San Francisco. Decades of disinvestment and institutional racism has left community members of San Francisco's once prosperous and largest Black neighborhood at risk of displacement. The Bayview CBTP is a community-driven planning effort focused on improving the physical mobility and needs for existing residents and businesses. The plan synthesized local knowledge of the community with San Francisco Municipal Transportation Agency technical expertise to create a plan with a list of projects that emphasize walking, public transit, and improving access for underserved groups such as seniors, young people, residents of color, residents with disabilities, and residents of public housing.

The Bayview CBTP partnered with five CBOs to help identify and engage hard-to-reach groups and elevate the needs of vulnerable residents. CBOs were full collaborators on the public outreach plan, co-designed three stages of public engagement events, co-hosted engagement events in the community, reviewed all outreach materials for cultural competency, clarity, and accuracy, reviewed all Bayview CBTP recommendations for the project, and facilitated a participatory budgeting process.

During the initial community engagement planning steps, residents directed efforts with assistance from the Bayview CBPT team to create an equity index map to help ensure the project would provide the greatest benefit to Bayview-Hunters Point's most vulnerable residents. This equity index map depicted community assets as well as the distribution of vulnerable groups within the community to help prioritize projects. Community members were then asked to develop a scoring system to determine how much the equity index

B3 Attach #1 of 3

should influence project selection. Importantly, the equity index scoring was also balanced against direct resident input, ensuring that voices left out during the initial equity index creation would still be represented.

The Bayview CBTP team sponsored several pop-up events and met residents at a variety of spaces, including the Bayview-Hunters Point Black Cuisine Festival, the Shekinah Christian Fellowship service, the Lunar New Year and Black History Month Celebration, and the Youth Transportation Summit. Workshops were also launched in collaboration with CBOs to engage Spanish and Chinese languages speakers. All worksheets and display boards were translated into Spanish and Chinese and made publicly available online. (San Francisco Municipal Transportation Agency 2020)

Resources

The California Air Resources Board's California Climate Investments program has developed a summary of best practices for community engagement: *Best Practices for Community Engagement and Building Successful Projects: A Summary from the 2018 Community Leadership Summit*.

Related Measures

- IE-3. Elevate Voices of Underrepresented Groups in Project Direction and Outreach

IE-2. Establish or Join a Community Project Steering Committee

Community project steering committees help shift decision-making power back to the communities where the project is being developed. This power shift facilitates greater community engagement and enhances equity in decision-making. The extent to which a community steering planning committee is invested with decision-making authority can be captured by the spectrum of community engagement, with greater ownership and authority in the process associated with the higher ends of the spectrum (dialogue, collaborate, and direct); see the *Inclusive Engagement* section introduction for more information.

To establish a community steering committee, project proponents should rely upon its stakeholder analysis and outreach strategy (see CCD-2. Conduct a Stakeholder Analysis and Develop a Community-Centered Outreach Plan) and ensure that steering committee members are representative and inclusive of the project area.

Oversight authorities and responsibilities should be granted to a community committee during all phases of a project's development. The community project steering committee *must be able to request information and review a project's performance to satisfy this measure*. Additional actions that a community project steering committee may take include the following:

- Directing and approving community outreach and engagement plans.
- Reviewing and approving construction plans, including any construction activity outside of normal working hours.

B3 Attach #1 of 3

- Reviewing and approving proposed road detours and closures, including impacts on transit and active transportation.
- Reviewing and approving agreed-upon project benefits, local hiring provisions, and other project commitments.
- Reviewing project performance.

At the project outset, the project proponent and community steering committee should clearly define the full scope and bounds of the committee's decision-making authority. This establishes transparency and clear expectations and can help avoid the project committee devoting time to decisions and items it cannot influence.

It is also important to keep in mind that steering committees may not be the right structure for every community. Some communities may feel more comfortable with a less formalized organizational structure to discuss, engage with, and direct project progress. Other options could include informal working groups, weekly coffee meetings, or other informal meeting settings. Project proponents could also consider engaging with the community through community coalitions, anchor institutions, neighborhood associations, and collaboratives. The key is to understand what format would be the most comfortable and inclusive for the residents of each community.

Key Question: How can community members provide input and direction to the project development process?

Applicability

Applicable to all projects.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning, construction, operations

Dimensions of Equity

Establishing or joining with a community project steering committee allows for greater community engagement and relationship building and can yield valuable insights from community members. Shifting decision-making power to the community is an important step to enhancing a community's degree of *self-determination* during project development.

Implementation Considerations

- Understand that statistics, indicators, and data do not tell the whole story, and that a community's lived experiences should also be part of the picture. Incorporating community members into decision-making structures is an essential step to gain these insights. Ground truth statistics and data with meaningful community engagement.

B3 Attach #1 of 3

- Ensure robust and equitable outreach strategies to reach all stakeholders, especially those in marginalized and underresourced groups, and incorporate them into the community project steering committee.
- Participation in community project steering committee should not be restricted to individuals who are eligible to vote in elections—ensure that all residents are able to participate, regardless of status. Recruit participation from undocumented people, people with experiences with the criminal justice system, refugees, permanent residents, and youth.
- Compensate community steering committee members fairly.
- Follow guidance to promote accessibility when it comes to creating and running community project steering committees.
- Respect and understand a community's history in collaborating with developers and local government.
- Clearly define the scope of the committee's decision-making authority and influence.
- Establish local, issue-based implementation working groups.
- Establish conflict resolution processes to ensure a clear system to address issues. A professional facilitator can also help provide support for meetings.
- Establish a clear system for decision-making and voting in the committee (e.g., majority or two-thirds vote?), as well as other governance policies as needed.
- Establish scheduled reporting to community project steering committee on agreed-upon subject areas.
- Ensure Community Project Steering Committee is *provided with educational materials* and given adequate time to make decisions. See IE-5. Educate Community Members on Essential Topics Related to Project.

Examples

Community Steering Committee

As part of Transform Fresno's initial community engagement plan—a robust process required by the Transformative Climate Communities grant that calls for a high degree of community engagement and stakeholder involvement at all phases—the project created a 165-member community steering committee. Meetings were open to the public, and residents were encouraged to participate and become a voting member. Each member of the committee either worked, lived, or owned property in the Transform Fresno project area. The committee created and voted on the final list of projects in the Transformative Climate Communities grant—demonstrating a high degree of authority in pursuit of community-centered development. This body eventually evolved into the Outreach and Oversight Committee.

Outreach and Oversight Committee

As the Transform Fresno initiative progressed, the project formed an outreach and oversight committee to serve as an advisory body and as a resource for community

B3 Attach #1 of 3

collaboration and feedback. The outreach and oversight committee is charged with providing overall guidance on implementation and material changes to the projects developed under the Transform Fresno initiative. Importantly, this body provides feedback and guidance on major budget and programmatic changes. Members must have served as voting members on the original community steering committee, either work, live, or own property in the Transform Fresno Project Area, and must not have been part of a project partner organization. (Transform Fresno 2021)

Related Measures

- CCD-2. Conduct a Stakeholder Analysis and Develop a Community-Centered Outreach Plan
- IE-3. Elevate Voices of Underrepresented Groups in Project Direction and Outreach

IE-3. Elevate Voices of Underrepresented Groups in Project Direction and Outreach

Upon identifying stakeholders and researching community needs, ensure that the community project steering committee is representative of the communities the project impacts. Amplify voices of frontline workers, people of color, women, gender-expansive people, LGBTQIA+, people with disabilities, people living in poverty, and underresourced communities by empowering them with decision-making authority and incorporating their representation in a community project steering committee (or another format). Leverage community knowledge and available data to identify vulnerable and underrepresented groups in the project impact area and elevate their priorities. Act on communicated needs and concerns, and report back to the community on how their input have informed the project.

Key Question: How can project proponents help to uplift the voices of underserved, underrepresented, and marginalized community members in decision-making and project development processes?

Applicability

Applicable to all projects.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning, construction, operations

Dimensions of Equity

The perspectives of underrepresented communities are often left unheard by government and land-use developers. Elevating their perspectives and acting on their concerns is an essential component of *racial justice and equity* work.

B3 Attach #1 of 3

Implementation Considerations

- Robust and inclusive outreach efforts are necessary to reach, incorporate, and uplift marginalized communities.
- Research and respect the historical experiences different groups have had with local government and developers. Talk to residents and leaders to learn about community experiences during the 2008 recession or COVID-19, or with wildfires, policing, deportation, and other community traumas. Understand the history and consequences of redlining and racial covenants, if applicable.
- Avoid tokenism and do not expect *individuals* to speak on behalf of an entire group. Recognize that individuals have different perspectives.
- Use appropriate committee structure, especially for people engaged over longer periods of time. These can vary from informal to very formal. Examples include steering committees, regular outreach meetings, social media groups, and coffee klatches.

Example

Recognizing that racism is a public health crisis, King County, Washington, committed to addressing the needs of Black, brown, Indigenous, and people of color in its 2020–2021 budget and policy agenda. As part of its larger priorities, the proposed budget includes $1.6 million for a cross-functional community engagement team and a $1 million reserve for "intentional and meaningful community engagement to co-create anti-racist, pro-equity solutions *with* community" (King County 2020). It also includes $1 million to build an ongoing translation program to ensure that information is available in the six most-spoken languages in the county. To help develop policy and investments, King County also provided $200,000 to 24 organizations serving underrepresented and marginalized communities. The organizations will help to engage their communities to provide input and direction that will guide the county's priorities and anti-racist agenda.

Related Measures

- CCD-2. Conduct a Stakeholder Analysis and Develop a Community-Centered Outreach Plan
- IE-1. Prioritize Outreach to Communities of Color and Underserved Groups
- IE-2. Establish or Join a Community Project Steering Committee
- IE-4. Inclusive Community Meetings

IE-4. Inclusive Community Meetings

Community engagement should be inclusive to all people, regardless of their abilities and needs, and capture diverse values and perspectives. To increase the accessibility of community meetings, the following strategies should be considered.

- *Hold community meetings in familiar spaces*: Meet community members where they are by following a format that is appropriate for the local community and use existing community meeting spaces if possible. Here, it is important to use physical spaces and

technological platforms with which community members are already familiar. Look for opportunities to become familiar with the community by attending community events and building long-term relationships with residents.

- *Make community meetings accessible via walking and public transit*: Limiting the time and resources needed to travel to community meetings can enhance participation and increase accessibility.
- *Hold community meetings during times convenient for working members of the community*: Consult with community members to find times that work best for them; weekends and evening are typically most suitable. Respect attendees' time and keep meetings productive and succinct.
- *Provide refreshments:* Meeting times may conflict with community members' opportunities to get food. Provide refreshments to help offset these inconveniences.

Photo Credit: Port of San Francisco, March 2019

- *Provide childcare:* Meeting times may be inaccessible for families, parents, and caregivers. Provide childcare to enhance engagement with these stakeholders.
- *Outreach and meeting materials are accessible:* Meeting materials should be in community members' primary language. Provide translation or interpretation services and conduct outreach in multiple languages to engage a larger group of stakeholders. Use accessible, non-technical language and provide explanations where appropriate. Ensure all materials and information are readily accessible for people with disabilities.
- *Provide monetary stipends/compensation:* Monetary compensation for attendees encourages community members' participation and can help offset costs of attending community meetings.

These recommended strategies are not definitive, and the project proponent is encouraged to create additional strategies in collaboration with community members to ensure accessible meetings suited for their local community.

Key Question: How can the project proponent ensure that all community members, regardless of their capabilities, needs, income, or other characteristics, are able to attend and fully participate in meetings?

Applicability

Applicable to all projects.

B3 Attach #1 of 3

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning, construction, operations

Dimensions of Equity

Ensuring accessibility for community meetings enhances the project proponent's ability to reach stakeholders who are traditionally left out of land-use development and decision-making structures. This measure can help promote opportunities for *social resilience, self-determination,* and *equity* for these groups.

Implementation Considerations

- Build relationships with community members and respect community history: It is important to understand the local community's culture, values, political structures, demographic trends, history, and past engagement with the local governments and project proponents.
- Work with local leaders and skilled facilitators with established relationships with community to help organize community meetings.
- To avoid engagement fatigue, provide additional resources as identified by community members to support capacity and participation.

Example

The Neighborhood Mobility Plan for the communities of Thermal and Oasis is designed to meet the needs of residents by increasing active mobility options and enhancing transportation networks in the Eastern Coachella Valley. The plan seeks to promote accessibility, connectivity, and resilience by following a community-driven model of development working in partnership with agencies and other stakeholders. The plan includes several projects, including establishing a long-term network of bicycle and pedestrian infrastructure that connects residents to key resources. Over 70 miles of multimodal pathways—more than ten times the existing amount of pedestrian and bicycle infrastructure—is proposed.

Among other strategies, Riverside County held three community workshops to help formulate the community-based plan. In these workshops, residents identified barriers to walking, bicycling, and transit and offered suggested solutions such as design and operational changes and the development of public transit route and mode options. In addition, the County conducted a diverse set of engagement activities to increase participation opportunities, including stakeholder meetings, pop-up on-street demonstrations, and mobile research beacon deployments. At these events, residents learned about traffic devices and improvement options, and identified priority areas to site enhanced pedestrian, public transit, and bicycle infrastructure. Times and locations were chosen to maximize accessibility and community turn-out. For instance, mobile research beacon deployments occurred at a local market in Oasis on a Friday and at a church in Thermal on a Sunday. All workshops were conducted in Spanish, the primary language of

residents, with English translations. Additionally, food and childcare were provided (Riverside County Department of Transportation 2018).

Related Measures

- IE-1. Prioritize Outreach to Communities of Color and Underserved Groups
- IE-3. Elevate Voices of Underrepresented Groups in Project Direction and Outreach

IE-5. Provide Education on Essential Topics Related to Project

This measure encourages project proponents to provide technical assistance and information on key issues related to the project. Aspects of a project may require a high degree of specialized or technical knowledge. Project proponents should work with CBOs and community members to identify specific topic areas for additional or supporting information. Project proponents should work with a local jurisdiction, agency, or specialized community non-profit to provide assistance and educational materials. For example, if residents have identified improving pedestrian safety and reducing traffic impacts as a priority, a local pedestrian and bicycle advocacy organization may provide education on available street design and traffic control options. Simple, non-technical language should be used to broaden reach.

Key Question: How can local jurisdictions and lead agencies help to build community capacity so that all members are equipped with the knowledge and expertise to make meaningful decisions about the project?

Applicability

This measure is recommended for projects costing $50 million or more.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning, construction, operations

Dimensions of Equity

Providing educational materials to community members not only enhances their capacity for *self-determination* as it relates to making informed decisions, but also increases a community's social *resilience* and builds local capacity by investing in social capital.

Implementation Considerations

- Provide materials in community's primary language. Proponents are also encouraged to offer multilingual materials and translation and interpretation services.

B3 Attach #1 of 3

- Avoid use of jargon or technical language wherever possible.
- Depending on the project, long-term educational services may be beneficial. Providing industry-specific information can ensure a community is well-informed about a certain practice or sector in the long run.

Examples

Sacramento Boards & Commission Leadership Institute

The Sacramento Boards & Commission Leadership Institute provides training and education to local community advocates from low-income communities and communities of color to help them successfully navigate the processes of local government and policymaking. The training equips community advocates with technical expertise as well as the language and cultural norms needed to participate in local boards and commissions. Topics covered include structural racism, land use and affordable housing, health equity, transportation justice, and more.

Santa Cruz Housing Conversation Kit

As a part of the City of Santa Cruz's 2017 housing community engagement efforts, the City launched a Housing Conversation Kit program, providing outreach kits to residents interested in engagement activities. The program distributed kits at its kickoff event as well as other community locations, including Toddler Time at the downtown public library, bookmobile stops in two affordable housing communities, the downtown farmers' market, a police department town hall meeting, and City Hall to YOU locations (pop-up events at different neighborhoods where citizens and city leaders and staff have the opportunity to discuss neighborhood-specific issues). Each kit included several cards with a provocative statement about housing to discuss, along with supporting information to provide a quick yet comprehensive overview of housing issues. More than 1,000 kits were distributed in both English and Spanish (City of Santa Cruz 2017).

IE-6. Conduct an Equity Assessment with Community Project Steering Committee

An equity assessment explores how a project addresses and performs across a variety of equity-related indicators. This type of assessment analyzes how a project impacts racial and ethnic groups, how it may enhance or exacerbate equity, and where positive outcomes are likely to be realized during project implementation or other phases.

Race Forward (2009) provides the following guide to conducting an equity assessment:

1. Identify stakeholders: Specify which racial/ethnic groups may be most affected by and concerned with this project.
2. Engage stakeholders: Identify and incorporate anyone missing from the engagement process. Ensure stakeholders from different racial/ethnic groups have meaningful opportunities for input and decision-making.

3. Identify and document racial inequities: Research how different racial/ethnic groups are advantaged and disadvantaged by the project. Gather qualitative and quantitative data to document such inequities.
4. Examine the causes: Critically study causes of inequities and any related trends. Explore how the project impacts or addresses such inequities.
5. Clarify the purpose: Re-examine the project goal and investigate how it might reduce or deepen disparities.
6. Consider adverse impacts: Comprehensively explore negative effects and unintended consequences related to the project. Consider approaches to prevent or minimize adverse effects.
7. Advance equitable impacts: Explore ways in which positive effects or trends can be enhanced through the project.
8. Examine alternatives or improvements: Research and recommend other strategies that might reduce racial disparities in a more meaningful manner.
9. Ensure viability and sustainability: Establish ongoing data collection systems and pursue accountability during all phases of project development.
10. Identify success indicators: Detail how success will be operationalized and measured. Specify indicators that are to be evaluated.

Working with a CBO and community members is essential to develop a legitimate and comprehensive equity assessment. Equity assessments may differ in their scope and processes depending on the project and community but developing a host of community-supported equity metrics for long-term monitoring is a necessary element.

Key Question: How will the project impact equity and related metrics in the local community? How could it improve?

Applicability

This measure is recommended for projects costing $50 million or more.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning, construction, operations

Dimensions of Equity

Effective equity assessments can help a project proponent understand where racial disparities exist and how to prevent negative impacts and/or enhance *racial justice and equity*.

B3 Attach #1 of 3

Implementation Considerations

- Promote community decision-making by allowing community members and CBOs to lead when conducting an equity assessment. They often have community-rooted knowledge that a project proponent might miss.
- Provide payment and other resources for community-based organizers and community members to do this work, much as a project proponent would hire a consultant; do not expect them to provide labor for free.
- Grant adequate time and resources to conduct an equity assessment early in the planning phase and dedicate resources for continuous monitoring of equity indicators throughout a project's development.

Example

As part of creating Oakland's 2030 Equitable Climate Action Plan (ECAP), the City of Oakland's 2030 ECAP Equity Facilitator Team—Oakland Climate Action Coalition, Environmental/Justice Solutions, and Blue Star Integrated Studio (the equity facilitator)—were charged with setting up an equitable community engagement process and ensuring that the final plan is equitable in its ability to help reduce disparities in Oakland. The equity facilitator reviewed draft 2030 ECAP language and developed the *Racial Equity Impact Assessment and Implementation Guide* (REIA). In the REIA, Oakland-specific data was collected to provide city staff with a framework to maximize equitable outcomes. The REIA outlines clear approaches to identifying frontline communities, avoid policy blind spots, mitigate or reverse equity gaps that limit access to resources, and monitor and evaluate equity outcomes for reporting back to frontline communities. Key recommendations issued include the following (Tobias et al. 2020):

- Create tailor-made approaches to identify frontline communities.
  - Collect and analyze existing quantitative and qualitative data to illuminate systemic root causes for disparities in climate vulnerabilities and outcomes.
  - Measure baseline conditions for frontline communities over time, noting any gaps and aspirational data needs.
  - Ground-truth assertions with frontline communities and acknowledge blind spots.
- Use Geographic Information Systems mapping to enhance data visualization and accessibility. Make use of community-based data reporting, such as data generated by frontline community members.
- Maximize equitable outcomes.
  - Invite and empower frontline communities to co-design ECAP equity implementing policies and programs.
  - Adopt recommendations from the REIA's Best Practices for Frontline Community Engagement over the 10-year implementation plan.
- Dedicate resources for monitoring and evaluation.
  - Track outcomes, relevant project locations, and where project benefits accumulate, along with demographics of beneficiaries.

B3 Attach #1 of 3

  - Track benefits that reach the 25 most-burdened census tracts in Oakland as compared to the City as a whole.
- Streamline and increase communication between City departments implementing the ECAP.

Related Measures

- CCD-2. Conduct a Stakeholder Analysis and Develop a Community-Centered Outreach Plan
- A-3. Evaluate Project Performance with Community Project Steering Committee/Community Based-Organizations

Accountability (A)

Photo Credit: Port of San Francisco, July 2019

Previous process sections outlined strategies to ensure community goals and perspectives are addressed in project development. This section focuses on delivering and implementing community priorities and providing enforcement and accountability strategies for community members. Transparency is foundational in this pursuit and should be followed throughout all phases of project development. Additional measures in this section call for project proponents to create accessible avenues for community members to register their concerns. Measures also focus on empowering community members to evaluate project performance and oversee the enforcement of provisions. Ensuring community members have direct roles in overseeing project development is critical to building project legitimacy and community ownership.

Making use of open feedback loops is a helpful overarching strategy to incorporate community insight into any stage of project development and increase accountability. Open feedback loop processes can be used to build trust with community members and enhance community decision-making in project development. The description of an open feedback loop follows (Jackson et al. 2018).

1. Initial community conversation: Identify community and neighborhood priorities.
2. Co-design data collection: Determine how community members prefer to have their input collected. There are a range of options here, such as surveys and websites where people can submit input. Co-design both the medium for data collection and the data focus areas.
3. Collect data: Collect community feedback.
4. Second community conversation: Meet with and assist community members to reach consensus on appropriate course-correcting actions in response to feedback collection.

B3 Attach #1 of 3

5. Implement: Take course-correcting actions as recommended by consensus in the previous step. Keep community notified of changes and project progress. Track and document changes and results.

The feedback loop can be continued.

6. Co-design second data collection: Co-design a second round of data collection with community members. Data should assess how community members view course-correcting actions.
7. Second data collection: Ensure feedback from community members results in a representative capture of community priorities.
8. Third community conversation: Discuss with community members to determine if action was appropriate and if additional changes need to be made. Follow a similar feedback loop pattern.

Following equitable stakeholder identification and community engagement practices is essential to gather representative feedback from community members. Be sure to show community members how their feedback is influencing project development to build trust. Measures in this section provide additional strategies to ensure accountability in project development.

A-1. Use Participatory Budgeting

Participatory budgeting is a democratic process that allows community members to lead funding allocation for projects by giving them voting powers when deciding how to spend part of a budget. Participatory budgeting is typically used for public investments, and the process begins during the outset of plan and program development. By participating in the budgeting process at every stage, residents can shape project proposals in a way that brings project development closer in alignment with the lived experiences of the local community. According to the Participatory Budgeting Project, a standard participatory budgeting process empowers community members to generate ideas, vote on proposals, and fund winners by following these steps.

1. Design the process: A steering committee that represents the community creates the rules for partnership and engagement plan.
2. Brainstorm ideas: Residents share and discuss ideas for projects.
3. Develop proposals: Volunteer "budget delegates" develop the ideas into feasible proposals with technical assistance from experts.
4. Vote: Residents vote on the proposals that most serve the community's needs.
5. Fund winning projects: The government or institution funds and implements winning ideas.

While the participatory budgeting process outlined above is commonly applied to public budgets, participatory budgeting can be applied to any budget. Overall, participatory budgeting democratizes decision-making power, enhances civic engagement, and tailors projects to community priorities.

Key Question: What would communities identify as top priorities for funding?

Applicability

Public agency-led plans and programs, grant-funded plans and programs.

Scale and Timing

- Scale: Neighborhood/City
- Timing: All

Dimensions of Equity

As a procedural equity tool, participatory budgeting opens opportunities for communities to lead investment in a variety of sectors, enhancing *community ownership* and *self-determination*. Community-led projects can achieve a range of outcomes from strengthening economic resilience to enhancing access to parks, green spaces, and community gardens. See the *Examples* section for case studies on participatory budgeting's impacts on equity.

Implementation Considerations

- Robust community engagement is essential to ensure that underrepresented communities have proper representation in a steering committee and have their voices amplified in decision-making settings.
- Participation should not be restricted to individuals who are eligible to vote in elections—ensure that all residents are able to participate, regardless of status. Recruit participation from undocumented people, people with experiences with the criminal justice system, refugees, permanent residents, and youth.
- Incorporating participatory budgeting during the earliest stages of project planning is essential to capture community priorities and foster collaboration.
- Ongoing participatory budgeting processes provide greater opportunities for community direction and collaboration.
- Private-sector proponents can make sure that their projects are aligned with community priorities identified by existing jurisdictional-scale participatory budgeting processes.
- Technical assistance should be provided to steering committee and community members; see IE-5. Educate Community Members on Essential Topics Related to Project.
- While participatory budgeting can work with any amount of money, larger allocations of funds will increase the likelihood for motivated participation and long-lasting project impact. The Participatory Budgeting Project recommends starting with at least $1 million per 100,000 residents for large municipalities, or $13 to $22 per resident. Many jurisdictions use between 1 to 15 percent of their annual budget. Smaller

B3 Attach #1 of 3

allocations can be just as worthwhile: in San Jose's Overfelt High School, the participatory budgeting process allocates $50,000 for 2,800 students.

Examples

Oakland

In 2017, Oakland launched its first participatory budgeting cycle that gave residents of City Council Districts 1 and 2 decision-making authority over how federal Community Development Block Grant funds should be spent over the next 2 years. A range of project proposals secured funding, such as programs to provide meals and health services to people who are unhoused and programs to improve infrastructure safety.

Vallejo

In 2012, the first city-wide participatory budgeting process in the U.S. was established in Vallejo. Vallejo stakeholders are tasked with developing project proposals and voting on projects that are sent to City Council for consideration as part of the annual City budget (City of Vallejo 2018). The participatory budgeting steering committee funds a range of projects such as educational programs and community garden improvement programs.

Resources

- The Participatory Budgeting Project provides resources and guides to how participatory budgeting can address issues such as affordable housing, transportation, climate resilience, and equity and inclusion.
- *Organizing Engagement* provides a guide to participatory budgeting.

Related Measures

- CCD-3. Conduct a Community Needs Assessment
- CCD-5. Establish a Community Benefits Agreement

A-2. Establish Incentive and Penalty Provisions for Community Priorities

Clear terms for enforcement are essential when pursuing accountability, and the use of penalties and positive incentives can help ensure project proponents deliver on commitments. These provisions apply to public projects where there is a contract between government and a developer or construction company. One example of a penalty is a clawback provision, or a recapture provision, which requires a project proponent to deliver on an agreed-upon goal, and, if they fail to do so, they must repay a certain amount of public funds. On the other hand, incentives provide additional funds (bonus) to a project proponent that meets or exceeds an agreed-upon goal. Agreed-upon goals can cover a wide range of outcomes such as the number of union jobs created, long-term capital investment, years in residence requirements, duration of construction, diverse contracting requirements, or other provisions. Incorporating these provisions into contract

B3 Attach #1 of 3

agreements helps ensure a project upholds obligations and provides taxpayers some protections for public funding.

Key Question: If the project proponent cannot deliver the agreed upon benefits, what redress will be available? Are the benefits being sought reflective of community priorities?

Applicability

Projects receiving public funds.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning

Dimensions of Equity

Penalty and incentive provisions require a project proponent to deliver on an agreed-upon benefit, increasing accountability. Tailoring provisions to the local community's desired benefits and priorities leave this measure with the potential to impact *any/all* dimensions of equity depending on the context.

Implementation Considerations

- Define key terms, metrics, and expectations.
- Clearly establish project proponent's scope of work and define penalties and incentives for agreed-upon metrics and goals.
- Agree to a timeline for achieving agreed-upon metrics and goals.
- Incorporate into the project agreement or contract to ensure it is legally enforceable.

Examples

City of Chicago and Ford Motors

In 2000 Chicago, Illinois, and Ford Motors negotiated a $115 million incentive deal for a new Ford plant, under which Ford would develop an industrial park and the city would develop a 900-acre inter-model freight transfer center. The deal included clawback provisions that required Ford to create at least 500 full-time jobs by the end of 2006 and to maintain these jobs through 2011. Failure to meet these goals would require Ford to pay back a percentage of the financing proportionate to the percentage of jobs that were not created, and it must also repay the city for infrastructure and road improvements (Santacroce and Weber 2007).

B3 Attach #1 of 3

UNIDAD and G.H. Palmer Associates

In December 2010, G. H. Palmer Associates unveiled plans to build a multi-million dollar residential and retail complex on a 9-acre site in South Central Los Angeles. The project proposal included the Lorenzo, a large private luxury housing and retail complex on the site of a hospital. Already struggling with health and environmental disparities, most local residents would not be able to afford the Lorenzo and were concerned over the replacement of a medical site with luxury housing. As a result, the UNIDAD coalition launched its Lorenzo campaign. With strong organizing from activists, community leaders, and community members, in early 2011 UNIDAD and Palmer Associates negotiated a ground-breaking fully private $9.5 million community benefits agreement. UNIDAD won several provisions, including a 7,500-square-foot community health clinic that would operate rent-free for its first 20 years, a $2.1 million contribution to the clinic, and affordable housing contributions, among others (Pastor 2015).

To help guarantee that the local community can realize the benefits won through the CBA, UNIDAD installed essential enforcement mechanisms, including $140,000 to fund CBA compliance monitoring. For instance, the CBA stipulates that if Palmer fails to meet its local hiring or at-risk hiring goals, the company would pay liquidated damages to the Community Benefits Fund at the value of $168 for each work-day by which performance fell short (Partnership for Working Families 2011). There are also similar protections for living wage provisions. UNIDAD also incorporated a crucial severability clause to bolster the entire CBA. This clause allows the remainder of the agreement to remain in full force and effect, should a court find any other term, provision, or condition of the agreement to be invalid, void, or unenforceable.

Strong legal capacity and an effective legal strategy were critical success factors for UNIDAD against a developer that had previously successfully sued the City of Los Angeles over affordable housing requirements. UNIDAD also benefited from its coalition members' seasoned history and experience organizing in South Central Los Angeles.

Related Measures

- CCD-5. Establish a Community Benefits Agreement

A-3. Evaluate Project Performance with Community Project Steering Committee/Community Based-Organizations

The project proponent should develop reports in collaboration with the community project steering community or CBO to evaluate progress at every stage of project development, centering around agreed-upon focus areas and data metrics. Essential data for a comprehensive evaluation includes indicators on demographic and geographic characteristics as well as personal experiences from communities in the project impact area. Quantitative data and qualitative data rooted in community insight should be used to create metrics for project evaluation.

B3 Attach #1 of 3

Potential Evaluation Metrics—Specific Metrics will Depend on Project Type

- Cost-benefits assessment: Compare societal benefits against anticipated costs, including not only financial costs and benefits but also costs and benefits for the environment, air quality, and public health, for example.
- Project performance:
  - Affordable housing units created.
  - Percent of contracts with local vendors and businesses from marginalized and low-income communities and communities of color.
  - Sustainability metrics and performance (e.g., support for transportation justice and air quality improvements).
  - Other agreed-upon targets, such as financial contributions to community groups (as agreed upon in a CBA for instance).
- Management:
  - Percentage of employees in management-level positions who come from local underrepresented racial and ethnic populations.
  - Percentage of employees in management-level positions who identify as women or gender-expansive people.
  - Percentage of employees in management-level positions who identify as LGBTQIA+.
- Staffing:
  - Percentage of employees in staffing positions who come from local underrepresented racial and ethnic populations.
  - Percentage of employees in staffing positions who identify as women or gender-expansive people.
  - Percentage of employees in staffing positions who identify as LGBTQIA+.
  - Percentage of employees making at minimum a living wage with benefits such as healthcare, paid time-off, and sick leave.
- Equity Assessment:
  - Analyze the distribution of positive and negative impacts associated with the project across different groups.

Potential Data Sources

- Quantitative Data:
  - Environmental and air quality data
  - Environmental justice screening tools
  - Social vulnerability screening tools
  - Census economic and social data
  - Jobs data
- Qualitative Data Collection Strategies:
  - Workshops
  - Surveys
  - Interviews

B3 Attach #1 of 3

- Other:
  - Community-based participatory research methods
  - Community-level data collection

Ideally, project evaluation reports should be conducted by a third-party evaluator, working in conjunction with the community project steering committee. The topics covered in each report will vary depending on agreed-upon data metrics; however, each report should cover at minimum successful activities, takeaways, and areas for improvement.

Key Question: How has the project proponent delivered on its commitments and metrics? Where is the project exceeding targets, and where is the project falling short and in need of remedies?

Applicability

Recommended for projects with a budget of at least $250 million.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: All

Dimensions of Equity

Evaluating project performance with a community project steering committee centers the local community in determining the overall performance of a development project. This practice also helps to ensure accountability and compliance by identifying where projects fall short of their equity targets and allows project proponents to identify and act on community concerns. Furthermore, coupling project performance with accountability measures builds the local community's degree of *self-determination*.

Implementation Considerations

- Schedule reports to ensure transparency and accountability in project's operational plan.
- Ensure access to agreed-upon data metrics across a project's development.
- Coordinate project evaluation performance with accountability measures.
- Make results of project performance assessment publicly available.
- Conduct hypothetical scenarios and prepare for "what if" scenarios to enhance project adaptation.

Example

To ensure community oversight of the implementation and operations of the Kingsbridge National Ice Center, a community advisory council was created in the Kingsbridge CBA.

B3 Attach #1 of 3

This body is a working group of 11 community representatives with broad monitoring and decision-making authorities. For instance, the advisory council may request the project proponent to make capital improvements from funding allocated through an $8 million initial contribution fund (Partnership for Working Families 2015b).

The community advisory committee is also charged with monitoring and reviewing the developer's local hiring and training initiatives at least annually. The CBA requires that on a quarterly basis each employer notifies the community advisory council of the following.

- The number of targeted job applicants hired (those who are underemployed, unemployed, recipients of public assistance, previously incarcerated individuals, people with disabilities, veterans, young people, seniors, and members of minority groups).
- The number of independent contractors, full-time employees, and total employees employed during the prior quarter.

Employers must retain these records for at least 7 years and grant the community advisory council the authority to request and review these documents. If an employer fails to meet requirements outlined in the CBA, the council may direct an employer to take corrective action; the CBA includes a hiring corrective action plan. If an employer fails to complete the corrective action plan, the CBA grants the advisory council and each organization of the coalition the authority to seek an additional remedy available at court or in equity, including specific performance. In terms of the CBA's local procurement plan, the community advisory council also has the authority to appoint an independent monitoring agency to assess progress toward meeting targets.

Related Measures

- CCD-5. Establish a Community Benefits Agreement
- IE-6. Conduct an Equity Assessment with Community Project Steering Committee
- A-2. Establish Incentive and Penalty Provisions for Community Priorities

A-4. Establish Clear Points of Contact

A core tenet of transparency is creating reachable avenues for the public to contact project proponents. This measure calls for project proponents to establish clear, accessible hotlines, websites, social media, email, and physical locations/mailing addresses to expand contact options for the public to register complaints and ask questions. Furthermore, during early stages of project development, clear points of contact can broaden and deepen the reach of the project's community engagement strategy. Post clear information detailing channels for communication and ensure that public inquiries are responded to promptly.

Key Question: How can community members quickly and easily contact project proponents to share concerns and provide feedback?

B3 Attach #1 of 3

Applicability

Applicable to all projects.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: All

Dimensions of Equity

Clear contact information can help address issues related to *public health, air pollution, walkability & bike-ability,* and boost the *social resilience* of the local community during different phases of project development.

Implementation Considerations

- Contact information and services may need to be provided in multiple languages based on demographics in the local community.
- Consider partnering with CBOs to help communicate contact information across the community.
- Follow up with community members who register complaints to evaluate how the project is addressing the concerns.

Example

Non-available.

Related Measures

- A-5. Public Disclosure of Project Commitments
- CE-3. Post a Clear, Visible Enforcement and Complaint Sign

A-5. Public Disclosure of Project Commitments

The project proponent will make publicly available all commitments to improve equity, diversity, health, climate change and resilience, and other benefits. This would apply for both projects with and without a community benefits agreement. Commitments should be included in a project proponent's agreement, other agreements, or other applicable documents, as well as maintained on a website. It should also include clear goals, performance metrics, timelines, contact information, and responsible parties. Project information, plans, potential impacts and benefits, and other information should also be included to help provide education and information. Translations should be available in the languages most widely spoken in the community.

Key Question: How can the public learn about project commitments and targets to help track and provide public monitoring on progress?

B3 Attach #1 of 3

Applicability

Applicable to all projects.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: All

Dimensions of Equity

Public disclosure of a project's commitments, in simple and clear language, is important for accountability and transparency. Enhanced, widespread community knowledge and awareness of a project's commitments can help to support public monitoring, progress tracking, and oversight to ensure that commitments are met. This can lead to greater *community ownership and self-determination,* as well as greater equity and community empowerment.

Implementation Considerations

The project proponent should coordinate with the community steering committee to ensure that residents know where to find project commitments. An easily accessible location may be the website of the community benefits coalition or CBO. This should also be accompanied by updates on project progress toward metrics, as well as points of contact and channels of communication to address questions and concerns. In addition, relevant conditions of approval should also be included on the website to streamline information accessibility and transparency.

Example

Non-available.

Related Measures

- A-3. Evaluate Project Performance with Community Project Steering Committee/Community Based-Organizations
- A-4. Establish Clear Points of Contact

Outcome Measures

A new land use project can alter the existing community, for better or for worse. Wealthier, well-resourced communities have the power and capacity to influence the processes of local governments, planning commissions, and public hearings and are often able to alter or reject proposed projects based on their preferences. Due to historic and structural inequities, low-income, underresourced, and marginalized communities often lack access to these same opportunities or have their concerns ignored and overlooked. The outcome is that underresourced communities must expend more time

B3 Attach #1 of 3

and effort to access education, jobs, convenient mobility choices, safe homes, affordable and fresh groceries, and much more.

While structural inequities and racism should be addressed at the policy and plan level, it is possible and desirable for each individual project to strive to maximize its positive outcomes and benefits for the surrounding community. This is more so if a project is proposed for a community that experiences disproportionate air pollution, or lacks tree canopy, parks, high-quality housing, and other amenities that are critical social determinants of health. While the previous section focused on strategies to expand community participation and decision-making in the process of project development, this section recommends strategies for projects to improve their outcomes for the community. These outcomes range from the temporary – construction emissions – to long-lasting impacts, such as the provision of healthy neighborhoods, economic opportunities, inclusive community resources, green spaces, affordable housing, and protection against climate impacts. By incorporating these measures, projects can help to address chronic under-investment and help to build up healthy, livable communities throughout California.

Construction Equity (CE)

Photo Credit: Richard Masoner, February 2011

While construction is generally a temporary state, its impacts on communities can be consequential and long-lasting. The construction sector as a whole is responsible for negative impacts on community experiences with noise, access, air quality, and quality of life, especially in growing neighborhoods. Statewide, off-road vehicles—such as bulldozers, backhoes, and graders—are responsible for nearly a quarter of particulate matter (PM) emissions and a fifth of nitrous oxides (NOx) emissions from mobile diesel sources (CARB 2007). Construction also generates carbon monoxide, sulfur dioxide, fugitive dust, reactive organic gases, volatile organic compounds, and GHGs from disparate sources and activities such as on-road haul trucks, off-road heavy-duty equipment, soil disturbance, grading, asphalt paving, and the application of architectural coatings. As a result, mitigation and conditions of approval can be difficult to enforce, with multiple contractors and trades working across different construction phases. Equipment breakdowns and shortages, as well as unplanned delays, can lead to dirtier engines or dustier construction sites than originally anticipated in construction plans.

This section is intended to offer communities and lead agencies a non-exhaustive list of considerations for lessening the disruption and impacts of the construction period on communities, as well as empower communities to ensure laws are fairly enforced.

B3 Attach #1 of 3

Key Indicators: While all communities can benefit from these measures, communities with sensitive populations and socioeconomic challenges would especially benefit. Relevant CalEnviroScreen indicators include: Asthma, Cardiovascular Disease, Low Birth Weight Infants, Poverty, Linguistic Isolation, Housing Burden, and Educational Attainment. Relevant Healthy Places Index indicators include: Above Poverty, Housing Habitability, Asthma Emergency Room Admissions, Coronary Heart Disease, Chronic Obstructive Pulmonary Disease, Heart Attack Emergency Room Admissions, Children, and Elderly.

Cross-Cutting Guidance

Construction sites are dynamic places, and it can be difficult for instructions and information to be disseminated to all relevant persons, or for a plan to foresee and appropriately address all issues. We recommend incorporating the following into any measures chosen.

- **Regular community check-ins**: Establishing a standard, open channel of communications is essential to allow the community to give the project proponent real-time feedback on the construction plan as it is implemented across different construction phases. The project proponent may also use the channel to communicate any changes. The feedback process should allow for additional enforcement as well as amendments to the construction plan, such as if nuisance issues become a problem. The community should be viewed as an ally in ensuring the project proceeds with minimal disruption to both the construction schedule and the community.
- **Construction equity requirements included in bid specifications and contracts**: Specific requirements, such as guaranteed bike lane access or speed limits for haul trucks, should be included in bid specifications and contracts. Contracts should also include financial penalties for non-compliance if contractors fail to adhere to policies that support public health and community priorities during construction.

CE-1. Create a Construction Plan with Community Input

This measure creates a construction plan that is responsive to community input, reflecting community concerns and priorities. The plan should include construction hours, duration, access closures, detours, noise, dust, parking, deliveries, lighting, emissions, truck routes, and other potential impacts and nuisances that may affect the community. The plan should also include agencies responsible for enforcing the plan and a point of contact in case aspects of the plan fail to be implemented or are ineffective. As noted by Jose Richard Aviles, "The construction phase tends to be the longest, most painful part of a

B3 Attach #1 of 3

project for the community—what would it look like for planners to build an engagement strategy for that phase?" (Aviles 2020).

Applicability

Projects involving construction.

Scale and Timing

- Scale: Project/Site
- Timing: Planning

Communities or Issues Addressed

Construction plans are often driven by what is most expedient for the project, and not necessarily what is best for the community. Plans also tend to be drafted in isolation of other nearby projects. In addition, communities may not be familiar with available enforcement options to reduce construction activity impacts. A construction plan developed jointly with the community can help to address community perspectives and concerns before any work takes place. While project proponents should research and identify any sensitive sites (such as schools, senior residences, or playgrounds) in advance, community participation can provide additional ground truthing and refinement of local needs, and express preferences in accommodating the construction process (for example, a shorter, more intensive construction process or a longer, less intensive one).

Dimensions of Equity

Community members are knowledgeable about their neighborhood and can help direct traffic and impacts away from sensitive areas, improving *public health* and minimizing disruptions to daily life. Increasing community participation in construction planning supports greater *self-determination*.

Implementation Considerations

Construction plan discussions with the community need to present meaningful choices that reflect community priorities. Jurisdiction staff and the project proponent should be thoughtful about these issues, and, especially for detours, hours, and duration, present a range of options for discussion. If only one plan is presented and community input would not change the plan, this measure cannot be utilized.

Construction plans should include the following: set construction hours, duration, access closures, detours, allowable noise, dust, parking, deliveries, lighting, emissions, truck routes, and other potential impacts and nuisances. Heavy-duty routes can be planned to avoid residential neighborhoods and sensitive land uses such as daycares, schools, and senior residences. It should also include penalties for violations.

It is strongly recommended that these outcome measures be combined with the *Process Measures* in this chapter, especially the *Inclusive Engagement* measures, so that the construction plan may be effectively discussed with the community. This is especially

B3 Attach #1 of 3

important for larger projects, multi-year projects, and/or projects that impact the public right-of-way (i.e., sidewalks, bicycle lanes, and streets).

In areas with nearby populations, the plan should pay particular attention to PM emissions, such as from dust and diesel exhaust. Most air districts provide guidance related to dust control and reducing diesel particulate matter.

Example

LA Metro's Purple Line extension required street closures and night work. Regular meetings with the community resulted in changes to the project practices, such as sound training, sound blankets, and moving loud work to the daytime. The construction schedule also changed during the COVID-19 pandemic, when it was deemed preferable to close Wilshire Boulevard continuously during the lockdown for a shorter duration instead of intermittent closures over a longer period.

Resources

- *Planning Healthy Places*: The Bay Area Air Quality Management District (BAAQMD) provides best management practices to reduce emissions as well as exposure for construction (pages 25–26) in this guidebook for addressing local sources of air pollutants in community planning.
- The Sacramento Metropolitan Air Quality Management District provides best management practices for various construction phases.
  - Basic Construction Emission Control Practices (Best Management Practices)
  - Enhanced Onsite Exhaust Controls
  - Enhanced Fugitive PM Dust Control Practices

CE-2. Ensure Active Modes Access During Construction

The project will maintain pedestrian, cycling, and transit access along street frontage during construction. Any pedestrian detours will not require crossing the street. Bus stop relocations should be no more than two blocks away, with clear signage and a map at the original stop directing passengers.

Applicability

Projects with construction that infringe upon the public right-of-way.

Scale and Timing

- Scale: Project/Site
- Timing: Construction

Communities or Issues Addressed

Construction projects often temporarily close sidewalks and bike lanes, forcing vulnerable users into dangerous situations in the vehicle lanes or creating burdensome detours. Closures are often not coordinated with other projects, leading to dangerous or

B3 Attach #1 of 3

incomplete active transportation networks. This measure seeks to maintain safety and convenience for active transportation users for the duration of construction.

Dimensions of Equity

Ensuring safe, sustainable modes maintains *active transportation/walkability and bike-ability.* Communities with low vehicle ownership rates and limited mobility options are often put into dangerous situations due to construction sites, leading to possible traffic injury or inconvenient, ill-marked detours. Maintaining transit stops also ensures *transportation access*.

Implementation Considerations

The project should ensure construction deliveries do not create safety conflicts with pedestrian and cycling paths of travel. A solid barrier should be used if the pedestrian or cycling path is in-street. Construction workers often use on-street parking, which can cause conflicts with transit stops and local business. If the project is replacing a vacant lot, look for desire paths, which indicate existing routes used by the community; these travel patterns should be taken into consideration when designing both the construction access plan as well as circulation patterns after the project is operational.

Example

For a construction project on Broadway, the City of Oakland required the placement of protective barriers for both sidewalks and bike lanes rerouted into the street (Rudick 2020). Unlike in many construction projects, the contractors provided K-rail to the left of the bike lane, providing cyclists a physical barrier from vehicle traffic. Additional dividers for the rerouted walking path protected pedestrians from both bicycles and construction equipment, providing greater safety for users.

The City and County of San Francisco provides clear guidance on sidewalk closures, transit station access, and bike lane access during construction. Contractors are required to provide, at minimum, a 4-foot wide clear path of travel on any sidewalk at all times, and any projects that cannot do so requires a special permit (San Francisco Municipal Transportation Agency 2012). If pedestrians must be routed into the parking lanes, a barrier must be used. San Francisco also requires that construction projects not block or impede any transit operations or movements into transit stops. Contractors may submit a request for a temporary bus stop relocation, and they must provide signs and may be required to install temporary benches.

CE-3. Post a Clear, Visible Enforcement and Complaint Sign

The project will have conspicuous signs at the fence line listing hotline numbers for potential nuisance complaints and agency responsible for enforcement. The sign should be in clear, plain language (example: Dust problems? – Call Air District at xxx, Construction before 6am or after 8pm? – Call City at xxx, etc.).

B3 Attach #1 of 3

Applicability

Projects with construction.

Scale and Timing

- Scale: Project/Site
- Timing: Construction

Communities or Issues Addressed

Enforcement of nuisance issues—which includes excessive dust, noise, light, pollution, or other inconvenience or annoyance impacting other people—tend to be complaint-based. Ensuring that all communities have knowledge of expected parameters of construction and access to reporting resources is necessary to minimize disruption and harm during the construction process.

Dimensions of Equity

Providing clear contact information and a means of solving a problem related to construction can increase *transparency* and *accountability* and increase community members' positive interactions with and trust in local government.

Implementation Considerations

Provide translations in communities where other languages are widely spoken, which may be reflected in CalEnviroScreen's Linguistic Isolation indicator and the American Community Survey and should be reviewed with community members during construction plan development, as many languages are not represented in surveys. Larger projects, or projects on multiple street frontages, will need multiple signs. Include multiple methods of contact for each enforcing agency, such as phone, email, social media, or website.

Example

The City of Los Angeles provides a list of good neighbor construction practices, containing requirements regarding street access, street closures, noise, debris and cleanliness, and allowed construction hours. The City also provides the agency responsible for enforcement for each requirement (Los Angeles Department of Building and Safety 2015).

CE-4. Portable Indoor Air Filtration for Nearby Residents During Construction

The project proponent will provide indoor air filtration for the duration of the construction project to potentially impacted residents and businesses. The project may either upgrade or equip heating, ventilation, and air conditioning (HVAC) systems to use MERV-13 or higher air filters capable of at least 0.5 air exchanges per hour, or provide California-certified portable air-cleaning devices. Residential users should be provided with at least one air-cleaning device per occupied bedroom, with sufficient air flow to complete at least two air exchanges per hour. Residents will be trained on their use, optimal placement,

B3 Attach #1 of 3

and are encouraged to move the air-cleaning device(s) to where they will be breathing. High-efficiency, appropriately sized portable air-cleaning devices can remove 30 to 60 percent of air particles, and in some cases up to 90 percent (CARB 2017).

Applicability

- Projects using diesel on-road trucks with a gross vehicle weight rating over 14,000 pounds using an exemption from the California Air Resources Board's (CARB) Truck and Bus regulation (such as Low-Use Exemption or a Governor's Emergency Order).
- Projects in locations with harmful soils.
- Projects where construction activity is likely to cause dust to impact adjacent or nearby occupied land uses.
- Projects involving demolition or extensive site preparation.

Scale and Timing

- Scale: Project/Site
- Timing: Construction

Communities or Issues Addressed

Even with carefully selected measures, construction activity can still impact nearby residents due to the amount of equipment involved, especially for large projects or in areas where residents are downwind of construction. Construction emissions can also have a greater impact on low-income residents, who are more likely to live in older homes or apartments, with more air leakages that leave them exposed to outdoor air quality. Renters, who may be more likely to be low income, also have less control over their building conditions or access to the HVAC system. This measure acts as an additional line of protection, filtering dust, diesel exhaust, and other PM generated by the project. Consider using this measure in areas with particularly harmful soils, such as areas with naturally occurring asbestos, lead contamination, or Valley Fever spores.

Dimensions of Equity

Providing indoor air filtration to impacted residents improves *public health* and can also mitigate indoor *air quality* impacts.

Implementation Considerations

This measure requires windows to be closed to be effective, so may be less effective in locations with mild climates or for buildings without HVAC systems. Resident training is key for success; all training and educational materials should be available in multiple languages based on community input and available data. Replacement filters need to be provided in sufficient quantities to last through the construction phase. The project proponent should also consider providing assistance throughout the construction phase with maintenance and filter replacements. Air filters may increase utility bills for residents, so a stipend may be appropriate.

B3 Attach #1 of 3

This measure is not a replacement for emission and nuisance-control practices and should complement local and state regulations, mitigation measures, and conditions of approval.

Example

For construction projects built under the UC Davis Sacramento Campus 2020 Long Range Development Plan update, the prime construction contractor will implement air pollution exposure reduction measures for nearby residents in areas where projected cancer risks exceed 10 per million. UC Davis will provide financial assistance for residents to purchase up to two MERV-15 air filters per year or a portable home air cleaner if the home lacks a compatible HVAC system. (UC Davis 2020.)

Resources

- U.S. Environmental Protection Agency's (U.S. EPA's) *Guide to Air Cleaners in the Home 2nd Edition*
- CARB's List of CARB-Certified Air Cleaning Devices
- *Planning Healthy Places*: This resource from BAAQMD provides guidance on air filtration use to reduce exposure for sensitive receptors.

CE-5. Air Quality Monitoring and Response Plan

The project proponent will commit to fence-line monitoring of air pollution during the construction phase and will take corrective action to modify or limit construction activities if pollutant levels exceed the ambient air quality standards. Community input is critical to determine preferred response and redress actions in advance, so that when air quality standards are exceeded, the project proponent can immediately implement corrective actions. Potential redress actions include eliminating idling of diesel-powered equipment; suspension of excavation, grading, and demolition activities when wind speeds or the daily air quality index (AQI) exceeds a certain threshold; limiting simultaneous occurrence of multiple construction phases; lowering speed limits; adding more freeboard in haul trucks; and increasing watering of exposed surfaces, such as unpaved access roads or graded areas, ideally with recycled or reclaimed water.

Applicability

- Locations with harmful soils near other occupied land uses.
- Construction includes demolition, simultaneous occurrence of two or more construction phases, extensive site preparation, or extensive material transport.

Scale and Timing

- Scale: Project/Site
- Timing: Construction

B3 Attach #1 of 3

Communities or Issues Addressed

This measure may be particularly applicable in communities already disproportionately burdened by air pollution, as based on their indicators in CalEnviroScreen or the Healthy Places Index. Some projects, such as landfill remediation, necessitate disturbing soils that may put nearby receptors at risk.

Dimensions of Equity

Continued air monitoring at a construction site, particularly if the data is available in real-time to the public, can increase *transparency* and *accountability* for land use development projects, while also supporting *public health*.

Implementation Considerations

An air quality monitoring plan should consider target emissions for monitoring as well as meteorological data. The plan should ideally also include a publicly accessible platform to share real-time as well as historical air quality data and connect to other local air quality monitoring efforts. If real-time data will not be available, the plan should work with the community to determine preferred reporting intervals and delivery formats. Multiple monitors may be required for appropriate coverage. Monitoring should begin before construction activities start to understand baseline air pollutant levels. Once construction begins, monitoring should be active both during and outside of core construction hours to establish a control for comparison. The plan should also set action levels at which construction activities are altered or limited. Community input (see *Inclusive Engagement*) and consultation with the local air district are necessary to make these determinations.

Example

City of Folsom Clean Closure Work Plan: Corporation Yard Landfill

The City of Folsom conducted a clean closure (removal of waste to another location) of a 4-acre landfill in their corporation yard. The environmental document required that an air monitoring specialist, independent of the contractor, would implement a monitoring program for methane, total VOCs, hydrogen sulfide, dust, metals, asbestos, and meteorological parameters during construction. The plan included actions that the contractor would take if air quality levels degraded below appropriate levels.

BNSF Sangamon Right-of-Way Air Monitoring Plan

BNSF (a railroad) conducted removal activities along South Sangamon Street in the City of Chicago, Illinois. An Air Quality Monitoring Plan was created to monitor for fugitive dust from project activities. The plan committed to real-time air monitoring and the implementation of additional fugitive dust mitigation measures if PM2.5 concentrations exceeded set action levels.

B3 Attach #1 of 3

Resources

- CARB's Community Air Protection program includes resources on how to develop and implement a community-driven air monitoring program.
- *Planning Healthy Places* and *Warehouse Projects and Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act*: These resources, from BAAQMD and the Office of the Attorney General, respectively, contain construction best practices and example construction ordinances that can be consulted for potential response actions if air quality standards are exceeded.

CE-6. Provide Funds to Businesses Impacted by Construction Activities

The project will provide financial assistance to businesses impacted by construction activities and consequently see a decline in revenue. Financial assistance may be limited to fixed operating expenses, such as payroll, rent or mortgage, utilities, and insurance.

Applicability

Projects where access to businesses are restricted during construction—typically, public transportation projects.

Scale and Timing

- Scale: Project/Site
- Timing: Construction

Communities or Issues Addressed

Small and local businesses typically have less available operating capital than their national counterparts and are typically less able to withstand temporary loss-of-business due to construction impacts. Many small businesses also have limited ability to transition to online sales or to increase marketing as a response strategy to construction disruptions.

Dimensions of Equity

Small and local businesses provide community identity, gathering places, and services. Small businesses also return more money into the local economy. Keeping small businesses afloat during the construction period helps to ensure the new project will benefit from an intact neighborhood and supports local *economic resilience* with the continuity of employment opportunities.

Implementation Considerations

Funds can be provided to businesses based on a percentage of their losses and may be capped at a certain amount. Some small businesses may not have sufficient record-keeping to demonstrate years of sales or income, so strict documentation requirements may exclude some impacted businesses.

B3 Attach #1 of 3

Example

The Los Angeles Metro operates a Business Interruption Fund that provides financial assistance to small businesses located in areas impacted by transit construction projects. The financial assistance covers fixed operating expenses such as utilities, rent or mortgage, payroll, insurance, and other documented expenses. Funding is limited to $50,000 or 60 percent of operating expenses, whichever is less. Businesses must have at least 2 years of continuous operating history, be solvent, provide financial records, and be in good standing with all tax and licensing authorities. Information is available in English, Spanish, Korean and Japanese, based on the demographics of the construction location. Six months after grant award, 94 percent of recipient businesses remained open, and 1 year after receiving the grant, 85 percent of businesses remained open.

Public Health and Air Quality (PH)

As established by extensive research and residents' lived experiences, low-income communities and communities of color are disproportionately burdened by air pollution, with lasting health impacts.

Marginalized communities are more likely to be located near highways, railyards, warehouses, ports, oil and gas facilities, and other industrial sources—or rather, these industrial facilities are more likely to be placed in and near communities of color. Over half (57 percent) of facilities covered by California's cap and trade program are in or within a half mile of disadvantaged communities, including 15 out of 20 refineries, 5 out of 9 cement plants, and 65 percent of other combustion sources – including facilities that produce a range of toxic chemicals (OEHHA 2017). Across the U.S., Black communities are exposed to 1.5 times more particulate matter 2.5 (PM2.5) than the population average, and communities of color 1.3 times more (Mikati et al. 2018). Communities of color with higher levels of racial isolation also experience higher levels of ozone and PM2.5 (Bravo et al 2016), as well as exposure to airborne toxics and its associated cancer risks (Morello-Frosch and Jesdale 2006). The severity of discrimination appears even at the particle level: Black, Latinx, Asian, and low-income populations were up to 150 percent more exposed to toxic components of PM2.5, including aluminum, sulfates, vanadium, nickel, nitrates, and zinc, than white populations—even in areas that meet federal air quality standards (Bell and Ebisu 2012).

Toxic air outside the home translates into toxic air inside the home. Low-income residents and residents of color are more likely to live in homes with elevated indoor levels of NOx, PM2.5, and compounds such as benzene, chlorinated chemicals, and lead as result of aging and dilapidated housing conditions, air leakages, inadequate or non-existent

B3 Attach #1 of 3

ventilation systems, smaller living spaces, and other challenges (Adamkiewicz 2011). Moreover, poor housing conditions and the lack of ventilation/HVAC systems can translate into exposure to hazardous levels of wildfire smoke – an increasingly urgent issue as California endures catastrophic wildfires year after year. Wildfire smoke can be up to 10 times more harmful to human health than ambient PM2.5, leading to significant increases in hospital admissions (Aguilera 2021). Low-income and outdoor workers, such as in the agricultural and construction industries, especially undocumented people, are particularly at risk of wildfire smoke and are often overlooked by local, state, and federal disaster response and relief programs.

A lifetime of breathing polluted air, coupled with systemic disparities in healthcare, transportation, housing, education, access barriers, green spaces, and resource availability, has consequences. Long-term exposure to PM2.5 is far deadlier – up to three times more – for Black, Asian, Latinx, and low-income populations than the general population (Di 2017). Race matters more than wealth: Even at higher income levels, Black people had higher risks of deaths from PM2.5 than the general population or lower-income white people, suggesting that systematic racism in the siting of polluting sources is at play (Di 2017). Extreme heat and the climate crisis will only make matters worse, as mortalities associated with PM2.5 increases with warmer temperatures (Kioumourtzoglou et al. 2016). Extreme heat itself is an environmental justice issue: low-income communities and communities of color are more likely to lack tree canopy, parks, and green spaces, and are more likely to experience urban heat island (UHI) effects and extreme heat. Heat, in turn, is linked to heat strokes and potential fatalities, cardiac arrests, and other health impacts.

These tragic disparities have magnified and exacerbated the impact of COVID-19 on marginalized and underserved communities. A nationwide study found that for every 1 microgram per cubic meter increase in long-term PM2.5 exposure, COVID-19 fatality rates increase by 11 percent (Wu 2020). Black, Latinx, and Native persons are hospitalized at three to four times the rate of white persons and have fatality rates about 2 to 2.5 times greater (CDC 2021). Decades of segregation and structural racism have resulted in poverty, pollution exposure, underserved neighborhoods, and a lack of access to healthy food, healthcare, and green spaces—all of which have left communities of color at far greater risk to COVID-19 and other health and environmental disasters (Pirtle 2020).

Recent research finds that inequities in PM2.5 exposure are increasing—not decreasing—in the U.S. *despite* the progress made in stricter vehicle emission standards, air pollution regulations, and cleaner electricity production. From 2000 to 2016, predominantly white populations saw improvements in air quality, compared to no improvements in predominantly Black communities (Jbaily 2020). While California's cap-and-trade program has helped to reduce the gap in air pollution exposure between disadvantaged communities and the rest of the state, it has not completely eliminated this gap, which has returned to near-2008 levels by 2017 (Hernandez-Cortes and Meng 2020). This suggests that unless equity and environmental justice are intentionally centered in policies and programs, frontline communities will not see the co-benefits of cleaner air and improved public health because of GHG reduction programs. As such, it is critical that new

B3 Attach #1 of 3

development in California attempts to implement measures to improve public health and air quality outcomes for vulnerable and underserved communities.

Key Indicators: These measures are relevant to communities that experience elevated air quality impacts, AB 617 communities, and communities with greater socioeconomic vulnerabilities. Relevant CalEnviroScreen indicators include PM2.5, Diesel PM, Ozone, Asthma, Cardiovascular Disease, Low-Birth Weight, Poverty, and Unemployment. Relevant Healthy Places Index indicators include Above Poverty Level, Clean Air–Diesel PM, Clean Air–Ozone, Clean Air–PM2.5, Asthma, Asthma–Emergency Room Admissions, Coronary Heart Disease, Chronic Obstructive Pulmonary Disease, Heart Attack Emergency Room Admissions, Active Transportation, Obesity, Children, Elderly, Outdoor Workers, and Race/Ethnicity.

Cross-Cutting Guidance

Most measures in this section focus on urban greening, which begins a multi-generational commitment of maintenance and care. Often if a tree becomes a problem or gets in the way, it is removed. As such, it is critical that the right planting goes in the right location with the right support and protection. It is recommended the user incorporate the following into PH-1 and 2.

- **Input from the community**: Community preference and concerns must be addressed for the plantings to be used and loved. Sight lines, access, security, lighting, allergens, odors, droppings, shade, and community character should be discussed.
- **Input from jurisdiction and agency partners**: To forestall potential conflicts, utilities, Caltrans, and local departments (e.g., transportation, fire, parks, planning, and urban forestry) should have access to and input on landscaping and greening plans. The landscape plan must also be cross-checked with signage and billboards, as trees will likely be felled if they encroach upon the view shed. Appropriate space must be given to prevent sidewalk and pavement buckling, as well as allowing the plantings to mature to their full potential.
- **Maintenance and redress**: There must be clear ownership of the maintenance responsibility, understanding of maintenance expectations, and appropriate redress if the vegetation fails. This can include replanting, adding high-albedo coating to unshaded pavements, providing portable air filtration devices, or other measures.

It should also be noted that measures addressing public health are not limited to this section. There are substantive public health benefits from many GHG mitigation measures in Chapter 3, chiefly via air pollution reduction, such as through building electrification,

B3 Attach #1 of 3

building decarbonization, renewable energy generation, and reductions in vehicle emissions. Critically, however, the health benefits associated with increased physical activity as a result of active transportation overshadow the health benefits associated with improved air quality from reduced or cleaner vehicle emissions (Maizlish et al. 2017). Physical inactivity is one of the leading factors in cardiovascular diseases, such as heart disease, diabetes, and cancer. Increasing active transportation to just 20 minutes per day could save over 8,000 lives annually, improve health, and reduce years of life lost and disability (Maizlish 2016). What's more, historically underserved and marginalized communities are often disproportionately burdened by chronic disease as a result of structural inequities and often lack access to sidewalks, bike lanes, transit service, and parks. Thus, measures that facilitate Californians to walk, bike, and ride transit as part of their daily routine should be prioritized to improve public health and reduce health disparities. To see measures that support active transportation, please turn to Chapter 4.

PH-1. Establish Vegetative Barriers to Reduce Pollution Exposure

If designed, planted, and maintained correctly, a thick barrier of trees, bushes, hedges, and/or shrubbery can decrease air pollution and protect public health. Vegetative barriers achieve this by intercepting PM, as well as taking up ozone, NOx, and other air pollutants through their leaves. Well-designed roadside vegetation barriers can reduce downwind particulate matter by as much as 50 percent, black carbon by 27 percent, and NOx by 20 percent (Deshmukh 2018). To maximize effectiveness, vegetative barriers can be combined with a solid wall barrier (Tong 2015); however, use of impenetrable walls should be considered carefully to avoid creating barriers that discourage walking or biking to destinations in or near a neighborhood.

Applicability

Projects within 1,000 feet of the following:

- Major roads such as highways, freeways, or arterials.
- Major stationary sources as defined by the local air district.
- Railyards and railways.
- Locations with high volume of diesel trucks, or other sources of pollution.

Scale and Timing

- Neighborhood/City and Project/Site
- Construction and operations

Communities or Issues Addressed

This measure is particularly applicable for AB 617 communities and other communities disproportionately burdened by poor air quality. Because it takes time for vehicle fleets to become cleaner, vegetative barriers can reduce air pollution for projects that are located near busy roads and freeways. They can also help to block pollution from new land uses

B3 Attach #1 of 3

that will be a source of emissions and provide protection for projects that serve sensitive users (e.g., daycares or senior residences).

Dimensions of Equity

In addition to improving *air quality*, vegetative barriers can help to reduce noise and beautify the environment. In addition, they can help to reduce the UHI effect through evapotranspiration and shading, contributing to *climate resilience*. If native species are selected, they can also support local biodiversity and habitat. Finally, vegetative barriers can help to reduce stormwater and improve groundwater infiltration.

Implementation Considerations

It is critical to properly design and plant vegetative barriers to effectively block and uptake air pollution. Vegetative barriers should be tall, thick, and have sufficient density of leaves to block air flow (Baldauf 2017). U.S. EPA has developed minimum recommendations for constructing roadside vegetation barriers to improve near-road air quality, including ensuring a minimum thickness of 10 meters (33 feet); for examples of vegetative roadside barriers meeting these minimum recommendations, please see illustrations on pages 13-16 in the Sacramento Metropolitan Air Quality Management District's *Landscaping Guidance for Improving Air Quality Near Roadways*.

Vegetative barriers should not seasonally shed leaves or have other gaps – vegetative barriers that are porous or have large gaps can result in unchanged or higher levels of air pollution downstream. Studies suggest that plants with small leaves, complex leaf shapes, and/or rough leaf surfaces are the most effective at air pollution reduction (Barwise and Kumar 2020). In addition, regular maintenance, pruning, and care is important to keep the vegetative barrier alive, and these costs should be factored in during the design phase. If possible, drought-tolerant or native species should be selected.

While there are ranked lists of species most effective at air pollutant removal (Yang 2015), the project proponent should consult with the regional urban forester, local tree foundations, master gardeners, CBOs, neighborhood associations, and other groups to select plant varieties preferred by residents and suitable to the local climate. Species selection should not include tree species that emit high amounts of reactive organic gases or allergenic pollen to avoid additional, substantial burdens for nearby residents, especially those with asthma or other respiratory conditions.

Vegetative barriers adjacent to freeways can consider the inclusion of a solid wall barrier or sound wall, but a wall along arterial and collector roads may create barriers to walking and biking around the community, reducing network connectivity.

Inclusive community engagement is a critical part of this measure: community participation can determine preferences and priorities around preferred species, barrier design, and barrier placement. Consult the *Community-Centered Development* and *Inclusive Engagement* sections for measures on understanding local priorities and community outreach.

B3 Attach #1 of 3

Example

Approved in 2014, McKinley Village is a 328-unit residential development in the City of Sacramento, closely bounded by an interstate highway to the north and the Union Pacific Railroad tracks to the south. Project residents are located within 500 feet of the highway—CARB's recommended minimum distance for siting new sensitive receptors—which averages 159,000 vehicles per day (City of Sacramento 2014). To reduce air quality impacts, the project includes a 30-foot-wide barrier consisting of a sound wall with landscaping adjacent to the freeway and an 8-foot-wide landscape buffer adjacent to the railroad tracks (City of Sacramento 2013). The vegetation for both barriers includes a mix of evergreen, deciduous (which are *not* recommended for vegetative barriers), and coniferous trees such as pines and redwoods. When initially planted, the vegetative barrier was incomplete due to temporary signage advertising the sale of homes.

Resources

- CARB: *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways*
- Sacramento Metropolitan Air Quality Management District: *Landscaping Guidance for Improving Air Quality Near Roadways*
- U.S. EPA: *Recommendations for Constructing Roadside Vegetation Barriers to Improve Near-Road Air Quality*

PH-2. Increase Urban Tree Canopy and Green Spaces

The project will go above and beyond local requirements and standards and plant additional trees along streets and public spaces in underserved and low-income communities, which disproportionately lack tree canopy, parks, and green spaces in comparison to wealthier, whiter neighborhoods. To achieve equity in tree canopy, additional tree planting should be focused on neighborhoods with the fewest trees. Trees are estimated to remove over 1 million tons of air pollution in California in 2010, with associated health benefits of $446 million dollars in terms of avoided health costs (Nowak 2014). Yet with the disparity in urban tree canopy between communities, these benefits fail to accrue to low-income residents and people of color, who disproportionately experience the impacts from respiratory conditions, hospital admissions and emergency room visits, lost workdays, and fatalities. By increasing tree canopy and park spaces in underserved communities, the project can contribute to reductions in air pollution and extreme heat, while creating a more inviting environment for walking and biking, improving all dimensions of public health.

Numerous studies have documented the association between income, race, and tree canopy coverage, which in turn leads to inequities in air pollution and extreme heat exposure. Formerly redlined communities have nearly 50 percent less tree canopy than formerly greenlined communities (Locke et al. 2021). Across the U.S., 94 percent of formerly redlined communities are hotter than their non-redlined neighbors, by as much as 12.6 degrees Fahrenheit (°F) in some cases (Hoffman et al. 2020). An analysis of heat disparities in urban California found a 4.7°F difference between the poorest 10 percent

B3 Attach #1 of 3

of neighborhoods and the wealthiest 10 percent, with the greatest difference of 6 to 7 °F in Los Angeles, the Inland Empire, Palm Springs, and Latinx communities (Dialesandro 2021). The disparity in tree canopy and green spaces leads to higher fatalities during heat waves, exacerbated cardiovascular conditions, higher energy bills, poorer air quality, lower home values, and other impacts.

Applicability

Applicable to all projects.

Scale and Timing

- Neighborhood/City and Project/Site
- Trees can be established during the construction or operations phase but should be determined in the planning stage in conjunction with the community.
- The environmental review phase should include opportunities to mitigate noise/air quality impacts through the installation of trees.

Communities or Issues Addressed

This measure should be prioritized for neighborhoods that lack tree canopy, or projects that are located near busy roads, freeways, industrial land uses, and other sources of pollution. Projects located in communities with a high percentage of impervious or paved surfaces should also consider increasing tree canopy, green spaces, greenways, and other green infrastructure.

Dimensions of Equity

Trees improve *air quality* by removing PM, NOx, ozone, and sulfur dioxides, with the greatest health and environmental benefits from PM reduction. By reducing air pollutant concentrations in outside air, trees in turn also reduce indoor air pollution, with trees planted outside the home linked with a 50 percent or more reduction in indoor PM (Maher 2013). Similarly, urban trees, as well as cooler air temperatures, have also been linked with improved academic performance in schools – a benefit that could extend to future *economic resilience* (Kuo et al. 2018; Park 2018). Indeed, trees can cool cities by up to 10°F, with the greatest cooling occurring when canopy cover exceeds 40 percent (Ziter 2019). This cooling effect means that homes in neighborhoods with high tree canopy levels can save on air-conditioning bills during the summer—by up to 30 percent in Sacramento as one example (Akbari 1997).

In addition, urban trees and parks can help to create a more comfortable environment for walking, biking, and exercise, improving people's overall *health* and encouraging *active transportation.* Urban greening can also help provide pleasant public spaces for community residents to meet and socialize. Public spaces and strong neighborhood connections have been linked with greater *social resilience* and decreased fatalities during the 1995 Chicago heat wave as documented by Eric Klinenberg in *Heat Wave: A Social Autopsy of Disaster in Chicago*. By listening to community members on desired spaces for greening, tree planting can support *community ownership* of their neighborhood and built

B3 Attach #1 of 3

environment. Finally, trees, parks, and green infrastructure can help to enhance overall *climate resilience,* through contributing to groundwater recharge, stormwater absorption, and biodiversity support.

Implementation Considerations

Community input and preferences should be centered in any tree planting efforts. Because an increase in tree canopy is associated with small increases in property value (Donovan 2021), gentrification is a concern, and CBOs and residents should have full input and decision-making authority on tree selection, siting, and maintenance. The project should work with neighborhood associations, CBOs, and other stakeholders throughout the process. Local tree foundations and forestry organizations can provide advice about species selection, but generally a diversity of species will be more resilient against pests, invasive species, and climate change. Heat- and drought-tolerant trees are more likely to be adaptable to future climate conditions and ensure long-term survivability. If urban cooling is a goal, growth rate and canopy size should be considered. Finally, allergen and biogenic volatile organic compound production are additional factors to consider.

Example

On June 17, 2021, the City of San Francisco broke ground on the India Basin Shoreline Park. The project will create a park that directly serves the priorities of San Francisco's historically overlooked and underserved southeast communities by remediating an abandoned industrial site, which will then be combined with two existing open space areas. Upon completion, the 10-acre waterfront park will offer the 35,000 nearby residents a restored shoreline, accessible, expanded park space, gardens, natural habitats, walkways, a public plaza for local events and markets, and an ecological education area. The park is led by a collaborative partnership with the Bayview Hunters Point community, the A. Philip Randolph Institute, the Trust for Public Land, and the San Francisco Parks Alliance (City and County of San Francisco Office of the Mayor 2021).

Resources

- Tree Equity Score: Based on the existing tree canopy cover, population, income, unemployment, race, age, and temperature, this tool identifies the amount of tree canopy cover needed for urbanized census tracts to reach tree equity.
- Vibrant Cities Lab: A wealth of resources, research, toolkits, and case studies related to urban forestry and all its accompanying benefits.

Related Measures

- Inclusive Engagement (IE) measures

PH-3. Highly Rated Air Filtration

This measure requires a project proponent to install MERV-13 or higher-rated air filtration systems, and for vulnerable populations such as schools and nursing homes, MERV-14 or

B3 Attach #1 of 3

higher air filters. Highly rated air filters clean the air that enters the building, reducing resident exposure to air pollution and wildfire smoke. Independent of efforts to reduce air pollution sources, filters can help protect people from the air pollution that already exists, removing 50 to 99 percent of particles (CARB 2017). In addition, they can reduce air pollution generated indoors (e.g., from cooking, candles, consumer products, or smoking) as well as allergens that trigger respiratory ailments.

This measure requires the project be constructed with an HVAC system that accepts MERV-13/14 or higher filters, and has a permanent label affixed to the HVAC system that indicates a MERV-13/14 or higher filter must be used as a condition of approval for the project.

Applicability

Applicable to all projects.

Scale and Timing

- Scale: Project/Site
- Timing: Project construction, but filters must be changed regularly during operations

Communities or Issues Addressed

Low-income and underserved communities are often disproportionately impacted by particulate pollution and toxic air contaminants. Indoor air filtration can reduce impacts from these pollutants. In addition, seasonal issues, such as wildfire smoke, wood-burning appliance use, dust storms or certain airborne allergens, can be reduced inside, giving respite to breathers. This is especially important in communities without regular access to health care providers, and for projects located near major sources of pollution such as highways, trucking routes, railyards and railroads, or industrial sources.

Dimensions of Equity

While a combination of regulations and lower-emissions technology (e.g., renewable energy or electric vehicles) is gradually lowering air pollution levels throughout California, air filtration represents an immediate improvement to indoor *air quality* and can address allergen issues as well. This is especially important in communities burdened with high levels of air pollutants. With wildfires increasing across California, air filtration is also a *climate resilience* solution, and may become necessary in areas where air pollution has not historically been an issue. While all properties can benefit from cleaner indoor air, projects in places with high traffic and high PM can especially benefit from this measure.

Implementation Considerations

Filters work best when windows are closed, so this measure will be less effective in mild climates where windows are kept open most of the year, or in places without air conditioning. Education is necessary to ensure effective use.

B3 Attach #1 of 3

While filters typically need replacing at least once each year, major wildfire events or location in high-use areas, such as near major roads, may necessitate more frequent replacement.

Because the filters are only effective when the HVAC fan is engaged, energy bills may be higher than normal. Seek to use the most efficient and durable systems. Operating the HVAC system on fan-only mode, instead of with air-conditioning, will have lower energy costs.

Example

Non-applicable.

Resources

- U.S. EPA: *Guide to Air Cleaners in the Home 2nd Edition*
- CARB: List of CARB-Certified Air Cleaning Devices

Related Measures

- CE-4. Portable Indoor Air Filtration for Nearby Residents During Construction

PH-4. Create Healthful, Sustainable Indoor Spaces

People spend nearly 90 percent of their time indoors, making indoor air quality and chemical exposure critical to human health. Yet indoor air quality can be two to five times worse than outdoor air quality (U.S. EPA n.d.). Building materials and interior furnishings are the main source of indoor air pollutants and other toxics. Paints, flooring, composite and manufactured wood, fire retardants, insulation, adhesives, binders, sealants, and other materials can off-gas and release a wide range of chemicals hazardous to human health. These include volatile organic compounds (VOCs) – including formaldehydes – benzene, xylene, styrene, per- and poly-fluorinated chemicals (PFCs, such as polyfluoroalkyl substances), and fibers. The U.S. EPA estimates that VOC levels can be as much as ten times higher indoors than they are outside (U.S. EPA n.d.).

In addition to reducing chemical exposure, ventilation is also a key component of indoor air quality. As building energy efficiency improves, the tightness of the envelope seal also improves, potentially creating stagnant air inside, which can result in higher indoor humidity and concentrations of carbon dioxide, VOCs, and other chemicals.

This measure calls for the project to:

- Use certified non-toxic, low-toxic, and/or low-emissions building materials, wherever feasible, including in paints, sealants, finishes, adhesive products, carpets, insulation, flooring, flooring materials, wood products, furniture, and more.
- Include operable windows and provide training and guidance on the proper operation and maintenance of ventilation systems to optimize indoor air quality. Ensure good ventilation when paints, sealants, adhesives, and similar products are being applied.

B3 Attach #1 of 3

- Projects with an operational component should use low- or non-toxic cleaners and other chemicals, which can benefit the health of building staff and occupants.

Some material certification systems undertake a lifecycle analysis of the environmental footprint of building materials and products. Thus, building materials should ideally be sustainable, natural, or made of recycled or renewable materials, which are also likely to have less impact on people and the environment during the manufacturing process. If possible, materials and products should be sourced locally.

Applicability

All

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning, construction, and/or operations

Communities or Issues Addressed

Using non- or low-toxic or low-emissions building materials can improve public health for both building occupants as well as construction workers. People with respiratory conditions or existing health conditions, seniors, and children are particularly vulnerable.

VOCs are linked with a range of short- and long-term health effects, ranging from irritation of the eyes, nose, and throat; to nausea, headaches, and loss of coordination; to long-term damage to the liver, kidneys, and central nervous system. As a carcinogen, formaldehyde is a particular VOC of concern and can be found in a range of composite wood products. Other indoor air contaminants, such as toluenes and xylenes, which are emitted from laminated lumber products, have high levels of toxicity to the liver, blood, and nervous systems (Khoshnava et al. 2020). In addition, PFCs are commonly used in building materials such as carpets and furniture to repel stains, water, and corrosion, but they are linked to health impacts such as high cholesterol, testicular and kidney cancer, reduced vaccine effectiveness, and thyroid disease (Fletcher et al. n.d.).

Used in pipes, flooring, and other building materials, polyvinyl chloride (PVC) generates high levels of dioxins and vinyl chloride throughout its production and disposal cycle and is a critical environmental justice issue: Most of the United States' PVC manufacturing plants – including the world's largest – are located in low-income Black communities in Texas and Louisiana, including Louisiana's Cancer Alley, a stretch between Baton Rouge and New Orleans home to 150 refineries, plastic plants, and chemical facilities (CHEJ n.d., UN 2021). Dioxins are highly toxic and are linked with cancers and harms to the reproductive and immune systems, while vinyl chloride is a known carcinogen (WHO 2016).

Using low- or non-toxic materials is beneficial for all projects but especially so for residential projects, healthcare facilities, and schools. Notably, for businesses and commercial projects, studies have found improved productivity, decision-making skills, and a 26 percent improvement in cognitive function for workers in green-certified

B3 Attach #1 of 3

buildings with low levels of VOCs, low levels of carbon dioxide, and low- or non-toxic building materials (MacNaughton 2017). Workers and occupants of these green buildings also report fewer symptoms of sick building syndrome and better sleep.

Dimensions of Equity

The use of low- or non-toxic building materials can improve *public health* for people across the lifecycle of the building. By displacing toxic materials, it can reduce chemical exposure during the material manufacturing, building construction, and operational phase for workers, nearby residents, and building occupants. If the building materials are sourced locally or recycled locally at their end of life, it can also help to support local *economic resilience*.

Implementation Considerations

There are various third-party certifications for low- or non-toxic building materials, with some certifications extending to cover lifecycle analysis, material sustainability, end-of-life producer responsibility, sourcing, and more. Note that each material or product type may have its own specific chemicals of concern, and there is not one single certification system, rule, or solution. Thus, ensuring a completely low-toxic building throughout all its components can be challenging and costly. The project should work with community members and stakeholders to understand priorities, goals, and toxins of highest concern. Examples of intrinsically low-VOC materials include glass, concrete, stone, ceramic, adobe, tile, plated or anodized metal, clay brick, and unfinished or untreated solid wood. Some low- or non-toxic materials may be more expensive than others, and understanding community priorities will be important to determining trade-offs and alternatives.

Note that many California air districts have VOC limits for paints, adhesives, sealants, and other architectural coatings. Projects are advised to check with their local air district for the most up-to-date limits.

Example

Kaiser Permanente has adopted a safer products policy prohibiting a wide range of toxins and carcinogens from its building materials as well as medical products. Specifically, Kaiser has prohibited the use of PVCs in flooring, carpet and carpet backing, handrails, signage, and more; the use of per- and poly-fluorinated chemicals in building materials, finishes, furniture, and fabrics; and upholstered furniture with chemical flame retardants. This is not only good for health but also lower cost overall: the use of PVC-free flooring not only reduces staff, patient, and visitor chemical exposure but also lowers the total cost of ownership, including cost and time for maintenance (Health Care Without Harm 2019). In addition, Kaiser's commitment across its facilities also helps to expand the market and product availability for low- and non-toxic building materials.

Resources

Certification systems

Below is a non-exhaustive list of established certification systems and programs for sustainable building materials. As interest in healthful indoor environments grows, the number of available environmentally friendly, non-toxic building materials is also likely to increase, while their cost is likely to decrease.

- Declare: The Living Future Institute's Declare program provides a clear label for building materials and products, detailing their place of final assembly, component ingredients (including toxics), VOCs, responsible sourcing certification for forestry products, and end-of-life options. The program includes construction materials, furnishings, paints, finishes, and more.
- WELL Building Standard: WELL certifies buildings based on how their design features and operational protocols support human health and well-being. WELL focuses on 10 areas, including air quality, materials, and thermal comfort, and is performance-based, with certification based on onsite testing.
- Build it Green: This pioneering California nonprofit organization focuses on environmentally friendly buildings that support occupant health. They offer a green product rating and also rate single- and multifamily homes for their environmental, health, and energy efficiency components.
- Greenguard: This independent, third-party organization certifies low-emitting building materials, paints, and products, with all results in a searchable database.
- GreenSeal: GreenSeal certifies products based on rigorous lifecycle analysis. Their directory includes paints, sealants, finishes, and adhesives, as well as a wide range of commercial/industrial cleaners and detergents.
- CARB Airborne Toxic Control Measures Phase II and Toxic Substances Control Act Title VI: To reduce exposure to formaldehyde in furniture, flooring, and cabinets, choose products that are certified CARB Airborne Toxic Control Measures Phase II compliant or Toxic Substances Control Act Title VI compliant.

Other resources

- Healthy Buildings For Health: This resource hub from the Harvard T.H. Chan School of Public Health translates research and studies on healthy buildings to actionable recommendations for all. The hub contains guides for healthy homes, schools, workplaces, and materials, as well as for COVID-19, climate change, and more.
- CARB Formaldehyde Factsheet: Overview of formaldehyde and strategies to reduce formaldehyde exposure.

Related Measures

- IEP-4. Use of Locally/Regionally Manufactured Products and Materials

B3 Attach #1 of 3

PH-5. Provide Equitable Food Access and Food Justice

California is the United States' largest producer of fruit and vegetables, but more than 4.7 million adults and 2 million children suffer food insecurity, experiencing inconsistent or limited access to sufficient or nutritious foods (California Food Policy Advocates 2019). The situation is worsening: the percentage of households reporting food insecurity increased by 22 percent during the first 3 months of the COVID-19 pandemic (UCLA 2021). Even when food is available, it may not be healthful. Counties with a higher percentage of people of color often have fewer healthful food options and more unhealthful options (Union of Concerned Scientists 2016). As a result, residents must often travel further and spend more time and money to access fresh produce. Thus, expanding access to healthful food is integral to public health and food justice, especially for low-income, historically underresourced communities.

While food access is a multifaceted issue, land use plays a key role in shaping access and availability. This measure calls for project proponents to incorporate strategies or solutions to support equitable food access as part of their project. Strategies include increasing opportunities for residents to grow their own food, adding or retaining locations to purchase food, and facilitating access to existing food sources.

For instance, projects can incorporate space and improvements for urban agriculture or community gardens, including through the transformation of vacant lots into urban farms. Also rising in popularity, vertical farming grows produce in stacked layers by controlling light, temperature, water, and sometimes carbon dioxide – thus, optimizing plant growth while taking up little space. Adopting local policies to support the growing of food crops in front yards and other practices can increase food access.

Projects can also expand the number of refrigeration units at existing or new convenience or neighborhood markets to facilitate the provision of fresh, healthful foods. Space, equipment, or funding for farmers markets, farm stands, mobile food banks, or local CBOs dedicated to food justice are also eligible. Larger efforts, such as the recruitment and construction of grocery stores, are also welcome.

Increasing access to existing food sources can also further food justice. Examples include expanding eligibility or hours to existing food programs (e.g., school nutrition programs) or facilitating travel (e.g., via microtransit or carshare) to existing retail locations.

Applicability

All

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning

B3 Attach #1 of 3

Communities or Issues Addressed

Expanding healthful foods access can reduce food insecurity and the incidence of chronic health conditions, such as high blood pressure, high cholesterol, heart disease, type 2 diabetes, cancer, and obesity. Many low-income and underserved communities are disproportionately burdened by these diseases as a result of structural inequities and redlining that have left neighborhoods with limited access to healthful foods but a far higher density of fast-food outlets and convenience stores (Union of Concerned Scientists 2016). Children are particularly vulnerable to food insecurity and poor nutrition, as it can affect development and mental health. Poor nutrition has even been linked with COVD-19 outcomes, as a plant-based diet is associated with a lower risk of COVID-19 infections and less serious symptoms if infected – with the beneficial effects particularly significant for residents in areas of high socioeconomic deprivation (Hampton 2021).

Dimensions of Equity

Providing access to nutritious food supports *public health*. In addition, enhanced access to affordable food and agriculture facilitates greater *economic and social resilience*. Community-based urban agriculture can support *community development* by creating an opportunity to network, organize, and strengthen social capital, civic involvement, and community empowerment (Meenar and Hoover 2012).

Implementation Considerations

The project should involve community members, CBOs, and other stakeholders in the planning and decision-making process to uplift community expertise and to avoid inequality, displacement, or gentrification. Consulting with community members is also essential in order to identify food options that are needed and desired, including culturally appropriate foods. Consider collaborating with a CBO to identify these needs and provide resources to community members. Such resources may include community-led cooking or canning workshops, gardening events, seed and crop swaps, and recipe bulletins.

When considering spaces to grow produce, especially in underresourced communities, specific health risks such as soil, water, and air pollution should be analyzed and mitigated first. For instance, vegetables grown in soil with high lead concentrations will uptake lead, which poses negative health effects, particularly for children (Horst et al. 2017). Appropriate training, garden planning, and infrastructure can help mitigate some of the environmental pollution risk.

Examples

The City of Santa Clara approved a farm-to-table, mixed-income development that will combine affordable housing with a 1.5-acre regenerative farm in a dense, urban environment. In addition to 36 townhomes, the housing will include 165 units for low-income seniors and veterans and 160 market-rate units with 10 percent reserved for moderate-income households. The farm will produce up to 20,000 pounds of hyper-local fruits, vegetables, herbs, and nuts per year, which will be available to purchase at steep

B3 Attach #1 of 3

discounts for residents. Landscaping outside the farm will also include food plants and habitat for native birds and insects. The project will also provide publicly accessible open space and recreational opportunities (Peters 2021).

The City of Richmond worked with the Richmond Food Policy Council to support agricultural initiatives by simplifying the process for submitting paperwork, lowering permitting fees, eliminating certain zoning requirements, and promoting community gardens as spaces for social and education activities (Barhoum 2016). The Contra Costa County Food Bank hosts a mobile food pantry, which provided food to one in eight people in Contra Costa and Solano Counties in 2015 (Barhoum 2016). Similarly, the Regional Environmental Council in Worcester, MA, provides fresh produce through their mobile farmers markets rotating through different residential, medical, cultural, or religious centers, while providing standing farmers markets at parks from Monday to Saturday.

The community of Southeast Bakersfield lost its only supermarket in 1995. Using $100,000 of public funds, the City of Bakersfield conducted demolition and site prep work on a burned-down motel located at California and Union Avenues (both of which host bus lines) in 2000 and started recruiting supermarkets. FoodMaxx opened for business on the site in 2006 (Wenner 2016).

Resources

- USDA Food Access Research Atlas and Food Environment Atlas: These atlases help to map food access indicators and data, and food environment indicators (store proximity, food prices, food and nutrition access), respectively, at the census tract level. They can help to determine if the proposed project is in a neighborhood facing food access or food insecurity challenges.
- The California Health and Human Services Open Data Portal offers California-specific data sets on food affordability, fruit and vegetable consumption, food assistance program participation, and the retail food environment.
- Food policy councils are made up of local food system stakeholders and provide suggestions on how to improve the food system. The Food Policy Network Directory lists local food policy councils throughout California.

Related Measures

- IC-5. Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets
- IC-8. Enhanced Access to Community Resources

B3 Attach #1 of 3

Inclusive Economics and Prosperity (IEP)

On August 28, 1963, more than 200,000 people gathered for the Washington March for Jobs and Freedom to call for a sweeping civil rights bill that would, among other goals, desegregate schools, eliminate discrimination in all employment, and provide training and placement for unemployed workers. Recognizing the centrality of economic empowerment to achieving racial justice, demonstrators marched in response to the segregation and structural racism that left Black workers facing low wages, poor mobility, unequal pay, and widespread discrimination. And yet, while much progress has been made, the dream of freedom and economic empowerment has not yet been fully realized. Systemic racism, as expressed by unfair housing, education, public safety, labor and healthcare policies, has continue to produce unjust outcomes in life expectancy, wage disparity, employment, and other indicators of prosperity. Historic disenfranchisement and exclusion from higher-paying jobs and homeownership, for example, has left communities of color unable to accumulate and pass on wealth between generations that can help to support a higher degree, a test prep course, or the ability to take on an unpaid internship. The mean and median wealth of Black families in the U.S. was only 15 percent that of white families in 2019—or $24,100 compared to $188,200 (Bhutta 2020). The wage gap between Black and white workers continues to increase year on year, and between 2000 and 2018, wage growth for white and Latinx workers was about four times faster than for Black workers (Gould 2019). Black workers with university and advanced degrees experienced significantly slower wage growth than white or Latinx workers at the same education levels.

Although these issues are challenging and complex, the development of land use projects can help to gradually address these issues through the adoption of inclusive contracting and hiring practices that prioritize residents from historically marginalized and underserved communities. By providing internships, apprenticeships, and other opportunities, project proponents can help open doors and potentially change lives.

Key Indicators: Relevant CalEnviroScreen indicators include Poverty, Education, and Unemployment. Relevant Healthy Places Index indicators include all Economic and Education indicators, Homeownership, and Hardship Index.

B3 Attach #1 of 3

Cross-Cutting Guidance

Many contracting and hiring processes, especially in the public sector, are resource-intensive for potential applicants and favor large enterprises or well-resourced individuals. If the measures below are simply appended to existing processes, root causes of exclusion are not addressed and can lead to tokenism or the proponent asking for the measures to be removed as infeasible. We recommend incorporating the following into any measures chosen.

- **Evaluate existing contracting, recruiting, and hiring practices**: The organization should evaluate their vendor lists and applicant pools from recent recruitments to identify additional outreach or modification of application requirements needed to increase local and diverse applicants. Consider partnering with CBOs or non-profits to provide technical assistance or increase the diversity of the applicant pool.
- **Plan for inclusion at the beginning**: Local small businesses need small, specific contracts. If the organization cannot bid contracts individually, the application process for the general contractor needs to include detailed, community-driven plans to meet local and diversity hiring targets, and appropriate redress if they fall short.
- **Create an inclusive workplace**: Worker productivity, growth, and retention occur when people can bring their authentic selves to the workplace. Pay equity, training, gender-neutral parental leave, employee resource groups, mentoring, and culturally inclusive dress codes, holidays, and organizational culture all can help people feel more welcome, supported, and included within an organization.

IEP-1. Local Labor and Apprenticeships (Construction)

To encourage economic development for the local community, the project will commit to hiring locally and provide apprenticeship and training opportunities for residents during the construction phase of the project. Local hiring can help to channel some of the economic value of development directly to the community in which it is building, helping to partially counter the potential effects of gentrification and neighborhood change. An apprenticeship program can help workers from low-income, vulnerable, marginalized, underresourced, or underrepresented backgrounds to gain work experience in the construction industry, and eventually accreditation and certification.

Applicability

All projects with construction.

Scale and Timing

- Neighborhood/City and Project/Site
- Construction

B3 Attach #1 of 3

Communities or Issues Addressed

Communities that are economically disadvantaged or low-income, based on median annual household income, CalEnviroScreen socioeconomic indicators, or Healthy Places Index economic indicators.

Dimensions of Equity

This measure can support local *economic development* and *job training* by providing opportunities to residents as well as members from underrepresented, marginalized, and vulnerable communities, and communities that face barriers in accessing jobs.

Implementation Considerations

This may be most feasible for larger projects above a certain price threshold (e.g., $2.5 million). The project can set targets for both overall local hiring as well as specifically for apprenticeships for workers from the local community, economically disadvantaged communities, communities of color, individuals who are unhoused, formerly incarcerated, or from underrepresented backgrounds, LGBTQIA+ people, and women. The project should establish quarterly or annual reporting to document progress toward these targets.

Example

In 2012, Los Angeles Metro adopted a construction career policy and a project labor agreement for federally funded, and some locally funded, projects with a construction value greater than $2.5 million. For federally funded projects, the project labor agreement set targets of 40 percent participation (based on work hours) for construction workers from economically disadvantaged areas, 10 percent participation for disadvantaged workers, and 20 percent participation for apprentices. For locally funded projects, the targets are 40 percent participation from local targeted workers and community area residents, 10 percent participation from Los Angeles County residents, and 20 percent participation from apprentices, with 50 percent of all apprentice hours coming from local targeted workers. Los Angeles Metro provides project labor agreements, contractor resources and forms, reports, and other helpful documents.

Related Measures

- IEP-2. Local Labor and Apprenticeships (Operations)
- IEP-3. Contract with Diverse Suppliers

IEP-2. Local Labor and Apprenticeships (Operations)

To encourage economic development for the local community, the project will commit to hiring locally and provide internship and training opportunities for residents or residents from marginalized and underresourced communities during the operations phase of the project. Ideally, partnering with local education providers can offer additional training and accreditation for workers. Local hiring can help to channel some of the economic value of development directly to the community, helping to partially counter the potential effects of

B3 Attach #1 of 3

gentrification and neighborhood change. An internship program can help workers from low-income or marginalized, underrepresented, and underresourced backgrounds to gain work experience and eventually accreditation and certification.

Applicability

All projects with employees.

Scale and Timing

- Neighborhood/City and Project/Site
- Operations

Communities or Issues Addressed

Communities that are economically disadvantaged or low-income, based on median annual household income, CalEnviroScreen socio-economic indicators, or Healthy Places Index economic indicators.

Dimensions of Equity

This measure can support local *economic development* and *job training* by providing opportunities to residents. It can also help to increase opportunities and training for individuals who face barriers in accessing employment, as well as members from underresourced and marginalized communities. Local employment also reduces the need for transportation expenditures, which, when combined with housing, make up half of the average U.S. household budget; thus, this measure can help to reduce cost burdens for households (U.S. DOT 2015).

Implementation Considerations

This may be most feasible with large projects or institutions, such as healthcare providers. However, smaller projects can partner with existing programs or educational institutions to provide internship opportunities. The goal of these programs is to develop local employee talent for the project while creating opportunity and building capacity for residents.

Examples

Eighty percent of jobs at hospitals require 2-years of training or less. East Bakersfield High School (a public Title I school) created a Health Careers Academy with local hospitals, governments, healthcare providers, and veterinarians to provide hands-on experience and training as well as college-prep courses to provide youth early engagement in the healthcare field.

Cristo Rey, a private high school network serving mostly low-income students of color, includes a corporate work-study program as part of its curriculum. Local employers can bring on students to intern 1 day per week in return for sponsoring half their tuition. Through 4 years of high school, the student learns about different careers, develops job skills, contacts, work experience, and builds professionalism.

B3 Attach #1 of 3

Many larger projects also include local hiring and training provisions, such as the $4.2 billion Los Angeles Sports and Entertainment District development (the Staples Center).

Related Measures

- IEP-1. Local Labor and Apprenticeships (Construction)

IEP-3. Contract with Diverse Suppliers

The project proponent will contract with diverse supplier(s): disadvantaged business enterprises (DBE); women-owned business enterprise (WBE); minority-owned business enterprise (MBE); disabled veteran-owned business enterprise; and/or LGBTQIA+-owned business enterprise.

This measure calls for proponents to contract with diverse suppliers, as defined above, for at least 15 percent of contracting dollars. Diverse suppliers are essential components of the health and sustainability of the economy. They employ people, provide wages, and contribute to social and community development. Project development offers important opportunities for equitable contracting practices by engaging with diverse suppliers.

Applicability

All projects with contracting needs.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timeframe: All

Dimensions of Equity

Utilizing inclusive contracting practices by partnering with diverse suppliers is an important strategy to direct funds to historically marginalized communities. Contracting with diverse suppliers provides important opportunities for *jobs/training* and *economic resilience* for women, people of color, disabled veterans, and/or LGBTQIA+ people.

Business ownership is a potent tool to help vulnerable communities accumulate assets and wealth. However, challenges for diverse suppliers arise on multiple fronts. Minority- and women-owned business enterprises typically have lower rates of utilization and face systemic barriers in contract procurement. The net worth for families of color is typically only a fraction of the net worth of white families—limiting access to financial institutions and causing their businesses to often rely on family and friends for initial growth capital. Discrimination in lending practices restricts initial access to capital and other financial resources for diverse suppliers. Gaps in capital between minority-owned businesses and their white counterparts are heavily influenced by disparities in credit scores (Fairlie 2020). Low levels of access to bank loans, credit services, and other financial resources affect minority-owned businesses in the long-run as well. Studies have found that businesses started by Black founders do not converge with their white-owned counterparts as they

B3 Attach #1 of 3

age. Additionally, minority business owners typically have fewer relationships with prime contractors, making it less likely they will be asked to become a sub-contractor.

Project proponents can help advance *racial justice* and equity by addressing systemic barriers and discrimination in lending, contracting, and business ownership. Promoting contracts with diverse suppliers provides these businesses with opportunities for capacity development and business growth. Not only do inclusive contracting programs help enhance individual diverse suppliers, but they work toward closing wealth and resource gaps impeding the well-being of children, families, and communities—contributing to greater *social resilience*. Studies have shown that regional economies that invest in their diversity are economically better off. Thus, active engagement with diverse suppliers is essential for sustainable economic prosperity.

Implementation Considerations

- The low number of certified diverse suppliers can be a barrier for this measure. Additionally, a complex network of certification programs contributes to a significant burden for diverse suppliers to receive third-party verification. Due to this reason, while third-party verification is recommended, it is not required to satisfy this measure.
- Establish data-reporting systems to share the following:
  - Race and gender data and hours worked for all employees under contractor(s) and subcontractor(s). These requirements help identify specific instances of discrimination in hours allocation.
  - Breakdown of dollar amounts the proponent spends on diverse suppliers.
  - Contract allocation (Edelman et al. 2017):
    - Percentage and absolute number of contracts awarded to all diverse suppliers.
    - Percentage and absolute number of businesses in each diverse supplier category (DBE, WBE, MBE, etc.) that have contracts with the proponent.
    - Number of diverse suppliers that win a contract with the proponent for the first time. This data reveals insights on the proponent's outreach performance for smaller diverse suppliers.
- Targeted outreach and technical assistance (Edelman et al. 2017):
  - Invest in staff dedicated to outreach and technical assistance objectives.
  - Provide support and guidance to diverse suppliers for business registration, certification, bidding, and contracting processes.
  - Conduct contract and business development workshops—particularly in low-income communities and/or communities of color.
  - Partner with non-profit organizations and CBOs to increase access to responsible capital and legal services for diverse suppliers.
  - Advertise contracting opportunities in spaces familiar with diverse suppliers. Circulate advertisements in small business media, and publications of minority and women's business organizations.
  - Meet with diverse suppliers prior to bid or proposal deadlines to explain scope of work.
  - Provide feedback to diverse suppliers who did not win a bid.

B3 Attach #1 of 3

  - Provide skills and information training to diverse suppliers. Due to high barriers to entry, disadvantaged businesses may have limited capacity in certain fields including high-cost construction requirements, materials, technologies, and skills.
- Use online contract monitoring tools to track contract progress and goals.
- Make use of best-value contracts. They are negotiated contracts between a contractor and owner and include a range of considerations such as expertise, financing, quality, and past performance.
- Pay sub-contractors promptly—they are often the last ones paid and least able to afford the wait.
- Ensure payment through contract compliance.
- Unbundle large projects to make them accessible to smaller DBEs with different levels of capacity.
- Structure bid pools based on contractor size. This allows small contractors to compete rather than with large contractors.
- Use an accessible online sub-contracting system.
- Identify portions of work during the planning phase that could be substituted for diverse suppliers.
- Build a diverse supplier contact list to share with other proponents. (Fairchild et al. 2018)

Examples

Kingsbridge Armory, New York

Contracting with minority- and women-owned business enterprises is an explicit provision in the Kingsbridge Armory CBA. Specifically, the CBA calls for each employer of the development project to award 25 percent of the funds spent on employees performing construction of the project to MBEs and WBEs located in the Bronx. Each employer is also required to include this provision in any contract or agreement with any third party that will operate its business at or provide services to the Kingsbridge Armory project (Partnership for Working Families 2015b).

Los Angeles International Airport, California

In 2004, a coalition of CBOs and labor unions entered a CBA as part of the Los Angeles International Airport's (LAX) $11 billion modernization plan. The agreement is between the LAX Coalition of Economic, Environmental, and Educational Justice and Los Angeles Worlds Airports (LAWA). The original agreement includes a MBE, WBE, and small business utilization and retention program to increase participation in the planning, construction, operation, and maintenance of LAX. To pursue these goals, LAWA agreed to conduct targeted outreach to small businesses, MBE, and WBE within the project impact area. These businesses were also included in pre-bid conferences and "meet the general contractor" events. LAWA also agreed to unbundle construction projects into smaller bid sizes to help ensure fair competition. Additionally, LAWA agreed to help with access to bonding, insurance, procurement and other types of capacity-related assistance where

B3 Attach #1 of 3

necessary. Importantly, the CBA also called for LAWA to coordinate with the City of Los Angeles Mayor's Office and other relevant business and finance organizations to assist in identifying or developing a low-interest working capital revolving loan program (Partnership for Working Families 2004).

Resources

Third-Party Certification Sources and Clearinghouse

- Caltrans California Unified Certification Program Disadvantaged Business Enterprise Certification
- Women, minority, LGBTQIA+, and disabled veteran-owned businesses:
  - CPUC GO 156 CPUC Supplier Diversity Program Clearinghouse
  - Southern California Minority Supplier Developer Council/National Minority Supplier Development Council Certification
  - Western Regional Minority Supplier Development Council/National Minority Supplier Development Council
  - US Small Business Administration: Service-Disabled Veteran-Owned Small Business Program
  - US Small Business Administration: Women-Owned Small Business/Economically Disadvantaged Women-Owned Small Business Program
  - CA Department of General Services: Disabled Veteran Business Enterprise Certification Program
  - US Small Business Administration: 8(a) Business Development Program

Related Measures

- CCD-5. Establish a Community Benefits Agreement

IEP-4. Use of Locally/Regionally Manufactured Products and Materials

Buying locally manufactured products and materials in both the construction (e.g., forestry products) and operations (e.g., food) provides employment opportunities for community members as well as supporting California tax revenues. Local procurement also reduces emissions for transportation, especially for bulk materials such as construction aggregate. Different parts of California also have different capacity for manufacturing and producing products and materials, so the guidelines below should be tailored to local conditions. In general, the preference is to first source materials from within the commute shed of the project location (offering local employment opportunities), followed by within the region or adjacent counties, followed by sourced within California.

Applicability

Applicable to all projects.

B3 Attach #1 of 3

Scale and Timing

- Scale: Project/Site
- Timing: Project construction

Communities or Issues Addressed

Tradable sectors of the economy (where output can be sold to other states and nations) bring income into an area, and typically support non-tradable sectors of the economy (such as retail, healthcare, and service) through the multiplier effect. Money spent with local businesses on locally made goods is more likely to flow to other sectors of the local economy (e.g., upstream through product supply chain or horizontally through employees), than money spent at national-level chains and retailers. In addition, local businesses support local jobs and pay local taxes, which in turn support municipal and state services. Keeping project dollars local by purchasing from local providers strengthens economies and can reduce transportation emissions.

Dimensions of Equity

Investment in local tradable industries improves *economic resilience* and creates additional opportunities for residents. The use of local forestry products made of biomass from forest restoration projects can help to increase *climate resilience* by reducing the risk of catastrophic wildfires, thus also reducing GHG emissions.

Implementation Considerations

Beyond aggregate, paving, and forestry products, consider other products the project would use, such as machinery, fabricated metals (bike racks and hardware), plumbing, interior furnishings, ceramics, electrical vehicle support equipment, etc. Product sourcing should also consider sustainability and recyclability and support the circular economy whenever possible. Paving products, for example, can contain recycled materials. Wood products can use biomass removed from forest thinning and management practices, sustaining local jobs as well as helping to increase resilience. Currently, California imports 100 percent of its engineered wood from out of state, but the use of locally produced cross-laminated timber products, for example, can simultaneously support local industry in rural California, develop beneficial uses for biomass removed from forest restoration and thinning, and reduce GHG emissions by offsetting the use of steel and concrete as construction materials (LHC 2018).

The project can also go a step further to ensure that its products and materials are not only locally sourced but are free of toxic chemicals and components that may affect the health of construction workers and building occupants (see Measure PH-4, *Create Healthful, Sustainable Indoor Spaces*). Additionally, project proponents can also look for materials that are locally recycled or salvaged.

B3 Attach #1 of 3

Example

The City of Pasadena has a First Buy Local Initiative that offers informal bid procedures for purchases under $25,000 and formal competitive procedures for purchases exceeding that threshold. Both the informal and formal procedures have a 5 percent bonus in evaluation score for local businesses and a 5 percent bonus for small businesses. Supporting strategies include outreach, engagement, and working groups to reach local businesses (City of Pasadena 2010).

Related Measures

- PH-4. Create Healthful, Sustainable Indoor Spaces

Resources

- Made in California Program: A directory of over 2,000 small- and medium-sized companies that make their products in California, with the ability to filter by county, region, or category.
- CA Made Program: The Governor's Office of Business and Economic Development's made in California certification and label.

IEP-5. Higher Wage and Working Condition Standards

The project will go above and beyond standard requirements on wages and working conditions. Since 1979, worker productivity has grown 3.5 times faster than worker pay, while cost of living – especially housing – has escalated dramatically, driving income inequality (Economic Policy Institute 2021). In addition, there are notable pay gaps in gender and race, with Asian and white people making more than Black and Latinx people and men making more than women (Patten 2016). The rise of independent contractors (the "gig" economy), labor deregulation, and increasing costs of benefits have further led to the deterioration of working conditions (Livni 2019). While projects may promise job creation as a core benefit, communities may be rightfully concerned that employment opportunities generated by project construction and operation may not pay wages commensurate with the local cost of living or provide safe working conditions and meaningful employment opportunities.

For this measure, the project would ensure minimum wage and/or labor standards. During construction, project labor agreements and prevailing wage and skilled and trained workforce requirements are typical mechanisms to ensure fair wages and working conditions. Living-wage standards, skilled worker or training requirements, or union labor agreements can help achieve these goals for operational projects. These requirements can also be adopted jurisdiction-wide for specific workers or industries, such as prevailing wage requirements for publicly funded construction projects, or New York City's delivery worker bills that required restroom access, mileage limits, and other working condition improvements for app-based delivery workers.

Finally, the project will include accountability measures to implement existing labor standards that may be overlooked or difficult to enforce. For example, to protect outdoor

B3 Attach #1 of 3

workers from wildfire smoke, California Code of Regulations, Title 8, Section 5141.1 requires employers to provide enclosed workspaces, relocate work sites, change work schedules or work intensity, and/or provide respirators such as N95 face masks when the AQI for PM2.5 exceeds 151. Projects would need to create policies and procedures in advance, such as designating staff to monitor daily AQI, stockpiling sufficient respirators, and instructing staff and supervisors on appropriate work intensity. These additional accountability measures should be focused on likely hazards, such as extreme heat, or regulations that are commonly violated in the industry or community.

Applicability

All

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Construction and operations

Communities or Issues Addressed

Projects may increase demand for low-wage service workers, workers in industries with limited regulations, or other laborers that operate with inherent power differentials that can lead to exploitation (e.g., undocumented workers or workers whose immigration status is dependent on the employer). Ensuring fair wages and safe working conditions empowers these employees and communities. Workers also benefit from lower allostatic load and increased residential and transportation choice (McEwen and Gianaros 2011).

For example, half of the families in California's construction sector are on state safety net programs, considerably higher than the state average of one-third for all working families (Jacobs and Huang 2021). A skilled and trained workforce provision, which requires a percentage of workers to graduate from apprenticeship programs, can improve safety and wages (Office of Disability Employment Policy 2021).

Dimensions of Equity

By implementing wage and working conditions standards that go beyond requirements, proponents can directly support *economic resilience* and *social resilience* for workers. This measure also has the potential to benefit the resilience of the broader community when coupled with local hiring and contracting provisions. With deep wage disparities across race and gender, prevailing wage standards can help advance *equity*. Enhanced labor standards can also help combat labor exploitation and provide safer environments, critical for *climate resilience*.

Implementation Considerations

Accountability measures are necessary to ensure the project is consistent with promises, and measures need to be carefully crafted to survive challenge. Community benefit

B3 Attach #1 of 3

agreements, project labor agreements, and developer agreements may be more defensible than mitigation measures or conditions of approval.

Examples

The Los Angeles Sports and Entertainment District Community Benefits Agreement (Staples Center) set a goal that 70 percent of the jobs created by the project would pay the City's living wage.

The Oakland Army Base project included employer hiring agreements that required living wage compensation and a focus on hiring disadvantaged workers.

Related Measures

- CCD-5. Establish a Community Benefits Agreement
- IEP-1. Local Labor and Apprenticeships (Construction)
- IEP-2. Local Labor and Apprenticeships (Operations)

Inclusive Communities (IC)

Photo Credit: Franco Folini, November 2003

Many communities in California have been intentionally designed to exclude people, often by race, income, or disability (Othering & Belonging Institute 2018). This reality created the need for people, especially marginalized communities, to create supportive social networks within the built environment to fulfill needs such as childcare, education, employment, and identity (Payne et al. 2009). As projects are built in new and established communities, care must be taken to ensure that all Californians can be included in the housing and jobs that the project brings. An inclusive community is one in which all residents can live, work, play, and meet their daily needs, and which shares, uplifts, and affirms the stories and identities of its marginalized and historically excluded communities.

Key Indicators: Many communities would benefit from these measures. That said, relevant indicators in CalEnviroScreen include: Education, Linguistic Isolation, Poverty, and Unemployment. Relevant Healthy Places Indicators include: Above Poverty, Employed, Median Household Income, Auto Access, Park Access, Retail Density, Supermarket Access, Tree Canopy, Disabled, Cognitively Disabled, Physically Disabled, Children, Elderly, Hardship Index, California Qualified Opportunity Zones, and Race/Ethnicity.

B3 Attach #1 of 3

Cross-Cutting Guidance

Standard development processes are rooted in exclusionary practices. Designing inclusive communities requires intentionality and collaboration, ideally prior to the formal entitlement process. It is recommended the user consider the following:

- **Early community engagement:** Community members are experts on their neighborhood and can help identify which suite of measures and implementation pieces have the most benefit for the community. Refer to the *Community-Centered Development* section for measures on community needs assessments and asset mapping to help identify needs and gaps, and the *Inclusive Engagement* section for engagement recommendations.
- **Continued engagement during operations**: As communities evolve, and as climate and economic disruptions may occur, community needs change. Demographic, socio-economic, and environmental changes may require the project to flexibly address what it means to create an inclusive community. Relationship building between community members and the project, as well as regular community engagement events, can help anticipate some of these changes.

IC-1. Invests in Local Arts and Culture to Affirm Community Identity

During development, a community's identity can often be erased and threatened with gentrification. Support for and investment in local arts and culture help to preserve a sense of community in the wake of neighborhood change. Art can help contribute to advancing human dignity, inspiring and mobilizing social change, healing and mental health, expressing a community's identity, history, and vision for itself and its place in the world, building community capacity, and improving its public spaces and infrastructure (Cleveland 2011). Additionally, access to representative arts and cultural spaces may be a community need identified through community needs assessments or other community-based outreach. Collaborating with CBOs and local groups is imperative to ensure proper and appropriate investment.

The project proponent, working with local community groups, will invest at least 1 percent of the total project cost in local arts and culture projects, programs, or other initiatives. This could manifest as murals, heritage walks, arts education, artist-in-residence and artist-in-training programs, cultural district designation, youth-led arts, arts programs for people who are incarcerated, a performing arts pavilion in an onsite plaza, sponsorship of local artists and groups, or other priorities identified by community members.

Applicability

Applicable to all projects.

Scale and Timing

- Scale: Project/Site or Neighborhood/City
- Timing: Planning, construction, or operations

B3 Attach #1 of 3

Communities or Issues Addressed

"During challenging and turbulent times, artists have been on the forefront of expressing our community's demand for change… It is imperative that we amplify their voices by supporting their work as they memorialize and mark this moment," noted the Saint Paul and Minnesota Foundation (SPMF 2020). The arts can narrate the unique people, culture, history, and issues of a community to both the members of the community and the wider world.

Art is a core part of a community's articulation of its past, present, and future, and it is crucial to provide greater space and support to artists from low-income and marginalized communities and communities of color, which have often been overlooked in arts funding programs. Arts organizations serving communities of color generally have far smaller budgets and greater financially instability than their counterparts in white communities (PolicyLink 2017). Through this measure, a project proponent can thoughtfully support artists from underresourced backgrounds, while contributing to community development and creative placemaking.

Dimensions of Equity

By uplifting artists from marginalized and underrepresented communities, inclusive art projects can help to enhance community *self-determination* and support community ownership over art, art-making, and public spaces. Providing support and spaces for Black, Indigenous, and People of Color (BIPOC) artists can help to further *racial equity*. Art commemorating civil rights leaders, community figures, and traditional cultural practices can help a community tell its story, benefiting *social resilience*. Community-centered art training and education can also help to increase individual wellbeing, civic participation, and engagement with community initiatives (Bennett 2014). Finally, arts projects can also help to contribute to creative placemaking and *enhance economic development* by drawing visitors.

Implementation Considerations

While art can benefit an individual project, the intent of this measure is to ensure the wider community benefits as well. This can take the form of not only supporting individual public works of arts (e.g., a sculpture, mural, a performance, or festival) but also supporting local artists, sponsoring art programs, and providing training and arts education for underserved, vulnerable, and marginalized communities. "Successful creative placemaking projects are not measured by how many new arts centers, galleries, or cultural districts are built. Rather, their success is measured in the ways artists, formal and informal arts spaces, and creative interventions have contributed toward community outcomes," writes ArtPlace, a collaboration between foundations and federal agencies to support and fund art as placemaking and community development (Axel-Lute 2017).

Community spaces should be respected, and artists should come from and be representative of the community. Community arts groups, coalitions, and CBOs should take the lead in identifying artists, programs, and initiatives to support, as well as implementation and program design. Artists and art groups from underresourced and

B3 Attach #1 of 3

marginalized communities should be prioritized, especially Black, indigenous, people of color, youth, and seniors. Local artists should be involved.

Examples

The City of Berkeley's Public Art on Private Development Program requires either an onsite, publicly accessible artwork valued at 1.75 percent of construction costs, an in-lieu fee at 0.8 percent of costs, or a combination thereof.

Public projects in San Francisco are required to contribute 2 percent of projects costs for art through the San Francisco Arts Commission. As part of its multibillion rebuild of its sewer system, the San Francisco Public Utilities Commission is working to channel art funds to neighborhoods directly impacted by the rebuild. This includes a focus on Bayview-Hunters Point, San Francisco's historic Black community and home to the city's largest wastewater treatment plant (PolicyLink 2017).

Resources

- The **Americans for the Arts** provides example ordinances that set aside percentages to fund arts projects.
- **ArtPlace** provides toolkits, resources, research studies, and more to help community planners, local governments, and artists to support art in community development. ArtPlace has developed an interactive tool that provides research and case studies on how arts and culture can support equitable community development, focusing on 13 benefits, such as ensuring cultural continuity, healing trauma, and building power.
- The **Federal Reserve Bank of San Francisco's** November 2019 issue of *Community Development Innovation Review* focuses on the role of arts and culture, with articles examining how the arts can impact community wellbeing, transforming vacant space, social resilience, community empowerment, economic development and more.

IC-2. Adopt Design Standards

The use of an inclusive design standard or certification system can encourage sustainable, equitable development, while also providing inspiration and examples to other project proponents. Today there exists a range of comprehensive international and national design standards and frameworks that help to guide and promote sustainable design throughout the project planning, construction, and operations lifecycle, but not all of them address equity.

Below are some of the key features of each of the design standards that can be incorporated to increase equity.

- The Living Future Challenge is the most comprehensive of all global design standards, aiming to be "socially just, culturally rich, and ecologically restorative" (International Living Future Institute 2021). Their standards can be implemented at the product, building, or community scale, and are based on performance and operations, not just certification at completion of construction.

B3 Attach #1 of 3

  - The Living Building Challenge includes elements focusing on indoor air quality; equitable and public access to non-building infrastructure and roads such as gardens, paths, and benches; equitable treatment; just business practices; accessibility; and urban agriculture.
  - The Living Community Challenge encompasses these same elements, as well as broader features that can build equity in an entire community: local food programs, community hubs, shared public spaces, community resilience and disaster planning, and more. They also provide a framework for affordable housing and biophilic design.
- Enterprise Green Communities (EGC) is a design standard specifically for new or rehabilitated affordable housing projects. The goal is to develop affordable housing that is healthy, sustainable, safe, resilient, and comfortable. Standards focus on a healthy indoor living environment, zero energy, active mobility, emergency management and resilience, and universal design. There are also recommendations for affordable housing development in rural, suburban, and tribal communities. Unlike many other design standards, EGC covers the cost of certification, making it more accessible for affordable housing developers.
- Active Design Guidelines: Developed by the Center for Active Design in 2010, the Active Design Guidelines aim to support public health through developing streets, buildings, and public spaces that encourage walking, biking, recreation, and active living. The guidelines can help improve pedestrian and bicycling infrastructure and amenities (e.g., lighting and crosswalks) in communities where they have historically been neglected. They can also to help to increase access to neighborhood destinations while simultaneously addressing physical activity and public health. There are additional supplements for affordable housing, safety, and schools.
- LEED: The U.S. Green Building Council's LEED rating system has introduced Social Equity Pilot Credits, which are designed to address equity throughout the lifecycle of the building process, from construction to operations. The credit includes community engagement, evaluating existing needs and disparities, workforce development, supply chain sustainability, accessibility, and more.
- Universal Design: Universal design is the principle that the built environment can be accessed and used by all people regardless of age, ability, disability, or size, meeting the needs of all without the use of individual modifications and adaptations. Universal design is inclusive by nature and aims to be equitable, flexible, and intuitive and require low physical effort. This supports equity by expanding accessibility to all users.

Applicability

All projects with construction.

Scale and Timing

- Neighborhood/City and Project/Site
- Timeframe: Planning, construction, and operations

B3 Attach #1 of 3

Communities or Issues Addressed

Due to the comprehensive nature of these design standards, they are beneficial to all communities and issues.

Dimensions of Equity

Because this measure encompasses a range of design standards, some of which are holistic and systematic in approach, it can help to address almost all dimensions of equity, depending on the specific standards implemented.

Implementation Considerations

The process of pursuing certification may be costly for some projects, but individual elements can be pursued or combined across systems to increase equity, resilience, and sustainability. The project should consider local goals and priorities, as well as community input, needs assessments, and plans, in selecting which design standard, or combination of standards, would be most appropriate. Of all the design standards, ECG specifically focuses on affordable housing and may be the most accessible for all projects.

Examples

Working with an interdisciplinary team of planners, health experts, community groups, and agencies, Sacramento County developed and adopted its own iteration of the Active Design Guidelines, Design 4 Active Sacramento. This has been codified into an array of zoning and housing codes, ensuring that active design for health is centered in Sacramento County regulations.

Seattle's International Chinatown District is exploring multiple ways to adopt Living Community Challenge principles, include a community-led de-paving effort, community gardens, public gathering spaces, a greenway, and stormwater mitigation. Numerous other case studies and examples, including many in California, can be found on the Living Future website.

IC-3. Promotes Accessibility

The project will increase ADA access beyond code requirements and design for people with autism as well as other neurological or sensory processing conditions. Open spaces and amenities are available to all; the project will incorporate Universal Design to create environments that are accessible to anyone. Universal Design explicitly calls for constructing environments that are designed with everyone in mind, regardless of their age, size, or ability.

Applicability

Applicable to all projects.

B3 Attach #1 of 3

Scale and Timing

- Scale: Project/Site or Neighborhood/City
- Timing: Construction

Communities or Issues Addressed

People with physical or neurological conditions or limitations may have difficulties navigating and using traditionally designed projects. Designing for accessibility supports all users, making a more open, inclusive built environment. Features that benefit neurodivergent populations also reduce stress and confusion for neurotypical users, while features aiding those with mobility devices also help those with carts or strollers. These features also enhance independence. For example, Universal Design facilitates aging in place, allowing seniors to defer or delay leaving their homes and communities for institutionalized care.

Dimensions of Equity

Designing for accessibility in all spaces creates a more welcoming environment for all, supporting greater inclusion and independence for individuals of all abilities. Accessible transportation can improve *mobility choice* and transportation justice, while accessible housing design can help improve *public health*, mental wellbeing and confidence, and enhance *economic* and *social resilience.*

Implementation Considerations

The project proponent should consider not only how the target market would use the project, but how anyone could use the project. For example, a subdivision of two-story single-family homes should include an option for a bedroom and bathroom on the ground floor to accommodate occupant injury, residents who cannot navigate stairs, or seniors. Grab bars in bathrooms and wide doorways and hallways facilitate aging and mobility devices. A nearby quiet garden with water feature can create a place to recover from overstimulation.

Resources

- The **Center for Excellence in Universal Design** provides an excellent primer on universal design.
- A City for Marc provides a toolkit and resources for urban design that is inclusive of people with autism and other neurosensory conditions.
- The American Association of Retired Persons' Center for Aging in Place provides a checklist for developing senior-friendly communities supportive of aging-in-place.

IC-4. Enhanced Open and Green Spaces

Low-income communities often lack equitable access to parks and green spaces. By supporting park and open space development in underserved communities, the project proponent can help increase space for residents to exercise and socialize, increasing

B3 Attach #1 of 3

social resilience and reducing the UHI effect. Especially as COVID-19 has highlighted the need for outdoor spaces in which to safely exercise and socialize, the disparities in park access between wealthy and low-income communities have become particularly stark.

Under this measure, proponents of residential projects will contribute their Quimby requirements and other park impact fees, plus an additional 25 percent or more in acreage-equivalents, to a Quimby plan area in the bottom quartile of a jurisdiction based on aggregated CalEnviroScreen score, or on the project if in a disadvantaged community. These additional funds may be given to the local jurisdiction or local open space CBOs. Commercial and industrial projects would make a similar additional contribution based on equivalent dwelling units.

Applicability

Applicable to all projects.

Scale and Timing

- Scale: Project/Site
- Timing: Construction

Communities or Issues Addressed

This measure can help communities that currently lack park access or have low tree canopy or a high percentage of impervious spaces. Low-income or underresourced communities should be prioritized. Relevant indicators include Park Access, Tree Canopy, Impervious Surface Cover, and Urban Heat Island Index as part of the Healthy Places Index.

Dimensions of Equity

Parks, greenbelts, and green spaces are linked with not only improved *air quality* and lower temperatures in the park itself, but also in their greater surrounding areas, supporting *climate resilience* (CARB 2017). In addition, parks and other public spaces help to support greater *social resilience.* Increasing access to public green spaces will also help to encourage *active transportation, mobility,* and *public health*.

Implementation Considerations

Commercial developments that are not able to develop public spaces or open spaces on site may be able to consider an offsite alternative, ideally within the same community. The development of parks in low-income and marginalized communities may lead to rising housing costs, and eventually gentrification and displacement. To address this potentiality, project proponents should work closely with CBOs and community members to understand community priorities and needs, as well as to plan, site, design, and develop the park. Project proponents, local jurisdictions, housing advocates, and community groups should also work together to determine appropriate anti-displacement strategies, such as local hiring measures in the *Inclusive Economics and Prosperity* section or housing measures in the *Anti-Displacement and Housing* section.

B3 Attach #1 of 3

Example

The 1985 San Francisco Downtown Plan required that publicly accessible open spaces be provided for all construction projects, at the rate of one square foot of open space per 50 square foot of building space. As a result, as of 2009, 27 open spaces have been developed, including urban gardens, walkways, and public plazas (SFPD 2011). In addition, commercial developments were required to contribute $2 per square foot of building space to a dedicated park fund that would be used to acquire and develop parks downtown. As of 2009, nearly $11 million has been collected and used to develop parks on existing public parcels. As a result, most of downtown is now within a quarter mile of a neighborhood-serving open space.

Resources

- Greening without Gentrification: This policy brief analyzes 26 parks-related anti displacement strategies targeted for different audiences, finding that early implementation and community engagement are key.

Related Measures

- PH-2: Increase Urban Tree Canopy and Green Spaces

IC-5. Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets

Designating space in a development project for a CBO, a community asset, or a disadvantaged business can contribute to local economic development, social wellbeing and resilience, education, health, capacity building, and other benefits. A CBO or local non-profit can provide services, resources, events, and activities for residents. Community assets should help to address existing needs and disparities in the community and provide needed services. Examples include community centers, health clinics, elderly care sites, grocery stores providing healthy, affordable foods, local businesses, and childcare facilities. Disadvantaged businesses can include businesses owned by women, people of color, veterans, LGBTQIA+ people, and other underrepresented groups, as well as small, locally owned businesses. In addition, or as an alternative approach, the project proponent could also consider offering discounted rent or mortgage, in-kind donations, or other support. By designating space for these organizations, the project can help to expand local opportunities and enhance the overall economic and social wellbeing of its surrounding community, which would in turn enhance its long-term prospects.

Applicability

Commercial or mixed-use developments in urban, rural, and suburban communities.

Scale and Timing

- Scale: Project/Site
- Timing: Operations

B3 Attach #1 of 3

Communities or Issues Addressed

This measure can help to support local businesses and community needs in low-income and underresourced communities.

Dimensions of Equity

Locally owned businesses recirculate a greater share (50–80 percent) of their revenue to the local economy as compared to chain businesses (14–30 percent), because of greater spending with local labor, contractors, supply chains, and locally made goods (ILSR 2016). Other studies show that sales at local businesses generate more than twice the amount of local economic activity and 2.6 times more jobs, than sales at chain businesses (ISLR 2016). Thus, supporting local businesses will help keep money in the local economy, supporting *local jobs,* tax revenue, and *economic resilience.*

Implementation Considerations

Community input is crucial to the success of this measure; the project should consult existing community plans, needs assessments, asset mapping, and other available community documents to identify unmet needs and priorities. If existing research is insufficient, the project should partner with a CBO or conduct listening sessions to understand local desires. By designating space to support community needs, the project can help gain local support and drive additional traffic and visits to project sites, increasing overall economic benefits.

Example

La Fenix, a new housing development by BRIDGE Housing and Mission Housing Development Corporation in the Mission District of San Francisco, provides 100 percent affordable housing in combination with dedicated spaces for CBOs and community assets. On the first floor, neighborhood-serving spaces include a childcare center operated by Mission Neighborhood Centers, art studios, an art gallery from Acción Latina, and a bicycle repair workshop (City and County of San Francisco 2021). These services are open to not only onsite residents but also the surrounding neighborhood.

Related Measures

- CCD-3. Conduct a Community Needs Assessment

IC-6: Create Non-Standard Commercial or Retail Spaces

National-level chain businesses typically require larger building footprints and standard retail environments, high ceilings, and storage. These retail spaces typically have greater difficulty accommodating locally owned and small businesses. As retail and dining trends evolve in the twenty-first century away from big-box stores and chains, commercial developments can incorporate more non-standard retail spaces within their projects to respond to emerging business types (e.g., pop-up and to-go only food vendors, start-ups). By being smaller and thus more affordable to rent and operate, non-standard retail

B3 Attach #1 of 3

spaces can reduce operating costs and better accommodate the needs of small and independent businesses, first-time business owners, and businesses owned by members of low-income, underserved, and underresourced communities. This can help to spur new business creation, especially by those who may lack initial capital, as well as social benefit businesses. In turn, this can help to support local economic development, social wellbeing and resilience, capacity-building, and other benefits.

Applicability

Commercial or retail projects.

Scale and Timing

- Scale: Project/Site
- Timing: Operations

Communities or Issues Addressed

Commercial or mixed-use properties, especially those in underserved communities.

Dimensions of Equity

Non-standard retail spaces can encourage new small businesses and help drive *economic development,* entrepreneurship, and creativity. Smaller spaces with lower rents reduce barriers of entry for people with less capital or lower credit. As non-standard retail spaces are more likely to be occupied by independent locally owned businesses, they are likely to return more economic value to the community. Locally owned businesses recirculate a greater share (50–80 percent) of their revenue to the local economy as compared to chain businesses (14–30 percent), because of greater spending with local labor, contractors, and locally made goods (ILSR 2016). Other studies show that sales at local businesses generate more than twice the amount of local economic activity, and 2.6 times more jobs, than at chain businesses (ISLR 2016). Thus, supporting local businesses will help to ensure that money stays in the local economy, supporting *local jobs*, tax revenue, and economic resilience.

Implementation Considerations

Offering a range of retail spaces can help commercial and mixed-use developments diversify the retail environment, support new business development, and attract a wider range of uses and customers. Buildings with low ceilings and alley-fronting spaces will usually be avoided by national retailers, preventing local businesses from being outbid. Small, street-facing retail spaces can help increase foot traffic and create more walkable, engaging neighborhoods. The project proponent should work with local business improvement districts and community coalitions to conduct outreach to potential tenants from underresourced and marginalized communities.

B3 Attach #1 of 3

Example

As malls have closed around in the U.S., several of them are being redeveloped to accommodate smaller retailers, while downtown revitalization efforts around the U.S. have also highlighted the popularity of smaller street-facing shops in dense, walkable communities. The popularity of markets, converted shipping containers, and food halls such as Los Angeles's Grand Central Market and San Francisco's Ferry Building also point to the success of establishments focused on non-standard retail and their ability to develop and support new businesses, including from underrepresented business owners. In San Francisco, La Cocina opened the first woman-led food hall that will provide retail spaces for women- and immigrant-owned restaurants, offer economic opportunities and jobs, and serve as a model for anti-gentrification and conscious development in the Tenderloin, one of San Francisco's most disadvantaged neighborhoods.

Related Measures

- IC-8. Enhanced Access to Community Resources

IC-7. Equal Access to Building Amenities

Mixed-income multi-family developments should provide equal access to all building entrances, amenities, lobbies, and other shared facilities for affordable housing units. Affordable housing units should also be built to the same energy efficiency and other design standards as the baseline market-rate units.

Applicability

Mixed-income residential projects with common areas.

Scale and Timing

- Scale: Project/Site
- Timing: Operations

Communities or Issues Addressed

Affordable housing units are sometimes excluded from amenities in multi-family housing complexes, such as use of the clubhouse, community room, pool, or other shared amenities. This leads to segregation under which affordable housing residents are treated as second-class citizens, and families must explain to children why they cannot enjoy the same the pool or playroom as other residents.

Dimensions of Equity

Equal access to building facilities can help build *social resilience* and integration in the community. This can also support greater physical and mental *health* for residents.

B3 Attach #1 of 3

Implementation Considerations

Shared, equitable access should include all amenities that are available to market-rate units at no additional cost but can exclude priced amenities such as parking. Affordable housing units should be provided the same keys to all secured amenities (e.g., bike rooms, laundry, gyms) as market-rate units. Take into account the needs of large families, those living with disabilities, and children when designing facilities and building access.

Example

Designed by Dutch architectural firm OMA, the Avery in San Francisco combines world-class architecture and a LEED gold rating with mixed-income housing. Of the 548 housing units, 149 are permanently affordable and will be designated for families earning up to 50 percent of area median income, which would be $64,050 or less for a family of four (City and County of San Francisco Office of the Mayor 2020). Shared building amenities include a fitness center, pool, roof garden, outdoor terrace, business and technology lounge, media room, and resident community garden. The Avery also includes public art, including works by local artists.

IC-8. Enhanced Access to Community Resources

The project will enhance and expand access of marginalized and underserved communities to resources such as additional green spaces, food, recreation areas, healthcare facilities, childcare facilities, elder care facilities, schools, broadband internet, and financial services. This measure promotes the diversification of accessible economic and social activities. The project can also expand transportation access to existing resources, such as by improving access to transit stations, sidewalk and bike lane improvements, or other improvements to the active transportation infrastructure. The project should directly address the identified needs of the community and help to support the creation of a healthier, more equitable, and more resilient environment for the people who live and work in the project area.

Applicability

Applicable to all projects.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning, operations

Communities or Issues Addressed

As a result of redlining and other historic policies, low-income communities and communities of color have been neglected by investment and development, and as a result lack ready access to facilities such as grocery stores, health, recreation, and other services that support healthful living. For example, predominantly white communities in Los Angeles have 3.2 times and 1.7 times more supermarkets than predominantly Black

B3 Attach #1 of 3

and Latinx communities, respectively (NYLSRJP 2012). At the same time, low-income communities often have higher than average shares of fast-food restaurants and convenience stores supplying only processed foods. As a result, residents often face fewer choices, pay more, and travel further for fresh produce, groceries, and other services. Rural communities, as well, lack access to many of the same facilities, in addition to high-quality broadband internet, which often puts rural residents at a disadvantage for remote work, school, healthcare, and social connections.

Dimensions of Equity

Depending on the specific needs in each community, this measure can address a range of equity dimensions, including *public health, education, climate resilience*, *air quality, social resilience, jobs,* and more. By directly addressing community needs, this measure can also improve a community's *self-determination* and *equity*.

Implementation Considerations

The project proponent should build on community engagement and outreach efforts to understand community needs, priorities, and challenges. Partnering with a local CBO can help to identify existing community needs without conducting a separate needs assessment. Other resources, such as adopted community plans, a community health needs assessment, Healthy Places Index, or CalEnviroScreen can help to inform the process. The project proponent should then work with residents and local organizations to develop strategies to address the identified needs through the provision of space, infrastructure, transportation access, programming, or other solutions. Consider creating a new social or economic use, such as one that is not available within a half-mile, to enhance the local community's access to diverse activities.

Example

In its request for proposal for a 700,000-square-foot mixed-use development in East Harlem, the New York City Economic Development Corporation requested that 50,000 square feet be set aside for local businesses and 30,000 square feet for community facilities (ISLR 2016).

Related Measures

- IC-5: Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets

B3 Attach #1 of 3

Anti-Displacement and Housing (AH)

Photo Credit: Mark Hogan, May 2012

Housing, equity, and climate resilience are deeply linked – especially in California. As a result of skyrocketing rents, 79 percent of extremely low-income households and over half of very low-income households in California pay more than half their income for housing, compared to 7 percent of moderate-income households (California Housing Partnership 2020a). According to the Bay Area Equity Atlas, renters who are Black, Latinx, Native American, and/or women are more likely to be rent-burdened (Bay Area Equity Atlas 2021). Black residents are less likely to own their home, and for those that do, they are more likely to have their home be systematically undervalued during appraisals—by as much as $164,000 in the San Francisco Bay Area—when compared to similar homes with similar neighborhood amenities and school districts, which in turn undermines wealth and equity building for families (Levin 2020). With home ownership being one of the primary means of generational wealth accumulation and transfer among middle-class Americans, decades of segregation and redlining have exacerbated intergenerational poverty for Black communities and other communities of color. For the U.S., homeownership rates for Black residents are about 30 points lower than those of non-Hispanic whites, and for Latinx residents, about 25 point lower (U.S. Census 2021).

High housing costs and the lack of affordable housing have other widespread impacts, contributing to the number of unhoused residents in California, higher poverty rates, and greater vulnerability to sudden shocks and emergencies. Unaffordable housing also pushes residents into aging, potentially unsanitary homes that may be more exposed to temperature extremes. Housing costs may force residents to live at great distances from their work and school, resulting in long commutes that reduce time available for family life and exercise, deteriorating physical and mental health. Thus, expanding affordable and workforce housing near job centers can also help to decrease GHG emissions, not only in cities but also in mountain towns and rural communities, where second homes and short-term rentals have exacerbated housing shortages for local residents.

The measures in this section provide recommendations to increase affordable housing in California, protect tenants, and develop additional forms of community-owned housing or supportive housing. There are many strategies and actions to support affordable housing and anti-displacement at all levels of actions, from state- and regional-level policy change to direct advocacy and assistance for tenants; the measures here are by no means comprehensive and focus on actions that may be implemented at the project level, or by the project working together with the local jurisdiction.

B3 Attach #1 of 3

Key Indicators: Relevant indicators in CalEnviroScreen include Housing Burden, Poverty, and Unemployment. Relevant indicators in Healthy Places Index include Above Poverty, Employed, Homeownership, Housing Habitability, Low-Income Homeowner Severe Housing Cost Burden, and Low-Income Renter Severe Housing Cost Burden.

Cross-Cutting Guidance

While California continues to pass laws that streamline the development of affordable housing, at the time of writing rising rents, land values, and construction costs have made safe, affordable housing even more challenging. The following are recommendations to support and enhance all measures in this section.

- **Early community engagement**: Early community engagement, including with CBOs and housing advocates, is essential to these measures. Projects including affordable housing may find challenges during entitlement, and early, collaborative engagement with the community can result in a better project. Community engagement also helps to identify important housing considerations for people with children, people living with a disability or medical condition, people coming from an underserved background, and large or multigenerational families.
- **Creative financing:** Standard project financing may require a rate-of-return that may be incompatible with these measures. Patient capital, tax credits, use of non-standard parcels, grants, or other finance vehicles may be appropriate.

AH-1. Support Community Land Trusts

Under this measure, the project proponent would either set aside land or provide a donation to a local, existing community land trust (CLT), a non-profit organization that owns land in trust for the community. The size of the land or donation should depend on project size and community characteristics and be determined in consultation with the local CLT and residents living in the project area.

First developed by civil rights activists, CLTs provide a shared model of land and home ownership that takes land off the market rollercoaster of appreciation and speculation. While some CLTs have other goals, most focus on the provision of housing through affordable rentals or long-term leases as an alternative to traditional home sales. Unlike housing funded by low-income house tax credits, CLT housing will not revert to market rate after 30 years and will remain permanently affordable. Under the CLT lease model, homeowners will only earn a portion of any appreciation in property value when they leave, and the rest goes back to the CLT, helping to preserve long-term affordability (Community-Wealth.org n.d.). A true multi-benefit solution, CLT-stewarded homes are often built more sustainably and are maintained in better condition than typical low-cost

B3 Attach #1 of 3

rental housing, helping residents to live in a healthier environment, build wealth, and support climate resilience and racial justice.

Applicability

All projects in jurisdictions with a local community land trust. While CLTs are most common in cities, they can also be found in suburban and rural communities in California, such as the Bolinas Land Trust and Humboldt Land Trust. CLTs can also steward community-owned farms and green spaces for conservation.

Scale and Timing

- Scale: Project/Site or Neighborhood/City
- Timing: Planning

Communities or Issues Addressed

CLTs can be particularly effective for neighborhoods at risk of displacement or gentrification by placing control of land and housing directly with the community. CLTs may also be an effective solution for rural communities where tourism is changing the market dynamics of real estate. It is recommended that projects consult with CBOs, residents, housing advocacy organizations, and the lead agency to understand if they are in a community at risk from gentrification. Regional or local studies may help to identify vulnerable communities. The Urban Displacement Project provides detailed maps for the San Francisco Bay Area (including Sacramento), Los Angeles, and San Diego on neighborhoods at risk of displacement and gentrification. A nation-wide effort from the University of Minnesota similarly maps displacement and the concentration of low-income residents in economically declining neighborhoods.

Dimensions of Equity

Community land trusts can directly alleviate the high *housing burden* for low-income residents and communities of color, reducing housing costs and the risk of becoming unhoused, providing fair lending practices, and enabling occupants to build up wealth and home equity. These improvements can slowly reverse decades of racial inequity in home ownership, and lead to greater economic stability and resilience. In turn, *economic resilience* often confers greater ability for *disaster response and recovery* at both the household and neighborhood level. The cascading impacts of climate disasters, high housing costs, and systemic racism not only place communities of color directly in the path of the disaster—as with Hurricane Katrina—but they are also less likely to receive assistance from the Federal Emergency Management Agency post-disaster (National Advisory Council 2020). By increasing economic stability—starting with housing—CLTs can play a valuable role in climate resilience. With hundreds of thousands of Californians displaced by wildfires in recent years—and likely more to come—increasing community-owned, permanently affordable housing is critical to aid recovery efforts.

In addition, market-supplied housing units available to low-income renters are often in unsanitary and unsafe conditions, leaving residents exposed to air pollution, extreme

heat, mold, and other climate and health hazards. In contrast, CLT homes generally are better maintained and often have energy efficiency and weatherization improvements, helping residents with utility savings and reducing GHG emissions. CLTs also contribute to *climate and social resilience* of the community through stewardship of parks, urban gardens, and other green spaces; many CLT homes incorporate renewable energy, green infrastructure, active transportation, and other sustainable elements.

Finally, CLTs help to build community power and support *community ownership*, *self-determination*, and participation by providing residents a say in land use planning and decision-making in the neighborhood.

Implementation Considerations

This measure is particularly applicable for housing or commercial developments that may contribute to rising rents and housing prices in the project area. As such, engagement with and input from organizations and stakeholders that are representative of the project area are especially important. Project proponents are recommended to consult with the CLT and community stakeholders on the ideal location, size, and other characteristics of the land to be donated. In areas without an established community land trust, project proponents could consider contributing to seed funding or start-up funding that could be held by the lead agency to support nascent efforts.

Examples

In its home renovations, the Community Land Trust Association of West Marin makes energy efficiency and weatherization improvements and installs induction cooktops, hybrid water heaters, grey water recycling, and other sustainability features. It also built California's first new passivhaus, which are highly efficient and uses minimal energy, instead relying on passive heating and cooling from the environment. The Beverly/Vermont Community Land Trust in Los Angeles exercises land stewardship to create permanently affordable, sustainable, and low-impact housing in pedestrian-centered neighborhoods, including the Los Angeles Eco Village.

Resources

- The California Community Land Trust Network is a group of over 25 community land trusts across California, helping to support new and existing CLTs.
- The Grounded Solutions Network provides a resource library containing toolkits, case studies, reports, and decision guides to support CLTs and other inclusive housing policies.

Related Measures

- AH-6. Support the Formation of Collective Ownership Models: Limited-Equity Housing Cooperatives or Mutual Housing Associations

B3 Attach #1 of 3

AH-2. Promote Affordable Housing in Transit-Rich Areas

Increasing affordable housing in transit-areas can help support wealth-building, mobility, and economic resilience for low-income residents, while also reducing GHG emissions and improving air quality. As a result of high housing prices in California, many low-income households live far from work or school, commuting hours from the outskirts of urban areas and job centers. Yet the trade-off is that transportation expenses—the cost of car ownership, maintenance, and operations—may erode or negate any savings on housing costs. Households in auto-dependent neighborhoods spend 25 percent of household income on transportation costs, but in neighborhoods with a variety of mobility options, including transit, transportation drops to 9 percent of budgets (HUD 2014). Affordable housing near transit, thus, can help save residents money as well as time. Data from the California Household Travel Survey shows that low-income households drive 25 to 30 percent less when living within a half mile of transit, and 50 percent less when living within a quarter mile of frequent transit, in comparison to households at the same income level living far from transit (Transform and California Housing Partnership Corporation 2014). This reduction in vehicle miles traveled can translate into savings in gas, vehicle ownership, and maintenance costs—which range from $6,000-$12,000 per year (HUD 2014).

In selecting sites and locations, multi-family affordable housing projects should opt for locations within a half-mile of existing transit stations and implement transit-supportive measures such as limiting onsite parking supply, building safe and comfortable bike lane and sidewalk connections to transit, and providing subsidized transit passes for residents. Cities and counties that own land within a half mile of transit stations should prioritize these locations for affordable housing development.

Applicability

Urban communities with a robust, frequent transit network.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Planning

Communities or Issues Addressed

This measure would help to support low-income residents, particularly those who are unable to drive, whether for reasons of income, ability, or age. Nationally, only about 18 percent of people earning less than $35,000 per year own a car (HUD 2014).

Dimensions of Equity

By reducing both housing and transportation costs for low-income households, affordable housing near transit can help to build *economic resilience*. In addition, transit can free up *mobility choices* and destination access for residents, especially for families with multiple working adults, school-age children, and only one vehicle. Decreased auto usage can

B3 Attach #1 of 3

also reduce GHG emissions, improve *air quality,* and support walking and *active transportation,* supporting *physical health* for residents.

Implementation Considerations

Strategies to help incentivize affordable housing include increasing density allowances, eliminating or reducing parking requirements for transit-oriented development (saving on costs while enabling increases in building footprint), and establishing a transit-oriented development fund. Because transit is typically viewed as a neighborhood amenity, proximity to transit typically increases market rates by up to 20 percent for residential properties and 23 to 120 percent for commercial properties (National Center for Sustainable Transportation 2017). Thus, it may be possible for proponents to subsidize affordable housing units with market-rate housing and commercial leases.

Potential funding programs to support affordable housing near transit include the Strategic Growth Council's Affordable Housing and Sustainable Communities Program, the California Department of Housing and Community Development's Transit-Oriented Development Housing Program and Infill Infrastructure Grant, and regional funding sources such as the Bay Area Transit-Oriented Affordable Housing Fund.

Example

Recognizing that transportation costs are a significant burden for low-income families, San Jose-based First Community Housing chooses to not only site its affordable, sustainable housing developments near transit stations, but also to provide free, annual Valley Transportation Authority (VTA) Eco Passes to all residents at its 14 properties in Santa Clara County (FCH 2014). The passes provide unlimited trips on bus and light rail services operated by VTA. Surveys and studies show a high utilization rate for the Eco Pass, ranging between 40 and 90 percent across the housing developments. Not surprisingly, housing sites closest to light rail stations had the highest utilization rates. Between 29 and 76 percent of residents also reported choosing public transportation over driving for specific trips. Many residents commented on the helpfulness of the Eco Pass, noting that their families relied primarily or solely on transit for their mobility needs. Benefits for residents include more affordable commutes, a greater likelihood of walking (and thus increased fitness), and financial savings on vehicle operations and maintenance costs. Public benefits include reduced GHG emissions, air pollution, and traffic.

In addition, the studies also conducted parking counts, finding that 17 to 63 percent of parking spaces were always free at the housing sites. This, in turn, helped to convince the City of San Jose to reduce its parking requirements for senior housing from 1 per unit to 0.67—a significant savings for developers, as parking construction costs between $15,000 to $50,000 per space in Silicon Valley. What is more, First Community Housing is analyzing the potential of converting some of the excess parking spaces into low-impact designs, featuring pervious pavers, bioswales, and raingardens. These solutions—the direct outcome of supporting transit access by low-income residents—thus can also

benefit climate resilience by reducing paved surface areas and the UHI effect, filtering stormwater, and supporting native habitat.

Resources

Transform's GreenTrip Connect tool allows residential multifamily developments in California to estimate how affordable housing can help to reduce vehicle miles traveled and GHG emissions. While it does not specifically focus on projects located near transit stations, users can set the project location near transit and determine the effects of increasing affordable housing units, reducing parking spaces, and providing subsidized transit passes and rideshare program membership, in comparison to the city or county average. GreenTrip Connect will also estimate residential savings in terms of transportation costs and developer savings for avoided parking spaces.

AH-3. Protection for Existing Tenants of Redevelopment Projects

Redevelopment or rehabilitation of existing housing developments can be more sustainable than new construction, while also helping to provide more energy efficient, healthier, and improved housing conditions for residents. When existing affordable or low-income housing developments are redeveloped, the project should aim to help protect existing tenants and avoid displacement. The scarcity of affordable housing makes it challenging for residents to find alternative, equivalent housing near their workplace, family, or school. Residents in affordable housing units may also have fewer resources to enable them to relocate to another region or city, and relocation generally disrupts existing social networks and communities.

To avoid displacement, the project proponent can adopt the following best practices.

- Right to return: Existing residents should have the right to return to the affordable housing site after redevelopment and/or the first right of refusal.
- Relocation assistance: Existing residents should be offered fair compensation or relocation assistance and funding if they must vacate their homes temporarily during construction, or permanently. Relocation assistance programs should aim to ensure existing residents are equipped with the necessary resources, support, and information throughout the moving process.
- Temporary housing: The project proponent should endeavor to provide temporary housing near the original site at similar costs and quality.

Applicability

Projects involving the removal or demolition of existing housing units.

Scale and Timing

- Scale: Project/Site
- Timing: Planning, operations

B3 Attach #1 of 3

Communities or Issues Addressed

Existing tenant protections can be particularly effective for affordable housing developments in neighborhoods at risk of displacement or gentrification, as well as rural communities where the market dynamics of real estate are evolving. The project should consult with CBOs, residents, housing advocacy organizations, and the lead agency to understand if they are in a community at risk from gentrification. Regional or local studies may help to identify vulnerable communities. The Urban Displacement Project provides detailed maps for the San Francisco Bay Area (including Sacramento), Los Angeles, and San Diego on neighborhoods at risk of displacement and gentrification. A nation-wide effort from the University of Minnesota similarly maps displacement and the concentration of low-income residents in economically declining neighborhoods.

Dimensions of Equity

Providing protections for existing residents can help to maintain a community's social fabric and network, helping to build and maintain *social resilience*. These protections can also help to buffer residents from high real estate costs and scarcity, reducing the risk of becoming unhoused and reducing housing burdens. Housing stability in turn translates into *economic resilience* and generates greater preparedness for disaster response and recovery at both the household and neighborhood level.

Implementation Considerations

An unplanned relocation from one's residence on another party's timeline is always disruptive and rarely easy. The project proponent should communicate all plans and timelines with residents in the existing development as early as possible, seek resident feedback, and work with residents to address issues and concerns. Households should receive a case manager to assist with the relocation process. If providing temporary housing, the project proponent should also develop clear options as early as possible and present them to residents for feedback. Permanently displaced residents should receive additional assistance and benefits.

Example

The Sacramento Housing and Redevelopment Agency (SHRA) is demolishing and rebuilding the 1940s-era, low-income Dos Rios housing project into a larger mixed-income housing development, renamed Marisol Village. The redevelopment process will fully replace the 218 very-low-income and low-income units and add another 280 affordable workforce and higher-end units. During the demolition and construction process, the proponent will provide relocation assistance for residents to relocate for at least 24 months. A case manager was assigned to each family to assist with relocation to either another SHRA-managed housing project or other alternatives with housing vouchers. If any residents are permanently displaced, they will receive permanent relocation assistance and benefits. While all 218 low-income units will be replaced, only the first 140 units in the initial phase will be offered to former residents. They will retain the same rents, set at a percentage of income. Other project additions will include a bike

B3 Attach #1 of 3

trail, community garden, 500 trees, a park, and electric vehicle car share. The project is funded by several federal and state grants, including a Transformative Climate Community grant from the Strategic Growth Council, and will be fully complete in 2024.

AH-4. Incorporates Permanent Supportive Housing

The needs of certain underserved groups are often overlooked when developing housing units. Specifically, people who are currently or formerly unhoused, people living with a mental illness, people who want support with substance use issues, people who are living with chronic medical conditions or disabilities, the elderly, people with young children, people living with large families or multigenerational households, and members of the LGBTQIA+ community can benefit greatly from having onsite services. Permanent supportive housing helps to meet these needs by combining affordable housing with case management and permanent supportive services designed to help people remain permanently housed. For instance, supportive housing projects can allocate space for a community center where residents can engage with health programs, mental health services, job-seeking assistance, educational classes, and childcare services. Services are to be provided permanently, and all tenants may live in their homes and use services if they meet the basic obligations of tenancy. The types of services provided may vary depending on the local community's demonstrated needs and priorities, with the primary goal of keeping tenants housed.

Applicability

Residential projects.

Scale and Timing

- Scale: Project/Site
- Timing: Operations

Communities or Issues Addressed

For everyone, a stable home is foundational. For some of the most vulnerable groups in the state, affordable housing coupled with support services is a necessity. From mental health services to childcare, when it comes to maintaining housing and living in a healthy environment, onsite, multi-disciplinary services help tenants address a variety of challenges. For instance, in Santa Clara County, a study found that 86 percent of unhoused individuals randomly assigned to a permanent supportive housing program remained housed and needed fewer emergency psychiatric services (Kurtzman 2020). Similarly, a comprehensive literature review of permanent supportive housing found significant reductions in use of medical emergency services and mental health crisis services, hospitalizations, substance use, and days incarcerated, as well as increases in quality of life, social network size, and use of outpatient medical services (CSH 2020).

Notably, because of the reductions in use of emergency and crises services, permanent supportive housing is far less costly than traditional spending on services for the

B3 Attach #1 of 3

unhoused. In Orange County, individuals in permanent supportive housing had 78 percent fewer ambulance transports and 100 percent fewer arrests in comparison to those who are unhoused. As a result, costs per capita for permanent supportive housing residents were 50 percent lower ($51,587) than for the unhoused ($100,759), with higher benefits for individuals who are more unwell (Snow and Goldberg 2017). As this number totals nearly $300 million in Orange County annually, permanent supportive housing can provide substantial savings for public agencies and non-profit organizations.

Dimensions of Equity

By directly addressing challenges for underserved groups, supportive housing services have the potential to enhance a community's *affordable housing* quality, *public health*, and *social resilience*, boost *employment*, and address key determinants of *poverty*.

Implementation Considerations

- Leverage expertise of local CBOs to help develop supportive housing and/or to become service providers at the project site during operations.
- Ensure that housing and services are affordable, with tenants paying no more than 30 percent of their income toward rent/utilities/services.
- Collaborate with CBOs and community groups to determine specific needs.

Example

Permanent supportive housing has a proven record in helping unhoused residents. In Orange County and Sacramento, Jamboree Housing operates six permanent supportive housing developments, providing homes to over 475 residents who had been unhoused (Jamboree 2021). The housing properties provide units of different sizes, as well as veteran-designated and Mental Health Services Act (MHSA) Housing Program-dedicated units. One of the properties is California's first 100 percent MHSA property. Three of the developments are integrated into standard affordable housing, but all offer onsite services including 24/7 full-service clinical services, vocational training, life skills training, support groups, and community alliances, referrals, and liaisons. In Irvine, one property, Doria, is developed in conjunction with the Irvine Community Land Trust and provides both affordable workforce housing and permanent supportive housing within an upscale master-planned community – exemplifying integrated housing across all income classes. The outcomes include significantly reduced hospitalizations for both physical and mental conditions, reduced incarceration and contacts with the criminal justice system, higher housing retention rates, and improvements in health, financial stability, work skills, and education.

AH-5. Make Housing Units Permanently Affordable

This measure calls for the project proponent to ensure affordable housing units are permanently affordable for low-income residents. Many affordable housing units in California eventually flip to market-rate as affordability restrictions expire. The project proponent should pursue strategies to guarantee affordable housing is maintained.

B3 Attach #1 of 3

Permanent affordability can be achieved by engaging with alternative housing models (*community land trusts* and *limited-equity housing cooperatives*) and deed restrictions.

In creating long-term affordable housing units, the project proponent, government agency, or nonprofit subsidizes homeownership for low- and moderate-income homebuyers by investing public and/or private funds to reduce the purchase price of the housing unit. Homebuyers then agree to requirements to preserve the affordability of the unit for future families. These requirements can take the form of resale price restrictions (typically a specified percentage of any increase in value, plus the original cost of the property and any additions they have made), and a requirement to sell to other low- or moderate-income households.

Applicability

Residential projects.

Scale and Timing

- Scale: Project/Site and Neighborhood
- Timing: Planning, operations

Communities or Issues Addressed

The California Housing Partnership (2020b) estimates that even before COVID-19, 1.3 million low-income households in California lacked access to affordable homes. Increasing and preserving affordable housing supply is an utmost priority for the state.

Dimensions of Equity

Enhancing a community's stock of affordable housing has important implications for *economic resilience, social resilience, public health,* and *poverty* levels.

Implementation Considerations

- To preserve affordable housing, project proponents should consider other alternative housing models, especially those that *support collective ownership* and *community land trusts.*
- Partner with local CBO to manage affordable housing programs and consider the following strategies (Stromberg and Stromberg 2013):
  - Provide pre- and post-purchase education for potential homebuyers.
  - Provide financial counseling.
  - Provide other homeownership assistance services.
- Important considerations for deed restrictions.
  - Important considerations when using deed restrictions to limit resale prices:
    - » Specify required length of affordability and affordability level.
    - » Determine how resale price will be calculated.

B3 Attach #1 of 3

    - » Specify the entity (typically a public agency) entitled to the difference between the sales price and the restricted resale price if an income-qualified buyer cannot be found.
    - » If there are restrictions for local workers, ensure the program is eligible to all people who work in a certain geographic area, including immigrants.
  - Design deed restriction programs to prevent the conversion of housing units to market rate in the event of foreclosures.
    - » This event occurs when the deed restriction is placed in a subordinate position to the interests of the primary lien holder (issuer of the primary mortgage) which allows a deed restriction to be cancelled under a foreclosure.
    - » Detail protections for buyers if the price of the housing unit declines.
    - » Determine the treatment of capital improvements as well as deferred maintenance at resale.
- Detail provisions for repayment of any secondary financing benefiting a public agency.
- Specify owner-occupancy requirements and/or restrictions on rentals.
- Detail property transfer process.
- Outline involuntary sale or transfer procedures.
- Outline processes for the addition of parties to title by marriage or domestic partnership.
- Detail hazard insurance and property tax requirements.
- Identify provisions for subordination of the agreement, refinancing, and home equity loans.
- Buyer's consent to the option to purchase.
- Detail default events that trigger the Option to Purchase or foreclosure.
- Define the affordability rate of housing units: Detail the income levels targeted (e.g., 80 percent area median income [AMI], 60 percent AMI, 30 percent AMI) and the number of units allocated to each income level. (Marshall, Kautz, and Higgins 2006)

Examples

The Vail, Colorado, Housing Department found that 90 percent of sales from locally owned homes were purchased by a second home/vacation property owner. Vail also found data demonstrating that these second homes and vacation properties are rarely purchased by residents, revealing a housing market trending toward pricing out local wage earners. To address this problem, the Vail Town Council and the Vail Local Housing Authority launched the VailInDEED program in 2017. This program uses taxpayer funds to purchase deed restrictions to protect and preserve existing housing for use by residents. Since its launch, the program has secured approximately 140 new deed restrictions for the Vail community. In total about 270 Vail residents have been assured of the affordability of their homes (Urban Land Institute 2020).

Grappling with a similar challenge of rising housing costs limiting availability for local workers, Placer County is developing a similar program, as 90 percent of homes in

B3 Attach #1 of 3

eastern Placer County—by Lake Tahoe—are owned by second homeowners. Due to launch in 2021, the Workforce Housing Preservation Program will pay homeowners to deed restrict their homes so that only local workers can purchase or rent them (County of Placer 2021). Participants must work at least 30 hours a week at a job within 20 miles of the deed-restricted residence; income eligibility is capped at 120 percent of the average median income, or about $103,000 for a family of four. The income and geographic limits are higher in eastern Placer County due to its significantly higher housing costs.

Related Measures

- AH-1. Support Community Land Trusts
- AH-6. Support the Formation of Collective Ownership Models: Limited-Equity Housing Cooperatives or Mutual Housing Associations

AH-6. Support the Formation of Collective Ownership Models: Limited-Equity Housing Cooperatives or Mutual Housing Associations

This measure calls for proponents to build and operate housing units as limited-equity housing cooperatives, mutual housing associations, or resident-controlled units. These collective ownership models serve as effective strategies to center the needs of residents and have the potential to bolster a community's stock of affordable housing.

Limited-Equity Housing Cooperatives

In a limited-equity housing cooperative, residents form a corporation and share ownership of a building. Cooperative members pay dues and work together through democratic decision-making to reach mutual goals. Limited-equity housing cooperatives can offer permanently affordable homeownership opportunities for low- and moderate-income families. Under this system, residents are shareholders of their cooperative, and they purchase a share of stock in the cooperative entitling them to occupy one housing unit, instead of directly buying the housing unit. Restrictions on share resales ensures that affordability is maintained from one resident/shareholder to the next.

Mutual Housing Associations

Mutual housing associations are non-profits that have a board that includes residents, future residents, and representatives of the public and private sectors. They manage their own developments and work toward goals of expanding affordable housing supply, providing public goods by investing in the local neighborhood, and ensuring quality of life for residents. Residents lease housing from the mutual housing association.

Applicability

Residential projects.

B3 Attach #1 of 3

Scale and Timing

- Scale: Project/Site or Neighborhood
- Timing: Planning, operations

Communities or Issues Addressed

Increasing the supply of affordable housing with collective ownership structures can help alleviate the declining stock of affordable housing across California. Collective ownership structures help make housing affordable for low-income people by removing property from the speculative real estate market.

Dimensions of Equity

Collective ownership structures help improve the *economic resilience* of residents and democratize residential decision-making power which enhances *community ownership* and *self-determination*.

Implementation Considerations

- Organize ownership structures in collaboration with prospective low- and moderate-income residents. Tailor the ownership structure based on community capacity and priorities. For instance, consider a merger between a community land trust and a limited-equity cooperative for a more robust shared equity model.
- Consider partnering with CBOs or existing community land trusts to manage resident recruitment/community building and to provide housing support services. Limited equity housing cooperatives require strong fiscal and organizational support to succeed. Leverage existing experience from local community organizations to ensure sustained support.
- Resident participation is fundamental for a cooperative's success. Ensure real estate educational resources are provided and residents are supported.
- For limited equity housing cooperatives, develop a workable limited equity formula to determine affordable share purchase and resale prices in the long term.

Examples

Limited Equity Housing Cooperatives

Originally completed in 1985, Dos Pinos is a limited-equity housing cooperative on a 4-acre parcel in the Senda Nueva neighborhood of North Davis. The cooperative has approximately 60 units and is governed by an elected seven-person Board of Directors. To become a voting member of the cooperative, a person purchases a share or membership certificate in the cooperative housing corporation. This share grants the person the exclusive right to occupy one dwelling unit in the cooperative and sign an occupancy agreement. Residents pay a monthly carrying charge that covers the cooperative's general operating costs.

B3 Attach #1 of 3

Shares cannot be resold for more than the maximum transfer value (MTV) for that unit. MTV is equivalent to the sum of the following: the value of the share at time of purchase, annual increases in the share's value over the span of a member's residency, and the depreciated value of any permanent improvements (which are approved by the board) made during residency. When a member notifies the Board of their intent to move out, Dos Pinos has the right of first refusal to re-purchase the share. If Dos Pinos does re-purchase, it sells it to the next person on a waiting list.

A study from the Urban Institute found that Dos Pinos has effectively provided affordable homeownership opportunities since its formation. Across 276 sales, the Dos Pinos cooperative's median share price provided homeownership opportunities for households with incomes below the area median. Additionally, during a period when the Sacramento area's housing market underwent substantial appreciation, the cooperative units at Dos Pinos were successful at retaining and in some instances increasing their affordability (Temkin et al. 2010).

Mutual Housing Association

In 1988 Mutual Housing was incorporated as a partnership between neighborhood residents, business representatives, housing advocates, and local government in Sacramento. The locally controlled nonprofit owns and operates 1,071 homes, including communities designed and built by Mutual Housing on vacant infill lots and other communities built from rehabilitated housing stock.

The nonprofit provides residents numerous supportive programs such as a digital literacy program, which provides free Internet access to all residents and offers trainings at onsite computer labs. Mutual Housing also offers various community-specific financial capability programs that provide financial mentoring, group workshops, peer lending circles, and youth financial coaching.

Mutual Housing provides leadership development support to resident leaders to help them identify needs for additional programs to uplift vulnerable individuals and address community-specific gaps. Examples of such activities include community gardening and nutrition, after-school tutoring, English and citizenship classes, disease prevention, and senior exercise classes. Importantly, resident leaders also serve on Mutual Housing's board of directors (Mutual Housing 2021).

Community Land Trust/Limited-Equity Housing Cooperative Hybrid

Established in 1989, the Lopez Community Land Trust uses the ground lease mechanism of CLTs coupled with the limited equity cooperative model of housing to serve the rural island community of Lopez Island, Washington. The hybrid organization is structured as a nonprofit and acquires land and develops housing for residents earning no more than 120 percent of the area median income.

Homes are owned by the limited equity housing cooperative, which leases the underlying land from the CLT. Prospective homeowners purchase shares from the cooperative (granting them the right to occupy homes), sign an occupancy agreement, and become

B3 Attach #1 of 3

voting members of the cooperative. Importantly, the housing cooperative holds both the title to the property and the mortgage, with residents making monthly payments to the cooperative to cover their share of the mortgage, property taxes, and other maintenance fees. This set up allows the Lopez Community Land Trust to offer housing to people who may not have the credit history needed to secure a mortgage on their own, as many underserved communities lack access to quality banking and credit infrastructure.

Because the cooperative is directed by residents, there is the inherent risk that members might vote to opt out of affordability restrictions. The CLT protects against this risk by incorporating affordability protections into both the ground lease and the occupancy agreement to help ensure lasting affordability. The CLT also provides supportive services such as first-time homebuyer classes, homeownership counseling, and training in cooperative governance (U.S. HUD OPD&R 2012).

Resources

The California Center for Cooperative Development supports cooperatives across California with start-up, management, and technical assistance, and provides education on how cooperatives can generate economic growth and home ownership in low-income and underserved areas.

AH-7. No Net Loss of Affordable Housing Units/One-For-One Affordable Housing Policies

This measure encourages proponents to preserve affordable housing stock by replacing all affordable units demolished on a one-for-one basis. This strategy is designed to result in a no net loss of affordable housing units for each of the very low-, low-, and moderate-income levels. No net loss/one-for-one replacement strategies ensure that the total number of affordable units within a community does not decline over time and help safeguard against the acquisition and conversion of low-income units into luxury units.

Applicability

Residential projects redeveloping affordable housing.

Scale and Timing

- Scale: Neighborhood/City
- Timing: Planning, construction

Communities or Issues Addressed

The conversion of existing affordable housing units into condominiums and luxury housing presents a clear threat to the already dwindling affordable housing supply.

Dimensions of Equity

As strategies to preserve *affordable housing* supplies, no net loss/one-for-one policies serve as valuable assets to the overall *social resilience* of the local community.

B3 Attach #1 of 3

Implementation Considerations

- Build affordable housing replacement units prior to the demolition of existing affordable units.
- Provide strong relocation assistance to help displaced residents find housing.
- Consider Enhanced Infrastructure Financing Districts to help finance the construction/rehabilitation of public and certain types of private infrastructure.
  - Funding from enhanced infrastructure financing districts can help subsidize the development of moderate-, low-, and very low-income housing units.
- Ensure that housing units are *permanently affordable*.

Example

In its redevelopment of the 1940s-era Dos Rios public housing project into mixed-income housing, SHRA has committed to fully replacing the 218 very low-income and low-income units that will be demolished. In addition, it will add 280 affordable workforce and higher-end units. While all 218 low-income units will be replaced, only the first 140 units in the initial phase will be offered to former residents. They will retain the same rents, set at a percentage of income.

Related Measures

- AH-3. Protections for Existing Tenants of Redevelopment Projects

Climate Resilience (CR)

Photo Credit: m., June 2010

Environmental justice communities are at far greater risk to the compounding impacts of climate change than other California communities. As recently experienced during California's catastrophic wildfires, communities of color and low-income communities have been on the frontlines of climate change and extreme weather, living in neighborhoods more likely to flood, living in older homes in high wildfire-risk areas, working jobs that leave them exposed to wildfire smoke—and critically, lacking access to resources, disaster relief, and other assistance needed to bounce back and recover. While it is true storms and wildfires do not differentiate in their destructiveness, wealthier communities are often better protected with infrastructure, live in more resilient homes, and have access to information systems, transportation options, insurance, savings, and other resources that enable them to access information, evacuate quickly (to a hotel or another area), and to recover and rebuild. Marginalized communities, on the other hand, may not receive critical emergency alerts, or may not receive it in a language they know, and may have functional or access needs that

B3 Attach #1 of 3

slow down evacuations. Without documentation and insurance, residents may have a difficult time accessing state or federal disaster relief assistance and may not be able to recover losses. For example, after the Thomas fire in Ventura and Santa Barbara counties, local immigrant rights and environmental justice groups provided essential services to communities not served by recovery efforts, which focused on privileged communities. These services included providing access to emergency information in Spanish and Indigenous languages; farmworker labor protections; and a private disaster relief fund for undocumented immigrants ineligible for federal aid.

The greater risks and exposures of environmental justice communities are not just the outcome of present-day decisions, however, but rather have their roots in historic decisions. Homes in formerly redlined neighborhoods are 25 percent more likely to be flooded today. As a result of low-income communities and communities of color being designated as risky for lending in the 1930s, they are now truly at risk of climate hazards. While cities invested in sewers, levees, and other infrastructure in formerly greenlined, predominantly white neighborhoods, systemic racism that drive investment decisions left poorer communities and communities of color exposed. Unfortunately, the floods, wildfires, storms, and other disasters California faces today have the potential to be much more severe and destructive.

Thus, it is critical that new growth and development takes place in a way that enhances resilience in the surrounding community, particularly in neighborhoods that have faced systemic disinvestment and racism in the past. By building in a way that enhances climate resilience and adaptive capacity, new growth has the potential to protect its neighborhood—as well as itself—from future impacts of climate change. A project's resilience is tied to its surrounding community; if a commercial building is surrounded by flooded roads, its employees cannot come to work, and nor can it receive deliveries or welcome customers. Recognizing that the long-term resilience of a business or a project is inherently dependent on its surrounding community can help to encourage project proponents to undertake improvements and investments to build overall responsive capacity to floods, wildfires, poor air quality, drought, extreme precipitation, sea-level rise, and other climate hazards.

It should be noted that most of the climate adaptation and risk reduction measures, of which many address equity and vulnerable communities, are in Chapter 4, *Assessing Climate Exposures and Measures to Reduce Vulnerabilities*. Chapter 4 provides guidance on evaluating climate risks, exposures, and vulnerability, and provides measures to increase resilience. This section provides a more detailed description on three particular risk reduction measures that can be incorporated as part of project design and land use planning at the jurisdictional level.

B3 Attach #1 of 3

Key Indicators: Many factors increase both physical and socio-economic vulnerability to climate change impacts. Relevant CalEnviroScreen indicators include: Ozone, PM2.5, Cleanup Sites, Asthma, Cardiovascular Disease, Housing Burden, Linguistic Isolation, Poverty, and Unemployment. Relevant Healthy Places Index indicators include: Above Poverty, Employed, Median Household Income, Automobile Access, Park Access, Tree Canopy, Clean Air – Ozone, Clean Air – PM2.5, Homeownership, Housing Habitability, Asthma, Coronary Heart Disease, Chronic Obstructive Pulmonary Disease, Disabled, Cognitively Disabled, Physically Disabled, Extreme Heat Days, Wildfire Risk, Population in Sea Level Rise Inundation Area, Children, Elderly, English Speaking, Outdoor Workers, Air Conditioning, Impervious Surface Cover, Urban Heat Island Index, and Race/Ethnicity.

Cross-Cutting Guidance

For an issue as big as climate resilience, it is imperative that local jurisdictions take the lead, leveraging their resources and tools to facilitate local action to deal with this global problem. It is recommended that users consider the following actions.

- **Adopt ordinances that facilitate resilience**: Whether requiring enhanced air filtration for publicly owned assembly buildings or adopting an Urban Agricultural Incentive Zone (California Government Code section 51040 et seq.), the jurisdiction should adopt policies that further resilience.
- **Understand community priorities**: Each community is likely to have their own vulnerabilities and exposures to climate impacts, as well as their own strengths and adaptive capacities. Outreach is critical to understand how climate hazards and changing conditions will impact each community, and the highest priority resilience measures.

CR-1. Adapt and Re-Use Vacant Lots for Green Infrastructure

As precipitation extremes are likely to increase because of climate change, stormwater inundation, localized flooding, and even severe flooding will become a greater risk for many communities. Coastal communities may also be at risk of king tides and storm surges that lead to localized flooding. Greening vacant lots and brownfields in cities can help manage stormwater and reduce UHIs, while also providing other community and social benefits based on specific designs and community goals. This measure can be especially beneficial in underserved communities where investment in traditional grey infrastructure is lacking. While grey infrastructure focuses on directing water away from the city, green infrastructure approaches the city as a sponge, with hundreds of points to absorb and hold water (Newman 2019). This can be considered a form of "urban

B3 Attach #1 of 3

acupuncture", a concept developed by UC Berkeley architecture professor Nicholas de Monchaux, treating many disparate locations across the urban environment to turn brownfields and vacant lots into public green spaces that can provide additional benefits such as job training, healthy foods, and social wellbeing (Maclay 2016).

Some 17 percent of land in U.S. cities are vacant, with many vacant lots being oddly shaped, small, disjointed, or having less-desirable locations. These lots are challenging to develop for commercial purposes. As such, there is significant potential to repurposing them for regenerative and climate-resilient purposes. Vacant lots can be adapted into urban gardens, bioswales, rain gardens, cisterns, small parks, and other community-serving green spaces.

Project proponents should be encouraged to contribute a small percentage of project costs to redeveloping adjacent or nearby vacant lots into climate-resilient green infrastructure. This can help to benefit the project itself by reducing stormwater run-off, beautifying the neighborhood, reducing the UHI effect, and discouraging crime.

Applicability

Projects located in urban and suburban areas.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Construction

Communities or Issues Addressed

This measure is applicable for communities that experience localized flooding or stormwater surges or have a high amount of paved surfaces and high UHI effect.

Dimensions of Equity

Transforming vacant lots into gardens, parks, and other green infrastructure can support improved *air quality* and reduced UHIs. Improvements can also be planned to incorporate cisterns or detention ponds to capture stormwater, providing *climate resilience* against both drought and flooding. Community gardens can also help to boost food security and encourage *community ownership*, as well as economic opportunity if combined with pop-up markets or food businesses. The use of native plants or pollinator-friendly plants can also support biodiversity and habitat. Turning vacant lots into cared-for spaces can also help to decrease littering and crime, and encourage more civic engagement, recreation, and *social resilience.*

Implementation Considerations

There are numerous ways for vacant lands to be transformed and designed to fit a variety of climate challenges as well as community goals. The project should work closely with community members, stakeholders, and coalitions on site selection and design to ensure alignment with local priorities and goals.

B3 Attach #1 of 3

Examples

In de Monchaux's analysis of transforming vacant parcels for climate resilience in the Los Angeles River Basin, a crowdsourcing and community engagement effort identified over 700 candidate sites. The analyzed improvements included drought-resistant landscaping, stormwater retention and filtering, shade trees, and shade gardens. The study estimated that all the proposed improvements together could absorb a million gallons of stormwater and save 13.1 gigawatt-hours of electricity through UHI reductions (Maclay 2016). A single site alone could save 980 kilowatt-hours of electricity a year. In another analysis focusing on the City of San Francisco, de Monchaux estimates that the city could save the millions that it currently spends on sewer work and stormwater management costs by transforming 1,500 vacant and under-used sites.

On the implementation front, Ron Finley, the self-styled "gangsta gardener," and L.A. Green Grounds helped turn dozens of unused and vacant lots in South Central Los Angeles—an area with many fast food outlets but little fresh food—into productive food gardens (Weston 2020). The gardens help to cultivate community ownership and youth engagement, in addition to fresh produce.

Resources

Various tools exist to help calculate and compare benefits across various sites. These include the following.

- Landscape Performance: This compendium of resources from the Landscape Architecture Foundation contains a toolkit, case studies, and resources to help evaluate the benefits of nature-based solutions. The resources can be filtered by benefit (stormwater management, access and equity, habitat, economic development, et cetera) or by feature (food garden, permeable paving, play equipment, et cetera). The toolkit library contains calculators and tools from a range of leading organizations to help quantify the ecological benefits.
- Center for Neighborhood Technology, Green Values Stormwater Management Calculator: This easy-to-use calculator can estimate the stormwater management benefits of a wide range of green infrastructure solutions. It provides both national defaults as well as customizable values for land use types, and calculates volume of stormwater captured, runoff volume, costs, and benefits such as reduced energy use, air pollutant reduction, and increased real estate value.
- Compared to vacant lots, brownfields will require additional remediation; the *U.S. EPA's Climate Smart Brownfields Manual* offers a guide to planning, environmental assessments, and remediation for brownfields, with the ultimate goal of redeveloping to include green infrastructure, community-owned open space, and other climate-resilient uses.

Related Measures

- IC-4. Enhanced Open and Green Spaces
- IC-8. Enhanced Access to Community Resources

B3 Attach #1 of 3

CR-2. Support the Development and Operations of Community Resilience Centers

Climate-exacerbated hazards and disasters are likely to compound existing vulnerabilities, challenges, and hazards for both individuals and communities. With increasing extreme weather events, wildfires, and other worsening natural disasters, it becomes critical to develop and establish local resilience centers that can support the needs of the surrounding community—as well as potentially evacuees—at short notice, and for potentially extended periods of time.

Local jurisdictions and project proponents can assist in this effort by anticipating how its structures and land uses can be adapted to serve as resilience centers or provide emergency services. Commercial developments or multi-family residential developments with a public space or community room could consider ensuring that they are equipped with MERV-13 or higher rated air filtration systems, for example, to serve as a clean air center during wildfire smoke events. Larger developments could consider onsite solar PV systems coupled with battery storage to provide emergency power. Multi-family developments should identify residents that have electric-powered medical devices at home or would require interpretation or mobility assistance during emergencies. Disaster preparedness training, supplies, and other capacity-building activities are also important components of developing a community resilience center.

Additionally, local jurisdictions and projects could also partner with established CBOs to develop facilities that can serve as resilience centers or hubs, as part of a community benefits agreement (see *CCD-5. Establish a Community Benefits Agreement*). This could entail retrofitting an existing community center, place of worship or religious center, school, or cultural hub with air filters, cool roofs, building weatherization, and/or back-up power. This approach has the benefit of establishing the resilience center in a space already known and comfortable to the community.

Applicability

Urban, rural, and suburban communities.

Scale and Timing

- Scale: Neighborhood/City and Project/Site
- Timing: Construction, operations

Communities or Issues Addressed

This measure is applicable for all communities, but particularly those that are marginalized and may have fewer resources or less capacity to respond to unexpected disasters or hazards. Existing and projected climate hazards should also be considered using Cal-Adapt.

B3 Attach #1 of 3

Dimensions of Equity

By helping to develop and establish community resilience centers, the project proponent can help to support overall *climate resilience* and community well-being during severe weather, extreme heat, wildfire smoke events, and other disasters and hazards. This can in turn help to mitigate and reduce the burdens of *disaster response* and recovery. In addition, community resilience centers can help to support *public health, equity, social resilience,* and *community ownership* and *empowerment*.

Implementation Considerations

Implementation specifics will depend on the location of the project, the surrounding community's existing challenges and needs, and the existing and future climate hazards likely to arise. Generally, partnering with an existing CBO can assist in understanding and identifying existing opportunities and vulnerabilities. A community benefits agreement can also help determine implementation specifics. In addition, creative, non-traditional community outreach and engagement strategies are critical to ensure that community members are aware of and use the resilience centers.

Example

The City of Berkeley's community resilience center program provides emergency supplies, tools, resources, and training to organizations to serve as hubs before, during, and following disasters. The organizations, which include multifamily housing complexes, a community college, and community-based, youth, religious, and cultural organizations, help to provide information and engagement with their audience and membership, and will help to support the community during emergencies.

Related Measures

- CCD-5. Establish a Community Benefits Agreement

CR-3. Passive Survivability

Over 2.7 million Californians were left in the dark when Pacific Gas and Electric Company and other utilities instituted extended blackouts to reduce wildfire risks in October 2019 (Botts 2019). Although entire cities lost power, the most impacted were low-income communities, people living with disabilities, and the elderly (Chabria and Luna 2019). Residents with money and resources are better able to escape to hotels, replace spoiled food, access generators, and maintain communications. For vulnerable communities, losing an entire refrigerator of food or being forced to upgrade cell phone plans to better access data can cause economic disaster. For those who rely on medical equipment, power outages can be life threatening. When the power outages caused schools to shut down, children who rely on school meals were left behind.

As underserved communities lack access to essential resources, face challenges in evacuating, and are often the last to receive emergency assistance, they must be prioritized for climate resilience efforts. One key solution, passive survivability, can help

B3 Attach #1 of 3

underserved communities stay safe and resilient at home. Under this architectural concept, buildings are designed to maintain livable conditions in the event of extreme weather or when cut off from utilities. As opposed to active approaches (e.g., onsite generators), passive survivability uses design and building materials to maintain livable conditions *passively,* without additional inputs. This can be particularly critical during extreme heat and heat waves to help residents stay cool without reliance on air-conditioning. On an everyday basis, passive survivability facilitates highly efficient climate control that translates into savings on energy bills.

Importantly, passive survivability principles can be applied to all types of buildings, including multifamily apartment buildings and high rises. Because a core component of passive survivability is increasing building efficiency, it is also complementary to zero net energy (Measure E-16) and renewable surplus (Measure E-17) buildings.

The following design elements are core components of passive survivability.

High-Performance Building Envelope

A highly efficient, well-insulated building envelope is key to passive survivability to minimize temperature gain (or loss) when cooling or heating systems become inoperable. Proponents are encouraged to design buildings to maintain occupant comfort based on reasonably expected historical and projected minimum and maximum temperatures, with particular focus on extremes. Set building design parameters, such as U-factors for window glazings and R-values for insulation, based on predictive climate data when designing the building envelope (DC Department of Energy and Environment 2017).

High-performance windows with low-e coatings, low-conductivity gas fill, and either double or triple glazing with an interior film can optimize the U-factor—a measurement of how well a window insulates—leading to greater energy efficiency (Wilson 2006). Radiant barriers for buildings with high-pitched attic spaces can help reduce radiant heat transfer. Other approaches include installing a cool roof, green roof, or vegetative façade.

To help control air and moisture, consider implementing a continuous air barrier in the building envelope to enhance efficiency and building durability. An air barrier is a system of materials that separates the indoor, conditioned air from outdoor, unconditioned air.

Finally, set an energy use intensity target in alignment with passive survivability principles. Energy use intensity is the building's annual energy consumption per square foot.

Cooling Load Avoidance

Cooling load avoidance strategies utilize geometry and architecture to reduce heat gain in buildings – critical to protecting people from extreme heat if air-conditioning equipment cannot operate. Design strategies to reduce heat gain include using a building orientation (typically north-south) that limits afternoon sun exposure; minimizing east- and west-facing glass; using low solar heat-gain coefficient glass for south, east, and west windows and skylights; shading south, east, and west windows; installing a cool or green roof,

B3 Attach #1 of 3

radiant barriers, or radiant barrier roof sheathing in unheated attics; or installing louvered shades on windows and vegetative shading (Wilson 2006).

Ventilation

Mechanical ventilation coupled with natural ventilation ensures efficient ventilation throughout the building. Natural ventilation creates pathways for exhaust air to escape without the use of electric fans. To achieve natural ventilation, consider optimal window placement, building geometry, cupola use, and other methods to allow exhaust air to escape near the peak of the roof (Wilson 2006).

During power outages, mechanical ventilation systems that rely on electricity may become inoperable. Manual controls such as operable windows, pull-down shades, and operable vents should be considered to ensure occupants maintain the ability to control indoor climate conditions (DC Department of Energy and Environment 2017).

Passive Solar Heating

Depending on the project site's climate, passive heating might be desirable during winter months. Passive solar heating strategies include optimizing the siting and orientation of the house and ensuring that there is adequate glazing and high-solar heat-gain coefficient glass for south-facing windows. High-mass materials within the envelope can bolster insulation. Passive ventilation can circulate sun-warmed air throughout the building (Wilson 2006).

Natural Daylighting

A building can be designed to predominantly rely on daylight as opposed to electric lighting. Solar apertures can effectively bring natural light deep into the building interior. Other strategies include light shelves—structures that have reflective upper surfaces that transmit natural light inside a building—and light-colored ceiling and wall finishes. Fiber-optic daylighting systems or tubular skylights can deliver light to locations within a building that do not have full access to windows (DC Department of Energy and Environment 2017).

Water Storage and Heating

In cases of emergency, rainwater catchment systems can provide occupants a critical source of water. Such systems can be used for outdoor irrigation, toilet flushing, washing, and after-filtration drinking and cooking water. Passive solar or PV-powered water heating systems can provide warm water during outages.

Solar Photovoltaic Power and Storage

Solar PV systems coupled with battery storage can provide power during outages, including at night and during times of lower solar availability.

Applicability

Residential projects located in rural, suburban, or urban communities

B3 Attach #1 of 3

Scale and Timing

- Scale: Project/Site
- Timing: Planning, construction, operations

Communities or Issues Addressed

As the threat from extreme climate events becomes increasingly prevalent and severe, measures to boost buildings' climate resilience are imperative to structural resilience as well as occupant health and safety. In the United States, low-income people are more likely to live in housing and areas that are vulnerable to climate impacts and face greater challenges in accessing life-saving relief. In the 1995 Chicago heat wave, 739 people died—most of whom were low-income individuals (SAMHSA 2017). Additionally, following disasters, low-income communities face many barriers in receiving aid, leading to disproportionate emotional, economic, and health impacts.

Thus, this measure should be prioritized for low-income communities and those without access to safe and reliable infrastructure services. With an increase in the frequency and severity of extreme heat, precipitation, wildfires, and other climate disasters, power outages and rolling blackouts have become more common. Power outages can be particularly dangerous or even life threatening for people who depend upon medical equipment or electric mobility equipment. For the elderly, children, and other vulnerable people, extended outages also increase the risk of heat illnesses.

Even without power outages, passive survivability can help low-income and underserved communities respond to heat waves and other extreme weather events and help to reduce their utility costs. Communities who may be unwilling to use air-conditioning due to financial challenges or cultural preferences benefit from passive survivability to maintain cooler, livable temperatures.

Dimensions of Equity

Maintaining survivable temperature thresholds can be a significant barrier for underserved and low-income communities. When outages and extreme weather events occur, many cannot afford to turn up the air conditioner (or heater) or relocate to a hotel. Designing buildings to maintain passive survivability enhances *economic resilience, social resilience, climate resilience,* and *public health* for occupants.

Implementation Considerations

When designing passive survivability components, it is essential to account for the project location's climate trends and potential future need. While passive cooling may be more critical in the majority of California, passive solar heating may be needed in some locations. Cal-Adapt, developed by the State of California, can provide localized climate projections for extreme heat, precipitation, wildfire risk, and sea level rise, while local climate vulnerability assessments can provide another detailed analysis. Chapter 4 provides additional guidance and strategies for addressing sea level rise, flooding,

B3 Attach #1 of 3

temperature and extreme heat, extreme precipitation, wildfire, drought, decrease in snowpack, and air quality degradation and their cascading effects.

Software tools allow proponents to test a design's efficiency and effectiveness. It is important to simulate 5-day outage worst-case scenarios when examining a building's ability to achieve passive survivability (White 2018). Moreover, depending on the building type, other approaches might be necessary. New construction and retrofits will have different requirements and needs. Maintenance capacity is another factor that can determine the effectiveness of passive survivability strategies, such as solar PV power, vegetative roofs, and vegetative shading. Proponents should consider the project site's design and how it interacts with existing neighborhood features and community needs – for example, the proximity to evacuation routes out of town.

Examples

Multifamily Retrofit, McKeesport Downtown Housing, Pennsylvania

McKeesport Downtown Housing in Pennsylvania is an 84-unit housing complex designed for unhoused people and people at risk of homelessness. Formerly a YMCA, the building added new lighting, air-conditioning, make-up air ventilation systems, an elevator, and cooking facilities as part of its renovations. By using passive house design strategies, the building uses 66 percent less energy than the original even after these additions. The site also serves the community by offering a cold-weather shelter, 60-day emergency housing, bridge housing, and section 8 apartment rentals (Passive House Accelerator 2021).

Multifamily Retrofit, Harry and Jeanette Weinberg Commons, DC

Completed in 2015, the Harry and Jeanette Weinberg Commons is the first multifamily retrofit in the United States to receive a PHIUS+ passive building certification. The project offers 36 two-bedroom units for 60 percent of area median income residents and is a permanent supportive housing complex. The building elements consists of a wall with R-value of R-39, continuous roof insulation, triple-pane windows, energy recovery ventilators, shading, and rooftop solar panels (Fine 2017). The use of passive house principles for this multifamily complex helped increase the affordability for residents by effectively eliminating utility bills and reducing the project's long-term operating costs—allowing more resources for resident support services.

Resources

- Architecture 2030's 2030 Palette offers a database of strategies, tools, and resources for designing zero-carbon, adaptable, and resilient built environments.
- Passive Survivability: How LEED Helps When the Power Goes Out
- Washington, DC Department of Energy and Environment's Climate Ready DC: Resilient Design Guidelines
- Passivhaus Institute's Passipedia, the Passive House Resource: What is a Passive House?
- Passive House Institute United States' PHIUS+ 2018: Getting to Zero
- Passive Survivability: Designing for Tomorrow's Disasters
- Passive House Accelerator

B3 Attach #1 of 3

References

Adamkiewicz, G., A. Zota, P. Fabian, T. Chahine, R. Julien, J. Spengler, and J. Levy. 2011. Moving Environmental Justice Indoors: Understanding Structural Influences on Residential Exposure Patterns in Low-Income Communities. *American Journal of Public Health*. Available: https://doi.org/10.2105/AJPH.2011.300119. Accessed: March 2021.

Aguilera, R., T. Corringham, A. Gershunov, and T. Benmarhnia. 2021. Wildfire smoke impacts respiratory health more than fine particles from other sources: observational evidence from Southern California. *Nature Communications*. Available: https://doi.org/10.1038/s41467-021-21708-0. Accessed: March 2021.

Akbari, H., D. Kurn, S. Bretz, and J. Hanford. 1997. *Peak power and cooling energy savings of shade trees*. Available: https://escholarship.org/uc/item/7w22p9mq. Accessed: March 2021.

Ali, A. 2018. *Somali Health Board: A Community-Led Model for Addressing Health Disparities*. Presentation prepared for Group Health Foundation. Available: https://grouphealthfoundation.org/wp-content/uploads/2018/09/SomaliHealthBoard_Presentation.pdf. Accessed: April 2021.

Aviles, J. 2020. Planners as Therapists, Cities as Clients. *Planning*. Available: https://www.planning.org/planning/2020/oct/intersections-viewpoint/. Accessed: April 2021.

Axel-Lute, M. 2017. *Bringing Together Arts and Community Development*. Shelterforce. Available: https://shelterforce.org/2017/01/11/bringing-together-arts-and-community-development/. Accessed: May 2021.

Baldauf, R. 2017. Roadside vegetation design characteristics that can improve local, near-road air quality. *Transportation Research Part D: Transport and Environment*. Available: https://doi.org/10.1016/j.trd.2017.03.013. Accessed: March 2021.

Barhoum, N. 2016. *Food Justice & Community Health in Richmond: Community Campus Partnerships for a Healthier and More Equitable Food System*. Available: https://escholarship.org/uc/item/2ws742n1. Accessed: September 2021.

Barwise, Y., Kumar, P. 2020. Designing vegetation barriers for urban air pollution abatement: a practical review for appropriate plant species selection. *Nature*. Available: https://www.nature.com/articles/s41612-020-0115-3. Accessed: March 2021.

Bay Area Equity Atlas. 2021. *Housing burden: All residents should have access to quality, affordable homes*. Available: https://bayareaequityatlas.org/indicators/housing-burden#/. Accessed: February 2021.

B3 Attach #1 of 3

Bell, M., and K. Ebisu. 2012. Environmental Inequality in Exposures to Airborne Particulate Matter Components in the United States. *Environmental Health Perspectives*. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3546368. Accessed March 2021.

Bennett, J. 2014. Creative Placemaking in Community Planning and Development: An Introduction to ArtPlace America. *Community Development Innovation Review*. Available: https://www.frbsf.org/community-development/publications/community-development-investment-review/2014/december/creative-placemaking-in-community-planning-and-development-an-introduction-to-artplace-america/. Accessed: May 2021.

Bergstrom, D., K. Rose, J. Olinger, and K. Holley. 2012. *The Sustainable Communities Initiative: The Community Engagement Guide for Sustainable Communities*. Available: https://www.policylink.org/sites/default/files/COMMUNITYENGAGEMENTGUIDE_LY_FINAL%20(1).pdf. Accessed: March 2021.

Bhutta, N., A. Chang, L. Dettling, J. Hsu, and J. Hewitt. 2020. Disparities in Wealth by Race and Ethnicity in the 2019 Survey of Consumer Finances. *Board of Governors of the Federal Reserve System*. Available: https://www.federalreserve.gov/econres/notes/feds-notes/disparities-in-wealth-by-race-and-ethnicity-in-the-2019-survey-of-consumer-finances-20200928.htm. Accessed: April 2021.

Bichell, R. 2017. *Scientists Start to Tease out the Subtler Ways Racism Hurts Health*. Available: https://www.npr.org/sections/health-shots/2017/11/11/562623815/scientists-start-to-tease-out-the-subtler-ways-racism-hurts-health. Accessed: May 2021.

Botts, J. 2019. *"We Need the Food that We Lost." Low-Income Families Still Reeling from Blackouts*. Available: https://calmatters.org/projects/california-psps-power-shutoffs-poverty-spoiled-food-hunger/. Accessed: October 2021.

Bravo, M., R. Anthopolos, M. Bell, and M. Miranda. 2016. Racial isolation and exposure to airborne particulate matter and ozone in understudied US populations: Environmental justice applications of downscaled numerical model output. *Environment International*. Available: https://pubmed.ncbi.nlm.nih.gov/27115915. Accessed: March 2021.

California Air Resources Board (CARB). 2007. *Staff Report: Initial statement of reasons for proposed rulemaking – proposed regulation for in-use off-road diesel vehicles*.

California Air Resources Board (CARB). 2017. *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways*. Available: https://ww3.arb.ca.gov/ch/rd_technical_advisory_final.pdf. Accessed: March 2021.

California Food Policy Advocates. 2019. *Struggling to Make Ends Meet: Food Insecurity in CA*. Available: https://nourishca.org/GeneralNutrition/CFPAPublications/FoodInsecurity-Factsheet-2019.pdf. Accessed: October 2021.

B3 Attach #1 of 3

California Housing Partnership. 2020a. *Housing Needs Dashboard.* Last revised: June. Available: https://chpc.net/housingneeds/. Accessed: February 2021.

California Housing Partnership. 2020b. *55 of California's Counties Lacked Enough Affordable Homes Even Before the Pandemic.* Available: https://chpc.net/55-of-californias-counties-lacked-enough-affordable-homes-even-before-the-pandemic/. Accessed: March 2021.

Center for Health, Environment, and Justice (CHEJ). n.d. *Environmental Justice & the PVC Chemical Industry*. Available: http://www.chej.org/pvcfactsheets/Environmental_Justice_and_the_PVC_Chemical_Industry.html. Accessed: September 2021.

Centers for Disease Control and Prevention (CDC). 2021. *Risk for COVID-19 Infection, Hospitalization, and Death by Race/Ethnicity*. Last revised March 12. Available: https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html. Accessed: March 2021.

Chabria, A., and T. Luna. 2019. *PG&E Power Outages Bring Darkness, Stress, and Debt to California's Poor and Elderly*. Available: https://www.latimes.com/california/story/2019-10-11/pge-power-outage-darkness-stress-debt-vulnerable. Accessed: October 2021.

Chou, C. 2014. *Land Use and the Chinatown Problem*. Available: https://escholarship.org/uc/item/8g7550h8. Accessed: May 2021.

City of Oakland. 2012. *Operations Jobs Policy Oakland Army Base Project West Gateway.* Available: https://cao-94612.s3.amazonaws.com/documents/D-15d.-LDDA-Attachment-15D-West-Gateway-Operations-Jobs-Policy.pdf. Accessed: April 2021.

City of Pasadena. 2010. *Pasadena First Buy Local*. Available: https://www.cityofpasadena.net/wp-content/uploads/sites/27/Pasadena-First-Buy-Local-Operations-Document.pdf. Accessed July 2021.

City of Sacramento. 2013. *McKinley Village Project (P08-806) Draft Environmental Impact Report – State Clearinghouse Number: SCH 2008082049, Chapter 2- Project Description.* Available: https://www.cityofsacramento.org/-/media/Corporate/Files/CDD/Planning/Environmental-Impact-Reports/McKinley-Village/02_Project-Description.pdf. Accessed July 2021

City of Sacramento. 2014. *McKinley Village Project (P08-806) Final Environmental Impact Report – State Clearinghouse Number: SCH 2008082049, Appendix C-1 Revised Health Risk Assessment.* Available: https://www.cityofsacramento.org/-/media/Corporate/Files/CDD/Planning/Environmental-Impact-Reports/McKinley-Village/Master-EIR/App-C-1_HRA-DEIR.pdf. Accessed July 2021.

B3 Attach #1 of 3

City and County of San Francisco. 2021. *City celebrates grand opening of new affordable housing in the heart of the Mission District*. Available: https://sf.gov/news/city-celebrates-grand-opening-new-affordable-housing-heart-mission-district. Accessed: May 2021.

City and County of San Francisco Office of the Mayor. 2021. *City Breaks Ground on India Basin Shoreline Park*. Available: https://sfmayor.org/article/city-breaks-ground-india-basin-shoreline-park. Accessed: June 2021.

City and County of San Francisco, Office of the Mayor. 2020. *Mayor London Breed Celebrates Grand Opening of New Mixed-Income Housing Community in the Transbay Neighborhood*. Available: https://sfmayor.org/article/mayor-london-breed-celebrates-grand-opening-new-mixed-income-housing-community-transbay. Accessed: May 2021.

City of Santa Cruz. 2017. *Santa Cruz Voices on Housing: Fall 2017 Community Engagement Report*. Available: https://www.cityofsantacruz.com/Home/ShowDocument?id=64832. Accessed: April 2021.

City of Vallejo. 2018. *Participatory Budgeting in Vallejo Rulebook*. Available: https://www.cityofvallejo.net/common/pages/DisplayFile.aspx?itemId=14956889. Accessed: March 2021.

Cleveland, W. 2011. *Arts-based Community Development: Mapping the Terrain*. Available: https://www.americansforthearts.org/by-program/reports-and-data/legislation-policy/naappd/arts-based-community-development-mapping-the-terrain. Accessed: May 2021.

Community-Wealth.org. n.d. *Overview: Community Land Trusts*. Available: https://community-wealth.org/strategies/panel/clts/index.html. Accessed: February 2021.

County of Placer. 2021. *New Program Offers Another Path to Homeownership for Placer Workforce*. Available: https://www.placerair.org/7123/New-affordable-housing-program. Accessed: May 2021.

CSH. 2020. *Literature Review of Supportive Housing*. Available: https://www.csh.org/supportive-housing-101/data/. Accessed: April 2021.

DC Department of Energy and Environment. 2017. *Climate Ready DC: Resilient Design Guidelines*. Available: https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/CRDC%20resilient%20design%20guidelines_FINALApproved.pdf. Accessed: September 2021.

De Barbieri, E. 2017. *Do Community Benefits Agreements Benefit Communities?* Available: https://www.bostonfed.org/publications/communities-and-banking/2017/spring/do-community-benefits-agreements-benefit-communities.aspx#:~:text=Based%20on%20the%20Kingsbridge%20National,a%20party%20to%20the%20agreement. Accessed: April 2021.

B3 Attach #1 of 3

de Monchaux, N. 2016. *Local Code – 3,659 Proposals About Data, Design and the Nature of Cities.* New York, NY: Princeton Architectural Press.

Deshmukh, P., V. Isakov, A. Venkatram, B. Yang, K. M. Zhang, R. Logan, and R. Baldauf. 2019. The effects of roadside vegetation characteristics on local, near-road air quality. *Air Quality, Atmosphere, & Health*. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7339705/. Accessed: March 2021.

Di, Q., Y. Wang, A. Zanobetti, Y. Wang, P. Koutrakis, C. Choirat, F. Dominici, and J. Schwartz. 2017. Air Pollution and Mortality in the Medicare Population. *New England Journal of Medicine*. Available: https://www.nejm.org/doi/10.1056/NEJMoa1702747. Accessed: March 2021.

Dialesandro, J., N. Brazil, S. Wheeler, and Y. Abunnasar. 2021. Dimensions of Thermal Inequity: Neighborhood Social Demographics and Urban Heat in the Southwestern U.S. *International Journal of Environmental Research & Public Health.* Available: https://www.mdpi.com/1660-4601/18/3/941/htm. Accessed: March 2021.

Donovan, G., J. Prestemon, D. Butry, A. Kaminski, and V. Monleon. 2021. The politics of urban trees: Tree planting is associated with gentrification in Portland, Oregon. *Forest Policy and Economics*. Available: https://doi.org/10.1016/j.forpol.2020.102387. Accessed March: 2021.

Economic Policy Institute. 2021. *The Productivity–Pay Gap*. Available: https://www.epi.org/productivity-pay-gap/. Accessed: September 2021.

Equity Matters. 2015. *Extreme Heat Scenario-Based Pilot Project in Frontline Communities Community Driven Planning Process—Racial Equity Mini Evaluation.* Available: https://www.usdn.org/uploads/cms/documents/heat_sceanrio_racial_equity_evaluation_mini-report_-_final.pdf. Accessed: March 2021.

Fairlie, R., A. Robb, and D. Robinson. 2020. Black and White: Access to Capital Among Minority-Owned Startups. *National Bureau of Economic Research.* Available: https://www.nber.org/system/files/working_papers/w28154/w28154.pdf. Accessed: February 2021.

Fan, D. 2015. *Yick Wo: How A Racist Laundry Law in Early San Francisco Helped Civil Rights.* Available: https://hoodline.com/2015/08/yick-wo-and-the-san-francisco-laundry-litigation-of-the-late-1800s/. Accessed: May 2021.

Fine, M. 2017. *Multifamily Passive House Case Studies.* Available: https://environment.arlingtonva.us/wp-content/uploads/sites/13/2017/06/Multifamily-Case-Studies.pdf. Accessed: October 2021.

B3 Attach #1 of 3

First Community Housing (FCH). 2014. *Eco Pass TOD Impact Study: First Community Housing Properties in Santa Clara County*. Available: https://www.enterprisecommunity.org/sites/default/files/fch-ecopass-tod-impact-study.pdf. Accessed: April 2021.

Fletcher, T., D. Savitz, and K. Steenland. n.d. C8 Probable Link Reports. *C8 Science Panel*. Available: http://www.c8sciencepanel.org/prob_link.html. Accessed: September 2021.

Gould, E. 2019. State of Working America Wages 2018: Wage inequality marches on—and is even threatening data reliability. *Economic Policy Institute*. Available: https://www.epi.org/publication/state-of-american-wages-2018/. Accessed: April 2021.

Gross, J., G. LeRoy, and M. Janis-Aparicio. 2005. *Community Benefits Agreements Making Development Projects Accountable*. Available: https://www.forworkingfamilies.org/sites/default/files/publications/2005CBAHandbook.pdf. Accessed: April 2021.

Hampton, T. 2021. *Diet May Affect Risk and Severity of COVID-19*. Available: https://news.harvard.edu/gazette/story/2021/09/diet-could-affect-coronavirus-risk-according-to-mgh-study/. Accessed: September 2021.

Health Care Without Harm. 2019. *How Kaiser Permanente Keeps 70M Square Feet of Flooring Free of Toxic Chemicals*. Available: https://noharm.medium.com/healthyflooringatkaiserpermanente-21661f86af3e. Accessed: September 2021.

Hernandez, J. 2009. Redlining Revisited: Mortgage Lending Patterns in Sacramento 1930–2004. *International Journal of Urban and Regional Research*. Available: https://doi.org/10.1111/j.1468-2427.2009.00873.x. Accessed: May 2021.

Hernandez-Cortes, D. and Meng, K. 2020. Do Environmental Markets Cause Environmental Injustice? Evidence from California's Carbon Market. National Bureau of Economic Research Working Paper. Available: https://www.nber.org/papers/w27205. Accessed May 2021.

Hoffman, J., V. Shandas, and N. Pendleton. 2020. The Effects of Historical Housing Policies on Resident Exposure to Intra-Urban Heat: A Study of 108 US Urban Areas. *Climate*. Available: https://doi.org/10.3390/cli8010012. Accessed: March 2021.

Horst, M., N. McClintock, and L. Hoey. 2017. The Intersection of Planning, Urban Agriculture, and Food Justice: A Review of Literature. *Journal of the American Planning Association*. Available: https://doi.org/10.1080/01944363.2017.1322914. Accessed: September 2021.

Institute for Local Self-Reliance (ILSR). 2016. *Key Studies: Why Independent Matters*. Available: https://ilsr.org/key-studies-why-local-matters/. Accessed: March 2021.

B3 Attach #1 of 3

International Living Future Institute. 2021. Mission + Impact. Available at: https://living-future.org/our-impact/. Accessed: May 2021.

Jackson, K., S. Burgess, F. Toms, and E. Cuthbertson. 2018. *Community Engagement: Using Feedback Loops to Empower Residents and Influence Systemic Change in Culturally Diverse Communities.* Available: gjcpp.org/pdfs/2-Jackson,%20Burgess,%20Toms%20_%20Cuthbertson-Final.pdf. Accessed: July 2021.

Jacobs, K., and K. Huang. 2021. *The Public Cost of Low-Wage Jobs in California's Construction Industry*. UC Berkeley Labor Center. Available: https://laborcenter.berkeley.edu/the-public-cost-of-low-wage-jobs-in-californias-construction-industry/. Accessed: October 2021.

Jamboree. 2021. *Permanent Supportive Housing: Housing first, long-term solutions to ending homelessness.* Available: https://www.jamboreehousing.com/pages/what-we-do-resident-services-permanent-supportive-housing. Accessed: April 2021.

Jbaily, A., X. Zhou, J. Liu, T. H. Lee, S. Verguet, and F. Dominici. 2020. *Inequalities in air pollution exposure are increasing in the United States*. Available: https://www.researchgate.net/publication/342966414_Inequalities_in_air_pollution_exposure_are_increasing_in_the_United_States. Accessed: March 2021.

Khoshnava, S., R. Rostami, R. Zin, D. Štreimikienė, A. Mardani, and M. Ismail. 2020. The Role of Green Building Materials in Reducing Environmental and Human Health Impacts. *International Journal of Environmental Research and Public Health.* Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7177900/. Accessed: September 2021.

King County. 2020. *Racism as a Public Health Crisis in King County*. Available: https://www.kingcounty.gov/elected/executive/constantine/initiatives/racism-public-health-crisis.aspx. Accessed: April 2021.

Kioumourtzoglou, M., J. Schwartz, P. James, F. Dominici, and A. Zanobetti. 2016. PM2.5 and mortality in 207 US cities: Modification by temperature and city characteristics. *Epidemiology*. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4748718. Accessed: March 2021.

Kuo, M., M. Browning, S. Sachdeva, K. Lee, and L. Westphal. 2018. Might School Performance Grow on Trees? Examining the Link Between "Greenness" and Academic Achievement in Urban, High-Poverty Schools. *Frontiers in Psychology*. Available: https://doi.org/10.3389/fpsyg.2018.01669. Accessed: March 2021.

Kurtzman, L. 2020. *Study Finds Permanent Supportive Housing is Effective for Highest Risk Chronically Homeless People.* UCSF. Available: https://www.ucsf.edu/news/2020/09/418546/study-finds-permanent-supportive-housing-effective-highest-risk-chronically. Accessed: April 2021.

B3 Attach #1 of 3

Levin, M. 2020. Black Californians' housing crisis, by the numbers. *CalMatters*. Available: https://calmatters.org/housing/2020/06/black-californians-housing-crisis-by-the-numbers. Accessed: February 2021.

Little Hoover Commission (LHC). 2018. *Fire on the Mountain: Rethinking Forest Management in the Sierra Nevada.* Report #242. Sacramento, CA. Available: https://lhc.ca.gov/sites/lhc.ca.gov/files/Reports/242/Report242.pdf. Accessed: April 2021.

Livni, E. 2019. *The Gig Economy Is Quietly Undermining a Century of Worker Protections*. Quartz. Available: https://qz.com/1556194/the-gig-economy-is-quietly-undermining-a-century-of-worker-protections/. Accessed: September 2021.

Lloyd, R. 2021. People of Color Breathe More Unhealthy Air from Nearly All Polluting Sources. *Scientific American*. Available: https://www.scientificamerican.com/article/people-of-color-breathe-more-unhealthy-air-from-nearly-all-polluting-sources/. Accessed: May 2021.

Locke, D., B. Hall, J. M. Grove, S. Pickett, L. Ogden, C. Aoki, C. Boone, and J. O'Neill-Dunne. 2021. *Residential housing segregation and urban tree canopy in 37 US cities*. Available: http://dx.doi.org/10.31235/osf.io/97zcs. Accessed: March 2021.

Los Angeles Department of Building and Safety. 2015. Good Neighbor Construction Practices. Available: https://www.ladbs.org/docs/default-source/publications/misc-publications/good-neighbor-construction-practices.pdf. Accessed April 2021.

Maclay, K. 2016. *For more resilient cities, think small(er) and look to vacant lots*. Available: https://news.berkeley.edu/2016/11/01/for-more-resilient-cities-think-smaller-and-look-to-vacant-lots/. Accessed: March 2021.

MacNaughton, P., U. Satish, J. Laurent, S. Flanigan, J. Vallarino, B. Coull, J. Spengler, and J. Allen. 2017. The Impact of Working in a Green Certified Building on Cognitive Function and Health. *Building and Environment*. Available: https://doi.org/10.1016/j.buildenv.2016.11.041. Accessed: September 2021.

Maher, B., I. Ahmed, B. Davison, V. Karloukovski, and R. Clarke. 2013. Impact of Roadside Tree Lines on Indoor Concentrations of Traffic-Derived Particulate Matter. *Environmental Science & Technology*. Available: https://doi.org/10.1021/es404363m. Accessed: March 2021.

Maizlish, N. 2016. *Increasing Walking, Cycling, and Transit: Improving Californians' Health, Saving Costs, and Reducing Greenhouse Gases*. Available: https://www.cdph.ca.gov/Programs/OHE/CDPH%20Document%20Library/Maizlish-2016-Increasing-Walking-Cycling-Transit-Technical-Report-rev8-17-ADA.pdf. Accessed: October 2021.

B3 Attach #1 of 3

Maizlish, N., N. Linesch, and J. Woodcock. 2017. Health and Greenhouse Gas Mitigation Benefits of Ambitious Expansion of Cycling, Walking, and Transit in California. *Journal of Transport & Health*. Available: https://doi.org/10.1016/j.jth.2017.04.011. Accessed: October 2021.

Marshall, P., B. Kautz, and B. Higgins. 2006. *Ensuring Continued Affordability in Homeownership Programs*. Available: https://www.ca-ilg.org/sites/main/files/file-attachments/resources__Ensuring_Continued_Affordability.pdf?1436996209. Accessed: March 2021.

McEwen, B., and P. Gianaros. 2011. Stress- and Allostasis-Induced Brain Plasticity. *Annual Review of Medicine*. Available: https://www.annualreviews.org/doi/10.1146/annurev-med-052209-100430. Accessed: October 2021.

Meenar, M., and B. Hoover. 2012. Community Food Security Via Urban Agriculture: Understanding People, Place, Economy, and Accessibility from a Food Justice Perspective. *Journal of Agriculture, Food Systems, and Community Development*. Available: https://mosaic.messiah.edu/soc_ed/27. Accessed: October 2021.

Menendian, S., Gailes, A., and S. Gambghir. 2021. *The Roots of Structural Racism Project: Twenty-First Century Racial Residential Segregation in the United States*. Available: https://belonging.berkeley.edu/roots-structural-racism. Accessed: July 2021.

Mikati, I., A. Benson, T. Luben, J. Sacks, and J. Richmond-Bryant. 2018. Disparities in Distribution of Particulate Matter Emission Sources by Race and Poverty Status. *American Journal of Public Health*. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5844406. Accessed: March 2021.

Morello-Frosch, R. and B. Jesdale. 2006. Separate and unequal: residential segregation and estimated cancer risks associated with ambient air toxics in U.S. metropolitan areas. *Environmental Health Perspectives*. Available: https://pubmed.ncbi.nlm.nih.gov/16507462. Accessed: March 2021.

Mutual Housing California. 2021. History and Mission. Available: http://www.mutualhousing.com/about-us/mission-and-history/. Accessed May 2021.

National Advisory Council to the Federal Emergency Management Administration. 2020. *Report to the FEMA Administrator November 2020*. Available: https://www.fema.gov/sites/default/files/documents/fema_nac-report_11-2020.pdf. Accessed: February 2020.

National Center for Sustainable Transportation. 2017. *Affordable Housing in Transit-Oriented Developments: Impacts on Driving and Policy Approaches*. Available: https://dot.ca.gov/-/media/dot-media/programs/research-innovation-system-information/documents/f0016779-ca17-2983-finalreport.pdf. Accessed: March 2021.

B3 Attach #1 of 3

Newman, G., D. Li, R. Zhu, and D. Ren. 2019. Resilience through Regeneration: The economics of repurposing vacant land with green infrastructure. *Landscape Architecture Frontiers*. Available: https://pubmed.ncbi.nlm.nih.gov/30761217/. Accessed: March 2021.

New York Law School Racial Justice Project (NYLSRJP). 2021. *Unshared Bounty: How Structural Racism Contributes to the Creation and Persistence of Food Deserts*. Available: http://digitalcommons.nyls.edu/racial_justice_project/3. Accessed: March 2021.

Nowak, D., Hirabayashi, S., Bodine, A., Greenfield, E. 2014. Tree and forest effects on air quality and human health in the United States. Environmental Pollution. Available: https://www.fs.fed.us/nrs/pubs/jrnl/2014/nrs_2014_nowak_001.pdf. Accessed April 2021.

Office of Disability Employment Policy, United States Department of Labor. 2021. *Apprenticeship Works for Business: A Guide to Building Inclusive Workplaces*. Available: https://www.dol.gov/sites/dolgov/files/odep/categories/youth/apprenticeship/apprenticeship_guide_for_business-2021.pdf. Accessed: October 2021.

Office of Environmental Health Hazard Assessment (OEHHA). 2017. *Tracking and Evaluation of Benefits and Impacts of Greenhouse Gas Limits in Disadvantaged Communities: Initial Report*. Available: https://oehha.ca.gov/media/downloads/environmental-justice/report/oehhaab32report020217.pdf. Accessed: March 2021.

Othering & Belong Institute, U.C. Berkeley. 2018. *Racial Segregation in the San Francisco Bay Area*. Available: https://belonging.berkeley.edu/segregationinthebay. Accessed: March 2021.

Park, J. 2018. *Hot Temperature and High Stakes Exams: Evidence from New York City Public Schools*. Available: https://scholar.harvard.edu/files/jisungpark/files/paper_nyc_aejep.pdf. Accessed: March 2021.

Partnership for Working Families. 2004. *Community Benefits Agreement LAX Master Plan Program*. Available: https://www.forworkingfamilies.org/sites/default/files/documents/LAXCommunityBenefitsAgreement.pdf. Accessed May 2021.

Partnership For Working Families. 2011. *Attachment E: Community Benefits Program Lorenzo Project*. Available: https://www.forworkingfamilies.org/sites/default/files/resources/Web_LorenzoPalmer%20CBP.pdf. Accessed: June 2021.

Partnership for Working Families. 2015a. *Los Angeles Sports and Entertainment District CBA*. Available: https://www.forworkingfamilies.org/resources/staples-cba. Accessed: March 2021.

B3 Attach #1 of 3

Partnership for Working Families. 2015b. *Kingsbridge Exhibit A: Community Benefits Program*. Available: https://www.forworkingfamilies.org/sites/default/files/documents/Kingsbridge%20FINAL%20Exhibit%20A%20-%20Community%20Benefits%20Program.pdf. Accessed: April 2021.

Partnership for Working Families. 2015c. *Policies & Tools: Community Benefits Agreements and Policies in Effect*. Available: https://www.forworkingfamilies.org/page/policy-tools-community-benefits-agreements-and-policies-effect. Accessed: April 2021.

Passive House Accelerator. 2021. *McKeesport Downtown Housing*. Available: https://passivehouseaccelerator.com/projects/mckeesport-downtown-housing. Accessed: October 2021.

Pastor, M., V. Carter, A. Sanchez-Lopez, and R. Chlala. 2015. *Planning, Power, and Possibilities: How UNIDAD is Shaping Equitable Development in South Central L.A.* Available: https://dornsife.usc.edu/assets/sites/242/docs/Planning_Power_Possibilities_UNIDAD_PERE_final_report.pdf. Accessed: April 2021.

Patten, E. 2016. *Racial, Gender Wage Gaps Persist in U.S. Despite Some Progress*. Pew Research Center. Available: https://www.pewresearch.org/fact-tank/2016/07/01/racial-gender-wage-gaps-persist-in-u-s-despite-some-progress/. Accessed: September 2021.

Payne, R. K., P. E. DeVol, and T. D. Smith. 2009. *Bridges Out of Poverty: Strategies for Professionals and Communities.* Highlands, TX: aha! Process, Incorporated.

Peters, A. 2021. This New Mixed-Income Housing Complex Comes with Its Own Farm. *Fast Company*. Available: https://www.fastcompany.com/90674652/this-new-mixed-income-housing-complex-comes-with-its-own-farm. Accessed: October 2021.

Pirtle, W. 2020. Racial Capitalism: A Fundamental Cause of Novel Coronavirus (COVID-19) Pandemic Inequities in the United States. *Health Education & Behavior*. Available: https://journals.sagepub.com/doi/10.1177/1090198120922942. Accessed March: 2021.

PolicyLink. 2017. *Creating Change through Arts, Culture, and Equitable Development: A Policy and Practice Primer*. Available: https://www.policylink.org/sites/default/files/report_arts_culture_equitable-development.pdf. Accessed: May 2021.

Public Health – Seattle & King County. 2019. *Public Health Insider – Community Health Boards Make Resilient Communities*. Last revised April 2, 2019. Available: https://publichealthinsider.com/2019/04/02/community-health-boards-make-resilient-communities/. Accessed: April 2021.

B3 Attach #1 of 3

Race Forward. *Racial Equity Impact Assessment.* 2009. Available: https://www.raceforward.org/sites/default/files/RacialJusticeImpactAssessment_v5.pdf. Accessed: March 2021.

Raimi + Associates. 2019. *Transform Fresno Community Engagement Plan Narrative.* Available: http://www.transformfresno.com/wp-content/uploads/2019/10/Transform-Fresno-Community-Engagement-Plan-FINAL.pdf. Accessed: April 2021.

Riverside County Department of Transportation. 2018. *Neighborhood Mobility Plan for the Communities of Thermal and Oasis*. Available: https://rctlma.org/Portals/7/documents/Thermal_Oasis_Mobility_Plan_Updated.pdf?ver=2019-10-30-132832-810. Accessed: April 2021.

Rudick, R. 2020. Safest Block on Broadway is a Construction Zone. *Streetsblog SF.* Available: https://sf.streetsblog.org/2020/10/19/safest-block-on-broadway-is-a-construction-zone/ Accessed: March 2021.

Saint Paul & Minnesota Foundation (SPMF). 2020. *Foundations Create "Art in This Present Moment" in Support of BIPOC Artists*. Available: https://www.spmcf.org/blog/art-in-this-present-moment-launch. Accessed: April 2021.

San Diego County Health and Human Services Agency. 2017. *2018-2019 County of San Diego Community Action Plan*. Available: https://www.sandiegocounty.gov/content/dam/sdc/hhsa/programs/sd/community_action_partnership/CAPPlans/2018-2019%20Community%20Action%20Plan.pdf. Accessed: March 2021.

San Francisco Municipal Transportation Agency. 2012. *Regulations for Working in San Francisco Streets, 8th Edition*. Available: https://www.sfmta.com/sites/default/files/reports-and-documents/2017/10/blue_book_8th_edition_pdf.pdf. Accessed: March 2021.

San Francisco Municipal Transportation Agency. 2020. *BAYVIEW Community-Based Transportation Plan.* Available: https://www.sfmta.com/sites/default/files/reports-and-documents/2020/03/bayview_cbtp_final_draft.pdf. Accessed: April 2021.

San Francisco Planning Department (SFPD). 2011. *25 Years: Downtown Plan Monitoring Report 1985-2009*. Available: https://commissions.sfplanning.org/cpcpackets/25%20Years%20Downtown%20Plan%20.pdf. Accessed: March 2021.

Santacroce, D., and R. Weber. 2007. *The Ideal Deal: How Local Governments Can Get More for Their Economic Development Dollar.* Available: https://repository.law.umich.edu/cgi/viewcontent.cgi?article=1004&context=books. Accessed: March 2021.

B3 Attach #1 of 3

Snow, D., and R. Goldberg. 2017. *Homelessness in Orange County: The Costs to Our Community*. Prepared for Orange County United Way, Jamboree, and the University of California, Irvine. Available: https://cdn.shopify.com/s/files/1/0072/3019/3782/files/jamboree-uci-united-way-cost-study-homelessness-report-2017.pdf. Accessed: April 2021.

Stromberg, E. and B. Stromberg. 2013. *The Federal Housing Administration and Long-Term Affordable Homeownership Programs*. Available: https://www.huduser.gov/portal/periodicals/cityscpe/vol15num2/ch21.pdf. Accessed: March 2021.

Substance Abuse and Mental Health Services Administration (SAMHSA), United States Department of Health and Human Services. 2017. *Disaster Technical Assistance Center Supplemental Research Bulletin, Greater Impact: How Disasters Affect People of Low Socioeconomic Status*. Available: https://www.samhsa.gov/sites/default/files/dtac/srb-low-ses_2.pdf. Accessed: October 2021.

Temkin, K., B. Theodos, and D. Price. 2010. *Shared Equity Homeownership Evaluation: Case Study of Dos Pinos Housing Cooperative*. Available: https://www.urban.org/sites/default/files/publication/29261/412238-Shared-Equity-Homeownership-Evaluation-Case-Study-of-Dos-Pinos-Housing-Cooperative.PDF. Accessed: May 2021.

Tobias, M., C. Miller, D. Jaber, and S. Yang. 2020. Racial Equity Impact Assessment and Implementation Guide. Available: https://cao-94612.s3.amazonaws.com/documents/FINAL_Complete_EF-Racial-Equity-Impact-Assessment_7.3.2020_v2.pdf. Accessed: May 2021.

Tong, Z., R. Baldauf, V. Isakov, P. Deshmukh, and K. M. Zhang. 2015. Roadside vegetation barrier designs to mitigate near-road air pollution impacts. *Science of the Total Environment*. Available: https://scholar.harvard.edu/files/ztong/files/online.pdf. Accessed: March 2021.

Transform and California Housing Partnership Corporation. 2014. *Why Creating and Preserving Affordable Homes Near Transit is a Highly Effective Climate Protection Strategy*. Available: https://www.transformca.org/sites/default/files/CHPC%20TF%20Affordable%20TOD%20Climate%20Strategy%20BOOKLET%20FORMAT.pdf. Accessed: March 2021.

Transform Fresno. 2021. *Outreach and Oversight Committee*. Available: https://www.transformfresno.com/outreach-oversight-committee/. Accessed: April 2021.

Union of Concerned Scientists. 2016. *The Devastating Consequences of Unequal Food Access: The Role of Race and Income in Diabetes*. Available: https://ucsusa.org/resources/devastating-consequences-unequal-food-access. Accessed: September 2021.

B3 Attach #1 of 3

United Nations (UN). 2021. *Environmental Racism in Louisiana's 'Cancer Alley', Must End, Say UN Human Rights Experts*. Available: https://news.un.org/en/story/2021/03/1086172. Accessed: September 2021.

University of California Davis (UC Davis). 2020. *UC Davis Sacramento Campus 2020 Long Range Development Plan Update*. Public Draft. July. State Clearing House No. 2020020161.

University of California Los Angeles (UCLA). 2021. *Food Insufficiency Rates in California Increased by More Than a Fifth in Earliest Months of Pandemic*. Available: https://ph.ucla.edu/news/press-release/2021/may/food-insufficiency-rates-california-increased-more-fifth-earliest-months. Accessed: October 2021.

Urban Land Institute. 2020. *Robert C. Larson Awards 2020 Winner: Town of Vail CO's Housing Department's VailInDEED Program*. Available: https://americas.uli.org/robert-c-larson-awards-2020-vail/. Accessed: May 2021.

U.S. Census Bureau. 2021. Figure 8: Quarterly Homeownership Rates by Race and Ethnicity of Householder for the United States 1994–2020. Available: https://www.census.gov/housing/hvs/data/charts/fig08.pdf. Accessed: March 2021.

U.S. Department of Housing and Urban Development (HUD). 2014. *Creating Connected Communities: A Guidebook for Improving Transportation Connections for Low and Moderate-Income Households in Small and Mid-Sized Cities*. Available: https://www.huduser.gov/portal/publications/pdf/Creating_Cnnted_Comm.pdf. Accessed: March 2021.

U.S. Department of Housing and Urban Development, Office of Policy Development and Research (U.S. HUD OPD&R). 2012. *Evidence Matters: Transforming Knowledge into Housing and Community Development Policy—Shared Equity Models Offer Sustainable Homeownership*. Available: https://www.huduser.gov/portal/periodicals/em/fall12/highlight3_sidebar.html. Accessed: May 2021.

U.S. Department of Transportation (U.S. DOT). 2015. *Housing and Transportation Affordability*. Last revised August 24. Available: https://www.transportation.gov/mission/health/housing-and-transportation-affordability. Accessed: April 2021.

U.S. Environmental Protection Agency (EPA). n.d. *Volatile Organic Compounds' Impact on Indoor Air Quality*. Available: https://www.epa.gov/indoor-air-quality-iaq/volatile-organic-compounds-impact-indoor-air-quality. Accessed: September 2021.

Wenner, G. 2016. Maximizing Opportunity. *The Bakersfield Californian*. Available: https://www.bakersfield.com/news/business/maxximizing-opportunity/article_2ae53959-54c6-53dc-ace6-590d8c0aa292.html. Accessed: October 2021.

B3 Attach #1 of 3

Weston, P. 2020. 'This is no damn hobby': the 'gangsta gardener' transforming Los Angeles. *The Guardian*. Available: www.theguardian.com/environment/2020/apr/28/ron-finley-gangsta-gardener-transforming-los-angeles. Accessed: March 2021.

White, L. 2018. *Assessing Passive Survivability in Multifamily Buildings*. Available: https://www.phius.org/NAPHC2018/Assessing%20Passive%20Survivability_Lisa%20White.pdf. Accessed: September 2021.

Wilson, A. 2006. *Passive Survivability: Designing for Tomorrow's Disasters*. Available: http://homeenergy.org/show/article/nav/newconstruction/page/17/id/228. Accessed: September 2021.

World Health Organization (WHO). 2016. *Dioxins and Their Effects on Human Health*. Available: https://www.who.int/news-room/fact-sheets/detail/dioxins-and-their-effects-on-human-health. Accessed: September 2021.

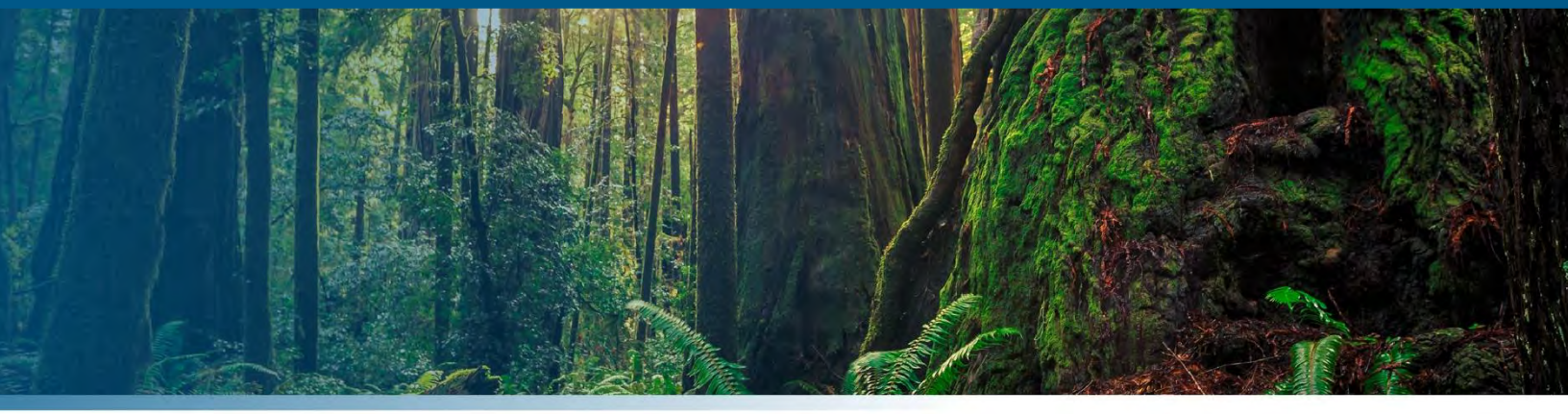
Wu, X., R. Nethery, M. Sabath, D. Braun, and F. Dominici. 2020. Air pollution and COVID-19 mortality in the United States: Strengths and limitations of an ecological regression analysis. *Science Advances*. Available: https://advances.sciencemag.org/content/6/45/eabd4049. Accessed: March 2021.

Yang, J., Y. Chang, P. Yan. 2015. Ranking the suitability of common urban tree species for controlling PM2.5 pollution. *Atmospheric Pollution Research*. Available: https://www.sciencedirect.com/science/article/pii/S130910421530235X?via%3Dihub. Accessed: March 2021.

Ziter, C., E. Pederson, C. Kucharik, and M. Turner. 2019. Scale-dependent interactions between tree canopy cover and impervious surfaces reduce daytime urban heat during summer. *Proceedings of the National Academy of Sciences*. Available: https://doi.org/10.1073/pnas.1817561116. Accessed: March 2021.

Resources to Support Resilient and Equitable Emission Reduction Planning

CHAPTER 6



Introduction

This Handbook provides techniques and strategies that can be implemented over the coming months and years to support and encourage sustainable, resilient, and equitable land use planning. While the measures, methods, and guidance presented in this Handbook represent the best available information at the time of publication, the number of resources relating to climate resilience, GHG reduction, and equity is continually growing. Models and tools also change regularly as they incorporate new science and data. Handbook users are encouraged to use the guidance presented in this Handbook, and where appropriate, supplement with data and ideas from a diverse array of additional resources.

Table 6-1 describes additional resources to expand on the principles outlined in this Handbook. Resources are presented in alphabetical order and grouped as either California specific or nationally applicable. Each resource is characterized by one or more function—community program; policy guidance; informational repository; local, regional, or state plan; model or data visualization software; measures/strategies; or reports, projections, or data. Table 6-1 also identifies the central topic(s)—climate resilience, GHG emission reductions, and health/equity—addressed by the resource, as indicated by the following graphics.

B3 Attach #1 of 3

Climate Resilience GHG Reduction Health/Equity

Table 6-1. Additional Resources and Guidance to Support Sustainable, Resilient, and Equitable Land Use Planning

Name	Resource Type	Description	Topic(s)
California-Specific			
APEN: Mapping Resilience	Informational repository	Mapping Resilience: A Blueprint for Thriving in the Face of Climate Disasters, from the Asian Pacific Environmental Network, reports on the distribution of climate resilience efforts in California and how to get resilience projects to historically underserved communities that will face disproportionate negative impacts from climate change.	
ARCCA	Policy guide, community program; informational repository	The Alliance of Regional Collaboratives for Climate Adaptation (ARCCA) is a network of regional collaboratives and allies that work to advance statewide adaptation and community resilience efforts. Its website tracks the latest policy updates, describes ongoing resilience and equity initiatives, and provides additional resources, such as toolkits and roadmaps.	
CalAdapt	Model or data visualization software	CalAdapt collects and visualizes simplified versions of climate change projections and climate impact research from California's scientific community. CalAdapt has a variety of visualizations to choose from, including: ▪ Sea Level Rise ▪ Wildfires ▪ Local Climate Change Snapshot ▪ Extended Drought Models ▪ Extreme Heat Days and Warm Nights	
CalEEMod	Model or data visualization software	CalEEMod quantifies ozone precursors, criteria pollutants, and GHG emissions from construction and operation of new land use development and linear projects in California. The model also integrates data from CalEnviroScreen®, Cal-Adapt®, and HPI® to identify potential climate risks and environmental burdens within the project vicinity. Measures to reduce emissions, climate risks, and environmental burdens are available for user selection and analysis.1	

[1] This version of CalEEMod is still in development and will be released in 2022. The current version of CalEEMod (2020.4.0) quantifies ozone precursors, criteria pollutants, and GHG emissions from construction and operation of new land use development projects.

Name	Resource Type	Description	Topic(s)
CalEnviroScreen	Model or data visualization software	CalEnviroScreen is a mapping tool that identifies communities that are the most affected by or vulnerable to different types of pollution. The data for CalEnviroScreen comes from environmental, health, and socioeconomic information at the state and federal level, and produces parceled data for every census tract in California.	
California Adaptation Clearinghouse	Informational repository	The State's Adaptation Clearinghouse is a searchable database of many resources that are useful for local, regional, and state adaptation planning efforts. Resources include tools, case studies, guidelines, scientific reports, and more. It also contains a clearinghouse for equity and environmental justice.	
California Climate Adaptation Planning Guide	Policy guidance; local, regional, or state plan	The California Adaptation Planning Guide (APG) is a tool that local governments and organizations can use to integrate best practices into their adaptation planning efforts. First published in 2012, the guide has since been updated in 2020, and includes processes communities can use to plan for climate change. The updated APG reflects the latest best practices, especially considering the many updates to California's plans, programs, science, regulations, and policies. An interactive version of the guidance is also available online.	
California Fourth Climate Change Assessment: Climate Justice and Tribal and Indigenous Communities Reports	Reports, projections, and data	California's Climate Change Assessments are a series of regional and state reports, tools, and models that contribute to the scientific foundation for understanding local scale climate-related vulnerability. The assessments identify how climate change may disproportionately affect underserved populations and tribal and indigenous communities. The Climate Justice report offers tools for mapping, discusses critical factors related to climate vulnerability and adaptive capacity, lists potential climate adaptation strategies, and discusses knowledge gaps in the field. The Tribal and Indigenous Communities report discusses how climate impacts uniquely affect tribal communities and offers related case studies and recommended actions.	
California Healthy Mobility Options Tool	Model or data visualization software	The California Healthy Mobility Options Tool (also known as the California Integrated Transport and Health Impacts Model / ITHIM CA) is a planning tool that compares the health impacts associated with different travel scenarios based on a mix of active and motorized transport modes. The tool calculates the associated change in deaths and years of life shortening and disability; health costs due to travel-related changes in	

Name	Resource Type	Description	Topic(s)
		air pollution, physical activity, and traffic injuries; and GHG emissions.	
California Healthy Places Index	Model or data visualization software	The California Healthy Places Index (HPI), developed by the Public Health Alliance of Southern California, is a tool that enables the user to explore local factors that affect life expectancy and compare community conditions across California, using a scoring system based on housing, transportation, education, and other key factors that influence health. There are many free features available, and users can also choose to pay for a premium account which unlocks additional features.	
California Heat Assessment Tool	Model or data visualization software	The California Heat Assessment Tool (CHAT) allows users to explore and understand how extreme heat will impact specific communities across the state. The tool allows users to explore how "heat health events" are projected to change in their communities over time. A heat health event is any heat event that generates public health impacts, regardless of the absolute temperature.	
Funding Wizard	Funding database	The Funding Wizard is a searchable funding database that helps to identify grants, rebates, and incentives for sustainability projects that are available in California. It includes various filters to help narrow down searches, and provides descriptions of funding opportunities and links for more information.	
CCHES	Policy guidance; measures/ strategies; informational repository; reports, projections, and data	The CDPH's Climate Change and Health Equity Section (CCHES) works across sectors to embed health and equity into California climate change programs and policies. CCHES administers the California Building Resilience Against Climate Effects (CalBRACE) project, which provides a comprehensive suite of tools for better understanding the effects of climate change on public health, including the Climate Change and Health Vulnerability Indicators for California, County-Level Climate and Health Profile Reports, an Adaptation Planning Toolkit for public health, and best practices for local health department partnerships.	
ICARP	Policy guidance; measures/ strategies	The Integrated Climate Adaptation and Resiliency Program (ICARP) provides a cohesive and coordinated programmatic response to climate change impacts in California. The program delivers holistic strategies to coordinate efforts at all governmental levels. The program website outlines current initiatives and provides multiple planning resources.	
Our Coast, Our Future	Model or data visualization software	Our Coast, Our Future uses data from the Coastal Storm Modeling System (CoSMoS) to provide a web visualization tool that assesses exposure to sea level rise and coastal flooding hazards. The tool assists coastal resource managers and land use planners in	

Name	Resource Type	Description	Topic(s)
		visualizing and anticipating vulnerabilities to sea level rise and storms.	
Resilience Before Disaster: The Need to Build Equitable, Community-Driven Social Infrastructure	Measures/ strategies; reports, projections, or data	The Resilience Before Disaster report offers recommendations for building resilient communities in California through investment in social infrastructure and climate resilience. It urges state policymakers to take urgent action to address climate change and social inequity to safeguard all Californians.	
SB 1000 Implementation Toolkit	Community program; policy guidance; measures/ strategies	The California Environmental Justice Alliance's SB 1000 Implementation Toolkit is a guidance document intended for local governments, planners, community-based organizations, and other stakeholders who will be working to develop an environmental justice element or a set of environmental justice policies for their general plans to meet the requirements of SB 1000.	
Safeguarding California Plan	Measures/ strategies	The Safeguarding California Plan outlines California's Climate Adaptation Strategy by discussing current and necessary actions the state should take to strengthen California's climate resilience, lower GHG emissions, and address environmental justice. In addition to the 2018 update of the plan, the California Natural Resources Agency publishes case studies of ongoing climate action, resources for coordinating local action, and reports on recent research.	
Sea the Future	Model or data visualization software	Sea the Future aggregates and compares the wide variety of sea level rise and flooding visualization tools that exist for modeling in California and helps users understand the underlying assumptions and methodologies of each tool to make sure that they choose the most appropriate tool for their task.	
Sustainable Communities and Climate Protection Program	Policy guide; local, regional, or state plan; informational repository	The Sustainable Communities and Climate Protection Program supports California's goals to reduce GHG emissions through coordinated transportation, housing, and land use planning. The program uses a variety of resources and a comprehensive library of policy briefs to make it easier for a government to implement climate programs.	
Tracking California	Model or data visualization software	Tracking California, a program of the Public Health Institute, mobilizes data on pollution and disease to understand their cause, effect, and trends. This program tracks and analyzes data on public health and the environment to protect communities in California and give policymakers and community groups the tools they need to be informed about environmental justice and health equity.	

B3 Attach #1 of 3

Name	Resource Type	Description	Topic(s)
National Tools			
Coastal Resilience	Policy guidance; model or data visualization software; reports, projections, or data	Coastal Resilience is a program led by The Nature Conservancy that looks at nature-based solutions for reducing coastal flood risk. This program includes a methodology, web mapping tool, and network of global practitioners.	
Community-Driven Climate Resilience Planning: A Framework	Policy guidance	Developed by the Movement Strategy Center, the Community-Driven Climate Resilience Planning: A Framework identifies characteristics of community-driven climate resilience planning and emerging opportunities for planners to draw from.	
Community Resilience Economic Decision Guide and Online Tool (EDG)	Policy guidance; model or data visualization software; reports, projections, or data	This Community Resilience Economic Decision Guide and Online Tool, from the National Institute of Standards and Technology, provides economic methodology for evaluating investment decisions related to adapting to, withstanding, and recovering from disrupting events for communities.	
Guide to Equitable, Community-Driven Climate Preparedness Planning	Policy guide; measures/ strategies	The Guide to Equitable, Community-Driven Climate Preparedness Planning was prepared by the Urban Sustainability Directors Network (USDN) and discusses social inequities, such as structural and institutional racism, and their place in climate preparedness planning. It offers a framework on community-driven planning for climate change, as well as equitable adaptation solutions. The guide also helps developers identify effective ways to engage with communities in resilience planning.	
Opportunities for Equitable Adaptation in Cities	Policy guidance; informational repository; measures/ strategies	Developed by the Georgetown Climate Center, this workshop summary report gives a framework that governments and community changemakers can use to determine the disproportionate impact of climate change on vulnerable communities and how best to alleviate those impacts while increasing overall resilience.	
Our Communities, Our Power: Advancing Resistance and Resilience in Climate Change Adaptation	Community program; policy guidance; informational repository	The NAACP's Our Communities, Our Power toolkit examines the power of communities in reducing GHG emissions and becoming climate resilient, while highlighting the opportunity that communities have to address equity and environmental justice while focusing on community programs.	

B3 Attach #1 of 3

Name	Resource Type	Description	Topic(s)
Social Cohesion: The Secret Weapon in the Fight for Equitable Climate Resilience	Community program; policy guidance	Social Cohesion: The Secret Weapon in the Fight for Equitable Climate Resilience by the Center for American Progress discusses how to integrate community resilience into climate resilience and how social cohesion builds up these goals.	
U.S. Adaptation Clearinghouse	Informational repository	The Georgetown Climate Center's Adaptation Clearinghouse allows users to search between tools related to climate adaptation and resilience and GHG reduction easily and provides summaries and comparisons of different tools and resources at a glance. Users can search by region, topic, or sector, and save their searches and favorites in a free account.	
U.S. Climate Resilience Toolkit	Model or data visualization software; reports, projections, or data	The U.S. Climate Resilience Toolkit amasses research across U.S. federal agencies as well as scientists and researchers to provide an in-depth look at climate resilience by region of the U.S., topic, type of stressor, and steps to resilience. The toolkit specializes in examining not just the existing issues and their projected intensities, but how to improve the preparation for and response to climate impacts through policy, infrastructure, and behavior change.	

Sources: APEN 2019; ARCCA 2021; CalEJA 2016; CARB 2021a, 2021b; CARB et al. 2020; CDC 2019; CDPH 2020, 2021a, 2021b, 2021c; CEC 2021; CEMA and CNRA 2020; CNRA n.d., 2019; Georgetown Climate Center 2011, 2017, 2021; Gonzalez 2017; Lou et al. 2020; NAACP 2019; NIST 2020; NOAA 2021; OEHHA 2021; OPR 2021a, 2021b, 2021c; OPR, CEC, and CNRA 2018; SCC 2021; PHASC 2021; TNC n.d.; Tracking California 2021; USGS n.d.; USDN 2017.

References

Alliance of Regional Collaboratives for Climate Adaptation (ARCCA). 2021. *ARCCA*. Last revised: 2021. Available: https://arccacalifornia.org/. Accessed: May 6, 2021.

Asian Pacific Environmental Network (APEN). 2019. *Mapping Resilience: A Blueprint for Thriving in the Face of Climate Disasters*. Available: https://apen4ej.org/wp-content/uploads/2019/10/APEN-Mapping_Resilience-Report.pdf. Accessed: May 6, 2021.

California Air Resources Board (CARB). 2021a. *Sustainable Communities & Climate Protection Program*. Available: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-climate-protection-program. Accessed: May 6, 2021.

California Air Resources Board (CARB). 2021b. Funding Wizard. Available: https://fundingwizard.arb.ca.gov/web/. Accessed: June 24, 2021.

B3 Attach #1 of 3

California Air Resources Board (CARB), California Department of Public Health (CDPH), and Nicholas Linesch Legacy Fund. 2020. *Integrated Transport and Health Impact Model*. Available: https://skylab.cdph.ca.gov/HealthyMobilityOptionTool-ITHIM/#Home. Accessed: September 17, 2021.

California Department of Public Health (CDPH). 2020. *Climate Change and Health Vulnerability Indicators for California*. Last revised: August 17, 2020. Available: https://www.cdph.ca.gov/Programs/OHE/Pages/CC-Health-Vulnerability-Indicators.aspx. Accessed: September 17, 2021.

California Department of Public Health (CDPH). 2021a. *Climate Change and Health Equity Section (CCHES)*. Last revised: August 11, 2021. Available: https://www.cdph.ca.gov/Programs/OHE/Pages/CCHEP.aspx. Accessed: September 17, 2021.

California Department of Public Health (CDPH). 2021b. *California Building Resilience Against Climate Effects (CalBRACE)*. Last revised: February 1, 2021. Available: https://www.cdph.ca.gov/Programs/OHE/Pages/CalBRACE.aspx#. Accessed: May 6, 2021.

California Department of Public Health (CDPH). 2021c. *CalBRACE - 2017 Climate Change and Health Profile Reports*. Last revised: February 1, 2021. Available: https://www.cdph.ca.gov/Programs/OHE/Pages/ClimateHealthProfileReports.aspx. Accessed: September 17, 2021.

California Emergency Management Agency and California Natural Resources Agency (CEMA and CNRA). 2020. *California Adaptation Planning Guide: Planning for Adaptive Communities*. Last revised: June 2020. Available: https://www.caloes.ca.gov/HazardMitigationSite/Documents/CA-Adaptation-Planning-Guide-FINAL-June-2020-Accessible.pdf. Accessed: June 22, 2021.

California Energy Commission. 2021 (CEC). *Cal-Adapt*. Last revised: January 26, 2021. Available: https://cal-adapt.org/. Accessed: May 6, 2021.

California Environmental Justice Alliance (CalEJA). 2016. *SB 1000 Toolkit: Planning for Healthy Communities*. Available: https://caleja.org/2017/09/sb-1000-toolkit-release/. Accessed: May 6, 2021.

California Office of Environmental Health Hazard Assessment (OEHHA). 2021. *CalEnviroScreen*. Last revised: April 28, 2021. Available: https://oehha.ca.gov/calenviroscreen. Accessed: May 6, 2021.

California Office of Planning and Research (OPR). 2021a. *Adaptation Clearinghouse*. Last revised: 2021. Available: https://resilientca.org/. Accessed: May 6, 2021.

California Office of Planning and Research (OPR). 2021b. *Equity and Environmental Justice Clearinghouse*. Last revised: 2021. Available: https://resilientca.org/topics/equity-and-environmental-justice/. Accessed: May 6, 2021.

B3 Attach #1 of 3

California Office of Planning and Research (OPR). 2021c. *Integrated Climate Adaptation and Resiliency Program*. Last revised: 2021 Available: https://opr.ca.gov/planning/icarp/. Accessed: May 6, 2021.

California Office of Planning and Research, California Energy Commission, and California Natural Resources Agency (OPR, CEC, and CNRA). 2018. *California's Fourth Climate Change Assessment*. Available: https://www.climateassessment.ca.gov/. Accessed: May 6, 2021.

California Natural Resources Agency (CNRA). 2019. *Safeguarding California and Climate Change Adaptation Policy*. Last revised: 2019. Available: https://files.resources.ca.gov/climate/safeguarding/. Accessed: May 6, 2021.

California Natural Resources Agency (CNRA). n.d. *California Heat Assessment Tool*. Available: https://cal-heat.org/. Accessed: September 17, 2021.

California State Coastal Conservancy (SCC). 2021. *Sea the Future*. Last revised: 2021. Available: https://www.seathefuture.org/#/. Accessed: May 6, 2021.

Georgetown Climate Center. 2011. *CalBRACE Adaptation Toolkit*. Last revised: 2011. Available: https://www.adaptationclearinghouse.org/resources/calbrace-adaptation-toolkit.html. Accessed: September 17, 2021.

Georgetown Climate Center. 2017. *Opportunities for Equitable Adaptation in Cities: A Workshop Summary Report*. Available: https://www.georgetownclimate.org/files/report/GCC-Opportunities_for_Equitable_Adaptation-Feb_2017.pdf. Accessed: May 6, 2021.

Georgetown Climate Center. 2021. *Adaptation Clearinghouse*. Last revised: 2021. Available: https://www.adaptationclearinghouse.org/. Accessed: May 6, 2021.

Gonzalez, R. 2017. *Community-Driven Climate Resilience Planning: A Framework*. Last revised: May 2017. Available: https://www.adaptationclearinghouse.org/resources/community-driven-climate-resilience-planning-a-framework.html. Accessed: June 22, 2021.

Lou, Z., A. Raval, M. Young, and S. Appel. 2020. *Resilience Before Disaster: The Need to Build Equitable, Community-Driven Social Infrastructure*. Final. California. September 21. Prepared for the Asian Pacific Environmental Network (APEN), SEIU California, and the BlueGreen Alliance. Available: http://apen4ej.org/wp-content/uploads/2020/10/Resilience-Before-Disaster-FINAL-UPDATED.pdf. Accessed: May 6, 2021.

National Associate for the Advancement of Colored People (NAACP). 2019. *Our Communities, Our Power: Advancing Resistance and Resilience in Climate Change Adaptation*. Report, Final. Available: https://www.adaptationclearinghouse.org/resources/naacp-our-communities-our-power-

B3 Attach #1 of 3

advancing-resistance-and-resilience-in-climate-change-adaptation-action-toolkit.html. Accessed: June 22, 2021.

National Institute of Standards and Technology (NIST). 2020. *The Community Resilience Economic Decision Guide and Online Tool*. Available: https://www.nist.gov/community-resilience/edge-and-economic-decision-guide. Accessed: May 6, 2021.

National Oceanic and Atmospheric Administration's Climate Program (NOAA). 2021. *U.S. Climate Resilience Toolkit*. Last revised: April 1, 2021. Available: https://toolkit.climate.gov/. Accessed: May 6, 2021.

Public Health Alliance of Southern California (PHASC). 2021. *The California Healthy Places Index*. Last revised: April 22, 2021. Available: https://healthyplacesindex.org/. Accessed: May 6, 2021.

The Nature Conservancy (TNC). No Date. *Coastal Resilience*. Available: https://coastalresilience.org/

Tracking California. 2021. *Tracking California – Informing Action for Healthier Communities*. Last revised: March 2021. Available: https://trackingcalifornia.org/. Accessed: May 6, 2021.

U.S. Centers for Disease Control and Prevention (CDC). 2019. *CDC'S Building Resilience Against Climate Effects (BRACE) Framework*. Last revised: September 9, 2019. Available: https://www.cdc.gov/climateandhealth/brace.htm. Accessed: May 6, 2021.

U.S. Geological Survey (USGS). No Date. *Our Coast, Our Future*. Available: https://data.pointblue.org/apps/ocof/cms/. Accessed: May 6, 2021.

United Sustainability Directors Network (USDN). 2017. *Guide to Equitable Community-Driven Climate Preparedness Planning*. Report, Final. Available: https://www.usdn.org/uploads/cms/documents/usdn_guide_to_equitable_community-driven_climate_preparedness-_high_res.pdf?cn=bWVudGlvbg%3D%3D&utm_content=buffer03b62&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer. Accessed: May 6, 2021.

Key Terms and Definitions

APPENDIX A

Below is a glossary of key terms and definitions for the Handbook.

Adaptation (Climate Change): Adjusting to a changing environment. Adaptation involves working to reduce or eliminate the impacts of climate change on a community. Adaptation can minimize harm and costs and take advantage of potential opportunities associated with the impacts of climate change. Adaptation includes addressing current and future natural hazards (i.e., wildfire, drought, cyclones, heat waves), as well as gradual changes (i.e., sea level rise, increasing temperatures) that could impact economic sectors, natural resources, and community well-being.

Adaptation Measure: An action that addresses a climate impact. A measure will reduce risk and/or vulnerability for a specific resource, asset, project component, or community.

Adaptive Capacity: A project's existing capacity to cope with the effects of climate change (an element of vulnerability.) Adaptive capacity includes the policies, programs, plans, and practices that are already in place or can be easily implemented, which prepare a project for climate change, as well as the financial resources to implement such actions.

Albedo: The fraction of solar radiation reflected by a surface or object. Snow covered surfaces have a high albedo, while vegetation-covered surfaces and oceans have a low albedo. The Earth's albedo varies, because of the dynamic nature of clouds, snow, ice, leaf area, and land cover changes. The normal albedo of snow, for example, is around 1.0, whereas the albedo of vegetation can be as low as 0.1. Human-made surfaces designed to have high albedos (i.e., near 1.0) reflect solar radiation and can help reduce

the urban heat island effect. Other human-made surfaces, such as asphalt or conventional shingle roofs, have low albedo and increase the urban heat island effect.

Anti-Displacement: Policies, programs, and actions that help people to remain in their communities, buffering the effects of rising costs (especially housing), lowered incomes, loss or conversion of housing units, or other factors.

Below Market Rate Housing: Housing provided at rates lower than the market rate. Below market rate housing is designed to assist lower-income families. When below market rate housing is provided near job centers or transit, it provides lower-income families with desirable job/housing match or greater opportunities for commuting to work through public transit.

Biogenic Emissions: Carbon dioxide (CO_2) emissions that result from materials that are derived from living cells, as opposed to CO_2 emissions derived from fossil fuels, limestone, and other materials that have been transformed by geological processes. Biogenic CO_2 contains carbon that is present in organic materials, including wood, paper, vegetable oils, animal fat, and waste from food, animals, and vegetation (such as yard or forest waste).

Building Climate Zones: Geographic areas of similar climatic characteristics, including temperature, weather, and other factors that affect building energy use. The California Energy Commission identified 16 Building Climate Zones for the Title 24 Standards. Building climate zones are different from Energy Demand Forecast Zones (EDFZs), which were developed by the California Energy Commission and used in the Residential Appliance Saturation Survey (RASS) and the 2018–2030 Uncalibrated Commercial Sector Forecast (Commercial Forecast).

Carbon Dioxide Equivalent (CO_2e): A measure for comparing CO_2 with other greenhouse gases (GHG). CO_2e is calculated by multiplying the metric tons of a GHG by its associated global warming potential (GWP).

California Environmental Quality Act (CEQA): A statute passed in 1970 that requires state and local agencies to identify the significant environmental impacts of their actions, to avoid or mitigate those impacts, and for projects with significant impacts to consider alternatives. The statute also requires public participation in the review of environmental documents.

Carbon Monoxide (CO): CO is a colorless, odorless, gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. While there are no ecological or environmental effects from CO, human exposure to CO at high concentrations can cause fatigue, headaches, confusion, dizziness, and chest pain.

Carbon Sink: Any process or mechanism that removes carbon dioxide from the atmosphere. A forest is an example of a carbon sink because it sequesters carbon dioxide from the atmosphere.

Climate Action Plan (CAP): A plan or series of plans that outline a strategy for an entity, such as a City, County, company, public agency, etc. to reduce their GHG emissions

and/or to make the jurisdiction or agency more resilient to climate change. Some CAPs only cover GHG emissions and some also cover climate adaptation. The foundation of a CAP is usually a GHG inventory, forecast of the trajectory of emissions in the absence of any action, and a GHG reduction target by a set year. The CAP must include GHG reduction measures, such as those presented in this Handbook, for the entity to meet their stated GHG goals.

Co-Benefits: Additional benefits that accompany the emissions reductions associated with GHG reduction measures, such as improvement in air quality, employment, climate resiliency, or community quality of life.

Combined Heat and Power (CHP): CHP is the generation of both heat and electricity from the same process, such as combustion of fuel, with the purpose of utilizing or selling both simultaneously. In combined heat and power systems, the thermal energy byproducts of a process are captured and used, whereas, in a separate heat and power system, the byproducts would be wasted. Examples of combined heat and power systems include gas turbines, reciprocating engines, and fuel cells. CHP is also known as *cogeneration*.

Community Benefits Agreement: A contract signed by community groups and a project proponent that requires the proponent to provide specific amenities and/or mitigations to the local community or neighborhood. In exchange, the community groups agree to publicly support the project, or at least not oppose it. These amenities and/or mitigations are then included in the record of decision as conditions of approval, mitigation measures, or developer agreement, as appropriate.

Community Engagement: Process of involving and working collaboratively with individuals and groups for the benefit of a community. Effective community engagement ensures that community members from diverse backgrounds have ample opportunity to communicate their priorities and concerns and participate in planning and decision-making activities.

Commute Shed: The area from which a business can expect employees to be drawn, typically a 45-minute drive, but often in metropolitan areas include areas farther away.

Cordon Pricing: Tolls charged for entering a particular area (a *cordon*), such as a downtown core. For example, New York City is currently evaluating an $8 daily fee for passenger vehicles and a $21 daily fee for trucks entering Manhattan below 86th Street from 6 am to 6 pm on weekdays.

Criteria Pollutants: Criteria pollutants are a group of six common air pollutants for which the federal and state governments have set national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), respectively. The standards are set to protect public health and welfare and the environment. The federal criteria pollutants are ozone (O_3), CO, lead (Pb), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (PM), which consists of particulates 10 microns in diameter or less (PM10) and 2.5 microns in diameter or less (PM2.5). Definitions of these pollutants are provided in this appendix (see *Carbon Monoxide*, *Lead*, *Nitrogen Dioxide*, *Ozone*, *Particulate Matter*, and

B3 Attach #1 of 3

Sulfur Dioxide). California has set CAAQS for these six pollutants, in addition to standards for visibility reducing particles, hydrogen sulfide, and vinyl chloride.

Cultural Competency: As defined by the Child Welfare League of America, "the ability of individuals and systems to respond respectfully and effectively to people of all cultures, classes, races, ethnic backgrounds, sexual orientations, and faiths or religions in a manner that recognizes, affirms, and values the worth of individuals, families, tribes, and communities, and protects and preserves the dignity of each" (National Technical Assistance and Evaluation Center for Systems of Care 2009).

Destination Accessibility: A measure of the number of jobs or other attractions reachable within a given travel time. Destination accessibility tends to be highest at central locations and lowest at peripheral ones.

Disadvantaged Community: A disadvantaged community is defined by the State of California as a census tract that is in the top 25 percentile of CalEnviroScreen, an environmental justice screening tool developed by the Office of Environmental Health Hazard Assessment to evaluate communities for their environmental pollution burden as well as vulnerability due to socioeconomic conditions. Disadvantaged community designation is often used by the State of California in funding and other programs (California Environmental Protection Agency 2017).

Disadvantaged community may be alternatively defined based on other metrics or indicators, such as those included in the California Healthy Places Index, or even defined by local communities themselves. See also *Vulnerable Places* and *Vulnerable Population*, which are alternative terms used by the CDPH.

Elasticity: The percentage change of one variable in response to a percentage change in another variable. For example, if the elasticity of vehicle miles traveled (VMT) with respect to density is -0.12, this means a 100 percent increase in density leads to a 12 percent decrease in VMT. Elasticity is represented by the following formula [percent change in variable A] / [percent change in variable B], where the change in B leads to the change in A.

Emission Factor: A relative value that relates the quantity of a pollutant to an activity associated with the release of that pollutant. Emission factors are typically expressed in terms of pollutant weight divided by an activity rate. For example, metric tons of CO_2 emitted per VMT (annotated as MT CO_2/VMT).

ENERGY STAR: A joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy which sets national standards for energy-efficient consumer products. ENERGY STAR-certified products are guaranteed to meet the efficiency standards specified by the program.

Environmental Justice: The right of all communities to live, work, and play in a healthy, climate-resilient, and sustainable environment. Environmental justice also includes the right of communities for meaningful involvement and self-determination in land use planning and environmental decision-making (California Environmental Justice Alliance 2021).

B3 Attach #1 of 3

Equity: Equity is the "just and fair inclusion into a society in which all can participate, prosper, and reach their full potential" (Policy Link 2021). Equity means creating the conditions, practices and environment that would enable all communities and individuals to lead healthy, thriving lives, recognizing that communities and individuals have historically faced and continue to face today discrimination and oppression because of their race, gender, sexuality, ability, citizenship status, or other characteristics. Thus, distributional equity includes increasing access to power, redistributing and providing additional resources, and eliminating barriers to opportunity.

Equality: Equality is treating every community and individual in the same way but may not recognize that communities and individuals are coming from different places and histories and have different needs and abilities.

Evapotranspiration: The loss of water from the soil both by evaporation and by transpiration from plants growing in the soil.

Exposure (to climate hazards): The effects of climate change that a project will face. Exposure includes change in the severity and location of a climate hazard (i.e., flood intensity associated with a flood zone). Projects can be exposed to both primary effects of climate change (i.e., sea level rise, reduced precipitation) and associated secondary effects (i.e., extreme high tides, reduced snowpack).

Exposure (to air pollution): The effects of air pollution that a project will face. People are exposed to air pollution in multiple ways, including breathing polluted air, eating foods that have accumulated pollutants, drinking contaminated water, ingesting contaminated soils, and touching contaminated surfaces. The primary human health and ecological impacts from exposure to criteria pollutants are defined in this appendix (see *Carbon Monoxide*, *Lead*, *Nitrogen Dioxide*, *Ozone*, *Particulate Matter*, and *Sulfur Dioxide*). Certain reduction measures, such as MERV 13 filters in ventilation systems, may reduce exposure to air pollution.

General Plan: A set of long-term goals and policies that guide local land use decisions. The General Plan Guidelines developed by the California Office of Planning and Research provide advice on how to write a general plan that articulates a community's long-term vision, fulfills statutory requirements, and contributes to creating a prosperous community.

Global Warming Potential (GWP): The ratio of radiative forcing that would result from the emission of one unit of a GHG (e.g., methane, nitrous oxide) to that from the emission of one unit of CO_2 over a fixed period (e.g., 20 years, 100 years). For example, methane has a 100-year GWP of 25, which means 1 metric ton of methane has the same global warming impact as 25 metric tons of CO_2.

Gray Water: Water from sinks, showers, tubs, and washing machines that has not contacted biological pathogens. It is non-drinkable water that can be collected and reused on site for irrigation, flushing toilets, and other purposes.

Greenhouse Gas (GHG): This report focuses on the following five gases: CO_2, nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF_6), but there are several others.

Hazard (Climate Hazard): A danger to a project or a community caused or exacerbated by climate change, including extreme weather events or gradual changes in climate (i.e., flooding, wildfires, drought, increasing temperatures, reduced snowpack).

Headway: The amount of time, typically measured in minutes, that elapses between two public transit vehicles servicing a given route. Headways for buses and rail are generally shorter during peak periods and longer during off-peak periods. Headway is the inverse of frequency (i.e., headway = 1/frequency), where frequency is the number of arrivals over a given time, such as the number of buses per hour.

Health Equity: Health equity is achieved when all people have full and equal access to opportunities that enable them to lead healthy, thriving lives (California Health and Safety Code Section 131019.5).

Impact (on climate change): The way a project experiences an effect of climate change. A climate hazard's impact is determined by the project's vulnerability to a hazard and its adaptive capacity. Impacts can be direct (sea level rise, changes in precipitation) or secondary, meaning they are related to a specific sector (i.e., public health, water management, natural resources).

Infill Development: A project that is located within or contiguous with the central city. Examples of infill projects are construction on redevelopment areas, abandoned sites, or underutilized older buildings/sites.

Kilowatt Hour (kWh): The kilowatt hour is a measure of electrical energy that is equal to 3,600 kilojoules. It is commonly used by utilities to measure and bill consumers for their electricity use. The kWh is basis for most energy-related greenhouse gas emissions calculations. Alternatively, megawatt hours (MWh) are also used. There are 1,000 kWh hours in 1 MWh.

Lead (Pb): Pb is a soft metal that was previously added to gasoline, which when combusted, generated small Pb particles that could be inhaled and deposited in the environment (soil and water). Once absorbed into the body, Pb accumulates in bones and adversely affects multiple organ systems. Children are particularly at risk of lead poisoning. The primary health impacts of Pb exposure are anemia, behavioral disorders, low IQ, reading and learning disabilities, and nerve damage. Ecological effects of Pb include losses in biodiversity, changes in community composition, and decreased growth and reproductive rates in plants and animals. Leaded fuel in the U.S. was banned in all on-road vehicles in 1996. The primary sources of Pb emissions today are metal refineries, smelters, battery manufacturers, iron and steel producers, and racing and aircraft industries.

LGBTQIA+: Lesbian, gay, bisexual, transgender, queer and questioning, intersex, asexual, and other gender identities.

Lifecycle Emissions: Emissions that are produced from the energy and resources used throughout the lifecycle of a product or material. Lifecycle emissions include the extraction of raw resources, physical distribution, use of the product or material, and disposal at the end of a product's life.

Locational Context: Used to identify emission reduction measures within the transportation sector that are appropriate in certain types of neighborhoods differentiated by transportation characteristics and level of development (e.g., urban, rural, suburban). See *Suburban*, *Urban*, and *Rural*.

Lumen: A unit measure of the brilliance of a source of visible light, or the power of light perceived by the human eye. The more lumens, the brighter the light. For example, a 100-watt incandescent bulb produces about 1,600 lumens. A 40-watt energy savings bulb produces about 450 lumens.

Measure Scales: The measures in this report are applicable to different scales and geographies (Project/Site scale and Program/Community scale). *Project/Site* refers to measures that reduce emissions at the scale of a parcel, employer, or development project. *Program/Community* refers to measures that reduce emissions at the scale of a neighborhood (e.g., specific plan), corridor, or entire municipality (e.g., city- or county-level).

Mixed-Use: A development project that incorporates more than one type of land use. For example, a mixed-use development may be a building with ground-floor retail and housing on the floors above. A larger mixed-use development may incorporate a variety of land uses within a short proximity of each other. This may include integrating office space, shopping, parks, schools, and residential development. Given the close proximities, mixed-use developments can encourage walking and other non-auto modes of transport from residential to office/commercial/institutional locations (and vice versa).

Multiplier Effect: The multiplier effect refers to the increase in final income arising from any new injection of spending. Some forms of new spending in a community can increase the total income of that community beyond the initial spending depending on how they interact with the local economy. Different types of economic activity will have different multiplier effects.

Nitrogen Dioxide (NO_2): NO_2 can be directly emitted from combustion sources, such as boilers, gas turbines, and mobile and stationary engines. NO_2 is also naturally formed through photochemical reactions among nitric oxide (NO) and other air pollutants. Human exposure to NO_2 at high concentrations can aggravate lung and heart problems, intensify responses to allergens in asthmatics, decrease lung-function in children, and potentially lead to premature death. NO_2 is a precursor to O_3 formation and acid rain and can contribute to global warming and reduce water quality. High ambient NO_2 concentrations over prolonged periods may also injure crops.

Ordinance: A local law usually found in municipal code. Examples of ordinances include those related to noise control, snow removal, pet restrictions, and zoning.

B3 Attach #1 of 3

Ozone (O_3): Ground-level O_3, or smog, is not directly emitted into the atmosphere. Rather, it is naturally formed through photochemical reactions between reactive organic gases (ROG) and nitrogen oxides (NO_X) (both by-products of combustion). Concentrations of ground-level O_3 are typically greatest on sunny days in urban environments, but because O_3 can be transported long distances in the air, rural communities also experience O_3 pollution. Exposure to ground-level O_3 at certain concentrations can make breathing more difficult, cause shortness of breath and coughing, inflame and damage the airways, aggravate lung diseases, increase the frequency of asthma attacks, and cause chronic obstructive pulmonary disease. Within the environment, ground-level O_3 can cause crop damage, typically in the form of stunted growth, leaf discoloration, cell damage, and premature death.

Particulate Matter: PM pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. NAAQS and CAAQS have been set for two sizes of PM—PM10 (10 microns in diameter or less) and PM2.5 (2.5 microns in diameter or less). PM10 typically deposits on the surfaces of the larger airways of the upper region of the lung and can induce tissue damage and lung inflammation and is linked with asthma and chronic obstructive pulmonary disease. PM2.5 travels into and deposits on the surface of the deeper parts of the lung and can induce tissue damage and lung inflammation and is also linked with hospitalizations from heart and lung causes. Depending on its composition, PM10 and PM2.5 can also affect water quality and acidity, deplete soil nutrients, damage sensitive forests and crops, affect ecosystem diversity, and contribute to acid rain.

Photovoltaic (PV): A system that converts sunlight directly into electricity using cells made of silicon or other conductive materials. When sunlight hits the cells, a chemical reaction occurs, resulting in the generation of electricity. There are often many PV cells in a single solar panel.

Program/Community: See *Measure Scales*.

Project/Site: See Measure Scales.

Quimby Requirements: The Quimby Act, within the Subdivision Map Act, authorizes the legislative body of a city or county to require the dedication of land or to impose fees for park or recreational purposes as a condition of the approval of a tentative or parcel subdivision map, if specified requirements are met. This is the primary source of funding and land for park development at the local level.

Racial Equity: Racial equity is both an outcome and a process. As an outcome, racial equity is achieved when race is no longer a predictor for life and socio-economic outcomes, and when everyone can lead healthy, thriving lives, regardless of their race. "As a process, we apply racial equity when those most impacted by structural racial inequity are meaningfully involved in the creation and implementation of the institutional policies and practices that impact their lives" (Race Forward 2021). We achieve racial equity by eliminating the policies, structures, practices, mindsets, and cultural messages

B3 Attach #1 of 3

that perpetuate racist outcomes and processes. (Race Forward 2021; Nelson et al. 2015; Racial Equity Tools 2020)

Recycled Water: Non-drinkable water that can be reused for irrigation, flushing toilets, and other purposes. It has been processed through a wastewater treatment plant, unlike greywater, and typically needs to be redistributed from the treatment plant to the site where it will be used.

Renewable Energy: Energy sources that are sustainable, and include non-carbon technologies, such as solar energy, hydropower, and wind, as well as carbon-neutral technologies such as biomass.

Resilience (to climate change): The ability of an individual, project, community, or natural system to prepare, cope, and recover from disruptions, shocks, and stresses caused by climate impacts.

Ridesharing: A form of carpooling or vanpooling where multiple people travel in the same vehicle instead of separately driving in individual vehicles. Ridesharing can be casual and formed independently or as part of an employer program.

Rural: An area characterized by little development. Compared to urban and suburban areas, rural areas have a lower density of residences, higher numbers of single-family residences, and higher numbers of vehicle dependent land use patterns. Where applicable, the Handbook provides three land use distinctions within the *rural* locational context category—R [a], R [b], and R [c]. R [a] refers rural areas within a master-planned community. These rural areas often include a broad offering of amenities and services, which may be accessed by walking or other alternative forms of transportation. R [b] refers to rural areas adjacent to a commuter rail station with convenient rail service to a major employment center. As the name implies, these rural areas have greater access to commuter rail as an alternative mode of transportation. R [c] refers to rural areas with transit service and that are near jobs/services.

Sector: Categories used to organize the sources that generate GHG emissions. Sectors are the standard method of categorizing emissions, such as transportation or energy.

Self-Selection: A type of bias where individuals select themselves into a group, potentially creating a non-representative sample.

Sensitivity (to climate change): The project's susceptibility to the effects of climate change. The degree to which different components of a project will be exposed to climate change and their capabilities hindered. Points of sensitivity include the project's functions, structures, and individuals who interact with the project. Sensitivity is an element of *Vulnerability*.

Separate Heat and Power: A typical system for acquiring heat and, separately, acquiring power. Thermal energy and electricity are generated and used separately. For example, heat is generated from a boiler while electricity is acquired from the local utility. Separate heat and power systems can be replaced by more efficient combined heat and power systems.

B3 Attach #1 of 3

Sequestration/Sequester: The process of increasing the carbon content of a carbon reservoir other than the atmosphere. Biological approaches to sequestration include direct removal of carbon dioxide from the atmosphere through afforestation, reforestation, and practices that enhance soil carbon in agriculture. Physical approaches include separation and disposal of carbon dioxide from flue gases or from processing fossil fuels to produce hydrogen- and carbon dioxide-rich fractions and long-term storage in underground depleted oil and gas reservoirs, coal seams, and saline aquifers.

Spillover (Parking): A term used to describe the effects of implementing a parking management strategy in one area that has the unintended consequence of impacting surrounding areas. For example, if parking meters are installed on all streets in a commercial/retail block with no other parking strategies implemented, customers may no longer park in the metered spots and will instead "spillover" to the surrounding residential neighborhoods where parking is unrestricted.

Suburban: An area characterized by dispersed, low-density, single-use, automobile dependent land use patterns, usually outside of the central city. Also known as a suburb.

Sulfur Dioxide (SO_2): SO_2 is generated by burning fossil fuels, industrial processes, and natural sources, such as volcanoes. Exposure to SO_2 at certain concentrations can increase incidence of pulmonary symptoms and disease, decrease pulmonary function, and lead to increased risk of mortality, especially among the elderly and people with cardiovascular disease or chronic lung disease. SO_2 deposition in the environment contributes to soil and surface water acidification and acid rain.

Title 24: Title 24, Part 6 regulates building energy efficiency standards in California. Regulated energy uses include space heating and cooling, ventilation, domestic hot water heating, and some hard-wired lighting. Title 24 determines compliance by comparing the modeled energy use of a "proposed home" to that of a minimally Title 24 compliant "standard home" of equal dimensions. Title 24 focuses on building energy efficiency per square foot; it places no limits upon the size of the house, or the actual energy used per dwelling unit. The current Title 24 standards were published in 2019.

Transit Ridership: The number of passengers who use a public transportation system, such as buses and subways.

Transportation Demand Management (TDM): A transportation strategy designed to increase the transportation system efficiency and reduce demand on the system. Common TDM strategies include discouraging single-occupancy vehicle travel; encouraging more efficient travel patterns and alternative modes of transportation (e.g., walking, bicycling, public transit, and ridesharing); and shifting travel patterns from peak to off-peak hours and to closer destinations.

Transit-Oriented Development (TOD): TOD refers to projects built in compact, walkable areas that have easy access to public transit, ideally in a location with a mix of uses, including housing, retail offices, and community facilities. TODs are generally described as places within a 10-minute walk (0.5 mile) of a high-frequency rail transit station (either rail, or bus with headways less than 15 minutes).

B3 Attach #1 of 3

Underserved (or Under-Represented), Under-Resourced, and/or Marginalized Communities: Communities that have been historically neglected by governments at all levels, whether because of policy (e.g., redlining), systemic racism, or a combination of factors. These communities are likely to not only experience greater levels of day-to-day pollution burdens, but also have greater vulnerability to climate disasters, economic disruptions, and other challenges. In addition, community members have often been excluded from decision-making and lack the resources and capacity to participate meaningfully in land use planning and other civic and political processes.

Urban: An area located within the central city with higher density land uses than in the suburbs. Often characterized by multi-family housing, tall office buildings and dense retail.

Urban Heat Island Effect: A term used to describe when a developed area is warmer than the surrounding rural areas, caused by urban land surfaces that retain heat (e.g., concrete, asphalt, metal, and other materials found in buildings and pavements). These urban surfaces can be darker than natural vegetation found in more rural areas. Darker surfaces absorb more sunlight that lighter surfaces, resulting in more heat (see *Albedo*). Urban environments also tend to have fewer plants and trees compared to rural locations. Plants and trees release water vapor to the air through transpiration, cooling the ambient temperature. Urban tree planting and measures requiring lighting building surfaces can help reduce the urban heat island effect.

Vehicle Miles Traveled (VMT): The number of miles driven by vehicles, an important traffic parameter, and the basis for most traffic-related greenhouse gas emissions calculations.

Vehicle Occupancy: The number of persons in a vehicle during a trip, including the driver and passengers.

Vulnerable Places: Places or communities with inequities in the social, economic, educational, or physical environment or environmental health and that have insufficient resources or capacity to protect and promote the health and well-being of their residents (Health and Safety Code Section 131019.5).

Vulnerable Population (to climate change): A group of individuals or a community that faces greater risks and has higher sensitivity to the impacts of climate change. Additionally, these groups may have a lower ability and/or fewer or insufficient resources to manage or recover from climate impacts. Populations may be vulnerable because of their physical environment, socio-economic demographics, political status, or other drivers. Example factors that can contribute to a population's vulnerable status include race, class, sexual orientation, sexual identification, and income-status.

Vulnerability (to climate change): The extent to which a project is susceptible to climate change. Vulnerability is the combination of a project's sensitivity, exposure, and adaptive capacity to climate hazards. Vulnerability includes susceptibility to direct climate impacts as well as secondary climate impacts. Vulnerability encompasses not only physical threats to a project's structure or facilities, but also impacts to a project's functions, operations, and users.

B3 Attach #1 of 3

References

California Environmental Justice Alliance. 2021. *California Environmental Justice Alliance*. Available: https://caleja.org/. Accessed: May 2021.

California Environmental Protection Agency. 2017. *Designation of Disadvantaged Communities Pursuant to Senate Bill 535 (De Leon)*. Available: https://calepa.ca.gov/wp-content/uploads/sites/6/2017/04/SB-535-Designation-Final.pdf. Accessed: May 2021.

National Technical Assistance and Evaluation Center for Systems of Care. 2009. *Cultural Competency*. March. Available: https://www.childwelfare.gov/pubPDFs/culturalcompetency.pdf. Accessed: September 2021.

Nelson, J., L. Spokane., L. Ross., and N. Deng. 2015. *Advancing Racial Equity and Transforming Government. A Resource Guide to Put Ideas into Action*. Local and Regional Government Alliance on Race & Equity. February.

Policy Link. 2021. *Mission Statement*. Available: https://www.policylink.org/about-us/mission-statement. Accessed: May 2021.

Race Forward. 2021. *What is Racial Equity?* Available: https://www.raceforward.org/about/what-is-racial-equity. Accessed: May 2021.

Racial Equity Tools. 2020. *Racial Equity Tools Glossary*. Available: https://www.racialequitytools.org/glossary. Accessed: May 2021.

Federal and State Planning Framework

APPENDIX B

Federal and State Planning Efforts

This appendix describes important federal and state regulations, policies, orders, guidance, and legislation related to greenhouse gas (GHG) emissions reductions, climate change vulnerability and adaptation, and public health and equity. These various directives directly influence and inform planning efforts across California. This appendix organizes federal regulations and requirements by climate change and GHG emissions and by public health and equity. State regulations and requirements are organized by GHG emissions reductions, adaptation, and public health and equity. Both sections present the regulations and requirements within each subsection chronologically. It is important to note that while rules and regulations are grouped into subcategories, many are cross-cutting across the topic areas.

The regulatory landscape is constantly shifting as amendments, revocations, and new requirements are adopted. The text in this section was drafted in 2021 and reflects the regulatory landscape as of this date. The appendix likewise is not exhaustive. Readers may need to conduct additional research to ensure they have the latest information. Links to websites and external resources that are frequently updated are presented at the conclusion of the appendix.

Federal Regulations and Requirements

Although currently there is no comprehensive federal law specifically related to climate change, climate adaptation, or the reduction of GHG emissions, in 2021, the U.S. rejoined the Paris Agreement to reduce national GHG emissions, and the federal government submitted to the United Nations Framework Convention on Climate Change

the U.S. Nationally Determined Contribution (NDC), which aims to reduce national GHG emissions 50 to 52 percent by 2030 from 2005 levels. The NDC, executive orders, and other goals and efforts of the Biden administration make up a new whole-of-government approach to reduce GHG emissions, increase resilience, improve equity, and boost economic growth (White House 2021a).

Additionally, the U.S. Environmental Protection Agency (U.S. EPA) is charged with implementing the federal Clean Air Act (CAA) and related regulations, and U.S. EPA and the National Highway Traffic and Safety Administration (NHTSA) implement fuel efficiency standards that have a direct effect on GHG emissions and public health and safety. The Civil Rights Act and several executive orders aim to improve equity and address environmental injustice. These regulations and rules are summarized below.

Climate Change and GHG Emissions

Clean Air Act and National Ambient Air Quality Standards (1963)

The CAA was enacted in 1963 and has been amended numerous times since (1965, 1967, 1970, 1977, and 1990). The CAA established federal national ambient air quality standards for six criteria air pollutants—lead, sulfur dioxide, particulate matter, ozone, carbon monoxide, and nitrogen dioxide—and specifies future dates for achieving compliance. These standards were set to improve air quality and public health outcomes. The CAA also mandates that states submit and implement a state implementation plan (SIP) for local areas not meeting those standards. The SIPs must include pollution control measures that demonstrate how the standards will be met (U.S. EPA 2021).

National Environmental Policy Act (1970)

Signed in 1970, the National Environmental Policy Act (NEPA) requires federal agencies to incorporate environmental considerations into planning and decision-making processes by using a systematic interdisciplinary approach. The purpose of NEPA is "to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans," (42 United States Code [U.S.C.] 4331(a)). Each federal agency has adopted its own NEPA procedures, but all must assess the potential environmental effects, and related social and economic effects, of proposed actions and alternative actions (U.S. EPA 2020a). The assessments must be reported in an environmental assessment (EA) that includes the following.

- The environmental impacts of the proposed action.
- Any adverse effects that cannot be avoided.
- Alternatives to the proposed action.
- The relationship between local short-term uses of the environment and the long-term productivity.
- Any irreversible and irretrievable commitments of resources that would be involved in the proposed action 42 U.S.C. 4332(2)(C).

B3 Attach #1 of 3

If the EA determines the environmental impacts of the proposed action will be significant, the agency must prepare an environmental impact statement, which involves much stricter requirements, greater public participation, and a more detailed analysis.

CAFE Standards (1975)

The Corporate Average Fuel Economy (CAFE) standards were first enacted in 1975 to reduce energy consumption by improving the fuel economy of vehicles. The standards set fleet-wide averages that each automaker must meet. By improving the fuel efficiency of vehicles, the standards improve national energy security, save consumers money, and reduce GHG emissions.

Mandatory Greenhouse Gas Reporting Rule (2009)

In 2009, U.S. EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the 2008 Consolidated Appropriations Act, which required U.S. EPA to develop mandatory reporting of greenhouse gases above appropriate thresholds. The Reporting Rule applies to most entities that emit 25,000 metric tons (MT) of carbon dioxide equivalent (CO_2e) or more per year. Starting in 2010, facility owners were required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements to help U.S. EPA to verify annual GHG emissions reports (U.S. EPA 2016).

Endangerment and Cause or Contribute Findings (2009)

In 2009, U.S. EPA signed the Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the CAA. Under the Endangerment Finding, U.S. EPA found that the current and projected concentrations of the six key GHGs—carbon dioxide (CO_2), methane (CH_4), nitrous oxide, perfluorinated carbons, sulfur hexafluoride, and hydrofluorocarbons—in the atmosphere threaten the public health and welfare of current and future generations. U.S. EPA also found that the combined emissions of these GHGs from motor vehicle engines contribute to the GHG pollution that threatens public health and welfare (U.S. EPA 2020b).

Executive Order 13547—Stewardship of the Ocean, Our Coasts, and the Great Lakes (2010)

In 2010, Executive Order 13547, also known as the National Ocean Policy, was signed by the president to protect, maintain, and restore the quality of ocean and coastal ecosystems. This order aims to protect aquatic resources, improve sustainable ocean and coastal businesses, and help adapt to and manage climate change and ocean acidification. The order also established a National Ocean Council to guide policy and action (White House 2010).

B3 Attach #1 of 3

GHG Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles (2011, 2016)

In 2011, the U.S. EPA and NHTSA issued a final rule for GHG emissions standards and fuel efficiency standards for medium- and heavy-duty engines and vehicles. This rule includes three regulatory categories of heavy-duty vehicles—combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles—and applies to model years 2014–2018. U.S. EPA and NHTSA estimate that these standards will reduce CO_2 emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of vehicles built for these model years, generating $49 billion in net program benefits.

The U.S. EPA and NHTSA established Phase 2 of these standards in 2016, which apply to model years 2019–2027 medium- and heavy-duty vehicles. The agencies expect the standards to reduce CO_2 emissions by approximately 1.1 billion metric tons, save $170 billion in fuel costs, and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles built for these model years (U.S. EPA 2020c).

CAFE Standards (2012)

The 2012 CAFE standards (for model years 2017 to 2025) update incorporated stricter fuel economy requirements promulgated by U.S. EPA and NHTSA. The 2012 standards established GHG emissions regulations that required new passenger cars and light trucks to reach 54.5 miles per gallon in 2025. The program also included incentives to encourage adoption of new technologies to improve vehicle performance, such as electric vehicles (U.S DOT 2014).

SAFE Rule (2020)

In 2018, the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule was proposed, which would amend prior CAFE and GHG emissions standards and create new standards for model year 2021 to 2026 vehicles and reduce fuel economy requirements. In September 2019, NHTSA and U.S. EPA established "The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program," which withdrew California's ability to create its own fuel economy standards under the CAA, which was finalized in 2020 (NHTSA 2020). The One National Program Rule enables U.S. EPA/NHTSA to provide nationwide uniform fuel economy and GHG vehicle standards, specifically by 1) clarifying that federal law preempts state and local tailpipe GHG standards, 2) affirming NHTSA's statutory authority to set nationally applicable fuel economy standards, and 3) withdrawing California's CAA preemption waiver to set state-specific standards.

U.S. EPA and NHTSA published their decisions to withdraw California's waiver and finalize regulatory text related to the preemption on September 27, 2019 (Part One of the SAFE Vehicles Rule) (84 Fed. Reg. 51310). U.S. EPA and NTHSA published final rules to amend and establish national CO_2 and fuel economy standards on April 30, 2020 (Part Two of the SAFE Vehicles Rule) (85 Fed. Reg. 24174). The revised rule changes the national fuel economy standards for light duty vehicles from 46.7 mpg to 40.4 mpg in

B3 Attach #1 of 3

future years. California, 22 other states, the District of Columbia filed a petition for review of the final rule on May 27, 2020.

On January 20, 2021, President Joseph Biden issued an executive order directing U.S. EPA and NHTSA to review the SAFE Vehicles Rule and propose a new rule suspending, revising, or rescinding it. On April 22, 2021, NTHSA issued a notice of proposed rulemaking to repeal the SAFE Vehicles Rule (49 Code of Federal Regulations Parts 531 and 533).

Public Health and Equity

Title VI of the Civil Rights Act (1964)

Passed in 1964, the Civil Rights Act is a law that protects civil rights and outlaws discrimination based on race, color, religion, sex, and national origin. Title VI specifically prohibits discrimination based on race, color, or national origin by any program or activity that receives federal funds, and any recipient of federal funds found to be violating Title VI may lose federal funding. Title VI requires each federal department and agency to execute the provisions of the act.

Executive Order 12898 (1994)

Executive Order 12898 was signed in 1994 and orders all federal agencies to make achieving environmental justice part of their mission. Agencies are directed to identify and address disproportionately high and adverse human health or environmental effects of agency programs, policies, and activities on minority and low-income populations. The order also established an Interagency Working Group on Environmental Justice that comprises the heads of numerous federal departments, agencies, and other bodies. The Working Group provides guidance to federal agencies on setting criteria to identify disproportionate effects, and to provide coordination and cooperation among agencies to develop projects and strategies that improve environmental justice outcomes (*Federal Register* 1994).

Environmental Justice Guidance Under the National Environmental Policy Act (1997)

In response to Executive Order 12898, the White House Council on Environmental Quality developed guidance for agencies to carry out the order, documented in a report titled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. The guidance includes six principles for environmental justice analyses and provides guidance for how to assess human health or environmental effects on low-income, minority, and tribal communities and how to create opportunities for such communities and the public to participate in related planning processes (CEQ 1997). Following this guidance, federal agencies have developed (and since updated) plans, guidance, or strategies to address environmental justice through agency actions.

B3 Attach #1 of 3

Executive Order 13985—Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (2021)

Executive Order 13985 aims to advance racial equity by addressing issues that have historically created inequity, and to advance civil rights, social justice, and equal opportunity. The directive declares that the government will address historic failures to invest sufficiently, justly, and equally in underserved communities, and will increase investment in underserved communities by promoting equitable delivery of government benefits and opportunities. To do so, it directs agencies to conduct equity assessments and allocate resources to advance fairness and opportunity. The order defines equity as "the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment," including minorities, LGBTQ+, disabled, rural, poor, and other disadvantaged groups (White House 2021a).

Executive Order 13990—Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (2021)

Executive Order 13990 declares a recommitment to follow scientific evidence in decision-making processes to advance public health and environment outcomes. More specifically, it states the administration's intent to ensure clean air and water, reduce GHG emissions, limit pollution and hold polluters responsible, reduce exposure to toxic chemicals, enhance environmental justice, bolster climate change resilience, and create well-paying union jobs. To do so, the order directs all executive departments and agencies to review all federal regulations and other actions made in the prior administration, and address those that conflict with the new national objectives. Specifically, it requires agency heads to propose suspending, revising, or rescinding the following rules.

- Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Reconsideration.
- The SAFE Vehicles Rule Part One: One National Program.
- Energy Conservation Program for Appliance Standards: Procedures for Use in New or Revised Energy Conservation Standards and Test Procedures for Consumer Products and Commercial/Industrial Equipment.
- National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units—Reconsideration of Supplemental Finding and Residual Risk and Technology Review.

In carrying out these reviews, agencies must seek input from environmental justice organizations and other stakeholders. Additional mandates include revoking the permit for the Keystone XL pipeline and barring oil drilling in the Arctic National Wildlife Refuge, reviewing the possibility of restoring national monuments, and mandating the development of a social cost of carbon and social cost of CH_4 to be used by agencies in accounting procedures (White House 2021b).

B3 Attach #1 of 3

State Regulations and Rules

California has adopted numerous statewide laws, regulations, and policies to address GHG emissions reductions, climate adaptation, and public health and equity. In many instances, California has been a trailblazer and standard setter for climate-related regulations and program. For example, California passed the Pavley 1 rule in 2002, which set the nation's first GHG standards for automobiles, and the state's GHG cap-and-trade program was the first multi-sector cap-and-trade program in North America.

GHG Emission Reductions

California Environmental Quality Act (1970)

The California Environmental Quality Act (CEQA) guidelines explain how to determine if an activity is subject to environmental review, what steps are involved in the environmental review process, and what environmental documents are required. Specifically, they require agencies to describe, calculate, or estimate the amount of GHG emissions that are expected to result from a project. They also require a determination of whether the project would directly exacerbate climate change effects (for example by increasing wildfire potential in areas where wildfire is more likely due to climate change). CEQA Guidelines apply to public agencies. CEQA Guidelines confirm agencies have discretion to determine appropriate significance thresholds, but require the preparation of an environmental impact report if "there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with adopted regulations or requirements" (AEP 2010). The guidelines were updated in 2010 and 2018 to include revisions to transportation impact analysis and GHG emissions analysis (OPR 2021a).

Assembly Bill 1493—Pavley Rules (2002, Amendments 2009)

Known as "Pavley I," AB 1493 set the nation's first GHG standards for automobiles. AB 1493 requires the California Air Resources Board (CARB) to adopt vehicle standards that will lower GHG emissions from new light-duty autos to the maximum extent feasible beginning in 2009 (CARB 2021a). In 2012, CARB strengthened the Pavley standards through the Advanced Clean Cars regulations, which limit GHG emissions from passenger vehicles for model years 2017–2025 (CARB 2021b).

Senate Bill 1078 (2002), Senate Bill 107 (2006), Senate Bill 2 (2011), Senate Bill 350 (2015), Senate Bill 100 (2018)—Renewables Portfolio Standard

SB 1078 and SB 107, California's Renewables Portfolio Standard, obligates investor-owned utilities, energy service providers, and Community Choice Aggregations to procure an additional 1 percent of retail sales per year from eligible renewable sources until 20 percent is reached, by no later than 2010. The California Public Utilities Commission and California Energy Commission are jointly responsible for implementing the program. Senate Bill (SB) X 1-2, passed in 2011, expanded the target to 33 percent of retail sales by 2020. Next, SB 350 (passed in 2015) established an ambitious long-term target to source 50 percent of

B3 Attach #1 of 3

electricity retail sales from renewable resources by 2030 (CARB 2021c). In 2018, SB 100 raised the 2030 target to 60 percent, and mandates that California source 100 percent of its electricity from carbon-free resources by 2045 (California Legislative Information 2018a).

Executive Order S-3-05 (2005)

Executive Order S-3-05 states that California is vulnerable to the effects of climate change and to help mitigate it, established the following GHG emissions reduction targets for state agencies.

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The Executive Order also requires the secretary of the California Environmental Protection Agency (CalEPA) to report to the governor and state legislature biannually the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions and meeting the targets established in this Executive Order (Office of Governor 2005).

Assembly Bill 32—California Global Warming Solutions Act (2006)

In 2006, AB 32—the California Global Warming Solutions Act of 2006—was adopted by the state legislature. AB 32 established a cap on statewide GHG emissions and created a regulatory framework to reduce emissions. Under AB 32, CARB is required to take the following actions:

- Adopt early action measures to reduce GHGs,
- Establish a statewide GHG emissions cap for 2020 based on 1990 emissions,
- Adopt mandatory reporting rules for significant GHG sources,
- Adopt a scoping plan indicating how emission reductions would be achieved through regulations, market mechanisms, and other actions, and
- Adopt regulations needed to achieve the maximum technologically feasible and cost-effective reductions in GHGs (CARB 2018a).

Executive Order S-01-07—Low Carbon Fuel Standard (2007)

Executive Order S-01-07 establishes a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. The executive order initiated a research and regulatory process at CARB, which led to regulation that became effective in 2010 (CARB 2021c). In 2018, CARB passed amendments to the LCFS that set a target to reduce fuel carbon intensity by 20 percent by 2030, compared to a 2010 baseline (CARB 2018b).

B3 Attach #1 of 3

California Air Resources Board Greenhouse Gas Mandatory Reporting Rule Title 17 (2007)

In 2007, CARB approved a rule requiring mandatory reporting of GHG emissions from certain sources, pursuant to AB 32. Facilities subject to the rule started to report their emissions from the calendar year 2009 and were required to have those emissions verified by a third party in 2010. The rule applies to facilities emitting more than 25,000 MT CO_2e in any given calendar year, or electricity generating facilities with a generating capacity greater than 1 megawatt and/or emitting more than 25,000 MT CO_2e per year. Additional requirements also apply to cement plants and entities that buy and sell electricity in-state. The most recent amendments to the regulation were made in 2018, and became effective in April of 2019, for 2019 data (CARB 2021d). These amendments more clearly define current requirements for calculation and reporting, ensure that electricity import emissions are fully accounted for, and support the state's GHG cap-and-trade program.

Senate Bill 375—Sustainable Communities Strategy (2008)

SB 375 provides a planning process that coordinates land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction goals established in AB 32. SB 375 requires regional transportation plans developed by metropolitan planning organizations to incorporate a sustainable communities strategy in their regional transportation plans. The goal of the SCS is to reduce regional vehicle miles traveled (VMT) through land use planning and transportation planning. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development (Institute for Local Government 2015).

Greenhouse Gas Cap-and-Trade Program (2011)

In 2011, CARB adopted a cap-and-trade program for California. The program is a key mechanism to reduce statewide GHG emissions and achieve California's GHG reduction goals. The cap-and-trade program created a market-based system that set an overall emissions limit (a "cap") for specific sectors, which is reduced annually. The program currently regulates more than 85 percent of California's emissions, including emissions from electricity generation, large industrial sources, fuel combustion, and transportation. Revenues from the program are deposited into a GHG Reduction Fund, which then distributes appropriations to state agencies to implement programs that reduce GHG emissions (35 percent of funds are required to be directed toward environmentally disadvantaged and low-income communities). More than $5 billion in revenue has been generated since the program began. In 2014, the program linked with Quebec, Canada's cap-and-trade program through the Western Climate Initiative (C2ES n.d.).

Assembly Bill 341 (2011)

AB 341 was passed in 2011 and sets requirements for the statewide mandatory commercial recycling program. The purpose of the law is to reduce GHG emissions by diverting commercial solid waste to recycling facilities and to expand recycling services.

B3 Attach #1 of 3

AB 341 requires businesses and public entities that generate four cubic yards or more of commercial solid waste and multifamily residential buildings of five units or more to arrange for recycling services. It also requires local jurisdictions to implement a commercial solid waste recycling program, including education, outreach, and monitoring to help divert waste, and to report progress annually. CalRecycle must review each jurisdiction's program periodically (CalRecycle 2020a).

Senate Bill 743 (2013)

SB 743, passed in 2013, required revisions to the CEQA Guidelines (which occurred in 2018 and became effective in 2020) to establish new impact analysis criteria for the assessment of a project's transportation impacts. The intent behind SB 743 and the CEQA Guidelines revision was to integrate and better balance the needs of congestion management, infill development, active transportation, and GHG emissions reduction (Caltrans 2021). Starting on July 1, 2020, agencies are required to look at VMT instead of levels of service when analyzing the transportation impacts of new projects. The change was made because VMT is a better measure of the transportation system's impact on the climate, environment, and human health, and also indicates access to economic and social opportunity (OPR 2021b).

Assembly Bill 1826 (2014)

AB 1826 was passed in 2014 and requires businesses and public entities that generate four cubic yards or more of commercial solid waste and multifamily residential buildings of five units or more to arrange for organic waste (e.g., food and lawncare waste) recycling services and for local jurisdictions to implement organic waste recycling programs. A 2014 report found that approximately one-third of overall waste was organic waste and seven percent was compostable paper. AB 1826 targeted this waste stream to reduce GHGs and to use the waste for more beneficial purposes such as compost, mulch, and biofuel production. The law phased in requirements over time and exempted rural counties. In 2020, CalRecycle reduced the threshold to 2 cubic yards of solid waste (CalRecycle 2020b).

Senate Bill 605 (2014) and Senate Bill 1383 (2016)—Short-Lived Climate Pollutants Reduction Strategy

SB 605 (passed in 2014) directed CARB, in coordination with other state agencies and local air districts, to develop a comprehensive Short-Lived Climate Pollutants (SLCP) Reduction Strategy. SB 1383 (passed in 2016) directed CARB to approve and implement the SLCP Reduction Strategy to achieve the following reductions in SLCPs.

- 40 percent reduction in CH_4 below 2013 levels by 2030.
- 40 percent reduction in hydrofluorocarbon gases below 2013 levels by 2030.
- 50 percent reduction in anthropogenic black carbon below 2013 levels by 2030.

The bill also establishes the following targets for reducing organic waste in landfills and CH_4 emissions from dairy and livestock operations.

B3 Attach #1 of 3

- 50 percent reduction in organic waste disposal from the 2014 level by 2020.
- 75 percent reduction in organic waste disposal from the 2014 level by 2025.
- 40 percent reduction in CH_4 emissions from livestock manure management operations and dairy manure management operations below the dairy and livestock sector's 2013 levels by 2030 (BAAQMD 2020).

Final regulations to achieve the GHG reduction goals expressed in SB 1383 were codified under the California Code of Regulations (Title 14, Division 7, Chapters 3 and Title 27, Division 2, Chapters 2, 3, and 4) in November 2020. The regulation goes into effect on January 1, 2022.

Executive Order B-30-15 (2015)

Signed in 2015, Executive Order B-30-15 establishes the connection between reducing GHG emissions to limit future climate change and adapting to current and future climate change impacts. It established a statewide interim GHG reduction target to reduce GHG emissions by 40 percent below 1990 levels by 2030 to ensure the state reduces emissions 80 percent below 1990 levels by 2050, and mandated state agencies to implement measures to achieve these targets. It also requires that the California Natural Resources Agency (CNRA) update the state's climate adaptation strategy—Safeguarding California—every three years. The strategy must:

- Identify vulnerabilities to climate change by sector and regions;
- Outline the primary risks to residents, property, communities, and natural systems and identify priority actions to reduce those risks; and
- Identify a lead agency or group of agencies to lead adaptation efforts in each sector.

The order also requires state agencies to take into account current and future climate impacts in all planning and investment decisions (Office of Governor 2015).

Senate Bill 32—California Global Warming Solutions Act (2016)

In 2016, the California legislature passed SB 32, which mandates a 40 percent reduction in GHG emissions from 1990 levels by 2030 and directs CARB to use the most advanced technology feasible to achieve cost-efficient reductions in GHG emissions. SB 32 also includes an environmental justice component that requires GHG reduction targets to be met in a way that benefits the most disadvantaged communities, which are often most affected by climate change (California Legislative Information 2016b).

Assembly Bill 197—State Air Resources Board: Greenhouse Gases – Regulations (2016)

In 2016, the California Assembly passed AB 197, which provides guidance to CARB on enacting GHG emission reduction measures and making air emissions data more accessible to the public. Specifically, AB 197 requires the following.

- Presenting GHG benchmarks and toxic air contaminant data to the public.

B3 Attach #1 of 3

- Considering social costs of GHG emissions.
- Prioritizing reductions from large stationary sources and mobile sources when passing emission reduction rules and regulations that protect disadvantaged communities.
- Identifying the following for each GHG emissions reduction measure.
  - Potential range of GHG emission reductions.
  - Potential range of air pollution reductions.
  - Cost-effectiveness of the measure (including social costs) (California Legislative Information 2016a).

2017 Climate Change Scoping Plan (2017)

CARB adopted the *2017 Climate Change Scoping Plan* in November 2017 to meet the GHG reduction requirement set forth in SB 32. The plan outlines how the State can reach the 2030 climate target to reduce GHG emissions by 40 percent from 1990 levels and provides a path for state regulators and policymakers to follow. Specifically, it describes how California can build on past policies and increase electric vehicle adoption, generate cleaner electricity, design denser and more walkable communities, improve energy efficiency, and reduce agricultural pollution (CARB 2021e).

Executive Order B-55-18 (2018)

Executive Order B-55-18 established a new state goal to achieve carbon neutrality as soon as possible, and no later than 2045, and to achieve and maintain net negative emissions thereafter. To track progress toward this goal, it orders CARB to work with state agencies to develop an implementation and accounting framework. It also states that all policies and programs undertaken to achieve the goal should support climate adaptation, resource conservation, biodiversity, and improve public health in urban and rural communities, particularly low-income and disadvantaged communities (Office of Governor 2018).

Innovative Clean Transit Regulation (2019)

Adopted in 2019, the Innovative Clean Transit (ICT) regulation requires all public transit agencies to transition to a 100 percent zero-emission bus fleet by 2040 and requires large transit agencies to begin to purchase zero-emission buses (ZEBs) as early as 2023. Large and small transit agencies must submit their ZEB rollout plans by July 1, 2020, and July 1, 2023, respectively. The agencies are required to phase in the proportion of ZEBs purchased over time. State funding to transit agencies is contingent upon the agencies purchasing the required level of ZEBs.

The ICT also encourages agencies to provide innovative first- and last-mile connectivity for riders. The ICT will significantly reduce NO_x and GHG emissions, especially in transit-dependent and disadvantaged communities, and is expected to provide other benefits including reduced dependency on fossil fuels, expanding the zero-emissions vehicle industry, creating high quality green jobs, and improving mobility and connectivity (CARB 2021g).

B3 Attach #1 of 3

California Green Building Standards Code (2019)

The California Green Building Standards Code (Part 11, Title 24), known as CALGreen, was adopted in 2007 as part of the California Building Standards Code. It established voluntary standards that became mandatory under the 2010 edition of the code. These involved sustainable site development, energy efficiency (above California Energy Code requirements), water conservation (e.g., low-flow fixtures), material conservation, and reducing internal air contaminants. As of the writing of this Handbook, the current energy efficiency standards were adopted in 2019 and took effect in 2020 (California Building Standards Commission 2019).

California 2030 Natural and Working Lands Climate Change Implementation Plan (2019)

In 2019, CARB, CNRA, CalEPA, and other state agencies released the 2030 Natural and Working Lands Climate Change Implementation Plan that describes how effectively utilizing natural and working lands can help reduce GHG emissions and improve resilience. The plan outlines specific conservation, restoration, and management activities that will improve resilience, maintain a natural carbon sink, and improve environmental quality. The plan sets a goal to at minimum double the pace and scale of State-supported land activities by 2030 and beyond. Additionally, by 2030, the plan strives to do the following.

- Double the rate of State-funded forest management or restoration efforts.
- Triple the rate of State-funded oak woodland and riparian restoration.
- Quintuple the number of acres of cultivated lands and rangelands under State-funded soil conservation practices.
- Double the rate of State-funded wetland and seagrass restoration.

The plan estimates that these activities will decrease emissions by 12.4 to 35.9 million MT CO_2e by 2030 and reduce emissions by 83.1 to 84.2 million MT CO_2e by 2045. (CARB 2019).

Advanced Clean Truck Regulation (2020)

CARB adopted the Advanced Clean Truck (ACT) Regulation in June 2020 to accelerate a large-scale transition to zero-emission medium- and heavy-duty vehicles. The purpose of the regulation is to reduce NO_x and GHG emissions to improve air quality and public health. The regulation requires the sale of zero-emission medium- and heavy-duty vehicles as an increasing percentage of total annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55 percent of Class 2b–3 truck sales, 75 percent of Class 4–8 straight truck sales, and 40 percent of truck tractor sales. By 2045, every new medium- and heavy-duty truck sold in California will be zero-emission. The regulation requires fleet owners with 50 or more trucks to report on their existing fleet operations. The regulation is the first in the world to require manufacturers to sell increasing percentages of zero-emissions trucks (ICCT 2020). This effort is currently in litigation.

B3 Attach #1 of 3

Climate Adaptation

Executive Order S-13-08 (2008)

Signed in 2008, Executive Order S-13-08 requires the CNRA to develop a state Climate Adaptation Strategy (described below) in partnership with local, regional, state, and federal entities. It also requires the development of a California Sea Level Rise Assessment Report that is reviewed every two years. Among other directives, it directs state agencies planning construction projects to assess their vulnerability to sea level rise and other climate change impacts (Adaptation Clearinghouse 2008).

California Climate Adaptation Strategy (2009) and Update (2018)

In 2009, California adopted a statewide Climate Adaptation Strategy (CAS) that summarized climate change impacts and recommended adaptation strategies for seven sectors—public health, biodiversity and habitat, oceans and coastal resources, water, agriculture, forestry, and transportation and energy. In 2018, the CNRA updated the CAS to lay out ongoing climate actions, cost-effective and achievable next steps to respond to climate change in 11 sectors, and overarching strategies to make California more resilient to climate change (CNRA 2018).

Senate Bill 246—Integrated Climate Adaptation and Resiliency Program (2015)

Signed in 2015, SB 246 establishes a statewide plan for integrated climate adaptation and resiliency that coordinates regional and local efforts with state strategies to effectively adapt to climate change. The program emphasizes climate equity considerations throughout all sectors and regions to help develop holistic strategies for climate adaptation. The bill requires numerous state agencies and other government bodies to coordinate with local and regional efforts to do the following.

- Develop tools and guidance.
- Promote and coordinate state agency support for local and regional efforts.
- Inform state-led programs to better facilitate local and regional goals and efforts to improve adaptation and resilience (California Legislative Information 2015).

As a result of SB 246, in 2020, a new version of the California Climate Adaptation Planning Guide was developed by the California Governor's Office of Emergency Services and OPR to include new requirements for local adaptation planning.

Senate Bill 379 (2015)

SB 379 was adopted in 2015 to ensure that climate adaptation is integrated into local jurisdictions' general plan processes. Jurisdictions must review and update the safety elements of their general plans to include climate adaptation and resilience strategies. The bill requires jurisdictions to do the following in their safety element review and update.

1. Conduct a vulnerability assessment that identifies climate change risks.

B3 Attach #1 of 3

2. Set adaptation and resilience goals, policies, and objectives based on the vulnerability assessment.
3. Set feasible implementation measures to achieve the goals and objectives.

Jurisdictions with a local hazard mitigation plan (LHMP) or a climate adaptation plan that meet these requirements can comply with SB 379 by incorporating these documents by summary in the safety element. For jurisdictions that have already adopted a local hazard mitigation plan, these requirements were to be satisfied upon the next of the LHMP starting January 1, 2017; those without an LHMP must update the safety element of the general plan by January 1, 2022 (OPR 2017).

Sea-Level Rise Policy Guidance (2015) and Science Update (2018)

The California Coastal Commission adopted the Sea-Level Rise Policy Guidance in 2015. The guidance provides an overview of the sea level rise science and a methodology for addressing sea level rise in the Coastal Commission planning and regulatory actions. The Coastal Commission describes the guidance as "a menu of options" that local planners can select from as appropriate, rather than a checklist of requirements. The guidance is broadly applicable and is used by the Coastal Commission, local governments, project applicants, and other stakeholders.

In 2018, the Coastal Commission adopted a "Science Update" to the guidance that integrates the best available scientific data. The update provides broad recommendations for how to plan for and address sea level rise impacts, and includes new projections that can inform planning, permitting, investment, and other decisions (CCC 2019).

California Water Action Plan (2016)

The California Water Action Plan sets forth a collection of actions developed by the CNRA, California Department of Food and Agriculture, and CalEPA with the goals to improve reliable water supply, restore the state's ecosystems, and build a resilient and sustainable water resource system. The plan provides specific actions to improve water conservation, protect and restore ecosystems, improve drought planning, expand water storage, recycle water, and identify sustainable and integrated financing opportunities. The Water Action Plan also emphasizes diversified regional supply portfolios to increase resilience to droughts, floods, population growth, and climate change (CNRA 2016).

State Water Board Resolution 2017-0012—Comprehensive Response to Climate Change (2017)

The State Water Resources Control Board (State Water Board) has taken a variety of actions to respond to climate change, including the adoption of Resolution 2017-0012 in 2017, known as the Comprehensive Response to Climate Change. The resolution requires that proactive measures to respond to climate change must be integrated into all State Water Board actions. The resolution outlines specific measures to reduce GHG emissions, improve ecosystem resilience, and respond to climate change impacts. Some measures include capturing CH_4 to support the SLCP Reduction strategy, improve water efficiency and

conservation, recycle water, improve storm water capture infiltration, and improve energy efficiency and use renewable energy to power water systems (State Water Board 2017).

Senate Bill 901—Wildfire Preparedness and Response (2018)

The Wildfire Preparedness and Response bill, signed in 2018, supports the state's climate adaptation and resilience efforts in response to increasingly frequent and extreme wildfires. The bill allocates $200 million annually from 2019 through 2024 to fund grants to fire departments, cities, counties, and nonprofit organizations to help reduce forest fuel loads with thinning and prescribed burns in high-risk areas. The California Department of Forestry and Fire Protection (CAL FIRE) distributes the funding and will create a Wildfire Resilience Program to provide technical assistance to non-industrial timberland owners. It also requires CARB to develop a standardized approach to quantifying the carbon emissions from fuel reduction activities and the emissions attributed to wildfires. Furthermore, SB 901 creates a s process for electrical utilities to seek approval to recoup costs from wildfires, but also requires them to create and implement wildfire mitigation plans (Adaptation Clearinghouse 2018).

Senate Bill 1035 (2018)

Local California jurisdictions are required to adopt a comprehensive, long-term general plan that includes, among other things, a housing element and safety element to protect against geologic and climatic hazards. SB 1035 requires local planning agencies to review, and if necessary, revise the safety element during each revision of the housing element or a local hazard mitigation plan, and not less than once every eight years. The review must identify any new information related to flood and fire hazards and adaptation and resiliency strategies that are applicable to the jurisdiction (California Legislative Information 2018b).

Public Health and Equity

Senate Bill 535 (2012) and Assembly Bill 1550 (2016)—Disadvantaged and Low-Income Communities

SB 535 requires California to invest a portion of the proceeds from cap-and-trade auctions—the Greenhouse Gas Reduction Fund (GGRF)—in disadvantaged communities. At least 25 percent of funds must benefit disadvantaged communities, and at least 10 percent must be invested directly in disadvantaged communities. In 2016, AB 1550 updated the GGRF funding targets to 25 percent for projects located within and directly benefiting disadvantaged communities, and 10 percent for low-income households or communities.

SB 535 requires CalEPA to identify disadvantaged communities in California based on environmental pollution burden, exposure, socioeconomic characteristics, and other criteria. To identify communities, CalEPA relied upon the California Communities Environmental Health Screening Tool (CalEnviroScreen), which scores all census tracts in California for their exposure and vulnerability to pollution burden. CalEPA defined disadvantaged communities as those scoring in the top 25th percentile of CalEnviroScreen scores.

Low-income households and census tracts are defined as those at or below 80 percent of the statewide median income, or at or below the low-income threshold for each county set by the California Department of Housing and Community Development.

Senate Bill 1000—Land Use: General Plans: Safety and Environmental Justice (2016)

SB 1000 requires cities and counties with disadvantaged communities to include an environmental justice element in their General Plans to ensure that local governments address environmental justice when planning long-term goals and policies related to land use and growth. To do so, local governments must identify any disadvantaged communities and develop measures to mitigate and reduce health risks that can be attributed to the environment. Additionally, the bill requires cities and counties to create policies to include members of disadvantaged communities in decision-making processes and to prioritize projects and improvements in those communities (Strategic Growth Council 2021). OPR has developed updated and expanded guidance on environmental justice and SB 1000 (OPR 2021).

Assembly Bill 2722—Transformative Climate Communities Program (2016)

AB 2722 was signed in 2016 to help create more sustainable cities, address climate justice, and help California meet its GHG emissions reduction goals. To achieve this, the California Strategic Growth Council created the Transformative Climate Communities program, which issues competitive grants to eligible entities to help develop "transformative" climate community plans. Entities must use the funds to implement community plans that improve air and water quality, reduce GHG emissions, and that show the potential to provide climate, economic, employment, health, and environmental benefits to disadvantaged communities. Up to $250 million in funding will be provided for the program (California Legislative Information 2016c).

Assembly Bill 617 (2017)

Passed in 2017, AB 617 requires the State to develop a statewide annual reporting system for emissions of criteria air pollutants and toxic air contaminants for certain stationary sources. It also requires the State to prepare a monitoring plan for emissions and to prepare a statewide strategy to reduce emissions of toxic air contaminants and criteria pollutants in communities that experience a high cumulative exposure burden. Environmental justice groups and other stakeholders must be consulted in developing the monitoring plan, and the reduction strategy must be updated every five years. Furthermore, the law requires the provision of grants to community organizations for technical assistance and requires air districts to adopt community emissions reduction programs (California Legislative Information 2017).

In response, CARB established the Community Air Protection Program (CAPP), which focuses on reducing pollution exposure to communities that are most affected by air pollution. CAPP includes community air monitoring and emissions reductions programs, which are funded to deploy clean technologies in communities. Additional funding is used

B3 Attach #1 of 3

to retrofit pollution controls on industrial sources. The CAPP also increases penalty fees for polluters and improves transparency and greater access to air quality and emissions data (CARB 2021f).

Additional Resources

For additional information, interested readers can reference the following resources. Please also refer to Chapter 6, *Resources to Support Resilient and Equitable Emission Reduction Planning*.

- **CNRA's (2018) *Safeguarding California Plan: 2018 Update***. The plan provides a timeline highlighting climate adaptation policies in California.
- **Georgetown Climate Center (n.d.)**. The Georgetown Climate Center offers an overview of and links to all state and agency laws and policies, as well as local and regional plans that guide California's approach to planning for climate change.
- **CARB (2021h) Local Actions for Climate Change**. CARB's website provides background information and resources to help local government take part in helping California achieve its climate goals.
- **Berkeley Law (2021) California Climate Policy Dashboard**. The dashboard collects all major state laws and programs in a concise format to provide background and direct links to resources related to climate policies.
- **OPR's (2021c) Resilient California Adaptation Clearinghouse**: The State's Adaptation Clearinghouse is a searchable database of the many resources that are useful for local, regional, and state adaptation planning efforts. Resources include tools, case studies, guidelines, scientific reports, and more. It also contains a clearinghouse for equity and environmental justice.
- **ARCCA (2021) Website**: The Alliance of Regional Collaborative for Climate Adaptation (ARCCA) is a network of regional collaboratives and allies that work to advance statewide adaptation and community resilience efforts. Their website tracks the latest policy updates, describes ongoing resilience and equity initiatives, and provides additional resources such as toolkits and roadmaps.

References

Adaptation Clearinghouse. 2008. *California Executive Order S-13-08 Requiring State Adaptation Strategy*. Available: https://www.adaptationclearinghouse.org/resources/california-executive-order-s-13-08-requiring-state-adaptation-strategy.html. Accessed: May 2021.

Adaptation Clearinghouse. 2018. *California SB 901—Wildfire Preparedness and Response*. Available: https://www.adaptationclearinghouse.org/resources/california-sb-901-wildfire-preparedness-and-response.html. Accessed: May 2021.

B3 Attach #1 of 3

Alliance of Regional Collaboratives for Climate Adaptation (ARCCA). 2021. *Working Together to Build Health Communities Across California*. Available: https://arccacalifornia.org/. Accessed: May 2021.

Association of Environmental Professionals (AEP). 2010. *California Environmental Quality Act (CEQA) Statue and Guidelines.* Available: https://resources.ca.gov/CNRALegacyFiles/ceqa/docs/2010_CEQA_Statutes_and_Guidelines.pdf. Accessed: May 2021.

Bay Area Air Quality Management District (BAAQMD). 2020. *Request for Comments Report Regulation 13, Climate Pollutants: Rule 2, Organic Material Handling Operations.* Available: https://www.baaqmd.gov/~/media/dotgov/files/rules/regulation-13-rule-2/documents/20200127_rfc_r1302-pdf.pdf?la=en. Accessed: May 2021.

Berkeley Law. 2021. California Climate Policy Dashboard. Available: https://www.law.berkeley.edu/research/clee/research/climate/climate-policy-dashboard/. Accessed: May 2021.

California Air Resources Board (CARB). 2018a. *AB 32 Global Warming Solutions Act of 2006*. Available: https://ww2.arb.ca.gov/resources/fact-sheets/ab-32-global-warming-solutions-act-2006. Accessed: May 2021.

California Air Resources Board (CARB). 2018b. *Amendments to the Low Carbon Fuel Standard Regulation and to the Regulation on Commercialization of Alternative Diesel Fuels*. Available: https://ww3.arb.ca.gov/regact/2018/lcfs18/fsorlcfs.pdf. Accessed: May 2021.

California Air Resources Board (CARB). 2019. *California 2030 Natural and Working Lands Climate Change Implementation Plan*. Available: https://ww2.arb.ca.gov/sites/default/files/2020-10/draft-nwl-ip-040419.pdf. Accessed: May 2021.

California Air Resources Board (CARB). 2021a. *California's Greenhouse Gas Vehicle Emission Standards under Assembly Bill 1493 of 2002 (Pavley)*. Available: https://ww2.arb.ca.gov/californias-greenhouse-gas-vehicle-emission-standards-under-assembly-bill-1493-2002-pavley. Accessed: May 2021.

California Air Resources Board (CARB). 2021b. *Low-Emission Vehicle (LEV III) Program*. Available: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/lev-program/low-emission-vehicle-lev-iii-program. Accessed: May 2021.

California Air Resources Board (CARB). 2021c. *LCFS Basics*. Available: https://ww2.arb.ca.gov/resources/documents/lcfs-basics. Accessed: May 2021.

California Air Resources Board (CARB). 2021d. *Mandatory Greenhouse Gas Reporting Regulation*. Available: https://ww2.arb.ca.gov/mrr-regulation. Accessed: May 2021.

B3 Attach #1 of 3

California Air Resources Board (CARB). 2021e. *AB 32 Climate Change Scoping Plan*. Available: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan. Accessed: May 2021.

California Air Resources Board (CARB). 2021f. *Community Air Protection Program*. Available: https://ww2.arb.ca.gov/capp/about. Accessed: May 2021.

California Air Resources Board (CARB). 2021g. *Innovative Clean Transit*. Available: https://ww2.arb.ca.gov/our-work/programs/innovative-clean-transit/about. Accessed: May 2021.

California Air Resources Board (CARB). 2021h. *Local Government Actions for Climate Change*. Available: https://ww2.arb.ca.gov/our-work/programs/local-actions-climate-change/local-government-actions-climate-change#:~:text=Local%20governments%20have%20a%20role,below%201990%20levels%20by%202050. Accessed: May 2021.

California Building Standards Commission. 2019. *2019 California Green Building Standards Code*. Available: https://calgreenenergyservices.com/wp/wp-content/uploads/2019_california_green_code.pdf. Accessed: May 2021.

California Coastal Commission (CCC). 2019. *Sea Level Rise: Adopted Policy Guidance*. Available: https://www.coastal.ca.gov/climate/slrguidance.html. Accessed: May 2021.

California Department of Resources Recycling and Recovery (CALRecycle). 2020a. *Mandatory Commercial Recycling*. Available: https://www.calrecycle.ca.gov/recycle/commercial. Accessed: May 2021.

California Department of Resources Recycling and Recovery (CALRecycle). 2020b. *Mandatory Commercial Organics Recycling*. Available: https://www.calrecycle.ca.gov/recycle/commercial/organics. Accessed: May 2021.

California Department of Transportation (Caltrans). 2021. *Senate Bill (SB) 743 Implementation*. Available: https://dot.ca.gov/programs/transportation-planning/office-of-smart-mobility-climate-change/sb-743#:~:text=SB%20743%20was%20signed%20in,traffic%20congestion%20shall%20not%20be. Accessed: May 2021.

California Legislative Information. 2015. *SB-246 Climate change adaptation*. Available: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB246. Accessed: May 2021.

California Legislative Information. 2016a. *AB-197 State Air Resource Board: greenhouse gases: regulations*. Available: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB197. Accessed: May 2021.

B3 Attach #1 of 3

California Legislative Information. 2016b. *SB-32 California Global Warming Solutions Act of 2006: emissions limit*. Available: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32. Accessed: May 2021.

California Legislative Information. 2016c. *SB-1000 Land use: general plans: safety and environmental justice*. Available: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB1000. Accessed: May 2021.

California Legislative Information. 2017. *AB-617 Nonvehicular air pollution: criteria air pollutants and toxic air contaminants*. Available: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB617. Accessed: May 2021.

California Legislative Information. 2018a. *SB-100 California Renewables Portfolio Standard Program: emissions of greenhouse gases*. Available: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100. Accessed: May 2021.

California Legislative Information. 2018b. *SB-1035 General plans*. Available: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1035. Accessed: May 2021.

California Natural Resources Agency (CNRA). 2016. *California Water Action Plan 2016 Update*. Available: https://resources.ca.gov/CNRALegacyFiles/docs/california_water_action_plan/Final_California_Water_Action_Plan.pdf. Accessed: May 2021.

California Natural Resources Agency (CNRA). 2018. *Safeguarding California Plan: 2018 Update*. Available: https://resources.ca.gov/CNRALegacyFiles/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf. Accessed: May 2021.

Center for Climate and Energy Solutions (C2ES). No Date. *California Cap and Trade*. Available: https://www.c2es.org/content/california-cap-and-trade/. Accessed: May 2021.

Council on Environmental Quality (CEQ). 1997. *Environmental Justice: Guidance Under the National Environmental Policy Act*. Available: https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf. Accessed: May 2021.

Georgetown Climate Center. No Date. *Preparing for Climate Change in California*. Available: https://www.georgetownclimate.org/adaptation/state-information/california/overview.html. Accessed: May 2021.

B3 Attach #1 of 3

Governor's Office of Planning and Research (OPR). 2017. *State of California General Plan Guidelines*. Available: https://opr.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf. Accessed: June 2021.

Governor's Office of Planning and Research (OPR). 2020. *General Plan Guidelines Chapter 4: Required Elements*. Available: https://opr.ca.gov/docs/20200706-GPG_Chapter_4_EJ.pdf. Accessed: June 2021.

Governor's Office of Planning and Research (OPR). 2021a. *Current CEQA Guidelines Update*. Available: https://opr.ca.gov/ceqa/updates/guidelines/. Accessed: May 2021.

Governor's Office of Planning and Research (OPR). 2021b. *SB 743 Frequently Asked Questions*. Available: https://opr.ca.gov/ceqa/updates/sb-743/faq.html#draft-docs. Accessed: May 2021.

Governor's Office of Planning and Research (OPR). 2021c. *Adaptation Clearinghouse*. Available at: https://resilientca.org/. Accessed: May 2021.

Institute for Local Government. 2015. *The Basics of SB 375*. Available: https://www.ca-ilg.org/post/basics-sb-375. Accessed: May 2021.

International Council on Clean Transportation (ICCT). 2020. *California's Advanced Clean Trucks Regulation: Sales Requirements for Zero-Emission Heavy-Duty Trucks*. Available: https://theicct.org/sites/default/files/publications/CA-HDV-EV-policy-update-jul2020.pdf. Accessed: May 2021.

National Highway Traffic Safety Administration (NHTSA). 2020. *SAFE: The Safer Affordable Fuel-Efficient 'SAFE' Vehicles Rule*. Available: https://www.nhtsa.gov/corporate-average-fuel-economy/safe#:~:text=Aug.&text=The%20Safer%20Affordable%20Fuel%2DEfficient%20(SAFE)%20Vehicles%20Rule%20proposed,model%20years%202021%20through%202026. Accessed: May 2021.

Office of Governor. 2005. *Executive Order S-3-05*. Available: http://static1.squarespace.com/static/549885d4e4b0ba0bff5dc695/t/54d7f1e0e4b0f0798cee3010/1423438304744/California+Executive+Order+S-3-05+(June+2005).pdf. Accessed: May 2021.

Office of Governor. 2015. *Governor Brown Establishes Most Ambitious Greenhouse Gas Reduction Target in North America*. Available: https://www.ca.gov/archive/gov39/2015/04/29/news18938/index.html. Accessed: May 2021.

Office of Governor. 2018. *Executive Order B-55-18 to Achieve Carbon Neutrality*. Available: https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf. Accessed: May 2021.

B3 Attach #1 of 3

State Water Resources Control Board (State Water Board). 2017. *State Water Resources Control Board Resolution No. 2017-0012*. Available: https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2017/rs2017_0012.pdf. Accessed: May 2021.

Strategic Growth Council. 2021. *Transformative Climate Communities*. Available: https://sgc.ca.gov/programs/tcc/. Accessed: May 2021.

U.S. Department of Transportation (U.S. DOT). 2014. *Corporate Average Fuel Economy (CAFE) Standards*. Available: https://www.transportation.gov/mission/sustainability/corporate-average-fuel-economy-cafe-standards. Accessed: May 2021.

U.S. Environmental Protection Agency (U.S. EPA). 2016. *Greenhouse Gas Reporting Program (GHGRP)*. Available: https://www.epa.gov/ghgreporting/10302009-rule. Accessed: May 2021.

U.S. Environmental Protection Agency (U.S. EPA). 2020a. *What is the National Environmental Policy Act?* Available: https://www.epa.gov/nepa/what-national-environmental-policy-act. Accessed: May 2021.

U.S. Environmental Protection Agency (U.S. EPA). 2020b. *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under the Section 202(a) of the Clean Air Act*. Available: https://www.epa.gov/ghgemissions/endangerment-and-cause-or-contribute-findings-greenhouse-gases-under-section-202a-clean#:~:text=On%20April%2017%2C%202009%2C%20the,received%20over%20380%2C000%20public%20comments. Accessed: May 2021.

U.S. Environmental Protection Agency (U.S. EPA). 2020c. *Regulations for Greenhouse Gas Emissions from Commercial Trucks & Buses*. Available: https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-greenhouse-gas-emissions-commercial-trucks. Accessed: May 2021.

U.S. Environmental Protection Agency (U.S. EPA). 2021. *Clean Air Act Overview*. Available: https://www.epa.gov/clean-air-act-overview/clean-air-act-text#:~:text=The%20Clean%20Air%20Act%20is,has%20made%20several%20minor%20changes. Accessed: May 2021.

White House. 2010. *Executive Order 13547—Stewardship of the Ocean, Our Coasts, and the Great Lakes*. Available: https://obamawhitehouse.archives.gov/the-press-office/executive-order-stewardship-ocean-our-coasts-and-great-lakes. Accessed: May 2021.

White House. 2021a. *Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*. Available: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-

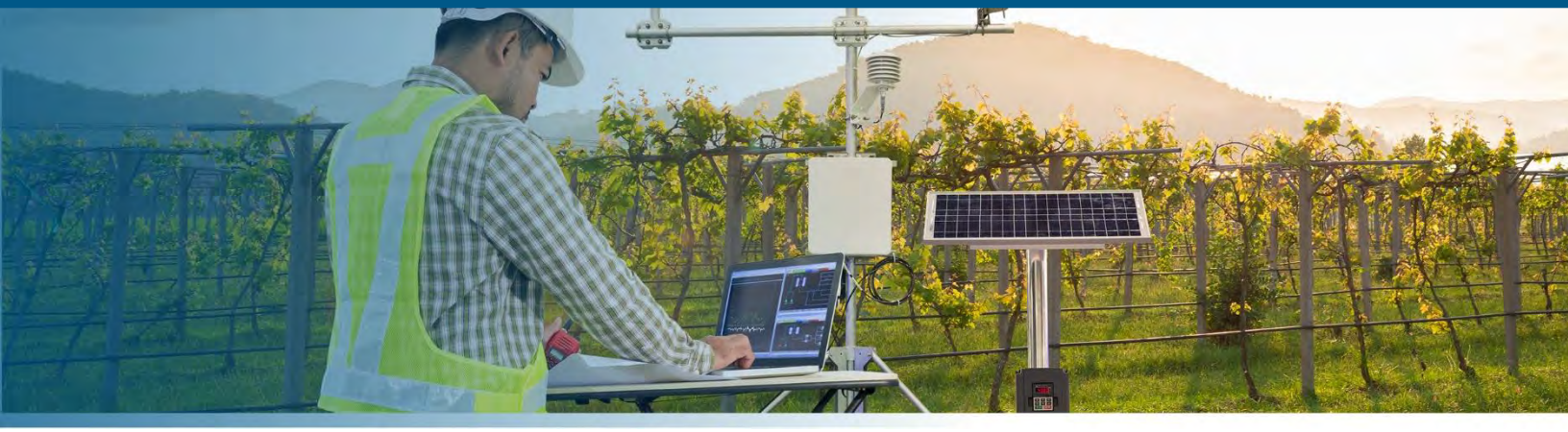
B3 Attach #1 of 3

order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/. Accessed: May 2021.

White House. 2021b. *Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*. Available: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/. Accessed: May 2021.

Emission Factors and Data Tables

APPENDIX C



Tables

Table T-3.1. Average Transit and Vehicle Mode Share of All Trips by California Core-Based Statistical Area C-1

Table T-8.1. Reduction in Employee Commute Vehicle Miles Traveled by Place Type C-1

Table T-9.1. Average Transit Mode Share of Work Trips by California Core-Based Statistical Area C-2

Table T-10.1. Average One-Way Bicycle and Vehicle Trip Length of All Trips by California Core-Based Statistical Area C-2

Table T-10.2. Average Bicycle and Vehicle Mode Share of Work Trips by California Core-Based Statistical Area C-2

Table T-11.1. Average One-Way Vehicle Commute Trip[1] Length by California Core-Based Statistical Area C-3

Table T-16.1. Typical Monthly Parking Prices by Facility Type C-3

Table T-19.1. Active Transportation Adjustment Factors C-3

Table T-19.2. Key Destination Credits C-4

Table T-19.3. Growth Factor Adjustment C-4

Table T-19.4. Bike Facility Default Days of Use per Year by County C-4

Table T-20.1. Bicycle Mode Share of All Trips by California Core-Based Statistical Area C-5

Table T-26.1. Transit Bus Fuel Economy by Fuel Type C-5

Table T-30.1. Battery Electric Vehicle Efficiency by Vehicle Type C-6

Table T-30.2. Vehicle Fuel Efficiency, Energy Density, and Well-to-Wheels Carbon Intensity and Emission Factor by Vehicle Category and Fuel Type C-7

Table E-1.1. Proxy Zones to Use for Electric Demand Forecast Zones C-11

Table E-1.2. Non-Residential Electricity Reduction for 1 Percent Improvement over 2019 Title 24 Requirements C-12

Table E-1.3. Non-Residential Natural Gas Reduction for 1 Percent Improvement over 2019 Title 24 Requirements C-14

Table E-1.4. Residential Electricity Reduction for 1 Percent Improvement over 2019 Title 24 Requirements C-16

Table E-1.5. Residential Natural Gas Reduction for 1 Percent Improvement over 2019 Title 24 Requirements C-16

Table E-1.6. Residential Appliance Saturation Study/Commercial End Use Forecast to CalEEMod Land Use Type Mapping C-17

Table E-2.1. Electricity Reduction of ENERGY STAR Appliance compared to Conventional Appliance C-18

Table E-2.2. Non-Residential Percent of Total Building Electricity for Commercial Refrigerators C-19

Table E-2.3. Residential Percent of Total Building Electricity by Appliance C-21

Table E-3-A.1. Average Annual Fuel Use and Savings by Boiler Type for Residential Boilers C-23

Table E-3-B.1. Average Annual Fuel Use and Savings for Boilers Installed Before January 10, 2023 for Commercial and Industrial Boilers C-24

Table E-3-B.2. Average Annual Fuel Use and Savings for Boilers Installed On or After January 10, 2023 ..... C-26

Table E-4.1. Canyon Aspect Ratios C-27

Table E-4.2. Solar Availability Factors by Canyon Aspect Ratio C-27

Table E-4.3. Greenhouse Gas Intensity Factor by California Electricity Provider by Year (2017–2031) C-28

Table E-4.4. Greenhouse Gas Intensity Factor by California Electricity Provider by Year (2032–2045) C-30

Table E-4.5. Natural Gas Emission Factors C-32

Table E-5.1. Changes in Energy Use of Green Roof Compared to Dark Roof by Building Type and City C-32

Table E-7.1. Outdoor Lighting Power Consumption and Efficacy by Lamp Type C-33

Table E-10-B.1. Estimated Electricity Generation from Typical PV Systems (kilowatt-hours per year) C-33

Table E-12.1. Energy Consumption by Type of Water Heater, Electricity Demand Forecast Zone, and Housing Type C-35

Table E-14.1. Woodstove and Fireplace Usage C-39

Table E-14.2. Woodstove and Fireplace Emission Factors (pound per ton of dry wood burned, unless noted) C-42
Table E-15.1. Residential Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Housing Type C-43
Table E-15.2. Commercial Energy Consumption by End Use, Electricity Demand Forecast Zone, and Building Type C-49
Table W-1.1. Water Energy Intensity Factors by Hydrologic Region and Process C-72
Table W-4.1. Residential Water Consumption Percentages by End Use C-74
Table W-4.2. Non-Residential Water Consumption Percentages by End Use C-75
Table W-4.3. Residential Baseline and Reduced Flow Rates for End Uses C-76
Table W-4.4. Non-Residential Baseline and Reduced Flow Rates for End Uses C-77
Table LL-1.1. Landscape Equipment Horsepower and Load Factors by Equipment Type C-78
Table S-1.1. Annual Residential Waste Disposal Rates by Location C-79
Table S-1.2. Annual Statewide Non-Residential Waste Disposal Rates by Business Type ... C-80
Table S-1.3. Waste Profile by Building Type C-81
Table N-1.1 Above- and Below-ground Biomass Carbon Accumulation (metric tons) per Hectare by Land Cover Type and Air Basin C-83
Table N-1.2. Annualized Soil Carbon Accumulation (metric tons) per Hectare by Soil Type and Land Use Type C-86
Table C-1-B.1. Average Horsepower for Diesel, Gasoline, and Compressed Natural Gas Equipment C-87
Table C-3.1. Average Home-Based-Work Trip Length by California County C-88
Table R-1.1 Global Warming Potentials of Commonly Used Refrigerants C-89
Table R-1.2. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type C-92
Table R-1.3. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type C-94
Table R-1.4. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type C-97
Table R-1.5. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type C-98

B3 Attach #1 of 3

Table T-3.1. Average Transit and Vehicle Mode Share of All Trips by California Core-Based Statistical Area

Core-Based Statistical Area	Mode Share	
	Transit	Vehicle
Los Angeles-Long Beach-Anaheim	4.23%	94.19%
Riverside-San Bernardino-Ontario	1.37%	96.88%
Sacramento-Roseville-Arden-Arcade	2.90%	95.04%
San Diego-Carlsbad	2.40%	94.85%
San Francisco-Oakland-Hayward	11.38%	86.96%
San Jose-Sunnyvale-Santa Clara	6.69%	91.32%

Source: Federal Highway Administration. 2017. National Household Travel Survey – 2017 Table Designer. Travel Day PMT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

Table T-8.1. Reduction in Employee Commute Vehicle Miles Traveled by Place Type

Place Type	Reduction in Employee Commute VMT
Urban	-8%
Suburban	-4%
Rural	—

Source: San Diego Association of Governments (SANDAG). 2019. Mobility Management VMT Reduction Calculator Tool – Design Document. June. Available: https://www.icommutesd.com/docs/default-source/planning/tool-design-document_final_7-17-19.pdf?sfvrsn=ec39eb3b_2. Accessed: January 2021

— = measure not applicable in this place type; VMT = vehicle miles traveled.

B3 Attach #1 of 3

Table T-9.1. Average Transit Mode Share of Work Trips by California Core-Based Statistical Area

Core-Based Statistical Area	Transit Mode Share of Work Trips
Los Angeles-Long Beach-Anaheim	5.39%
Riverside-San Bernardino-Ontario	1.12%
Sacramento-Roseville-Arden-Arcade	5.44%
San Diego-Carlsbad	4.74%
San Francisco-Oakland-Hayward	25.60%
San Jose-Sunnyvale-Santa Clara	6.11%

Source: Federal Highway Administration. 2017. National Household Travel Survey – 2017 Table Designer. WRKTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

Table T-10.1. Average One-Way Bicycle and Vehicle Trip Length of All Trips by California Core-Based Statistical Area

	Trip Length (miles)	
Core-Based Statistical Area	Bicycle	Vehicle
Los Angeles-Long Beach-Anaheim	1.7	9.7
Riverside-San Bernardino-Ontario	2.2	11.7
Sacramento-Roseville-Arden-Arcade	2.9	10.9
San Diego-Carlsbad	2.0	19.1
San Francisco-Oakland-Hayward	2.1	12.4
San Jose-Sunnyvale-Santa Clara	2.8	11.5

Source: Federal Highway Administration. 2017. National Household Travel Survey – 2017 Table Designer. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

Table T-10.2. Average Bicycle and Vehicle Mode Share of Work Trips by California Core-Based Statistical Area

	Mode Share	
Core-Based Statistical Area	Bicycle	Vehicle
Los Angeles-Long Beach-Anaheim	1.0%	90.7%
Riverside-San Bernardino-Ontario	0.4%	95.3%
Sacramento-Roseville-Arden-Arcade	2.2%	89.5%
San Diego-Carlsbad	1.3%	91.8%
San Francisco-Oakland-Hayward	2.8%	67.1%
San Jose-Sunnyvale-Santa Clara	4.1%	86.6%

Source: Federal Highway Administration. 2017. National Household Travel Survey – 2017 Table Designer. Workers by WRKTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

B3 Attach #1 of 3

Table T-11.1. Average One-Way Vehicle Commute Trip[1] Length by California Core-Based Statistical Area

Core-Based Statistical Area	Vehicle Trip Length (miles)
Los Angeles-Long Beach-Anaheim	14.07
Riverside-San Bernardino-Ontario	18.62
Sacramento-Roseville-Arden-Arcade	14.23
San Diego-Carlsbad	14.52
San Francisco-Oakland-Hayward	15.63
San Jose-Sunnyvale-Santa Clara	12.44

Source: Federal Highway Administration. 2017. National Household Travel Survey – 2017 Table Designer. Travel Day VT by HH_CBSA by TRPTRANS by TRIPPURP. Available: https://nhts.ornl.gov/. Accessed: January 2021.

[1]Trips included in this dataset were for work-related trips (HBW).

Table T-16.1. Typical Monthly Parking Prices by Facility Type

Facility Type	Monthly Cost per Space
Suburban, Surface	$36
Urban, Surface	$65
Urban, Structure	$133
Urban, Underground	$191

Source: Litman. 2020b. Parking Requirement Impacts on Housing Affordability. June. Available: https://www.vtpi.org/park-hou.pdf. Accessed: January 2021.

Table T-19.1. Active Transportation Adjustment Factors

Average Daily Traffic (vehicle trips per day)	One-way Facility Length[1]	Adjustment Factor for a Population > 250,000 or a Non-university Town with Population < 250,000	Adjustment Factor for a University Town with Population <250,000
1 to 12,000	≤1	0.0019	0.0104
	1.02 to 2	0.0029	0.0155
	>2	0.0038	0.0207
12,001 to 24,000	≤1	0.0014	0.0073
	1.02 to 2	0.0020	0.0109
	>2	0.0027	0.0145
24,001 to 30,000	≤1	0.0010	0.0052
	1.02 to 2	0.0014	0.0078
	>2	0.0019	0.0104

Source: California Air Resources Board. 2020. Quantification Methodology for the Strategic Growth Council's Affordable Housing and Sustainable Communities Program. September. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/draft_sgc_ahsc_qm_091620.pdf. Accessed: January 2021.

< = less than; > = greater than; ≤ = less than or equal to

[1]Measurements of bike facilities should not include the length of crosswalks.

B3 Attach #1 of 3

Table T-19.2. Key Destination Credits[1,2]

Number of Key Destinations[3]	Credit within ½ Mile of Facility	Credit Within ¼ Mile of Facility
0 to 2	0.0000	0.000
3	0.0005	0.001
4 to 6	0.0010	0.002
≥ 7	0.0015	0.003

Source: California Air Resources Board. 2020. *Quantification Methodology for the California Natural Resource Agency's Urban Greening Grant Program*. March. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/cnra_ug_finalqm.pdf. Accessed: January 2021.

≥ = greater than or equal to

[1] The largest value from either credit column that matches the project activities should be used. For example, if there are 3 activity centers within ¼ mile of the facility and 7 activity centers within ½ mile of the facility, the correct value to use is 0.0015.

[2] These metrics should be evaluated for the project location site and surrounding area which can extend a distance not to exceed a ½ mile. If a shopping center has multiple activity centers, each of those activity centers would count individually. For example, if a bank, grocery store, and post office are all located in a shopping center, they would be input as three activity centers for the purposes of this quantification methodology.

[3] Key destination examples: banks, post offices, grocery stores, medical centers, pharmacies, office parks, places of worship, public libraries, schools, universities, colleges, and light rail stations (park & ride).

Table T-19.3. Growth Factor Adjustment

Facility Type	Growth Factor Adjustment
New Class I bike path[1] or Class IV bikeway[2]	1.54
New Class II bike lane[3]	1.0
Conversion from Class II to IV	0.54

Source: California Air Resources Board. 2020. *Quantification Methodology for the Strategic Growth Council's Affordable Housing and Sustainable Communities Program*. September. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/sgc_ahsc_qm_022521.pdf. Accessed: March 2021.

[1] Class I bike paths are physically separated from motor vehicle traffic.

[2] Class IV bikeways are protected on-street bikeways, also called cycle tracks.

[3] Class II bike lanes are striped bicycle lanes that provide exclusive use to bicycles on a roadway.

Table T-19.4. Bike Facility Default Days of Use per Year by County

County	Days	County	Days	County	Days	County	Days
Alameda	302	Kern	333	Placer	291	San Joaquin	314
Alpine	291	Kings	328	Plumas	292	San Luis Obispo	321
Amador	302	Lake	298	Riverside	337	San Mateo	295
Butte	294	Los Angeles	332	Sacramento	307	Solano	309
Calaveras	304	Lassen	309	San Benito	315	Stanislaus	319
Contra Costa	307	Madera	314	San Bernardino	333	Sutter	304
Colusa	309	Marin	296	Santa Barbara	328	Tehama	297
Del Norte	252	Mariposa	307	Santa Clara	307	Trinity	277
El Dorado	295	Mendocino	279	Santa Cruz	304	Tulare	314
Fresno	320	Merced	316	San Diego	323	Tuolumne	299
Glenn	304	Modoc	287	San Francisco	301	Ventura	334

B3 Attach #1 of 3

Table T-19.4. Bike Facility Default Days of Use per Year by County (cont.)

County	Days	County	Days	County	Days	County	Days
Humboldt	262	Mono	311	Shasta	283	Yolo	311
Imperial	353	Monterey	310	Sierra	301	Yuba	293
Inyo	331	Orange	335	Siskiyou	280	Statewide	311

Source: National Oceanic and Atmospheric Administration (NOAA). 2021. *Global Historical Climatology Network – Daily (GHCN-Daily), Version 3*. 2015-2019 average of days per year with precipitation >0.1 inches. Available: https://www.ncei.noaa.gov/access/search/data-search/daily-summaries?bbox=38.922,-120.071,38.338,-119.547&place=County:1276&dataTypes=PRCP&startDate=2015-01-01T00:00:00&endDate=2019-01-01T23:59:59. Accessed: May 2021.

Table T-20.1. Bicycle Mode Share of All Trips by California Core-Based Statistical Area

Core-Based Statistical Area	Bicycle Mode Share
Los Angeles-Long Beach-Anaheim	0.18%
Riverside-San Bernardino-Ontario	0.06%
Sacramento-Roseville-Arden-Arcade	0.56%
San Diego-Carlsbad	0.23%
San Francisco-Oakland-Hayward	0.47%
San Jose-Sunnyvale-Santa Clara	0.79%

Source: Federal Highway Administration. 2017. National Household Travel Survey – 2017 Table Designer. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

Table T-26.1. Transit Bus Fuel Economy by Fuel Type

Fuel Type	Fuel Economy	Unit
Gasoline	0.21261	gal/mile
Diesel	0.15691	gal/mile
Natural gas[1]	0.24890	gal/mile
Electric[2]	2.39132	kWh/mile

Sources: California Air Resources Board. 2020. EMFAC2017 v1.0.3. August. Available: https://arb.ca.gov/emfac/emissions-inventory. Accessed: January 2021.

U.S. Department of Energy (U.S. DOE). 2021. Fuel Economy Datasets for All Model Years (1984-2021). January. Available: https://www.fueleconomy.gov. Accessed: January 2021.

gal = gallon; kwh = kilowatt hour

[1] Natural gas fuel economy is based on a conversion of natural gas fuel consumption to gallons of diesel equivalent.

[2] Scaled from diesel equivalent based on energy efficiency ratio (EER) of 2.5 and assumption of 38.1 kWh electricity per gallon of diesel.

B3 Attach #1 of 3

Table T-30.1. Battery Electric Vehicle Efficiency by Vehicle Type

Vehicle Type[1]	BEV Efficiency (kWh/mile)
Light-duty automobile (LDA)	0.33
Light-duty truck (LDT)	0.38
Light-heavy duty truck 1 (LHDT1)	1.47
Light-heavy duty truck 2 (LHDT2)	1.67
Medium-heavy duty truck (MHDT)	1.56
Heavy-heavy duty truck (HHDT)	2.33

Sources: California Air Resources Board. 2020b. EMFAC2017 v1.0.3. August. Available: https://arb.ca.gov/emfac/emissions-inventory. Accessed: January 2021.

California Air Resources Board. 2020c. Unofficial electronic version of the Low Carbon Fuel Standard Regulation. Available: https://ww2.arb.ca.gov/sites/default/files/2020-07/2020_lcfs_fro_oal-approved_unofficial_06302020.pdf. Accessed: January 2021.

U.S. Department of Energy (U.S. DOE). 2021. Fuel Economy Datasets for All Model Years (1984-2021). January. Available: https://www.fueleconomy.gov. Accessed: January 2021.

kWh = kilowatt-hours; BEV = battery electric vehicle

[1] Vehicles listed reflect a subset of the EMFAC vehicle categories.

Table T-30.2. Vehicle Fuel Efficiency, Energy Density, and Well-to-Wheels Carbon Intensity and Emission Factor by Vehicle Category and Fuel Type

		Fuel Efficiency			Energy Density			Carbon Intensity			Emission Factor
Vehicle	Fuel	Value	Units	Ref	Value	Units	Ref	Value	Units	Ref	(g CO_2e/mile)[11]
LDA	Gasoline	30.3	mpg	1	115.8	MJ/gal	7	93.2	g CO_2e/MJ	5	356.2
	Gasoline hybrid	45.5	mpg	2	115.8	MJ/gal	7	93.2	g CO_2e/MJ	5	237.2
	Flex fuel (E85)	22.7	mpg	3	86.7	MJ/gal	6	66.8	g CO_2e/MJ	9	255.1
	PHEV[10]	—	—	—	—	—	—	—	—	—	173.0
	BEV	0.327	kWh/mile	4	3.6	MJ/kWh	7	82.9	g CO_2e/MJ	7	97.6
LDT1	Gasoline	25.9	mpg	1	115.8	MJ/gal	5	93.2	g CO_2e/MJ	5	416.9
	Gasoline hybrid	38.9	mpg	2	115.8	MJ/gal	5	93.2	g CO_2e/MJ	5	277.4
	Flex fuel (E85)	19.4	mpg	3	86.7	MJ/gal	6	66.8	g CO_2e/MJ	9	298.5
	PHEV[10]	—	—	—	—	—	—	—	—	—	202.6
	BEV	0.383	kWh/mile	4	3.6	MJ/kWh	7	82.9	g CO_2e/MJ	7	114.3
LDT2	Gasoline	23.8	mpg	1	115.8	MJ/gal	5	93.2	g CO_2e/MJ	5	453.5
	Composite Diesel[1,2]	23.8	mpg	1, 3	130.5	MJ/gal	5, 8	45.4	g CO2e/MJ	5, 9	248.9
	Diesel	34.9	mpg	1	134.5	MJ/gal	5	94.2	g CO_2e/MJ	5	363.0
MDV	Gasoline	19.4	mpg	1	115.8	MJ/gal	5	93.2	g CO_2e/MJ	5	556.3
	Composite Diesel[1,2]	19.4	mpg	1, 3	130.5	MJ/gal	5, 8	45.4	g CO2e/MJ	5, 9	305.4
	Diesel	26.4	mpg	1	134.5	MJ/gal	5	94.2	g CO_2e/MJ	5	479.9
LHDT1	Gasoline	9.2	mpg	1	115.8	MJ/gal	5	93.2	g CO_2e/MJ	5	1,173.1
	Composite Diesel[1,2]	9.2	mpg	1, 3	130.5	MJ/gal	5, 8	45.4	g CO2e/MJ	5, 9	664.0
	Diesel	18.9	mpg	1	134.5	MJ/gal	5	94.2	g CO_2e/MJ	5	670.4
	BEV	1.47	kWh/mile	4	3.6	MJ/kWh	7	82.9	g CO_2e/MJ	7	438.7
LHDT2	Gasoline	8.1	mpg	1	115.8	MJ/gal	5	93.2	g CO_2e/MJ	5	1,332.4
	Composite Diesel[1,2]	8.1	mpg	1, 3	130.5	MJ/gal	5, 8	45.4	g CO2e/MJ	5, 9	731.4
	Diesel	17.1	mpg	1	134.5	MJ/gal	5	94.2	g CO_2e/MJ	5	740.9
	BEV	1.67	kWh/mile	4	3.6	MJ/kWh	7	82.9	g CO_2e/MJ	7	498.4

Table T-30.2. Vehicle Fuel Efficiency, Energy Density, and Well-to-Wheels Carbon Intensity and Emission Factor by Vehicle Category and Fuel Type (cont.)

		Fuel Efficiency			Energy Density			Carbon Intensity			Emission Factor (g CO_2e/mile)[11]
Vehicle	Fuel	Value	Units	Ref	Value	Units	Ref	Value	Units	Ref	
MHDT	Gasoline	4.9	mpg	1	115.8	MJ/gal	5	93.2	g CO_2e/MJ	5	2,202.6
	Composite Diesel[1,2]	9.4	mpg	1, 3	130.5	MJ/gal	5, 8	45.4	g CO2e/MJ	5, 9	630.3
	Diesel	9.4	mpg	1	134.5	MJ/gal	5	94.2	g CO_2e/MJ	5	1347.9
	BEV	1.56	kWh/mile	4	3.6	MJ/kWh	7	93.8	g CO_2e/MJ	7	526.8
HHDT	Composite Diesel[1,2]	6.3	mpg	1, 3	130.5	MJ/gal	5, 8	45.4	gCO2e/MJ	4, 9	940.4
	Diesel	6.3	mpg	1	134.5	MJ/gal	5	94.2	g CO_2e/MJ	5	2011.1
	Natural gas	5.9	mpgde	3	134.5	MJ/gal	5	32.7	g CO_2e/MJ	9	745.4
	BEV	2.33	kWh/mile	4	3.6	MJ/kWh	7	93.8	g CO_2e/MJ	7	786.8

Sources: See footnotes.

LDA = light-duty automobile; light-duty truck 1 (LDT1); light-duty truck 2 (LDT2); MDV = medium-duty vehicle; light-heavy duty truck 1 (LHDT1); light-heavy duty truck 2 (LHDT2); MHDT = medium-heavy duty truck; HHDV = heavy-heavy duty vehicle; MJ = megajoules; mpg = miles per gallon; mpgde = miles per gallon of diesel equivalent; gal = gallon; kWh = kilowatt-hours; CO_2e = carbon dioxide equivalent; g = grams; ref = reference

[1] California Air Resources Board. 2020a. EMFAC2017 v1.0.3. August. Available: https://arb.ca.gov/emfac/emissions-inventory. Accessed: January 2021.

Statewide analysis for the year 2021.

[2] U.S. Department of Energy (U.S. DOE). 2021. Fuel Economy Datasets for All Model Years (1984-2021). January. Available: https://www.fueleconomy.gov. Accessed: January 2021.

Assumes 50% improvement vs. gasoline, based on comparison of gasoline and hybrid Toyota Camry and Corolla.

[3] Scaled from gasoline equivalent based on energy density values.

[4] U.S. DOE 2021. Scaled from gasoline or diesel equivalent based on energy efficiency ratio (EER) of 2.5 and assumption of 33.7 kWh electricity per gallon gasoline or 38.1 kWh electricity per gallon diesel.

[5] Gasoline value reflects California Reformulated Gasoline (RFG), which consists of a blend of California Reformulated Gasoline Blendstock for Oxygenate Blending (CARBOB) and 10% ethanol. California Air Resources Board. 2020b. Unofficial electronic version of the Low Carbon Fuel Standard Regulation. Available: https://ww2.arb.ca.gov/sites/default/files/2020-07/2020_lcfs_fro_oal-approved_unofficial_06302020.pdf. Accessed: January 2021.

[6] Assumes 85% denatured ethanol and 15% California reformulated gasoline (CaRFG).

[7] California Air Resources Board. 2020c. California Climate Investments Quantification Methodology Emission Factor Database and Documentation. August. Available: https://ww2.arb.ca.gov/resources/documents/cci-quantification-benefits-and-reporting-materials. Accessed: January 2021.

[8] Assumes 80% diesel and 20% FAME Biodiesel

[9] California Air Resources Board. 2019. LCFS Pathway Certified Carbon Intensities. Available: https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities. Accessed: January 2021.

[10] CARB 2020a. Can be calculated as 46% BEV and 54% gasoline hybrid, based on eVMT fraction. See Equation A2 for further instruction.

[11] Where fuel efficiency is measured in miles per gallon, the emission factor is calculated as (fuel efficiency * energy density * carbon intensity). Where fuel efficiency is measured in kilowatt-hours per mile, the emission factor is calculated as ((1/fuel efficiency) * energy density * carbon intensity).

[12] Composite diesel is a blend of conventional fossil diesel (6%), biodiesel (16%), and renewable diesel (78%). The percentages are based on the percent of total volume blended into diesel sold in California (CARB 2020c).

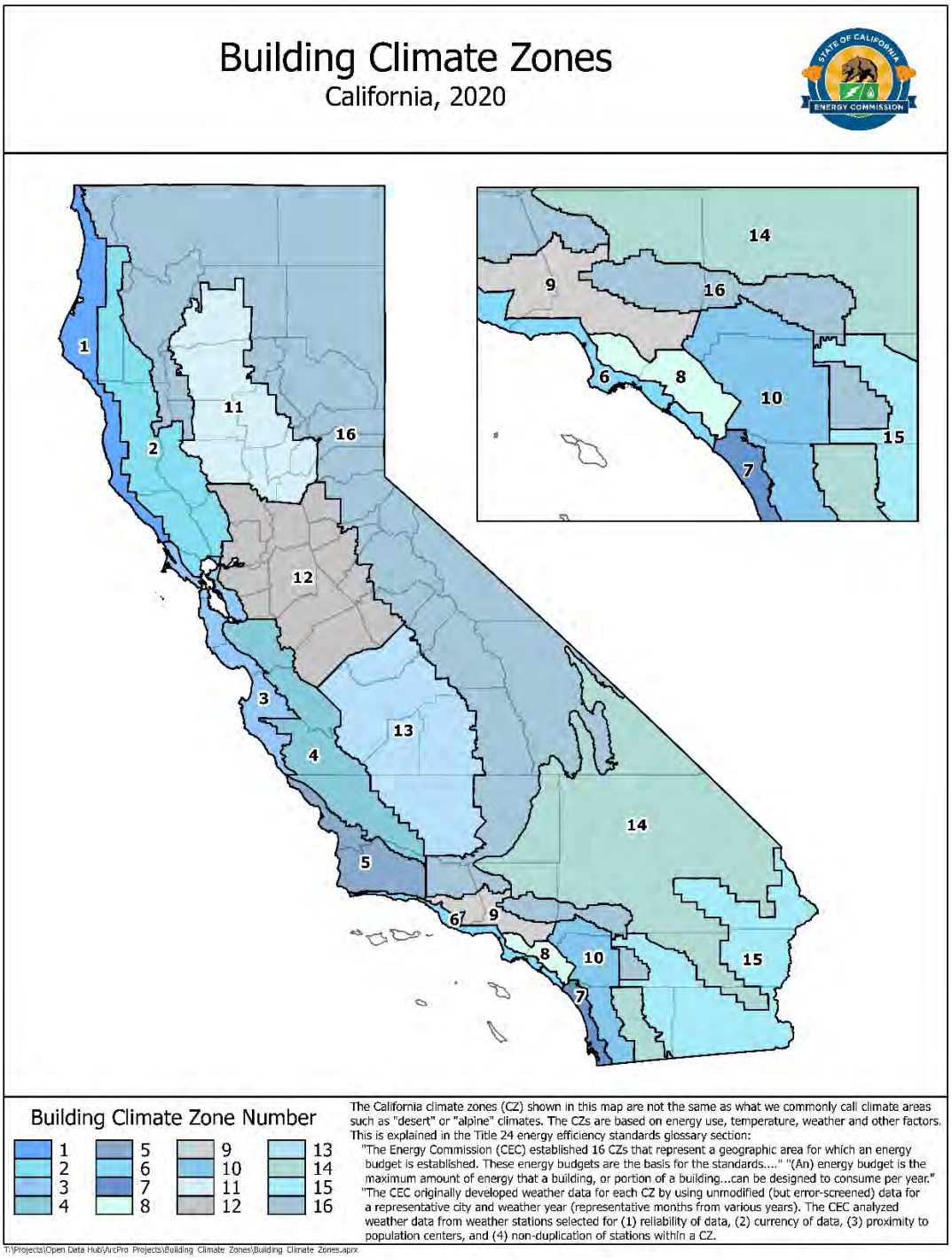
B3 Attach #1 of 3

Figure E-1.1. California Energy Commission Electricity Demand Forecast Zones

Note: This figure is intended to provide a general depiction of the forecast zones as not all details can be clearly depicted at this scale. Those interested in additional detail should refer directly to the interactive version of this map, available on CEC's website at the following URL: https://cecgis-caenergy.opendata.arcgis.com/datasets/86fef50f6f344fabbe545e58aec83edd_0/data?geometry=-165.327%2C31.004%2C-72.427%2C43.220.

Source: California Energy Commission (CEC). 2017. *California Electricity Demand Forecast Zones*. Available: https://cecgis-caenergy.opendata.arcgis.com/datasets/86fef50f6f344fabbe545e58aec83edd_0/data?geometry=-165.327%2C31.004%2C-72.427%2C43.220. Accessed: June 2021.

Figure E-4.1. CEC Building Climate Zones



Note: The CEC has an online climate zone search tool available at the following URL: https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/climate-zone-tool-maps-and.

Source: California Energy Commission (CEC). 2020. Building Climate Zones. August. Available: https://caenergy.maps.arcgis.com/home/item.html?id=eaf3158767674e6cb14f4407186d3607. Accessed: January 2021.

B3 Attach #1 of 3

Table E-1.1. Proxy Zones to Use for Electric Demand Forecast Zones

EDFZ Name	EDFZ	Residential (RASS) Proxy Zone	Commercial Proxy Zones
Other-A	0-A	4	4
Other-B	0-B	2	2
Other-C	0-C	3	3
Other-D	0-D	3	3
Other-E	0-E	10	10
Other-F	0-F	3	3
Other-G	0-G	3	3
Other-H	0-H	4	4
Greater Bay Area	1	—	—
North Coast	2	—	—
North Valley	3	—	—
Central Valley	4	—	—
Southern Valley	5	—	—
Central Coast	6	—	—
LA Metro	7	—	—
Big Creek West	8	—	—
Big Creek East	9	—	—
Northeast	10	—	—
Eastern	11	—	—
SDG&E	12	—	—
SMUD Service Territory	13	—	—
Turlock Irrigation District	14	4	—
Rest of BANC Control Area	15	3	—
LADWP Coastal	16	—	—
LADWP Inland	17	—	—
Burbank/Glendale	18	17	—
Imperial Irrigation District	19	11	—
Valley Electric	20	10	10

Source: California Energy Commission (CEC). 2017. *California Electricity Demand Forecast Zones*. Available: https://cecgis-caenergy.opendata.arcgis.com/datasets/86fef50f6f344fabbe545e58aec83edd_0/data?geometry=-165.327%2C31.004%2C-72.427%2C43.220. Accessed: June 2021.

- = N/A. EDFZ is already included in the RASS or commercial end use forecast. Numbers only listed for missing zones.

EDFZ = Electricity Demand Forecast Zone; RASS = Residential Appliance Saturation Study; LA = Los Angeles; LADWP = Los Angeles Department of Water and Power; BANC = Balancing Authority of California; SDG&E = San Diego Gas & Electric; SMUD = Sacramento Municipal Utility District

Table E-1.2. Non-Residential Electricity Reduction for 1 Percent Improvement over 2019 Title 24 Requirements

	Electricity Reduction by EDFZ[2]																			
Non-Residential Building Type[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	State
Arena	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
Automobile Care Center	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
Bank (with Drive-Through)	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
Convenience Market (24 hour)	0.37%	0.39%	0.46%	0.39%	0.46%	0.39%	0.35%	0.35%	0.38%	0.35%	0.35%	0.35%	0.39%	0.49%	0.47%	0.36%	0.36%	0.34%	0.24%	0.39%
Convenience Market with Gas Pumps	0.37%	0.39%	0.46%	0.39%	0.46%	0.39%	0.35%	0.35%	0.38%	0.35%	0.35%	0.35%	0.39%	0.49%	0.47%	0.36%	0.36%	0.34%	0.24%	0.39%
Day-Care Center	0.80%	0.80%	0.81%	0.80%	0.81%	0.80%	0.86%	0.86%	0.87%	0.86%	0.86%	0.84%	0.87%	0.79%	0.79%	0.76%	0.78%	0.85%	0.95%	0.85%
Discount Club	0.71%	0.71%	0.77%	0.73%	0.77%	0.71%	0.79%	0.79%	0.80%	0.79%	0.79%	0.81%	0.76%	0.79%	0.78%	0.65%	0.66%	0.72%	0.77%	0.75%
Electronic Superstore	0.71%	0.71%	0.77%	0.73%	0.77%	0.71%	0.79%	0.79%	0.80%	0.79%	0.79%	0.81%	0.76%	0.79%	0.78%	0.65%	0.66%	0.72%	0.77%	0.75%
Elementary School	0.80%	0.80%	0.81%	0.80%	0.81%	0.80%	0.86%	0.86%	0.87%	0.86%	0.86%	0.84%	0.87%	0.79%	0.79%	0.76%	0.78%	0.85%	0.95%	0.85%
Fast Food Restaurant w/o Drive Thru	0.34%	0.36%	0.41%	0.36%	0.41%	0.36%	0.53%	0.54%	0.52%	0.50%	0.51%	0.51%	0.39%	0.43%	0.42%	0.48%	0.50%	0.47%	0.44%	0.44%
Fast Food Restaurant with Drive Thru	0.34%	0.36%	0.41%	0.36%	0.41%	0.36%	0.53%	0.54%	0.52%	0.50%	0.51%	0.51%	0.39%	0.43%	0.42%	0.48%	0.50%	0.47%	0.44%	0.44%
Free-Standing Discount store	0.71%	0.71%	0.77%	0.73%	0.77%	0.71%	0.79%	0.79%	0.80%	0.79%	0.79%	0.81%	0.76%	0.79%	0.78%	0.65%	0.66%	0.72%	0.77%	0.75%
Free-Standing Discount Superstore	0.71%	0.71%	0.77%	0.73%	0.77%	0.71%	0.79%	0.79%	0.80%	0.79%	0.79%	0.81%	0.76%	0.79%	0.78%	0.65%	0.66%	0.72%	0.77%	0.75%
Gasoline/Service Station	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
General Heavy Industry	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
General Light Industry	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
General Office Building	0.65%	0.65%	0.69%	0.66%	0.69%	0.65%	0.81%	0.81%	0.81%	0.81%	0.81%	0.78%	0.67%	0.69%	0.68%	0.73%	0.73%	0.65%	0.62%	0.71%
Government (Civic Center)	0.65%	0.65%	0.69%	0.66%	0.69%	0.65%	0.81%	0.81%	0.81%	0.81%	0.81%	0.78%	0.67%	0.69%	0.68%	0.73%	0.73%	0.65%	0.62%	0.71%
Government Office Building	0.65%	0.65%	0.69%	0.66%	0.69%	0.65%	0.81%	0.81%	0.81%	0.81%	0.81%	0.78%	0.67%	0.69%	0.68%	0.73%	0.73%	0.65%	0.62%	0.71%
Hardware/Paint Store	0.71%	0.71%	0.77%	0.73%	0.77%	0.71%	0.79%	0.79%	0.80%	0.79%	0.79%	0.81%	0.76%	0.79%	0.78%	0.65%	0.66%	0.72%	0.77%	0.75%
Health Club	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
High School	0.80%	0.80%	0.81%	0.80%	0.81%	0.80%	0.86%	0.86%	0.87%	0.86%	0.86%	0.84%	0.87%	0.79%	0.79%	0.76%	0.78%	0.85%	0.95%	0.85%
High Turnover (Sit Down Restaurant)	0.34%	0.36%	0.41%	0.36%	0.41%	0.36%	0.53%	0.54%	0.52%	0.50%	0.51%	0.51%	0.39%	0.43%	0.42%	0.48%	0.50%	0.47%	0.44%	0.44%
Home Improvement Superstore	0.71%	0.71%	0.77%	0.73%	0.77%	0.71%	0.79%	0.79%	0.80%	0.79%	0.79%	0.81%	0.76%	0.79%	0.78%	0.65%	0.66%	0.72%	0.77%	0.75%
Hospital	0.45%	0.46%	0.51%	0.47%	0.51%	0.47%	0.66%	0.65%	0.66%	0.66%	0.66%	0.69%	0.55%	0.55%	0.55%	0.46%	0.50%	0.47%	0.85%	0.55%
Hotel	0.49%	0.49%	0.49%	0.47%	0.49%	0.48%	0.76%	0.76%	0.78%	0.79%	0.79%	0.69%	0.54%	0.53%	0.53%	0.72%	0.72%	0.59%	0.83%	0.67%
Industrial Park	0.65%	0.65%	0.69%	0.66%	0.69%	0.65%	0.81%	0.81%	0.81%	0.81%	0.81%	0.78%	0.67%	0.69%	0.68%	0.73%	0.73%	0.65%	0.62%	0.71%
Junior College (2yr)	0.83%	0.83%	0.84%	0.83%	0.84%	0.82%	0.79%	0.78%	0.80%	0.79%	0.79%	0.78%	0.83%	0.84%	0.84%	0.64%	0.67%	0.65%	0.87%	0.78%

Table E-1.2. Non-Residential Electricity Reduction for 1 Percent Improvement over 2019 Title 24 Requirements (cont.)

	Electricity Reduction by EDFZ[2]																			
Non-Residential Building Type[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	State
Junior High School	0.80%	0.80%	0.81%	0.80%	0.81%	0.80%	0.86%	0.86%	0.87%	0.86%	0.86%	0.84%	0.87%	0.79%	0.79%	0.76%	0.78%	0.85%	0.95%	0.85%
Library	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
Manufacturing	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
Medical Office Building	0.65%	0.65%	0.69%	0.66%	0.69%	0.65%	0.81%	0.81%	0.81%	0.81%	0.81%	0.78%	0.67%	0.69%	0.68%	0.73%	0.73%	0.65%	0.62%	0.71%
Motel	0.49%	0.49%	0.49%	0.47%	0.49%	0.48%	0.76%	0.76%	0.78%	0.79%	0.79%	0.69%	0.54%	0.53%	0.53%	0.72%	0.72%	0.59%	0.83%	0.67%
Movie Theater (No Matinee)	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
Office Park	0.65%	0.65%	0.69%	0.66%	0.69%	0.65%	0.81%	0.81%	0.81%	0.81%	0.81%	0.78%	0.67%	0.69%	0.68%	0.73%	0.73%	0.65%	0.62%	0.71%
Pharmacy/Drugstore w/o Drive Thru	0.71%	0.71%	0.77%	0.73%	0.77%	0.71%	0.79%	0.79%	0.80%	0.79%	0.79%	0.81%	0.76%	0.79%	0.78%	0.65%	0.66%	0.72%	0.77%	0.75%
Pharmacy/Drugstore with Drive Thru	0.71%	0.71%	0.77%	0.73%	0.77%	0.71%	0.79%	0.79%	0.80%	0.79%	0.79%	0.81%	0.76%	0.79%	0.78%	0.65%	0.66%	0.72%	0.77%	0.75%
Place of Worship	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
Quality Restaurant	0.34%	0.36%	0.41%	0.36%	0.41%	0.36%	0.53%	0.54%	0.52%	0.50%	0.51%	0.51%	0.39%	0.43%	0.42%	0.48%	0.50%	0.47%	0.44%	0.44%
Racquet Club	0.44%	0.43%	0.50%	0.43%	0.50%	0.41%	0.85%	0.86%	0.83%	0.85%	0.86%	0.83%	0.44%	0.54%	0.53%	0.68%	0.70%	0.42%	0.68%	0.61%
Refrigerated Warehouse-No Rail	0.08%	0.08%	0.09%	0.08%	0.09%	0.08%	0.10%	0.11%	0.09%	0.08%	0.08%	0.09%	0.08%	0.10%	0.10%	0.09%	0.10%	0.18%	0.09%	0.09%
Refrigerated Warehouse-Rail	0.08%	0.08%	0.09%	0.08%	0.09%	0.08%	0.10%	0.11%	0.09%	0.08%	0.08%	0.09%	0.08%	0.10%	0.10%	0.09%	0.10%	0.18%	0.09%	0.09%
Regional Shopping Center	0.71%	0.71%	0.77%	0.73%	0.77%	0.71%	0.79%	0.79%	0.80%	0.79%	0.79%	0.81%	0.76%	0.79%	0.78%	0.65%	0.66%	0.72%	0.77%	0.75%
Research & Development	0.65%	0.65%	0.69%	0.66%	0.69%	0.65%	0.81%	0.81%	0.81%	0.81%	0.81%	0.78%	0.67%	0.69%	0.68%	0.73%	0.73%	0.65%	0.62%	0.71%
Strip Mall	0.71%	0.71%	0.77%	0.73%	0.77%	0.71%	0.79%	0.79%	0.80%	0.79%	0.79%	0.81%	0.76%	0.79%	0.78%	0.65%	0.66%	0.72%	0.77%	0.75%
Supermarket	0.37%	0.39%	0.46%	0.39%	0.46%	0.39%	0.35%	0.35%	0.38%	0.35%	0.35%	0.35%	0.39%	0.49%	0.47%	0.36%	0.36%	0.34%	0.24%	0.39%
University/College (4yr)	0.83%	0.83%	0.84%	0.83%	0.84%	0.82%	0.79%	0.78%	0.80%	0.79%	0.79%	0.78%	0.83%	0.84%	0.84%	0.64%	0.67%	0.65%	0.87%	0.78%
Unrefrigerated Warehouse-No Rail	0.35%	0.37%	0.37%	0.35%	0.37%	0.36%	0.67%	0.67%	0.62%	0.65%	0.65%	0.67%	0.47%	0.47%	0.46%	0.54%	0.54%	0.58%	0.33%	0.46%
Unrefrigerated Warehouse-Rail	0.35%	0.37%	0.37%	0.35%	0.37%	0.36%	0.67%	0.67%	0.62%	0.65%	0.65%	0.67%	0.47%	0.47%	0.46%	0.54%	0.54%	0.58%	0.33%	0.46%

Source: ICF calculations; California Energy Commission (CEC). 2021. Excel database with the 2018-2030 Uncalibrated Commercial Sector Forecast, provided to ICF. January 21, 2021.

EDFZ = Electricity Demand Forecast Zone; yr = year

[1] The 12 building types used by the commercial end use forecast have been cross walked to the 49 non-residential land use types in CalEEMod, as shown in Table E-1.6.

[2] Data for some EDFZ were not available in the commercial end use forecast, and a representative EDFZ was assumed (refer to Table E-1.1).

Table E-1.3. Non-Residential Natural Gas Reduction for 1 Percent Improvement over 2019 Title 24 Requirements

	Natural Gas Reduction by EDFZ[2]																			
Non-Residential Building Type[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	State
Arena	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
Automobile Care Center	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
Bank (with Drive-Through)	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
Convenience Market (24 hour)	0.76%	0.78%	0.69%	0.72%	0.68%	0.75%	0.18%	0.17%	0.27%	0.20%	0.19%	0.34%	0.49%	0.67%	0.67%	0.17%	0.18%	0.36%	0.17%	0.51%
Convenience Market with Gas Pumps	0.76%	0.78%	0.69%	0.72%	0.68%	0.75%	0.18%	0.17%	0.27%	0.20%	0.19%	0.34%	0.49%	0.67%	0.67%	0.17%	0.18%	0.36%	0.17%	0.51%
Day-Care Center	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.51%	0.52%	0.65%	0.58%	0.58%	0.55%	0.98%	0.99%	0.99%	0.50%	0.50%	0.70%	0.35%	0.83%
Discount Club	0.98%	0.98%	0.99%	0.99%	0.99%	0.98%	0.24%	0.23%	0.31%	0.24%	0.23%	0.29%	0.99%	0.99%	0.99%	0.24%	0.23%	0.41%	0.44%	0.68%
Electronic Superstore	0.98%	0.98%	0.99%	0.99%	0.99%	0.98%	0.24%	0.23%	0.31%	0.24%	0.23%	0.29%	0.99%	0.99%	0.99%	0.24%	0.23%	0.41%	0.44%	0.68%
Elementary School	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.51%	0.52%	0.65%	0.58%	0.58%	0.55%	0.98%	0.99%	0.99%	0.50%	0.50%	0.70%	0.35%	0.83%
Fast Food Restaurant w/o Drive Thru	0.17%	0.21%	0.22%	0.22%	0.22%	0.19%	0.18%	0.18%	0.20%	0.19%	0.19%	0.16%	0.23%	0.22%	0.22%	0.18%	0.18%	0.16%	0.13%	0.19%
Fast Food Restaurant with Drive Thru	0.17%	0.21%	0.22%	0.22%	0.22%	0.19%	0.18%	0.18%	0.20%	0.19%	0.19%	0.16%	0.23%	0.22%	0.22%	0.18%	0.18%	0.16%	0.13%	0.19%
Free-Standing Discount store	0.98%	0.98%	0.99%	0.99%	0.99%	0.98%	0.24%	0.23%	0.31%	0.24%	0.23%	0.29%	0.99%	0.99%	0.99%	0.24%	0.23%	0.41%	0.44%	0.68%
Free-Standing Discount Superstore	0.98%	0.98%	0.99%	0.99%	0.99%	0.98%	0.24%	0.23%	0.31%	0.24%	0.23%	0.29%	0.99%	0.99%	0.99%	0.24%	0.23%	0.41%	0.44%	0.68%
Gasoline/Service Station	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
General Heavy Industry	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
General Light Industry	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
General Office Building	0.79%	0.79%	0.87%	0.83%	0.88%	0.78%	0.79%	0.80%	0.85%	0.81%	0.81%	0.88%	0.86%	0.87%	0.86%	0.78%	0.78%	0.49%	0.51%	0.82%
Government (Civic Center)	0.79%	0.79%	0.87%	0.83%	0.88%	0.78%	0.79%	0.80%	0.85%	0.81%	0.81%	0.88%	0.86%	0.87%	0.86%	0.78%	0.78%	0.49%	0.51%	0.82%
Government Office Building	0.79%	0.79%	0.87%	0.83%	0.88%	0.78%	0.79%	0.80%	0.85%	0.81%	0.81%	0.88%	0.86%	0.87%	0.86%	0.78%	0.78%	0.49%	0.51%	0.82%
Hardware/Paint Store	0.98%	0.98%	0.99%	0.99%	0.99%	0.98%	0.24%	0.23%	0.31%	0.24%	0.23%	0.29%	0.99%	0.99%	0.99%	0.24%	0.23%	0.41%	0.44%	0.68%
Health Club	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
High School	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.51%	0.52%	0.65%	0.58%	0.58%	0.55%	0.98%	0.99%	0.99%	0.50%	0.50%	0.70%	0.35%	0.83%
High Turnover (Sit Down Restaurant)	0.17%	0.21%	0.22%	0.22%	0.22%	0.19%	0.18%	0.18%	0.20%	0.19%	0.19%	0.16%	0.23%	0.22%	0.22%	0.18%	0.18%	0.16%	0.13%	0.19%
Home Improvement Superstore	0.98%	0.98%	0.99%	0.99%	0.99%	0.98%	0.24%	0.23%	0.31%	0.24%	0.23%	0.29%	0.99%	0.99%	0.99%	0.24%	0.23%	0.41%	0.44%	0.68%
Hospital	0.75%	0.76%	0.71%	0.73%	0.70%	0.74%	0.65%	0.66%	0.69%	0.69%	0.69%	0.80%	0.69%	0.70%	0.70%	0.63%	0.61%	0.70%	0.69%	0.70%
Hotel	0.89%	0.89%	0.92%	0.92%	0.92%	0.88%	0.51%	0.51%	0.60%	0.53%	0.53%	0.78%	0.96%	0.91%	0.92%	0.52%	0.49%	0.76%	0.63%	0.76%
Industrial Park	0.79%	0.79%	0.87%	0.83%	0.88%	0.78%	0.79%	0.80%	0.85%	0.81%	0.81%	0.88%	0.86%	0.87%	0.86%	0.78%	0.78%	0.49%	0.51%	0.82%
Junior College (2yr)	0.96%	0.96%	0.88%	0.96%	0.86%	0.96%	0.85%	0.85%	0.87%	0.87%	0.87%	0.91%	0.96%	0.85%	0.92%	0.84%	0.85%	0.86%	0.71%	0.88%
Junior High School	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.51%	0.52%	0.65%	0.58%	0.58%	0.55%	0.98%	0.99%	0.99%	0.50%	0.50%	0.70%	0.35%	0.83%

Table E-1.3. Non-Residential Natural Gas Reduction for 1 Percent Improvement over 2019 Title 24 Requirements (cont.)

	Natural Gas Reduction by EDFZ[2]																			
Non-Residential Building Type[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	State
Library	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
Manufacturing	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
Medical Office Building	0.79%	0.79%	0.87%	0.83%	0.88%	0.78%	0.79%	0.80%	0.85%	0.81%	0.81%	0.88%	0.86%	0.87%	0.86%	0.78%	0.78%	0.49%	0.51%	0.82%
Motel	0.89%	0.89%	0.92%	0.92%	0.92%	0.88%	0.51%	0.51%	0.60%	0.53%	0.53%	0.78%	0.96%	0.91%	0.92%	0.52%	0.49%	0.76%	0.63%	0.76%
Movie Theater (No Matinee)	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
Office Park	0.79%	0.79%	0.87%	0.83%	0.88%	0.78%	0.79%	0.80%	0.85%	0.81%	0.81%	0.88%	0.86%	0.87%	0.86%	0.78%	0.78%	0.49%	0.51%	0.82%
Pharmacy/Drugstore w/o Drive Thru	0.98%	0.98%	0.99%	0.99%	0.99%	0.98%	0.24%	0.23%	0.31%	0.24%	0.23%	0.29%	0.99%	0.99%	0.99%	0.24%	0.23%	0.41%	0.44%	0.68%
Pharmacy/Drugstore with Drive Thru	0.98%	0.98%	0.99%	0.99%	0.99%	0.98%	0.24%	0.23%	0.31%	0.24%	0.23%	0.29%	0.99%	0.99%	0.99%	0.24%	0.23%	0.41%	0.44%	0.68%
Place of Worship	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
Quality Restaurant	0.17%	0.21%	0.22%	0.22%	0.22%	0.19%	0.18%	0.18%	0.20%	0.19%	0.19%	0.16%	0.23%	0.22%	0.22%	0.18%	0.18%	0.16%	0.13%	0.19%
Racquet Club	0.42%	0.42%	0.40%	0.41%	0.40%	0.42%	0.38%	0.37%	0.42%	0.39%	0.39%	0.51%	0.42%	0.39%	0.38%	0.38%	0.38%	0.38%	0.21%	0.40%
Refrigerated Warehouse-No Rail	0.24%	0.27%	0.58%	0.16%	0.57%	0.26%	0.02%	0.02%	0.03%	0.02%	0.02%	0.02%	0.05%	0.54%	0.39%	0.01%	0.01%	0.02%	0.03%	0.06%
Refrigerated Warehouse-Rail	0.24%	0.27%	0.58%	0.16%	0.57%	0.26%	0.02%	0.02%	0.03%	0.02%	0.02%	0.02%	0.05%	0.54%	0.39%	0.01%	0.01%	0.02%	0.03%	0.06%
Regional Shopping Center	0.98%	0.98%	0.99%	0.99%	0.99%	0.98%	0.24%	0.23%	0.31%	0.24%	0.23%	0.29%	0.99%	0.99%	0.99%	0.24%	0.23%	0.41%	0.44%	0.68%
Research & Development	0.79%	0.79%	0.87%	0.83%	0.88%	0.78%	0.79%	0.80%	0.85%	0.81%	0.81%	0.88%	0.86%	0.87%	0.86%	0.78%	0.78%	0.49%	0.51%	0.82%
Strip Mall	0.98%	0.98%	0.99%	0.99%	0.99%	0.98%	0.24%	0.23%	0.31%	0.24%	0.23%	0.29%	0.99%	0.99%	0.99%	0.24%	0.23%	0.41%	0.44%	0.68%
Supermarket	0.76%	0.78%	0.69%	0.72%	0.68%	0.75%	0.18%	0.17%	0.27%	0.20%	0.19%	0.34%	0.49%	0.67%	0.67%	0.17%	0.18%	0.36%	0.17%	0.51%
University/College (4yr)	0.96%	0.96%	0.88%	0.96%	0.86%	0.96%	0.85%	0.85%	0.87%	0.87%	0.87%	0.91%	0.96%	0.85%	0.92%	0.84%	0.85%	0.86%	0.71%	0.88%
Unrefrigerated Warehouse-No Rail	0.84%	0.87%	0.84%	0.85%	0.84%	0.86%	0.04%	0.04%	0.08%	0.04%	0.04%	0.04%	0.76%	0.83%	0.83%	0.04%	0.04%	0.06%	0.05%	0.21%
Unrefrigerated Warehouse-Rail	0.84%	0.87%	0.84%	0.85%	0.84%	0.86%	0.04%	0.04%	0.08%	0.04%	0.04%	0.04%	0.76%	0.83%	0.83%	0.04%	0.04%	0.06%	0.05%	0.21%

Source: ICF calculations; California Energy Commission (CEC). 2021. Excel database with the 2018-2030 Uncalibrated Commercial Sector Forecast, provided to ICF. January 21, 2021.

EDFZ = Electricity Demand Forecast Zone; yr = year

[1] The 12 building types used by the commercial end use forecast have been cross walked to the 49 non-residential land use types in CalEEMod, as shown in Table E-1.6.

[2] Data for some EDFZ were not available in the commercial end use forecast, and a representative EDFZ was assumed (refer to Table E-1.1).

Table E-1.4. Residential Electricity Reduction for 1 Percent Improvement over 2019 Title 24 Requirements

	Electricity Reduction by EDFZ[2]															
Housing Type[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	State
Single Family Housing	0.14%	0.15%	0.33%	0.26%	0.34%	0.15%	0.22%	0.17%	0.31%	0.32%	0.34%	0.18%	0.24%	0.20%	0.26%	0.23%
Apartments Low Rise	0.11%	0.12%	0.28%	0.24%	0.31%	0.11%	0.16%	0.15%	0.24%	0.28%	0.41%	0.11%	0.27%	0.12%	0.20%	0.27%
Apartments Mid Rise	0.13%	0.14%	0.24%	0.27%	0.32%	0.13%	0.17%	0.15%	0.31%	0.27%	0.36%	0.15%	0.27%	0.13%	0.22%	0.29%
Apartments High Rise	0.13%	0.14%	0.24%	0.27%	0.32%	0.13%	0.17%	0.15%	0.31%	0.27%	0.36%	0.15%	0.27%	0.13%	0.22%	0.29%
Condo/Townhouse	0.10%	0.12%	0.22%	0.22%	0.27%	0.10%	0.16%	0.15%	0.26%	0.24%	0.40%	0.12%	0.29%	0.10%	0.24%	0.24%
Condo/Townhouse High Rise	0.13%	0.14%	0.24%	0.27%	0.32%	0.13%	0.17%	0.15%	0.31%	0.27%	0.36%	0.15%	0.27%	0.13%	0.22%	0.29%
Mobile Home Park	0.20%	0.19%	0.38%	0.28%	0.34%	0.16%	0.23%	0.11%	0.32%	0.31%	0.39%	0.21%	0.27%	0.19%	0.27%	0.35%
Retirement Community	0.11%	0.12%	0.28%	0.24%	0.31%	0.11%	0.16%	0.15%	0.24%	0.28%	0.41%	0.11%	0.27%	0.12%	0.20%	0.27%
Congregate Care	0.13%	0.14%	0.24%	0.27%	0.32%	0.13%	0.17%	0.15%	0.31%	0.27%	0.36%	0.15%	0.27%	0.13%	0.22%	0.29%

Source: ICF calculations; California Energy Commission. 2020. Excel database with the 2019 Residential Appliance Saturation Study (RASS), provided to ICF. November 13, 2020.
EDFZ = Electricity Demand Forecast Zone
[1] The five housing types used by the RASS have been cross walked to the nine residential land use types in CalEEMod, as shown in Table E-1.6.
[2] Data for some EDFZ were not available in the RASS, and a representative EDFZ was assumed (refer to Table E-1.1).

Table E-1.5. Residential Natural Gas Reduction for 1 Percent Improvement over 2019 Title 24 Requirements

	Natural Gas Reduction by EDFZ[2]															
Housing Type[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	State
Single Family Housing	0.94%	0.95%	0.95%	0.95%	0.94%	0.94%	0.88%	0.89%	0.93%	0.89%	0.86%	0.91%	0.95%	0.88%	0.88%	0.92%
Apartments Low Rise	0.94%	0.94%	0.95%	0.93%	0.92%	0.91%	0.87%	0.88%	0.91%	0.89%	0.90%	0.90%	0.91%	0.89%	0.88%	0.91%
Apartments Mid Rise	0.93%	0.98%	0.95%	0.96%	0.95%	0.93%	0.87%	0.88%	0.96%	0.91%	0.90%	0.91%	0.96%	0.84%	0.81%	0.90%
Apartments High Rise	0.93%	0.98%	0.95%	0.96%	0.95%	0.93%	0.87%	0.88%	0.96%	0.91%	0.90%	0.91%	0.96%	0.84%	0.81%	0.90%
Condo/Townhouse	0.94%	0.97%	0.98%	0.94%	0.92%	0.93%	0.89%	0.90%	0.94%	0.89%	0.90%	0.92%	0.95%	0.89%	0.89%	0.92%
Condo/Townhouse High Rise	0.93%	0.98%	0.95%	0.96%	0.95%	0.93%	0.87%	0.88%	0.96%	0.91%	0.90%	0.91%	0.96%	0.84%	0.81%	0.90%
Mobile Home Park	0.92%	0.95%	0.92%	0.92%	0.92%	0.93%	0.92%	0.93%	0.93%	0.94%	0.91%	0.92%	0.94%	0.94%	0.88%	0.92%
Retirement Community	0.94%	0.94%	0.95%	0.93%	0.92%	0.91%	0.87%	0.88%	0.91%	0.89%	0.90%	0.90%	0.91%	0.89%	0.88%	0.91%
Congregate Care	0.93%	0.98%	0.95%	0.96%	0.95%	0.93%	0.87%	0.88%	0.96%	0.91%	0.90%	0.91%	0.96%	0.84%	0.81%	0.90%

Source: ICF calculations; California Energy Commission. 2020. Excel database with the 2019 Residential Appliance Saturation Study (RASS), provided to ICF. November 13, 2020.
EDFZ = Electricity Demand Forecast Zone
[1] The five housing types used by the RASS have been cross walked to the nine residential land use types in CalEEMod, as shown in Table E-1.6.
[2] Data for some EDFZ were not available in the RASS, and a representative EDFZ was assumed (refer to Table E-1.1).

B3 Attach #1 of 3

Table E-1.6. Residential Appliance Saturation Study/Commercial End Use Forecast to CalEEMod Land Use Type Mapping

Land Use Type[1]	Mapped Land Use Type[2]
College	Junior college (2yr), University/college (4yr)
Grocery	Convenience market (24 hour), Convenience market with gas pumps, Supermarket
Hospital	Hospital
Hotel/motel	Hotel, Motel
Large office	General office building, Government (civic center), Government office building, Industrial park, Medical office building, Office park, Research & development
Miscellaneous	Arena, automobile care center, Bank (with drive-through), Gasoline/service station, General heavy industry, General light industry, Health club, Library, Manufacturing, Movie theater (no matinee), Place of worship, Racquet club
Refg. Warehouse	Refrigerated warehouse
Restaurant	Fast food restaurant w/o drive thru, Fast food restaurant with drive thru, High turnover (sit down restaurant), Quality restaurant
Retail	Discount club, Electronic superstore, Free-standing discount store, Free-standing discount superstore, Hardware/paint store, Home improvement superstore, Pharmacy/drugstore, Regional shopping center, Strip mall
Schools	Day-care center, Elementary school, High school, Junior high school
Small office	n/a
Warehouse	Unrefrigerated warehouse
Single family detached	Single family housing
Apartment or condo (2-4 units)	Apartments low rise, Retirement community
Apartment or condo (5+ units)	Apartments mid rise, Apartments high rise, Condo/townhome high rise, Congregate care
Townhome, duplex, or row house	Condo/townhouse
Mobile home	Mobile home park

RASS = Residential Appliance Saturation Study; Refg. = refrigerated; yr = year; n/a = no mapped land use type

[1] Excludes land use types with zero energy consumption in the commercial end use forecast and RASS.

[2] The commercial end use forecast and RASS land use types were mapped to those analyzed in the California Emissions Estimator Model (CalEEMod).

B3 Attach #1 of 3

Table E-2.1. Electricity Reduction of ENERGY STAR Appliance compared to Conventional Appliance

Appliance Type	Electricity Reduction (%)
Commercial Refrigerator	-20%
Residential Refrigerator	-9%
Clothes Washer	-25%
Dishwasher	-12%
Ceiling Fan	-60%

Sources: ENERGY STAR. 2014. Refrigerators – Overview. September. Available: https://www.energystar.gov/products/appliances/refrigerators. Accessed: January 2021.

ENERGY STAR. 2016. Dishwashers – Overview. January. Available: https://www.energystar.gov/products/appliances/dishwashers. Accessed: January 2021.

ENERGY STAR. 2017. Commercial Refrigerators & Freezers – Overview. March. Available: https://www.energystar.gov/products/commercial_food_service_equipment/commercial_refrigerators_freezers. Accessed: January 2021

ENERGY STAR. 2018a. Clothes Washers – Overview. February. Available: https://www.energystar.gov/products/appliances/clothes_washers?qt-consumers_product_tab=2#qt-consumers_product_tab. Accessed: January 2021.

ENERGY STAR. 2018b. Ceiling Fans – Overview. June. Available: https://www.energystar.gov/products/lighting_fans/ceiling_fans. Accessed: January 2021.

Table E-2.2. Non-Residential Percent of Total Building Electricity for Commercial Refrigerators

	Commercial Refrigerator Percent of Total Building Electricity by EDFZ[2]																		
Non-Residential Building Type[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	State
Arena	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
Automobile Care Center	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
Bank (with Drive-Through)	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
Convenience Market (24 hour)	23%	23%	21%	23%	20%	23%	57%	57%	52%	56%	57%	55%	27%	23%	24%	55%	55%	50%	45%	35%
Convenience Market with Gas Pumps	23%	23%	21%	23%	20%	23%	57%	57%	52%	56%	57%	55%	27%	23%	24%	55%	55%	50%	45%	35%
Day-Care Center	3%	3%	3%	3%	3%	3%	1%	1%	2%	2%	2%	1%	2%	3%	3%	1%	1%	<1%	1%	2%
Discount Club	2%	2%	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%	2%
Electronic Superstore	2%	2%	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%	2%
Elementary School	3%	3%	3%	3%	3%	3%	1%	1%	2%	2%	2%	1%	2%	3%	3%	1%	1%	<1%	1%	2%
Fast Food Restaurant w/o Drive Thru	13%	12%	12%	13%	12%	13%	24%	24%	23%	26%	26%	22%	15%	14%	14%	19%	20%	19%	16%	17%
Fast Food Restaurant with Drive Thru	13%	12%	12%	13%	12%	13%	24%	24%	23%	26%	26%	22%	15%	14%	14%	19%	20%	19%	16%	17%
Free-Standing Discount store	2%	2%	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%	2%
Free-Standing Discount Superstore	2%	2%	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%	2%
Gasoline/Service Station	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
General Heavy Industry	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
General Light Industry	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
General Office Building	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Government (Civic Center)	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Government Office Building	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Hardware/Paint Store	2%	2%	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%	2%
Health Club	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
High School	3%	3%	3%	3%	3%	3%	1%	1%	2%	2%	2%	1%	2%	3%	3%	1%	1%	<1%	1%	2%
High Turnover (Sit Down Restaurant)	13%	12%	12%	13%	12%	13%	24%	24%	23%	26%	26%	22%	15%	14%	14%	19%	20%	19%	16%	17%
Home Improvement Superstore	2%	2%	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%	2%
Hospital	<1%	<1%	<1%	<1%	<1%	<1%	1%	1%	<1%	1%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	9%	1%
Hotel	4%	4%	4%	4%	4%	4%	8%	8%	7%	8%	8%	10%	5%	5%	5%	8%	8%	7%	3%	7%
Industrial Park	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Junior College (2yr)	<1%	<1%	<1%	<1%	<1%	<1%	4%	4%	3%	4%	4%	3%	<1%	<1%	<1%	3%	2%	3%	5%	3%

Table E-2.2. Non-Residential Percent of Total Building Electricity for Commercial Refrigerators (cont.)

	Commercial Refrigerator Percent of Total Building Electricity by EDFZ[2]																		
Non-Residential Building Type[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	State
Junior High School	3%	3%	3%	3%	3%	3%	1%	1%	2%	2%	2%	1%	2%	3%	3%	1%	1%	<1%	1%	2%
Library	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
Manufacturing	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
Medical Office Building	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Motel	4%	4%	4%	4%	4%	4%	8%	8%	7%	8%	8%	10%	5%	5%	5%	8%	8%	7%	3%	7%
Movie Theater (No Matinee)	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
Office Park	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Pharmacy/Drugstore w/o Drive Thru	2%	2%	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%	2%
Pharmacy/Drugstore with Drive Thru	2%	2%	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%	2%
Place of Worship	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
Quality Restaurant	13%	12%	12%	13%	12%	13%	24%	24%	23%	26%	26%	22%	15%	14%	14%	19%	20%	19%	16%	17%
Racquet Club	1%	2%	1%	2%	1%	2%	<1%	<1%	<1%	<1%	<1%	<1%	2%	2%	2%	<1%	<1%	<1%	<1%	<1%
Refrigerated Warehouse-No Rail	64%	64%	64%	64%	64%	64%	80%	79%	81%	83%	83%	82%	72%	71%	71%	78%	78%	52%	73%	72%
Regional Shopping Center	2%	2%	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%	2%
Research & Development	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Strip Mall	2%	2%	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%	2%
Supermarket	23%	23%	21%	23%	20%	23%	57%	57%	52%	56%	57%	55%	27%	23%	24%	55%	55%	50%	45%	35%
University/College (4yr)	<1%	<1%	<1%	<1%	<1%	<1%	4%	4%	3%	4%	4%	3%	<1%	<1%	<1%	3%	2%	3%	5%	3%
Unrefrigerated Warehouse-No Rail	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Unrefrigerated Warehouse-Rail	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Source: ICF calculations; California Energy Commission (CEC). 2021. Excel database with the 2018-2030 Uncalibrated Commercial Sector Forecast, provided to ICF. January 21, 2021.

EDFZ = Electricity Demand Forecast Zone; yr = year

[1] The 12 building types used by the commercial end use forecast have been cross walked to the 49 non-residential land use types in CalEEMod, as shown in Table E-1.6.

[2] Data for some EDFZ were not available in the commercial end use forecast, and a representative EDFZ was assumed (refer to Table E-1.1).

Table E-2.3. Residential Percent of Total Building Electricity by Appliance

	Percent of Total Electricity by Appliance by EDFZ[2]															
Housing Type[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	State
Refrigerator																
Single Family Housing	18%	18%	14%	15%	13%	18%	17%	17%	15%	15%	13%	18%	16%	18%	15%	16%
Apartments Low Rise	26%	29%	22%	25%	21%	27%	28%	26%	25%	23%	17%	27%	25%	27%	28%	26%
Apartments Mid Rise	28%	29%	25%	24%	22%	29%	28%	29%	22%	24%	21%	28%	24%	30%	27%	27%
Apartments High Rise	28%	29%	25%	24%	22%	29%	28%	29%	22%	24%	21%	28%	24%	30%	27%	27%
Condo/Townhouse	24%	24%	24%	22%	22%	26%	24%	24%	22%	24%	17%	26%	21%	27%	23%	24%
Condo/Townhouse High Rise	28%	29%	25%	24%	22%	29%	28%	29%	22%	24%	21%	28%	24%	30%	27%	27%
Mobile Home Park	23%	21%	15%	17%	16%	23%	22%	28%	17%	18%	17%	21%	21%	25%	20%	19%
Retirement Community	26%	29%	22%	25%	21%	27%	28%	26%	25%	23%	17%	27%	25%	27%	28%	26%
Congregate Care	28%	29%	25%	24%	22%	29%	28%	29%	22%	24%	21%	28%	24%	30%	27%	27%
Clothes Washer																
Single Family Housing	1.1%	0.8%	0.7%	0.8%	0.9%	1.0%	1.2%	1.1%	0.9%	1.0%	0.9%	1.1%	0.9%	1.1%	1.1%	1.0%
Apartments Low Rise	1.0%	1.0%	1.0%	0.6%	0.8%	0.9%	1.0%	1.0%	0.9%	1.0%	0.6%	1.0%	0.6%	1.0%	0.5%	0.9%
Apartments Mid Rise	0.6%	0.6%	0.7%	0.6%	0.6%	0.5%	0.5%	0.6%	0.7%	0.6%	0.5%	0.6%	0.7%	0.5%	0.6%	0.6%
Apartments High Rise	0.6%	0.6%	0.7%	0.6%	0.6%	0.5%	0.5%	0.6%	0.7%	0.6%	0.5%	0.6%	0.7%	0.5%	0.6%	0.6%
Condo/Townhouse	1.3%	1.1%	0.8%	1.1%	1.1%	1.4%	1.3%	1.2%	1.2%	1.3%	0.8%	1.2%	1.0%	1.3%	1.6%	1.2%
Condo/Townhouse High Rise	0.6%	0.6%	0.7%	0.6%	0.6%	0.5%	0.5%	0.6%	0.7%	0.6%	0.5%	0.6%	0.7%	0.5%	0.6%	0.6%
Mobile Home Park	1.5%	1.1%	0.9%	0.8%	0.8%	1.0%	1.1%	1.3%	0.9%	0.8%	0.8%	0.9%	0.9%	0.6%	1.3%	0.9%
Retirement Community	1.0%	1.0%	1.0%	0.6%	0.8%	0.9%	1.0%	1.0%	0.9%	1.0%	0.6%	1.0%	0.6%	1.0%	0.5%	0.9%
Congregate Care	0.6%	0.6%	0.7%	0.6%	0.6%	0.5%	0.5%	0.6%	0.7%	0.6%	0.5%	0.6%	0.7%	0.5%	0.6%	0.6%
Dishwasher																
Single Family Housing	1.1%	0.9%	0.6%	0.8%	0.7%	0.9%	0.9%	1.0%	0.7%	0.8%	0.8%	1.0%	0.9%	0.8%	0.8%	0.9%
Apartments Low Rise	1.0%	0.9%	1.0%	0.7%	0.8%	0.9%	0.8%	1.1%	0.8%	1.0%	0.7%	1.1%	0.8%	0.6%	0.6%	0.9%
Apartments Mid Rise	1.0%	0.7%	0.9%	0.7%	0.7%	0.8%	0.9%	0.7%	0.9%	0.9%	0.8%	1.0%	0.9%	0.8%	1.1%	0.9%
Apartments High Rise	1.0%	0.7%	0.9%	0.7%	0.7%	0.8%	0.9%	0.7%	0.9%	0.9%	0.8%	1.0%	0.9%	0.8%	1.1%	0.9%
Condo/Townhouse	1.2%	1.0%	0.6%	0.9%	0.8%	1.3%	1.1%	1.2%	0.8%	0.9%	0.7%	1.2%	0.8%	0.7%	1.1%	1.1%
Condo/Townhouse High Rise	1.0%	0.7%	0.9%	0.7%	0.7%	0.8%	0.9%	0.7%	0.9%	0.9%	0.8%	1.0%	0.9%	0.8%	1.1%	0.9%
Mobile Home Park	0.8%	0.6%	0.4%	0.6%	0.4%	0.8%	0.6%	0.6%	0.5%	0.4%	0.5%	0.8%	0.6%	0.3%	0.6%	0.6%
Retirement Community	1.0%	0.9%	1.0%	0.7%	0.8%	0.9%	0.8%	1.1%	0.8%	1.0%	0.7%	1.1%	0.8%	0.6%	0.6%	0.9%

Table E-2.3. Residential Percent of Total Building Electricity by Appliance (cont.)

	Percent of Total Electricity by Appliance by EDFZ[2]															
Housing Type[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	State
Congregate Care	1.0%	0.7%	0.9%	0.7%	0.7%	0.8%	0.9%	0.7%	0.9%	0.9%	0.8%	1.0%	0.9%	0.8%	1.1%	0.9%
Ceiling Fan																
Single Family Housing	1.3%	1.2%	0.9%	1.0%	0.9%	1.3%	1.2%	1.3%	0.9%	1.1%	0.9%	1.3%	0.9%	1.2%	1.0%	1.1%
Apartments Low Rise	2.2%	2.4%	1.8%	1.9%	1.7%	2.6%	2.2%	2.1%	1.8%	1.8%	1.2%	2.4%	1.7%	2.3%	2.3%	2.1%
Apartments Mid Rise	2.4%	2.6%	1.7%	1.8%	1.7%	2.8%	2.3%	2.4%	1.6%	1.9%	1.5%	2.5%	1.7%	2.5%	2.1%	2.3%
Apartments High Rise	2.4%	2.6%	1.7%	1.8%	1.7%	2.8%	2.3%	2.4%	1.6%	1.9%	1.5%	2.5%	1.7%	2.5%	2.1%	2.3%
Condo/Townhouse	1.9%	2.0%	1.6%	1.6%	1.5%	2.3%	1.8%	1.9%	1.6%	1.7%	1.1%	2.0%	1.3%	2.1%	1.6%	1.8%
Condo/Townhouse High Rise	2.4%	2.6%	1.7%	1.8%	1.7%	2.8%	2.3%	2.4%	1.6%	1.9%	1.5%	2.5%	1.7%	2.5%	2.1%	2.3%
Mobile Home Park	2.0%	1.5%	1.1%	1.2%	1.2%	1.8%	1.7%	2.3%	1.2%	1.5%	1.2%	1.8%	1.5%	1.9%	1.7%	1.4%
Retirement Community	2.2%	2.4%	1.8%	1.9%	1.7%	2.6%	2.2%	2.1%	1.8%	1.8%	1.2%	2.4%	1.7%	2.3%	2.3%	2.1%
Congregate Care	2.4%	2.6%	1.7%	1.8%	1.7%	2.8%	2.3%	2.4%	1.6%	1.9%	1.5%	2.5%	1.7%	2.5%	2.1%	2.3%

Source: ICF calculations; California Energy Commission (CEC). 2020. Excel database with the 2019 Residential Appliance Saturation Study (RASS), provided to ICF. November 13, 2020.

EDFZ = Electricity Demand Forecast Zone

[1] The five housing types used by the RASS have been cross walked to the nine residential land use types in CalEEMod, as shown in Table E-1.6.

[2] Data for some EDFZ were not available in the RASS, and a representative EDFZ was assumed (refer to Table E-1.1).

B3 Attach #1 of 3

Table E-3-A.1. Average Annual Fuel Use and Savings by Boiler Type for Residential Boilers

	Annual Fuel Use		
AFUE by Boiler Type[1, 2]	Total (MMBtu/yr)[3]	Savings (MMBtu/yr)	Change (%)
Gas-fired[4] Hot Water Boiler			
84% (Standard)	82.1	—	—
85%	81.1	1.0	-1.2%
90%	75.2	6.9	-8.4%
92%	73.6	8.5	-10.4%
96% (Max Tech)	70.6	11.5	-14.0%
Gas-fired Steam Boiler			
82% (Standard)	83.9	—	—
83% (Max Tech)	82.9	1.0	-1.2%
Oil-fired Hot Water Boiler			
86% (Standard)	84.3	—	—
91% (Max Tech)	80.1	4.2	-5.0%
Oil-fired Steam Boiler			
85% (Standard)	82.9	—	—
86% (Max Tech)	81.9	1.0	-1.2%

Source: U.S. Department of Energy (U.S. DOE). 2015. Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Residential Boilers. March. Available: https://www.regulations.gov/docketBrowser?rpp=25&so=DESC&sb=commentDueDate&po=0&dct=SR%2BO&D=EERE-2012-BT-STD-0047. Accessed: January 2021.

AFUE = Annual fuel utilization efficiency; MMBtu = one million British Thermal Units; yr = year

[1] "Standard" refers to the minimum AFUE required by the 2016 Conservation Standards for Residential Boilers.

[2] "Max Tech" refers to the maximum technologically feasible improvement in energy efficiency determined by DOE for each type of boiler.

[3] The average annual fuel use is based on historical consumption data.

[4] Gas-fired boilers refer to boilers that use natural gas and/or propane as fuel.

B3 Attach #1 of 3

Table E-3-B.1. Average Annual Fuel Use and Savings for Boilers Installed Before January 10, 2023 for Commercial and Industrial Boilers

	Annual Fuel Use		
CE or TE by Boiler Type[1, 2]	Total (MMBtu/yr)[3]	Savings (MMBtu/yr)	Change (%)
Gas-fired Hot Water Boiler (≥300,000 Btu/hr and ≤2,500,000 Btu/hr)			
80% TE (Standard)	907.7	—	—
81% TE	896.3	11.4	-1.3%
82% TE	885.2	22.6	-2.5%
84% TE	863.7	44	-4.8%
85% TE	853.4	54.4	-6.0%
93% TE	815.7	92	-10.1%
95% TE	797.3	110.4	-12.2%
99% TE (Max Tech)	762.9	144.8	-16.0%
Gas-fired Hot Water Boiler (≥2,500,000 Btu/hr and ≤10,000,000 Btu/hr)			
82% CE (Standard)	6,008.8	—	—
83% CE	5,929.9	78.9	-1.3%
84% CE	5,853.1	155.7	-2.6%
85% CE	5,778.3	230.5	-3.8%
94% CE	5,442.5	566.3	-9.4%
97% CE (Max Tech)	5,252.2	756.6	-12.6%
Oil-fired Hot Water Boiler (≥300,000 Btu/hr and ≤2,500,000 Btu/hr)			
82% TE (Standard)	807.3	—	—
83% TE	797.4	9.9	-1.2%
84% TE	787.8	19.5	-2.4%
85% TE	778.4	28.9	-3.6%
87% TE	760.2	47.1	-5.8%
88% TE	751.5	55.8	-6.9%
97% TE (Max Tech)	709.5	97.8	-12.1%
Oil-fired Hot Water Boiler (≥2,500,000 Btu/hr and ≤10,000,000 Btu/hr)			
84% CE (Standard)	3,119.1	—	—
86% CE	3,047.7	71.4	-2.3%
88% CE	2,979.5	139.6	-4.5%
89% CE	2,946.5	172.6	-5.5%
97% CE (Max Tech)	2,854.2	264.9	-8.5%
Gas-fired Steam Boiler (≥300,000 Btu/hr and ≤2,500,000 Btu/hr)			
77% TE (Standard)	787.0	—	—
78% TE	776.7	10.3	-1.3%
79% TE	766.7	20.3	-2.6%
80% TE	757	30	-3.8%
81% TE	747.4	39.6	-5.0%
83% TE (Max Tech)	729.1	57.9	-7.4%

B3 Attach #1 of 3

Table E-3-B.1. Average Annual Fuel Use and Savings for Boilers Installed Before January 10, 2023 for Commercial and Industrial Boilers (cont.)

	Annual Fuel Use		
CE or TE by Boiler Type[1, 2]	Total (MMBtu/yr)[3]	Savings (MMBtu/yr)	Change (%)
Gas-fired Steam Boiler (≥2,500,000 Btu/hr and ≤10,000,000 Btu/hr)			
77% TE (Standard)	4,956.9	—	—
78% TE	4,892.1	64.8	-1.3%
79% TE	4,829.0	127.9	-2.6%
80% TE	4,767.5	189.4	-3.8%
81% TE	4,707.6	249.3	-5.0%
82% TE	4,649.1	307.8	-6.2%
84% TE (Max Tech)	4,536.4	420.5	-8.5%
Oil-fired Steam Boiler (≥300,000 Btu/hr and ≤2,500,000 Btu/hr)			
81% TE (Standard)	845.7	—	—
83% TE	825.0	20.7	-2.4%
84% TE	815.0	30.7	-3.6%
86% TE (Max Tech)	795.8	49.9	-5.9%
Oil-fired Steam Boiler (≥2,500,000 Btu/hr and ≤10,000,000 Btu/hr)			
81% TE (Standard)	3,730.3	—	—
83% TE	3,639.0	91.3	-2.4%
85% TE	3,552.1	178.2	-4.8%
87% (Max Tech)	3,469.2	261.1	-7.0%

Source: U.S. Department of Energy (U.S. DOE). 2016. Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Commercial Packaged Boilers. December. Available: https://www.regulations.gov/docket?D=EERE-2013-BT-STD-0030. Accessed: January 2021.

CE = combustion efficiency; MMBtu = one million British Thermal Unit; TE = thermal efficiency; yr = year; Btu = British Thermal Unit; ≥ = greater than or equal to; ≤ = less than or equal to

[1] "Standard" refers to the minimum CE or TE required by the 2012 Conservation Standards for Commercial Packaged Boilers.

[2] "Max Tech" refers to the maximum technologically feasible improvement in energy efficiency determined by DOE for each type of boiler.

[3] The average annual fuel use is based on historical consumption data.

B3 Attach #1 of 3

Table E-3-B.2. Average Annual Fuel Use and Savings for Boilers Installed On or After January 10, 2023

	Annual Fuel Use		
CE or TE by Boiler Type[1, 2]	Total (MMBtu/yr)[3]	Savings (MMBtu/yr)	Change (%)
Gas-fired Hot Water Boiler (≥300,000 Btu/hr and ≤2,500,000 Btu/hr)			
84% TE (Standard)	863.7	—	—
85% TE	853.4	10.3	-1.2%
93% TE	815.7	48.0	-5.6%
95% TE	797.3	66.4	-7.7%
99% TE (Max Tech)	762.9	100.8	-11.7%
Gas-fired Hot Water Boiler (≥2,500,000 Btu/hr and ≤10,000,000 Btu/hr)			
85% CE (Standard)	5,778.3	—	—
94% CE	5,442.5	335.8	-5.8%
97% CE (Max Tech)	5,252.2	526.1	-9.1%
Oil-fired Hot Water Boiler (≥300,000 Btu/hr and ≤2,500,000 Btu/hr)			
87% TE (Standard)	760.2	—	—
88% TE	751.5	8.7	-1.1%
97% TE (Max Tech)	709.5	50.7	-6.7%
Oil-fired Hot Water Boiler (≥2,500,000 Btu/hr and ≤10,000,000 Btu/hr)			
88% CE (Standard)	2,979.5	—	—
89% CE	2,946.5	33.0	-1.1%
97% CE (Max Tech)	2,854.2	125.3	-4.2%
Gas-fired Steam Boiler (≥300,000 Btu/hr and ≤2,500,000 Btu/hr)			
81% TE (Standard)	747.4	—	—
83% TE (Max Tech)	729.1	18.3	-2.4%
Gas-fired Steam Boiler (≥2,500,000 Btu/hr and ≤10,000,000 Btu/hr)			
82% TE (Standard)	4,649.1	—	—
84% TE (Max Tech)	4,536.4	112.7	-2.4%
Oil-fired Steam Boiler (≥300,000 Btu/hr and ≤2,500,000 Btu/hr)			
84% TE (Standard)	815.0	—	—
86% TE (Max Tech)	795.8	19.2	-2.4%
Oil-fired Steam Boiler (≥2,500,000 Btu/hr and ≤10,000,000 Btu/hr)			
81% TE (Standard)	3,730.3	—	—
83% TE	3,639.0	91.3	-2.4%
85% TE	3,552.1	178.2	-4.8%
87% (Max Tech)	3,469.2	261.1	-7.0%

Source: U.S. Department of Energy (U.S. DOE). 2016. Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Commercial Packaged Boilers. December. Available: https://www.regulations.gov/docket?D=EERE-2013-BT-STD-0030. Accessed: January 2021.

CE = combustion efficiency; MMBtu = one million British Thermal Units; TE = thermal efficiency; yr = year; Btu = British Thermal Unit; ≥ = greater than or equal to; ≤ = less than or equal to

[1] "Standard" refers to the minimum CE or TE required by the 2020 Conservation Standards for Commercial Packaged Boilers.

[2] "Max Tech" refers to the maximum technologically feasible improvement in energy efficiency determined by DOE for each type of boiler.

[3] The average annual fuel use is based on historical consumption data.

B3 Attach #1 of 3

Table E-4.1. Canyon Aspect Ratios

Ratio	Height (ft)	Width (ft)	Neighboring Building Types Represented
0.2	19.7	98.4	Two-story single-family homes across a residential street
1	19.7	19.7	Two-story single-family homes across small backyards
2	19.7	9.8	Two-story single-family homes on the same street side
10	98.4	9.8	Adjacent 10-story office buildings on the same street side

Source: Levinson, R. 2019. *Using Solar Availability Factors to Adjust Cool-Wall Energy Savings for Shading and Reflection by Neighboring Buildings.* March. Available: https://escholarship.org/content/qt0hf5m90n/qt0hf5m90n.pdf. Accessed: January 2021.

ft = foot

Table E-4.2. Solar Availability Factors by Canyon Aspect Ratio

	Conventional Neighboring Wall (albedo = 0.25)				Cool Neighboring Wall (albedo = 0.60)			
Ratio	North	East	South	West	North	East	South	West
0.2	0.92	0.92	0.95	0.92	1.02	0.95	0.96	0.95
1	0.67	0.62	0.7	0.62	0.94	0.72	0.75	0.72
2	0.47	0.42	0.49	0.42	0.73	0.52	0.55	0.52
10	0.13	0.11	0.13	0.11	0.22	0.15	0.16	0.15

Source: Levinson, R. 2019. *Using Solar Availability Factors to Adjust Cool-Wall Energy Savings for Shading and Reflection by Neighboring Buildings.* March. Available: https://escholarship.org/content/qt0hf5m90n/qt0hf5m90n.pdf. Accessed: January 2021.

Table E-4.3. Greenhouse Gas Intensity Factor by California Electricity Provider by Year (2017–2031)[1]

Electricity Provider	Intensity Factor per Total Energy Delivered (lb CO_2e per MWh)												
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Alameda Municipal Power	455	0[2]	0	0	0	0	0	0	0	0	0	0	0
Apple Valley Choice Energy	655	655	655	595	595	595	595	526	526	526	526	334	334
Bear Valley Electric Service	914	914	914	567	567	567	567	483	483	483	483	435	435
Burbank Water & Power	1,132	1,008	932	902	884	669	398	224	221	216	218	236	236
Baldwin Park Resident Owned Utility District	—[3]	585	585	598	598	598	598	526	526	526	526	336	336
Central Coast Community Energy	12	137	509	542	528	448	388	313	235	159	83	8	8
City of Anaheim Public Utilities Department	1,037	965	982	1001	985	937	756	568	469	311	304	276	271
City of Commerce	—[4]	—[4]	—[4]	600	600	600	600	518	518	518	518	331	331
City of Palo Alto Utilities Department	0	0	0	0	0	0	0	0	0	0	25	75	75
City of Riverside	875	788	792	791	789	789	602	451	441	432	415	398	398
City of Vernon Municipal Light Department	707	713	567	545	504	508	456	416	420	426	321	326	326
CleanPowerSF	46	19	132	122	108	94	80	9	9	9	9	0	0
Clean Energy Alliance	—[3]	964	964	545	544	544	544	449	449	449	449	431	431
Clean Power Alliance	361	474	474	432	432	432	431	416	416	416	416	332	332
Desert Community Energy	534	47	85	85	81	76	72	68	65	62	60	58	58
Glendale Water and Power	1027	948	951	785	790	693	550	346	357	370	285	304	304
Imperial Irrigation District	459	183	192	189	219	223	225	264	268	277	251	249	249
Lancaster Choice Energy	618	618	618	600	600	600	600	516	516	516	516	333	333
Los Angeles Department of Water & Power	694	694	694	694	694	694	694	694	694	694	694	694	694
MCE	190	292	292	151	151	150	150	184	184	184	184	247	247
Merced Irrigation District	455	293	293	403	403	403	403	405	405	405	405	391	391
Modesto Irrigation District	480	503	455	467	474	481	490	394	408	385	368	373	373
Pacific Gas and Electric Company	206[6]	206	206	206	206	206	206	206	206	206	206	206	206
PacifiCorp	1,501	1,292	1,188	1,228	1,254	1029	978	967	930	808	784	724	722
Pasadena Water and Power	1,030	869	875	869	869	465	82	71	68	68	71	64	64
Peninsula Clean Energy	102	102	0	0	0	0	0	0	0	0	0	0	0
Pico Rivera Innovative Municipal Energy	687	687	686	595	594	594	594	527	527	527	527	335	335
Pioneer Community Energy	767	767	767	624	623	623	623	482	482	482	482	391	391
Pomona Choice Energy	—[3]	618	618	598	598	598	598	517	517	517	517	333	332
Rancho Mirage Energy Authority	648	648	647	591	591	591	591	526	526	526	526	328	328
Redding Electric Utility	377	374	339	339	337	341	350	161	166	173	175	181	181
Redwood Coast Energy Authority	64	317	408	231	181	226	226	200	200	200	200	244	244
Roseville Electric	530	532	474	473	473	448	394	377	360	343	325	309	309
Sacramento Municipal Utility District	376	375	360	344	329	314	297	280	269	254	239	224	210
San Diego Community Power	—[4]	—[4]	—[4]	583	583	582	582	486	486	486	486	324	324
San Diego Gas & Electric	591	542	542	542	542	542	541	47	47	46	46	171	171
San Francisco Public Utilities Commission	0	0	0	0	0	0	0	0	0	0	0	0	0
San Jacinto Power	583	643	643	583	583	582	582	486	486	486	486	324	324
San Jose Clean Energy	811	811	810	390	390	390	390	363	363	363	363	311	311
Silicon Valley Clean Energy	2	2	2	6	5	5	5	5	4	4	4	3	3

Table E-4.3. Greenhouse Gas Intensity Factor by California Electricity Provider by Year (2017–2031) (cont.)[1]

Electricity Provider	Intensity Factor per Total Energy Delivered (lb CO_2e per MWh)												
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Silicon Valley Power	389	357	310	168	187	205	224	224	227	232	239	155	155
Sonoma Clean Power	41	78	122	117	112	107	102	96	91	86	81	76	76
Southern California Edison	534	393	393	351	351	351	351	348	348	348	348	263	263
Turlock Irrigation District	589	702	610	563	694	704	581	547	296	291	336	348	286
Valley Clean Energy	206	961	961	639	639	639	639	520	520	519	519	391	391
Western Community Energy	—[3]	534	534	397	397	330	330	330	330	393	393	392	392
Statewide Average [7]	455	448	430	411	393	375	355	335	321	303	285	268	250

Sources: ICF calculations; California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021; U.S. Environmental Protection Agency. 2021. Emissions & Generation Resource Integrated Database (eGRID). Last Revised: February 23, 2021. Available: https://www.epa.gov/egrid. Accessed: February 24, 2021.

lb = pounds; MWh = megawatt-hour; CO_2e = carbon dioxide equivalent

[1] All electricity providers gave an emission factor for at least one reported year. Emission factors for remaining years were calculated according to the following method, except where noted below.

- If an electricity provider gave data up until a year before 2045, all years between the last year of data given and 2045 were held constant at the values for the last year of data given. For example, Burbank Water & Power provided emission factors through 2030. Emission factors for years 2031 through 2045 were held constant at value provided for 2030.
- If an electricity provider gave factors for CO_2, but not CH_4 or N_2O, statewide average emission factors for CH_4 and N_2O were assumed to calculate CO_2e emission factors for the utility.

Users should consult their local electricity provider for updated emission factors available at the time of their analysis before proceeding with the defaults provided in this table.

[2] The electricity provider indicated that it began deriving carbon-free power beginning in 2020. This factor was held constant into all future years.

[3] The electricity provider began service in 2020.

[4] The electricity provider is not expected to begin service until 2022.

[5] The electricity providers' GHG emissions reported in their IRP filing change to positive in 2029 and 2030. This may be because they have not yet developed a plan to achieve carbon-free (or negative) power after 2029.

[6] 2018 value (data for 2019 not available).

[7] CO_2, CH_4, and N_2O emission factors for 2019 obtained from USEPA eGRID2019. Future year emission factors were calculated based on the 2019 intensity factors divided by the percent of energy delivered from non-renewable sources in that same year (68%). The calculated non-renewable source emission factors were multiplied by the projected percentage of energy delivered from non-renewable sources in each future year. The percentages of energy delivered from renewable sources in future years is per the requirements of Senate Bill 100: 33% RPS by 2020, 44% RPS by 2024, 50% RPS by 2026, 52% RPS by 2027, 60% RPS by 2030, and 100% carbon-free electricity for 2045. Percentages for non-Senate Bill 100 target years were interpolated.

Table E-4.4. Greenhouse Gas Intensity Factor by California Electricity Provider by Year (2032–2045)[1]

	Intensity Factor per Total Energy Delivered (lb CO_2e per MWh)													
Electricity Provider	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Alameda Municipal Power	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apple Valley Choice Energy	333	333	333	333	333	333	333	333	333	333	333	333	333	332
Bear Valley Electric Service	435	435	435	435	435	435	435	434	434	434	434	434	434	434
Burbank Water & Power	236	236	236	236	236	236	236	236	236	236	236	236	236	236
Baldwin Park Resident Owned Utility District	336	336	335	335	335	335	335	335	335	335	335	335	335	335
Central Coast Community Energy	8	8	7	7	7	7	7	7	7	7	7	7	7	7
City of Anaheim Public Utilities Department	267	267	267	267	267	267	267	267	267	267	267	267	267	267
City of Commerce	331	331	331	331	331	330	330	330	330	330	330	330	330	330
City of Palo Alto Utilities Department	7	7	7	7	7	7	7	7	7	7	7	7	7	7
City of Riverside	398	398	398	398	398	398	398	398	398	398	398	398	398	398
City of Vernon Municipal Light Department	326	326	326	326	326	326	326	326	326	326	326	326	326	326
CleanPowerSF	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clean Energy Alliance	431	431	431	430	430	430	430	430	430	430	430	430	430	430
Clean Power Alliance	332	332	332	331	331	331	331	331	331	331	331	331	331	331
Desert Community Energy	58	58	58	58	58	58	57	57	57	57	57	57	57	57
Glendale Water and Power	304	304	304	304	304	304	304	304	304	304	304	304	304	304
Imperial Irrigation District	249	249	249	249	249	249	249	249	249	249	249	249	249	249
Lancaster Choice Energy	333	333	333	333	333	333	333	333	332	332	332	332	332	332
Los Angeles Department of Water & Power	694	694	694	694	694	694	694	694	694	694	694	694	694	694
MCE	247	247	247	247	247	247	247	247	247	247	246	246	246	246
Merced Irrigation District	391	391	391	391	391	391	391	391	391	391	390	390	390	390
Modesto Irrigation District	373	373	373	373	373	373	373	373	373	373	373	373	373	373
Pacific Gas and Electric Company	206	206	206	206	206	206	206	206	206	206	206	206	206	206
PacifiCorp	711	706	704	684	686	616	536	499	463	483	479	331	304	304
Pasadena Water and Power	64	64	64	64	64	64	62	62	62	62	62	62	62	62
Peninsula Clean Energy	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pico Rivera Innovative Municipal Energy	335	335	335	335	335	335	335	335	335	335	335	334	334	334
Pioneer Community Energy	391	391	391	391	391	391	391	391	391	391	390	390	390	390

Table E-4.4. Greenhouse Gas Intensity Factor by California Electricity Provider by Year (2032–2045) (cont.)[1]

Electricity Provider	Intensity Factor per Total Energy Delivered (lb CO_2e per MWh)													
	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Pomona Choice Energy	332	332	332	332	332	332	332	332	332	332	332	331	331	331
Rancho Mirage Energy Authority	328	328	328	328	328	328	328	328	328	327	327	327	327	327
Redding Electric Utility	181	181	181	181	181	181	181	181	181	181	181	181	181	181
Redwood Coast Energy Authority	243	243	243	243	243	243	243	243	243	243	243	243	243	242
Roseville Electric	309	309	309	309	309	309	309	309	309	309	309	309	309	309
Sacramento Municipal Utility District	195	180	165	150	135	120	106	91	76	61	46	31	16	2
San Diego Community Power	324	324	324	324	324	324	324	324	324	324	324	323	323	323
San Diego Gas & Electric	171	171	171	170	170	170	170	170	170	170	170	170	170	170
San Francisco Public Utilities Commission	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Jacinto Power	324	324	324	324	324	324	324	324	324	324	324	323	323	323
San Jose Clean Energy	311	311	311	311	311	311	310	310	310	310	310	310	310	310
Silicon Valley Clean Energy	3	3	3	3	3	2	2	2	2	2	2	2	2	2
Silicon Valley Power	155	155	155	155	155	155	155	155	155	155	155	155	155	155
Sonoma Clean Power	76	76	76	76	76	76	76	75	75	75	75	75	75	75
Southern California Edison	263	263	263	263	263	263	263	263	263	263	263	263	263	263
Turlock Irrigation District	263	263	263	263	263	263	263	263	263	263	263	263	263	263
Valley Clean Energy	391	391	391	391	391	391	391	391	391	391	390	390	390	390
Western Community Energy	378	378	378	378	378	378	378	378	377	377	377	377	377	377
Statewide Average [2]	232	214	196	178	161	143	125	107	89	71	54	36	18	0

Sources: ICF calculations; California Utilities. 2021. Excel database of GHG emission factors for delivered electricity, provided to the Sacramento Metropolitan Air Quality Management District and ICF. January through March 2021; U.S. Environmental Protection Agency. 2021. Emissions & Generation Resource Integrated Database (eGRID). Last Revised: February 23, 2021. Available: https://www.epa.gov/egrid. Accessed: February 24, 2021.

lb = pounds; MWh = megawatt-hour; CO_2e = carbon dioxide equivalent

[1] All electricity providers gave an emission factor for at least one reported year. Emission factors for remaining years were calculated according to the following method, except where noted below.

- If an electricity provider gave data up until a year before 2045, all years between the last year of data given and 2045 were held constant at the values for the last year of data given. For example, Burbank Water & Power provided emission factors through 2030. Emission factors for years 2031 through 2045 were held constant at value provided for 2030.
- If electricity provider gave factors for CO_2, but not CH_4 or N_2O, statewide average emission factors for CH_4 and N_2O were assumed to calculate CO_2e emission factors for the utility.

Users should consult their local electricity provider for updated emission factors available at the time of their analysis before proceeding with the defaults provided in this table.

[2] CO_2, CH_4, and N_2O emission factors for 2019 obtained from USEPA eGRID2019. Future year emission factors were calculated based on the 2019 intensity factors divided by the percent of energy delivered from non-renewable sources in that same year (68%). The calculated non-renewable source emission factors were multiplied by the projected percentage of energy delivered from non-renewable sources in each future year. The percentages of energy delivered from renewable sources in future years is per the requirements of Senate Bill 100: 33% RPS by 2020, 44% RPS by 2024, 50% RPS by 2026, 52% RPS by 2027, 60% RPS by 2030, and 100% carbon-free electricity for 2045. Percentages for non-Senate Bill 100 target years were interpolated.

B3 Attach #1 of 3

Table E-4.5. Natural Gas Emission Factors

Pollutant	Emission Factor by Land Use Type (lb/MMBtu)	
	Residential	Non-Residential
TOG	0.011	0.011
ROG	0.005	0.005
SO_2	0.001	0.001
NO_x[1]	0.092	0.098
PM10	0.007	0.007
PM2.5	0.007	0.007
CO	0.039	0.082
CO_2	116.977	117.647
CH_4	0.010	0.010
N_2O	0.000	0.002
CO_2e	117.325	118.549

Sources: U.S. Environmental Protection Agency. 1998. AP 42, Fifth Edition, Volume I. Chapter 1: External Combustion Sources. 1.4, Natural Gas Combustion. July. Available: https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf. Accessed: January 2021.

U.S. Environmental Protection Agency. 2020. Emission Factors for Greenhouse Gas Inventories. March. Available: https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf. Accessed: March 2021.

TOG = total organic gases; ROG = reactive organic gases; CO = carbon monoxide; SO_2 = sulfur dioxide; NOx = nitrogen oxides; PM10 = particulate matter less than or equal to 10 microns; PM2.5 = particulate matter less than or equal to 2.5 microns; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2 = carbon dioxide equivalent; lb = pound; MMBtu = one million British Thermal Units

[1] Both BAAQMD Regulation 9 Rule 6 and SCAQMD Rule 1121 require that natural gas water heaters limit NO_x emissions to 10 nanograms per joule, which equates to 0.023 lb/MMBtu, lower than the generic value of 0.092 lb/MMBtu provided above. Users with a project in BAAQMD or SCAQMD territory that are calculating the NO_x reduction associated with Measure E-11, *Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences*, should use the value of 0.023 lb/MMBtu.

Table E-5.1. Changes in Energy Use of Green Roof Compared to Dark Roof by Building Type and City[1]

Building Type	Electricity Savings (kWh/yr/KSF)[2]					Gas Savings (therm/yr/KSF)				
	Bakersfield	Fresno	Los Angeles	Sacramento	San Francisco	Bakersfield	Fresno	Los Angeles	Sacramento	San Francisco
Office[3]	106.9	122.9	36.9	126.7	62.9	0.1	0.2	0.0	0.2	0.0
Residential[4]	12.2	31.7	-14.6	37.6	-23.2	7.7	7.9	3.4	8.2	5.2

Source: Sailor, D., Brass, B., Peck, S. 2008. *Green Roof Energy Calculator*. Available: https://sustainability.asu.edu/urban-climate/green-roof-calculator/. Accessed: January 2021.

kWh = kilowatt-hour; KSF = thousand square feet; yr = year

[1] The Green Roof Energy calculator was run for the above building types and cities using conservative values for the remaining tool inputs: growing media depth (2 inches), leaf area index (0.5), irrigation (no), green roof coverage (50%), remaining roof material (dark). A "dark roof" is defined as having an albedo of 0.15.

[2] Negative electricity savings represent an increase in electricity use.

B3 Attach #1 of 3

[3] The office building defined for the Green Roof Energy Calculator is a 3-story medium office building with a floor area of 53.6 KSF.

[4] The residential building defined for the Green Roof Energy Calculator is a 4-story midrise apartment complex with a floor area of 33.6 KSF.

Table E-7.1. Outdoor Lighting Power Consumption and Efficacy by Lamp Type[1]

Lamp Type	Typical Power Rating (W)	Source Efficacy (LPW)
High-pressure sodium	70-400	80-120
Low-pressure sodium	55-180	130-170
Ceramic metal halide	20-400	75-110
Metal halide	70-400	40-70
CFL	20-70	80-85
Linear fluorescent	25-32	80-100
Induction	70-250	50-85
LED	40-250	Up to 130

Source: California Lighting Technology Center. 2015. *2013 Title 24, Part 6 Outdoor Lighting Guide. University of California, Davis*. March. Available: https://cltc.ucdavis.edu/sites/default/files/files/publication/2013-title-24-outdoor-lighting-guide-mar15.pdf. Accessed: January 2021.

CFL = compact fluorescent lamp; LED = light emitting diode; LPW = lumens per watt; W = watts

[1] Values are based on lamp sizes typically used in outdoor applications. These numbers are subject to change as technologies improve. Source efficacy is based on initial lumen output; system efficacy depends on the specifications of the luminaires and ballasts or drivers employed. Some outdoor applications may be best served by products with characteristics that fall outside of the ranges listed in this table.

Table E-10-B.1. Estimated Electricity Generation from Typical PV Systems (kilowatt-hours per year)[1]

Air District	Major City	Zip Code	3 kW	5 kW	10 kW
Amador County	Ione	95640	4,696	7,827	15,655
Antelope Valley	Lancaster	93534	5,410	9,017	18,034
Bay Area	San Francisco	94163	4,646	7,744	9,292
Butte County	Chico	95926	4,514	7,524	9,028
Calaveras County	Rancho Calaveras	95252	4,714	7,857	9,428
Colusa County	Colusa	95932	4,641	7,735	9,282
El Dorado County	South Lake Tahoe	96150	5,181	8,635	10,362
Feather River	Yuba City	95991	4,637	7,729	9,274
Glenn County	Orland	95963	4,578	7,630	9,156
Great Basin Unified	Bishop	93514	5,462	9,104	10,924
Imperial County	El Centro	92243	5,191	8,652	10,382
Kern County	Bakersfield	93301	5,000	8,334	10,000
Lake County	Lakeport	95453	4,610	7,684	9,220
Lassen County	Susanville	96130	4,804	8,007	9,608

B3 Attach #1 of 3

Table E-10-B.1. Estimated Electricity Generation from Typical PV Systems (kilowatt-hours per year) (cont.)[1]

Air District	Major City	Zip Code	3 kW	5 kW	10 kW
Mariposa County	Mariposa	95338	4,835	8,059	9,670
Mendocino County	Ukiah	95482	4,508	7,514	9,016
Modoc County	Alturas	96101	4,651	7,752	9,302
Mojave Desert	Victorville	92392	5,429	9,049	10,858
Monterey Bay	Monterey	93940	4,629	7,715	9,258
North Coast Unified	Eureka	95501	3,974	6,624	7,948
Northern Sierra	Grass Valley	95949	4,600	7,667	9,200
Northern Sonoma County	Healdsburg	95448	4,638	7,730	9,276
Placer County	Roseville	95678	4,608	7,680	9,216
Sacramento Metro	Sacramento	95864	4,713	7,855	9,426
San Diego County	San Diego	92182	4,999	8,332	9,998
San Joaquin Valley	Fresno	93650	4,819	8,032	9,638
San Luis Obispo County	San Luis Obispo	93405	4,993	8,322	9,986
Santa Barbara County	Santa Barbara	93101	4,923	8,205	9,846
Shasta County	Redding	96001	4,340	7,234	8,680
Siskiyou County	Yreka	96097	4,490	7,484	8,980
South Coast	Los Angeles	90071	4,984	8,307	9,968
Tehama County	Red Bluff	96080	4,513	7,522	9,026
Tuolumne County	Sonora	95370	4,827	8,045	9,654
Ventura County	Oxnard	93030	4,965	8,275	9,930
Yolo-Solano	Davis	95616	4,759	7,932	9,518

Source: National Renewable Energy Laboratory (NREL). 2017. *NREL's PVWatts® Calculator*. August. Available: https://pvwatts.nrel.gov/index.php. Accessed: January 2021.

kW = kilowatt; PV = photovoltaic

[1]Default inputs for system information were used to run the simulation.

B3 Attach #1 of 3

Table E-12.1. Energy Consumption by Type of Water Heater, Electricity Demand Forecast Zone, and Housing Type

		Energy (Therm/yr/du for NG and kWh/yr/du for electricity)			
EDFZ[1]	Housing Type[2]	NG Storage Tank	Electric Storage Tank	Solar Water Heater w/ NG Backup[3]	Solar Water Heater w/ Electric Backup[3]
1	Single Family Housing	255	2,309	210	1,319
	Apartments Low Rise	236	1,249	—	—
	Apartments Mid Rise	234	1,139	—	—
	Apartments High Rise	234	1,139	—	—
	Condo/Townhouse	245	1,626	—	—
	Condo/Townhouse High Rise	234	1,139	—	—
	Mobile Home Park	245	2,761	—	—
	Retirement Community	236	1,249	—	—
	Congregate Care	234	1,139	—	—
2	Single Family Housing	279	2,381	180	1,400
	Apartments Low Rise	217	1,014	—	—
	Apartments Mid Rise	211	1,203	—	—
	Apartments High Rise	211	1,203	—	—
	Condo/Townhouse	238	1,280	—	—
	Condo/Townhouse High Rise	211	1,203	—	—
	Mobile Home Park	257	1,790	—	—
	Retirement Community	217	1,014	—	—
	Congregate Care	211	1,203	—	—
3	Single Family Housing	239	2,327	—	1,750
	Apartments Low Rise	218	836	—	—
	Apartments Mid Rise	188	917	—	—
	Apartments High Rise	188	917	—	—
	Condo/Townhouse	214	1,228	—	—
	Condo/Townhouse High Rise	188	917	—	—
	Mobile Home Park	223	2,349	—	—
	Retirement Community	218	836	—	—
	Congregate Care	188	917	—	—
4	Single Family Housing	248	2,502	187	1,238
	Apartments Low Rise	247	1,316	—	—
	Apartments Mid Rise	244	1,299	—	—
	Apartments High Rise	244	1,299	—	—
	Condo/Townhouse	250	1,308	—	—
	Condo/Townhouse High Rise	244	1,299	—	—
	Mobile Home Park	228	2,258	—	—
	Retirement Community	247	1,316	—	—
	Congregate Care	244	1,299	—	—

B3 Attach #1 of 3

Table E-12.1. Energy Consumption by Type of Water Heater, Electricity Demand Forecast Zone, and Housing Type (cont.)

		Energy (Therm/yr/du for NG and kWh/yr/du for electricity)			
EDFZ[1]	Housing Type[2]	NG Storage Tank	Electric Storage Tank	Solar Water Heater w/ NG Backup[3]	Solar Water Heater w/ Electric Backup[3]
5	Single Family Housing	309	2,344	272	2,077
	Apartments Low Rise	365	—	—	—
	Apartments Mid Rise	356	1,521	—	—
	Apartments High Rise	356	1,521	—	—
	Condo/Townhouse	352	—	—	—
	Condo/Townhouse High Rise	356	1,521	—	—
	Mobile Home Park	290	1,749	—	—
	Retirement Community	365	—	—	—
	Congregate Care	356	1,521	—	—
6	Single Family Housing	265	2,373	203	1,750
	Apartments Low Rise	352	915	—	—
	Apartments Mid Rise	358	783	—	—
	Apartments High Rise	358	783	—	—
	Condo/Townhouse	352	1,995	—	904
	Condo/Townhouse High Rise	358	783	—	—
	Mobile Home Park	258	2,015	—	—
	Retirement Community	352	915	—	—
	Congregate Care	358	783	—	—
7	Single Family Housing	260	2,676	244	483
	Apartments Low Rise	246	1,238	181	—
	Apartments Mid Rise	245	1,148	—	—
	Apartments High Rise	245	1,148	—	—
	Condo/Townhouse	255	1,233	—	1,475
	Condo/Townhouse High Rise	245	1,148	—	—
	Mobile Home Park	251	2,046	174	—
	Retirement Community	246	1,238	181	—
	Congregate Care	245	1,148	—	—
8	Single Family Housing	272	1,935	213	—
	Apartments Low Rise	286	1,097	—	—
	Apartments Mid Rise	282	1,076	—	—
	Apartments High Rise	282	1,076	—	—
	Condo/Townhouse	273	1,057	—	—
	Condo/Townhouse High Rise	282	1,076	—	—
	Mobile Home Park	245	—	—	—
	Retirement Community	286	1,097	—	—
	Congregate Care	282	1,076	—	—

B3 Attach #1 of 3

Table E-12.1. Energy Consumption by Type of Water Heater, Electricity Demand Forecast Zone, and Housing Type (cont.)

		Energy (Therm/yr/du for NG and kWh/yr/du for electricity)			
EDFZ[1]	Housing Type[2]	NG Storage Tank	Electric Storage Tank	Solar Water Heater w/ NG Backup[3]	Solar Water Heater w/ Electric Backup[3]
9	Single Family Housing	272	2,466	278	1,385
	Apartments Low Rise	265	898	—	—
	Apartments Mid Rise	266	1,512	—	—
	Apartments High Rise	266	1,512	—	—
	Condo/Townhouse	267	1,473	—	—
	Condo/Townhouse High Rise	266	1,512	—	—
	Mobile Home Park	262	3,008	—	—
	Retirement Community	265	898	—	—
	Congregate Care	266	1,512	—	—
10	Single Family Housing	231	2,091	199	739
	Apartments Low Rise	204	1,373	—	—
	Apartments Mid Rise	197	1,154	—	—
	Apartments High Rise	197	1,154	—	—
	Condo/Townhouse	210	1,143	—	—
	Condo/Townhouse High Rise	197	1,154	—	—
	Mobile Home Park	224	2,280	—	—
	Retirement Community	204	1,373	—	—
	Congregate Care	197	1,154	—	—
11	Single Family Housing	224	2,595	—	—
	Apartments Low Rise	172	1,297	—	—
	Apartments Mid Rise	194	1,366	—	—
	Apartments High Rise	194	1,366	—	—
	Condo/Townhouse	182	1,400	109	—
	Condo/Townhouse High Rise	194	1,366	—	—
	Mobile Home Park	218	2,055	—	—
	Retirement Community	172	1,297	—	—
	Congregate Care	194	1,366	—	—
12	Single Family Housing	210	2,156	174	1,332
	Apartments Low Rise	203	1,011	220	—
	Apartments Mid Rise	200	1,027	154	—
	Apartments High Rise	200	1,027	154	—
	Condo/Townhouse	204	1,310	164	—
	Condo/Townhouse High Rise	200	1,027	154	—
	Mobile Home Park	203	1,867	—	—
	Retirement Community	203	1,011	220	—
	Congregate Care	200	1,027	154	—

B3 Attach #1 of 3

Table E-12.1. Energy Consumption by Type of Water Heater, Electricity Demand Forecast Zone, and Housing Type (cont.)

		Energy (Therm/yr/du for NG and kWh/yr/du for electricity)			
EDFZ[1]	Housing Type[2]	NG Storage Tank	Electric Storage Tank	Solar Water Heater w/ NG Backup[3]	Solar Water Heater w/ Electric Backup[3]
13	Single Family Housing	241	2,803	179	1,479
	Apartments Low Rise	263	1,575	—	—
	Apartments Mid Rise	278	1,608	—	—
	Apartments High Rise	278	1,608	—	—
	Condo/Townhouse	256	1,790	—	—
	Condo/Townhouse High Rise	278	1,608	—	—
	Mobile Home Park	229	2,256	—	—
	Retirement Community	263	1,575	—	—
	Congregate Care	278	1,608	—	—
16	Single Family Housing	359	1,895	331	1,301
	Apartments Low Rise	286	1,640	—	—
	Apartments Mid Rise	267	932	—	—
	Apartments High Rise	267	932	—	—
	Condo/Townhouse	296	740	—	—
	Condo/Townhouse High Rise	267	932	—	—
	Mobile Home Park	319	—	—	—
	Retirement Community	286	1,640	—	—
	Congregate Care	267	932	—	—
17	Single Family Housing	290	2,734	232	—
	Apartments Low Rise	332	—	—	—
	Apartments Mid Rise	330	1,202	—	—
	Apartments High Rise	330	1,202	—	—
	Condo/Townhouse	348	1,664	229	—
	Condo/Townhouse High Rise	330	1,202	—	—
	Mobile Home Park	294	—	—	—
	Retirement Community	332	—	—	—
	Congregate Care	330	1,202	—	—
State	Single Family Housing	250	2,338	195	1,291
	Apartments Low Rise	238	1,215	220	—
	Apartments Mid Rise	245	1,131	—	—
	Apartments High Rise	245	1,131	—	—
	Condo/Townhouse	244	1,344	167	1,190
	Condo/Townhouse High Rise	245	1,131	—	—
	Mobile Home Park	232	2,120	174	—
	Retirement Community	238	1,215	220	—
	Congregate Care	245	1,131	—	—

Source: ICF calculations; California Energy Commission (CEC). 2020. Excel database with the 2019 Residential Appliance Saturation Study (RASS), provided to ICF. November 13, 2020.

EDFZ = Electricity Demand Forecast Zone; kWh = kilowatt-hour; NG = natural gas; yr = year; du = dwelling unit; — = no data

[1] Data for some EDFZ were not available in the RASS, and a representative EDFZ was assumed (refer to Table E-1.1).

[2] The five housing types used by the RASS have been cross walked to the nine residential land use types in CalEEMod, as shown in Table E-1.6.

[3] The sample size in the RASS for solar water heater data was limited. Accordingly, the data should be used with caution.

Table E-14.1. Woodstove and Fireplace Usage

		Wood Stoves							Fireplaces						
Housing	Air District	Convent-ional	Catalytic	Non-catalytic	Pellet	Wood Mass (lb/yr)	Hr/day	Days/yr	Wood	Natural Gas	Propane	None	Wood Mass (lb/yr)	Hr/day	Days/yr
M	Amador County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Antelope Valley AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Bay Area AQMD	0%	0%	0%	0%	0	0	0	0%	51%	0%	49%	0	4	9
M	Butte County AQMD	0%	9%	9%	0%	3,019	7	150	39%	43%	0%	18%	5,158	4	150
M	Calaveras County AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Colusa County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	El Dorado County AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Feather River AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Glenn County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Great Basin UAPCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Imperial County APCD	0%	0%	0%	0%	0	0	0	0%	55%	0%	45%	2,080	3	4
M	Kern County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Lake County AQMD	70%	15%	10%	5%	3,019	12	82	35%	0%	55%	10%	3,078	12	82
M	Lassen County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Mariposa County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Mendocino County AQMD	0%	20%	20%	0%	4,896	3	117	5%	5%	0%	90%	4,992	3	117
M	Modoc County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Mojave Desert AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Monterey Bay ARD	0%	0%	0%	0%	0	0	120	0%	100%	0%	0%	0	0	0
M	North Coast Unified APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Northern Sierra AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Northern Sonoma County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Placer County APCD	0%	0%	0%	0%	0	0	0	0%	30%	0%	70%	0	0	0
M	Sacramento Metropolitan AQMD	0%	0%	0%	0%	0	0	0	0%	0%	0%	100%	0	0	0
M	San Diego County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	San Joaquin Valley APCD	0%	5%	5%	0%	3,019	3	82	0%	50%	0%	50%	3,078	3	82
M	San Luis Obispo County APCD	0%	0%	0%	0%	2,016	8	60	0%	0%	0%	100%	0	0	0
M	Santa Barbara County APCD	0%	0%	0%	0%	1,400	3	82	0%	0%	0%	100%	417	3	82

Table E-14.1. Woodstove and Fireplace Usage (cont.)

		Wood Stoves							Fireplaces						
Housing	Air District	Convent-ional	Catalytic	Non-catalytic	Pellet	Wood Mass (lb/yr)	Hr/day	Days/yr	Wood	Natural Gas	Propane	None	Wood Mass (lb/yr)	Hr/day	Days/yr
M	Shasta County AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Siskiyou County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	South Coast AQMD	0%	5%	5%	0%	1,000	3	25	5%	85%	0%	10%	1,019	3	25
M	Tehama County APCD	0%	30%	30%	0%	4,558	3	82	20%	20%	0%	60%	4,558	3	82
M	Tuolumne County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
M	Ventura County APCD	0%	0%	0%	0%	0	0	0	0%	0%	0%	100%	0	0	0
M	Yolo/Solano AQMD	0%	0%	0%	0%	0	0	0	0%	0%	0%	100%	0	0	0
M	Statewide	2%	5%	5%	0%	2,380	3	70	23%	44%	2%	31%	2,456	3	65
S	Amador County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Antelope Valley AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Bay Area AQMD	0%	0%	0%	0%	0	0	0	0%	51%	0%	49%	0	4	9
S	Butte County AQMD	0%	9%	9%	0%	3,019	7	150	39%	43%	0%	18%	5,158	4	150
S	Calaveras County AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Colusa County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	El Dorado County AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Feather River AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Glenn County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Great Basin UAPCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Imperial County APCD	0%	0%	0%	0%	0	0	0	0%	55%	0%	45%	2,080	3	4
S	Kern County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Lake County AQMD	70%	15%	10%	5%	3,019	12	82	35%	0%	55%	10%	3,078	12	82
S	Lassen County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Mariposa County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Mendocino County AQMD	0%	20%	20%	0%	4,896	3	117	5%	5%	0%	90%	4,992	3	117
S	Modoc County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Mojave Desert AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Monterey Bay ARD	0%	0%	0%	0%	0	0	120	0%	100%	0%	0%	0	0	0
S	North Coast Unified APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82

Table E-14.1. Woodstove and Fireplace Usage (cont.)

		Wood Stoves							Fireplaces						
Housing	Air District	Convent-ional	Catalytic	Non-catalytic	Pellet	Wood Mass (lb/yr)	Hr/day	Days/ yr	Wood	Natural Gas	Propane	None	Wood Mass (lb/yr)	Hr/day	Days/yr
S	Northern Sierra AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Northern Sonoma County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Placer County APCD	0%	0%	0%	0%	0	0	0	0%	30%	0%	70%	0	0	0
S	Sacramento Metropolitan AQMD	0%	0%	0%	0%	0	0	0	0%	0%	0%	100%	0	0	0
S	San Diego County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	San Joaquin Valley APCD	0%	5%	5%	0%	3,019	3	82	0%	50%	0%	50%	3,078	3	82
S	San Luis Obispo County APCD	0%	0%	0%	0%	2,016	8	60	0%	0%	0%	100%	0	0	0
S	Santa Barbara County APCD	0%	0%	0%	0%	1,400	3	82	0%	0%	0%	100%	417	3	82
S	Shasta County AQMD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Siskiyou County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	South Coast AQMD	0%	5%	5%	0%	1,000	3	25	5%	85%	0%	10%	1,019	3	25
S	Tehama County APCD	0%	30%	30%	0%	4,558	3	82	20%	20%	0%	60%	4,558	3	82
S	Tuolumne County APCD	0%	5%	5%	0%	3,019	3	82	35%	55%	0%	10%	3,078	3	82
S	Ventura County APCD	0%	0%	0%	0%	0	0	0	0%	0%	0%	100%	0	0	0
S	Yolo/Solano AQMD	0%	0%	0%	0%	0	0	0	0%	0%	0%	100%	0	0	0
S	Statewide	2%	5%	5%	0%	2,380	3	70	23%	44%	2%	31%	2,456	3	65

Source: California Air Districts. 2021. Excel database of hearth usage and inventory statistics, provided to the Sacramento Metropolitan Air Quality Management District and ICF. April 1, 2021.

M = multi-family housing; S = single-family housing; lb = pound; yr = year; hr = hour; APCD = air pollution control district; AQMD = air quality management district; ARD = air resources district

Table E-14.2. Woodstove and Fireplace Emission Factors (pound per ton of dry wood burned, unless noted)

Type	TOG	ROG	CO	SO_2	NO_x	PM10	PM2.5	CO_2 (BIO)	CO_2 (NBIO)	CH_4	N_2O	CO_2e
Woodstoves Conventional	83	53	230.8	0.4	2.8	30.6	29.5	2,952	0	30	0	3,792
Woodstoves Catalytic	26.6	15	104.4	0.4	2	20.44	19.6	2,952	0	11.6	0	3,277
Woodstoves Noncatalytic	28	12	140.8	0.4	2	14.6	14.1	2,952	0	16	0	3,400
Woodstoves Pellet	0.07	0.04	15.9	0.3	3.8	3.1	2.9	2,952	0	16	0	3,400
Wood Fireplace	229	229	252.6	0.4	2.6	34.6	34.6	3,400	0	0	0.3	3,480
Natural Gas Fireplace (lb/MMBtu)	0.0108	0.0054	0.0392	0.0006	0.0922	0.0075	0.0075	0	11	0.0022	0.0002	117.1
Propane Fireplace (lb/MMBtu)	0.0109	0.0109	0.0820	0.0000	0.1421	0.0077	0.0077	0	135	0.0066	0.0013	136.1

Sources: California Air Resources Board (CARB). 2011. *Section 7.1, Residential Wood Combustion*. Revised October 2015. Available: https://ww3.arb.ca.gov/ei/areasrc/fullpdf/full7-1_2011.pdf. Accessed: March 2021.

U.S. Environmental Protection Agency. 1996a. *Report on Revisions to 5th Edition AP-42. Section 1.10 Residential Wood Stoves*. July. Available: https://www3.epa.gov/ttnchie1/ap42/ch01/bgdocs/b01s10.pdf. Accessed: January 2021.

U.S. Environmental Protection Agency. 1996b. *Report on Revisions to 5th Edition AP-42. Section 1.9 Residential Fireplaces*. July. Available: https://www3.epa.gov/ttnchie1/ap42/ch01/bgdocs/b01s09.pdf. Accessed: January 2021.

U.S. Environmental Protection Agency. 2015. *Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces*. March. Available: https://www.govinfo.gov/content/pkg/FR-2015-03-16/pdf/2015-03733.pdf. Accessed: January 2021.

U.S. Environmental Protection Agency. 2020. Emission Factors for Greenhouse Gas Inventories. March. Available: https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf. Accessed: March 2021.

TOG = total organic gases; ROG = reactive organic gases; CO = carbon monoxide; SO_2 = sulfur dioxide; NOx = nitrogen oxides; PM10 = particulate matter less than or equal to 10 microns; PM2.5 = particulate matter less than or equal to 10 microns; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; BIO = biogenic; NBIO = non-biogenic; lb = pound; MMBtu = one million British Thermal Units

Table E-15.1. Residential Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Housing Type

Electricity Demand Forecast Zone[2]	Housing Type[3]	Natural Gas (Therm/yr/DU)									Electricity (kWh/yr/DU)									
		Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ NG Backup	Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ Elec. Backup	Heat Pump
1	Single Family Housing	255	245	21	11	16	80	168	38	210	2,266	1,485	390	488	1,496	529	—	1,319	1,050	1,190
	Apartments Low Rise	235	93	17	18	16	54	196	—	—	1,282	923	275	389	761	174	—	—	—	732
	Apartments Mid Rise	232	65	14	14	25	52	167	—	—	1,146	757	246	334	563	165	—	—	—	593
	Apartments High Rise	232	65	14	14	25	52	167	—	—	1,146	757	246	334	563	165	—	—	—	593
	Condo/Townhouse	242	103	19	17	16	53	142	29	—	1,580	1,075	329	387	965	160	—	—	1,163	755
	Condo/Townhouse High Rise	232	65	14	14	25	52	167	—	—	1,146	757	246	334	563	165	—	—	—	593
	Mobile Home Park	246	144	18	17	16	75	182	27	—	2,761	1,314	278	419	714	—	—	—	228	834
	Retirement Community	235	93	17	18	16	54	196	—	—	1,282	923	275	389	761	174	—	—	—	732
	Congregate Care	232	65	14	14	25	52	167	—	—	1,146	757	246	334	563	165	—	—	—	593
2	Single Family Housing	278	289	20	12	20	109	202	47	180	2,445	2,073	379	553	1,572	827	—	1,400	1,394	1,564
	Apartments Low Rise	214	72	15	15	—	62	217	—	—	1,003	877	252	475	496	169	—	—	—	1,089
	Apartments Mid Rise	208	56	12	13	14	67	—	—	—	1,226	1,082	172	337	405	269	—	—	—	630
	Apartments High Rise	208	56	12	13	14	67	—	—	—	1,226	1,082	172	337	405	269	—	—	—	630
	Condo/Townhouse	234	108	13	15	15	78	—	—	—	1,216	1,204	241	424	771	238	—	—	1,290	1,063
	Condo/Townhouse High Rise	208	56	12	13	14	67	—	—	—	1,226	1,082	172	337	405	269	—	—	—	630
	Mobile Home Park	259	227	15	15	—	96	200	—	—	1,790	1,324	208	504	895	—	—	—	633	1,142
	Retirement Community	214	72	15	15	—	62	217	—	—	1,003	877	252	475	496	169	—	—	—	1,089
	Congregate Care	208	56	12	13	14	67	—	—	—	1,226	1,082	172	337	405	269	—	—	—	630
3	Single Family Housing	237	183	19	12	16	73	93	31	—	2,353	1,592	328	565	1,374	774	—	1,750	1,260	1,414
	Apartments Low Rise	215	55	21	13	—	—	—	—	—	836	670	115	541	647	160	—	—	—	707
	Apartments Mid Rise	181	37	15	14	14	—	—	—	—	917	667	247	543	529	—	—	—	—	736
	Apartments High Rise	181	37	15	14	14	—	—	—	—	917	667	247	543	529	—	—	—	—	736
	Condo/Townhouse	221	72	5	21	16	—	—	—	—	1,228	2,158	295	494	776	504	—	—	—	706
	Condo/Townhouse High Rise	181	37	15	14	14	—	—	—	—	917	667	247	543	529	—	—	—	—	736
	Mobile Home Park	228	122	11	15	—	77	178	25	—	2,271	1,451	250	554	812	579	—	—	727	1,104
	Retirement Community	215	55	21	13	—	—	—	—	—	836	670	115	541	647	160	—	—	—	707
	Congregate Care	181	37	15	14	14	—	—	—	—	917	667	247	543	529	—	—	—	—	736

Table E-15.1. Residential Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Housing Type (cont.)

Electricity Demand Forecast Zone[2]	Housing Type[3]	Natural Gas (Therm/yr/DU)									Electricity (kWh/yr/DU)									
		Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ NG Backup	Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ Elec. Backup	Heat Pump
4	Single Family Housing	246	241	20	11	17	83	140	33	187	2,528	1,953	358	565	1,607	756	—	1,238	1,162	1,603
	Apartments Low Rise	239	68	13	15	17	53	205	—	—	1,545	1,205	294	494	621	222	—	—	—	756
	Apartments Mid Rise	244	61	12	15	17	54	197	—	—	1,543	1,062	240	406	601	183	—	—	—	1,014
	Apartments High Rise	244	61	12	15	17	54	197	—	—	1,543	1,062	240	406	601	183	—	—	—	1,014
	Condo/Townhouse	250	87	23	17	17	—	—	37	—	1,308	956	306	462	891	193	—	—	3	718
	Condo/Townhouse High Rise	244	61	12	15	17	54	197	—	—	1,543	1,062	240	406	601	183	—	—	—	1,014
	Mobile Home Park	230	171	16	14	194	—	179	—	—	2,237	1,344	289	488	933	720	—	—	1,331	1,509
	Retirement Community	239	68	13	15	17	53	205	—	—	1,545	1,205	294	494	621	222	—	—	—	756
	Congregate Care	244	61	12	15	17	54	197	—	—	1,543	1,062	240	406	601	183	—	—	—	1,014
5	Single Family Housing	307	244	30	15	20	80	161	46	272	2,419	1,690	362	586	1,517	548	—	2,077	1,076	1,230
	Apartments Low Rise	355	105	35	23	24	75	309	—	—	738	624	273	517	640	121	—	—	—	424
	Apartments Mid Rise	364	99	25	22	25	66	290	—	—	1,479	682	262	405	595	199	—	—	—	557
	Apartments High Rise	364	99	25	22	25	66	290	—	—	1,479	682	262	405	595	199	—	—	—	557
	Condo/Townhouse	349	92	24	29	25	65	222	32	—	—	622	378	488	733	—	—	—	—	610
	Condo/Townhouse High Rise	364	99	25	22	25	66	290	—	—	1,479	682	262	405	595	199	—	—	—	557
	Mobile Home Park	289	205	24	18	20	66	225	56	—	1,749	922	176	499	871	386	—	—	127	1,580
	Retirement Community	355	105	35	23	24	75	309	—	—	738	624	273	517	640	121	—	—	—	424
	Congregate Care	364	99	25	22	25	66	290	—	—	1,479	682	262	405	595	199	—	—	—	557
6	Single Family Housing	264	254	21	12	17	89	186	46	203	2,444	1,848	346	523	1,388	674	—	1,750	1,249	1,584
	Apartments Low Rise	348	107	32	25	21	97	319	—	—	941	1,548	245	402	430	215	—	—	—	563
	Apartments Mid Rise	368	111	29	22	24	113	299	—	—	818	969	200	312	434	181	—	—	—	525
	Apartments High Rise	368	111	29	22	24	113	299	—	—	818	969	200	312	434	181	—	—	—	525
	Condo/Townhouse	353	131	25	25	23	69	229	—	—	1,995	1,267	277	385	689	243	—	904	766	776
	Condo/Townhouse High Rise	368	111	29	22	24	113	299	—	—	818	969	200	312	434	181	—	—	—	525
	Mobile Home Park	251	244	17	18	115	—	—	—	—	2,015	1,565	185	390	908	525	—	—	991	—
	Retirement Community	348	107	32	25	21	97	319	—	—	941	1,548	245	402	430	215	—	—	—	563
	Congregate Care	368	111	29	22	24	113	299	—	—	818	969	200	312	434	181	—	—	—	525

Table E-15.1. Residential Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Housing Type (cont.)

Electricity Demand Forecast Zone[2]	Housing Type[3]	Natural Gas (Therm/yr/DU)									Electricity (kWh/yr/DU)									
		Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ NG Backup	Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ Elec. Backup	Heat Pump
7	Single Family Housing	260	136	24	12	17	39	168	36	244	2,810	972	411	528	1,552	375	—	483	993	713
	Apartments Low Rise	246	43	23	17	37	25	200	—	181	1,185	538	293	441	665	92	—	—	—	330
	Apartments Mid Rise	244	42	19	17	17	27	188	—	—	1,164	451	243	360	594	99	—	—	—	392
	Apartments High Rise	244	42	19	17	17	27	188	—	—	1,164	451	243	360	594	99	—	—	—	392
	Condo/Townhouse	253	57	21	19	17	30	148	31	—	1,365	609	292	422	953	125	—	1,475	405	413
	Condo/Townhouse High Rise	244	42	19	17	17	27	188	—	—	1,164	451	243	360	594	99	—	—	—	392
	Mobile Home Park	250	115	17	16	17	30	—	—	174	2,046	806	172	416	786	—	—	—	17	211
	Retirement Community	246	43	23	17	37	25	200	—	181	1,185	538	293	441	665	92	—	—	—	330
	Congregate Care	244	42	19	17	17	27	188	—	—	1,164	451	243	360	594	99	—	—	—	392
8	Single Family Housing	273	173	22	12	17	51	188	41	213	2,014	1,052	383	515	1,483	486	—	—	1,044	702
	Condo/Townhouse	269	78	20	20	18	31	176	26	—	1,049	768	268	487	890	121	—	—	—	831
	Condo/Townhouse High Rise	278	54	15	18	101	48	217	—	—	1,090	582	226	311	522	68	—	—	—	355
	Mobile Home Park	243	121	15	16	—	51	—	—	—	—	—	154	361	670	—	—	—	—	325
	Retirement Community	284	56	29	19	17	52	—	—	—	1,130	524	271	387	735	112	—	—	—	586
	Congregate Care	278	54	15	18	101	48	217	—	—	1,090	582	226	311	522	68	—	—	—	355
9	Single Family Housing	268	222	23	14	17	90	144	32	278	2,434	1,765	372	614	1,517	699	—	1,385	1,172	1,646
	Apartments Low Rise	272	63	24	23	—	—	—	—	—	898	529	314	529	630	—	—	—	—	376
	Apartments Mid Rise	267	65	9	16	—	—	—	—	—	1,354	923	280	417	629	390	—	—	—	998
	Apartments High Rise	267	65	9	16	—	—	—	—	—	1,354	923	280	417	629	390	—	—	—	998
	Condo/Townhouse	263	77	16	17	19	54	—	—	—	1,473	1,209	303	483	689	—	—	—	1,030	527
	Condo/Townhouse High Rise	267	65	9	16	—	—	—	—	—	1,354	923	280	417	629	390	—	—	—	998
	Mobile Home Park	262	207	22	17	17	—	—	106	—	2,667	1,037	281	564	976	—	—	—	446	1,276
	Retirement Community	272	63	24	23	—	—	—	—	—	898	529	314	529	630	—	—	—	—	376
	Congregate Care	267	65	9	16	—	—	—	—	—	1,354	923	280	417	629	390	—	—	—	998

Table E-15.1. Residential Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Housing Type (cont.)

Electricity Demand Forecast Zone[2]	Housing Type[3]	Natural Gas (Therm/yr/DU)									Electricity (kWh/yr/DU)									
		Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ NG Backup	Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ Elec. Backup	Heat Pump
10	Single Family Housing	231	136	22	12	15	39	152	32	199	2,120	982	386	546	1,391	129	—	739	1,025	823
	Apartments Low Rise	203	34	17	14	14	23	170	—	—	1,529	813	389	431	612	160	—	—	—	515
	Apartments Mid Rise	197	37	16	14	14	36	—	—	—	1,138	678	280	375	598	99	—	—	—	477
	Apartments High Rise	197	37	16	14	14	36	—	—	—	1,138	678	280	375	598	99	—	—	—	477
	Condo/Townhouse	211	48	18	14	14	27	157	22	—	1,143	987	320	392	832	—	—	—	—	807
	Condo/Townhouse High Rise	197	37	16	14	14	36	—	—	—	1,138	678	280	375	598	99	—	—	—	477
	Mobile Home Park	224	113	12	15	—	—	—	—	—	2,280	580	310	415	750	—	—	—	—	—
	Retirement Community	203	34	17	14	14	23	170	—	—	1,529	813	389	431	612	160	—	—	—	515
	Congregate Care	197	37	16	14	14	36	—	—	—	1,138	678	280	375	598	99	—	—	—	477
11	Single Family Housing	222	152	21	10	15	45	146	33	—	2,647	1,389	422	559	1,709	143	—	—	916	1,045
	Condo/Townhouse	182	51	14	14	15	19	94	43	109	1,261	828	354	506	1,181	198	—	—	—	1,009
	Condo/Townhouse High Rise	198	36	13	14	15	25	184	—	—	1,366	512	296	437	832	70	—	—	—	397
	Mobile Home Park	217	114	15	15	15	—	168	23	—	2,055	999	215	456	956	161	—	—	528	495
	Retirement Community	175	46	14	16	15	32	195	—	—	1,297	612	280	480	962	—	—	—	—	408
	Congregate Care	198	36	13	14	15	25	184	—	—	1,366	512	296	437	832	70	—	—	—	397
12	Single Family Housing	210	118	17	10	14	36	122	31	174	2,235	933	375	498	1,442	252	—	1,332	985	778
	Apartments Low Rise	199	39	17	14	14	24	163	—	220	1,002	405	246	420	622	97	—	—	—	337
	Apartments Mid Rise	198	38	12	13	14	22	170	—	154	1,134	410	228	352	524	88	—	—	—	346
	Apartments High Rise	198	38	12	13	14	22	170	—	154	1,134	410	228	352	524	88	—	—	—	346
	Condo/Townhouse	202	51	15	14	14	25	—	28	164	1,321	556	283	398	869	114	—	—	1,067	378
	Condo/Townhouse High Rise	198	38	12	13	14	22	170	—	154	1,134	410	228	352	524	88	—	—	—	346
	Mobile Home Park	201	100	14	14	14	43	156	22	—	1,867	1,011	211	432	840	—	—	—	1,785	680
	Retirement Community	199	39	17	14	14	24	163	—	220	1,002	405	246	420	622	97	—	—	—	337
	Congregate Care	198	38	12	13	14	22	170	—	154	1,134	410	228	352	524	88	—	—	—	346

Table E-15.1. Residential Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Housing Type (cont.)

Electricity Demand Forecast Zone[2]	Housing Type[3]	Natural Gas (Therm/yr/DU)									Electricity (kWh/yr/DU)									
		Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ NG Backup	Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ Elec. Backup	Heat Pump
13	Single Family Housing	240	232	18	11	15	77	123	31	179	2,845	1,877	407	617	1,753	767	—	1,479	1,245	1,501
	Apartments Low Rise	260	66	16	20	15	53	212	—	—	1,589	1,117	253	544	673	202	—	—	—	1,002
	Apartments Mid Rise	277	65	18	18	20	57	—	—	—	1,584	979	246	457	654	205	—	—	—	870
	Apartments High Rise	277	65	18	18	20	57	—	—	—	1,584	979	246	457	654	205	—	—	—	870
	Condo/Townhouse	253	90	18	17	18	63	172	29	—	1,726	1,456	314	514	1,000	230	—	—	1,620	1,279
	Condo/Townhouse High Rise	277	65	18	18	20	57	—	—	—	1,584	979	246	457	654	205	—	—	—	870
	Mobile Home Park	229	186	11	13	15	—	171	—	—	2,256	—	145	517	932	—	—	—	655	685
	Retirement Community	260	66	16	20	15	53	212	—	—	1,589	1,117	253	544	673	202	—	—	—	1,002
	Congregate Care	277	65	18	18	20	57	—	—	—	1,584	979	246	457	654	205	—	—	—	870
16	Single Family Housing	363	196	31	16	26	53	247	61	331	2,509	1,062	400	512	1,603	—	—	1,301	1,047	787
	Condo/Townhouse	297	74	25	19	20	29	169	31	—	968	658	369	441	916	—	—	—	35	361
	Condo/Townhouse High Rise	268	48	20	17	35	31	239	—	—	1,052	350	262	365	560	—	—	—	—	397
	Mobile Home Park	301	118	16	22	—	—	—	—	—	—	—	—	457	693	—	—	—	—	—
	Retirement Community	285	58	25	21	19	29	—	—	—	1,640	521	311	619	740	—	—	—	—	861
	Congregate Care	268	48	20	17	35	31	239	—	—	1,052	350	262	365	560	—	—	—	—	397
17	Single Family Housing	290	153	27	13	21	46	172	37	232	2,529	783	407	556	1,513	—	—	—	1,144	845
	Apartments Low Rise	325	63	29	22	—	—	—	—	—	—	983	332	440	558	—	—	—	—	260
	Apartments Mid Rise	328	57	30	29	24	40	244	—	—	1,182	457	266	343	586	—	—	—	—	290
	Apartments High Rise	328	57	30	29	24	40	244	—	—	1,182	457	266	343	586	—	—	—	—	290
	Condo/Townhouse	345	85	33	24	23	42	—	38	229	1,815	864	361	441	984	—	—	—	—	569
	Condo/Townhouse High Rise	328	57	30	29	24	40	244	—	—	1,182	457	266	343	586	—	—	—	—	290
	Mobile Home Park	294	121	32	16	—	—	—	—	—	—	—	256	—	710	—	—	—	—	—
	Retirement Community	325	63	29	22	—	—	—	—	—	—	983	332	440	558	—	—	—	—	260
	Congregate Care	328	57	30	29	24	40	244	—	—	1,182	457	266	343	586	—	—	—	—	290

Table E-15.1. Residential Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Housing Type (cont.)

Electricity Demand Forecast Zone[2]	Housing Type[3]	Natural Gas (Therm/yr/DU)									Electricity (kWh/yr/DU)									
		Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ NG Backup	Water Heater	Primary Heat	Range/ Oven	Dryer	Misc.	Aux. Heat	Pool Heat	Spa Heat	Solar Water Heater w/ Elec. Backup	Heat Pump
Statewide	Single Family Housing	254	191	22	12	17	64	162	36	210	2,473	1,507	384	544	1,535	663	—	1,395	1,114	1,198
	Apartments Low Rise	244	65	21	17	20	43	216	—	201	1,220	751	275	439	678	132	—	—	—	561
	Apartments Mid Rise	248	54	18	17	22	38	201	—	154	1,195	619	241	360	568	136	—	—	—	490
	Apartments High Rise	248	54	18	17	22	38	201	—	154	1,195	619	241	360	568	136	—	—	—	490
	Condo/Townhouse	247	79	20	18	17	41	167	31	167	1,402	888	305	424	915	191	—	1,190	912	704
	Condo/Townhouse High Rise	248	54	18	17	22	38	201	—	154	1,195	619	241	360	568	136	—	—	—	490
	Mobile Home Park	238	148	16	16	32	58	181	38	174	2,136	1,208	228	486	864	530	—	—	763	1,000
	Retirement Community	244	65	21	17	20	43	216	—	201	1,220	751	275	439	678	132	—	—	—	561
	Congregate Care	248	54	18	17	22	38	201	—	154	1,195	619	241	360	568	136	—	—	—	490

Source: ICF calculations; California Energy Commission. 2020. Excel database with the 2019 Residential Appliance Saturation Study (RASS), provided to ICF. November 13, 2020.

EDFZ = Electricity Demand Forecast Zone; yr = year; du = dwelling unit; kWh = kilowatt-hour; — = no data

[1] The sample size in the RASS data for several end uses and housing types was limited. Accordingly, the data should be used with caution.

[2] Data for some EDFZ were not available in the RASS, and a representative EDFZ was assumed (refer to Table E-1.1).

[3] The five housing types used by the RASS have been cross walked to the nine residential land use types in CalEEMod, as shown in Table E-1.6.

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Arena	1	42	136	1	6	252	—	52	40	6	1,033	5,703	162	2	42	131	1	7	245	—	51	49	11	1,058	5,551	159
Automobile Care Center		42	136	1	6	252	—	52	40	6	1,033	5,703	162		42	131	1	7	245	—	51	49	11	1,058	5,551	159
Bank (with Drive-Through)		42	136	1	6	252	—	52	40	6	1,033	5,703	162		42	131	1	7	245	—	51	49	11	1,058	5,551	159
Convenience Market (24 hour)		16	184	1	7	63	—	253	606	84	2,466	19,227	12,001		15	207	1	5	61	—	259	702	81	3,436	18,605	11,745
Convenience Market with Gas Pumps		16	184	1	7	63	—	253	606	84	2,466	19,227	12,001		15	207	1	5	61	—	259	702	81	3,436	18,605	11,745
Day-Care Center		13	393	4	<1	—	—	427	77	34	105	430	124		12	422	4	<1	—	—	449	75	34	126	430	125
Discount Club		<1	53	<1	2	1	—	35	118	9	413	1,811	135		<1	61	<1	2	1	—	35	132	9	450	1,756	132
Electronic Superstore		<1	53	<1	2	1	—	35	118	9	413	1,811	135		<1	61	<1	2	1	—	35	132	9	450	1,756	132
Elementary School		13	393	4	<1	—	—	427	77	34	105	430	124		12	422	4	<1	—	—	449	75	34	126	430	125
Fast Food Restaurant w/o Drive Thru		137	90	1,031	8	84	—	93	804	5,459	3,211	17,827	5,732		129	131	974	12	80	—	82	1,171	5,156	3,825	16,835	5,416
Fast Food Restaurant with Drive Thru		137	90	1,031	8	84	—	93	804	5,459	3,211	17,827	5,732		129	131	974	12	80	—	82	1,171	5,156	3,825	16,835	5,416
Free-Standing Discount store		<1	53	<1	2	1	—	35	118	9	413	1,811	135		<1	61	<1	2	1	—	35	132	9	450	1,756	132
Free-Standing Discount Superstore		<1	53	<1	2	1	—	35	118	9	413	1,811	135		<1	61	<1	2	1	—	35	132	9	450	1,756	132
Gasoline/Service Station		42	136	1	6	252	—	52	40	6	1,033	5,703	162		42	131	1	7	245	—	51	49	11	1,058	5,551	159
General Heavy Industry		42	136	1	6	252	—	52	40	6	1,033	5,703	162		42	131	1	7	245	—	51	49	11	1,058	5,551	159
General Light Industry		42	136	1	6	252	—	52	40	6	1,033	5,703	162		42	131	1	7	245	—	51	49	11	1,058	5,551	159
General Office Building		1	168	<1	18	50	—	82	385	28	2,934	5,800	14		1	169	<1	14	49	—	83	438	27	3,089	5,714	14
Government (Civic Center)		1	168	<1	18	50	—	82	385	28	2,934	5,800	14		1	169	<1	14	49	—	83	438	27	3,089	5,714	14
Government Office Building		1	168	<1	18	50	—	82	385	28	2,934	5,800	14		1	169	<1	14	49	—	83	438	27	3,089	5,714	14
Hardware/Paint Store		<1	53	<1	2	1	—	35	118	9	413	1,811	135		<1	61	<1	2	1	—	35	132	9	450	1,756	132
Health Club		42	136	1	6	252	—	52	40	6	1,033	5,703	162		42	131	1	7	245	—	51	49	11	1,058	5,551	159
High School		13	393	4	<1	—	—	427	77	34	105	430	124		12	422	4	<1	—	—	449	75	34	126	430	125

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
High Turnover (Sit Down Restaurant)		137	90	1,031	8	84	—	93	804	5,459	3,211	17,827	5,732		129	131	974	12	80	—	82	1,171	5,156	3,825	16,835	5,416
Home Improvement Superstore		<1	53	<1	2	1	—	35	118	9	413	1,811	135		<1	61	<1	2	1	—	35	132	9	450	1,756	132
Hospital		284	260	9	7	177	—	13	3	101	6,250	19,922	135		282	284	9	7	175	—	14	2	100	7,043	19,727	134
Hotel		67	190	14	10	20	—	52	183	20	477	2,847	264		67	179	13	11	18	—	54	210	20	455	2,798	263
Industrial Park		1	168	<1	18	50	—	82	385	28	2,934	5,800	14		1	169	<1	14	49	—	83	438	27	3,089	5,714	14
Junior College (2yr)		9	366	1	5	14	—	117	190	18	1,082	596	18		9	353	1	5	14	—	117	202	18	1,087	596	18
Junior High School		13	393	4	<1	—	—	427	77	34	105	430	124		12	422	4	<1	—	—	449	75	34	126	430	125
Library		42	136	1	6	252	—	52	40	6	1,033	5,703	162		42	131	1	7	245	—	51	49	11	1,058	5,551	159
Manufacturing		42	136	1	6	252	—	52	40	6	1,033	5,703	162		42	131	1	7	245	—	51	49	11	1,058	5,551	159
Medical Office Building		1	168	<1	18	50	—	82	385	28	2,934	5,800	14		1	169	<1	14	49	—	83	438	27	3,089	5,714	14
Motel		67	190	14	10	20	—	52	183	20	477	2,847	264		67	179	13	11	18	—	54	210	20	455	2,798	263
Movie Theater (No Matinee)		42	136	1	6	252	—	52	40	6	1,033	5,703	162		42	131	1	7	245	—	51	49	11	1,058	5,551	159
Office Park		1	168	<1	18	50	—	82	385	28	2,934	5,800	14		1	169	<1	14	49	—	83	438	27	3,089	5,714	14
Pharmacy/Drugstore w/o Drive Thru		<1	53	<1	2	1	—	35	118	9	413	1,811	135		<1	61	<1	2	1	—	35	132	9	450	1,756	132
Pharmacy/Drugstore with Drive Thru		<1	53	<1	2	1	—	35	118	9	413	1,811	135		<1	61	<1	2	1	—	35	132	9	450	1,756	132
Place of Worship		42	136	1	6	252	—	52	40	6	1,033	5,703	162		42	131	1	7	245	—	51	49	11	1,058	5,551	159
Quality Restaurant		137	90	1,031	8	84	—	93	804	5,459	3,211	17,827	5,732		129	131	974	12	80	—	82	1,171	5,156	3,825	16,835	5,416
Racquet Club		42	136	1	6	252	—	52	40	6	1,033	5,703	162		42	131	1	7	245	—	51	49	11	1,058	5,551	159
Refrigerated Warehouse-No Rail		<1	4	<1	—	8	7	6	14	<1	28	6,364	14,769		<1	5	<1	—	8	7	6	16	<1	48	6,253	14,673
Refrigerated Warehouse-Rail		<1	4	<1	—	8	7	6	14	<1	28	6,364	14,769		<1	5	<1	—	8	7	6	16	<1	48	6,253	14,673
Regional Shopping Center		<1	53	<1	2	1	—	35	118	9	413	1,811	135		<1	61	<1	2	1	—	35	132	9	450	1,756	132
Research & Development		1	168	<1	18	50	—	82	385	28	2,934	5,800	14		1	169	<1	14	49	—	83	438	27	3,089	5,714	14

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Strip Mall		<1	53	<1	2	1	—	35	118	9	413	1,811	135		<1	61	<1	2	1	—	35	132	9	450	1,756	132
Supermarket		16	184	1	7	63	—	253	606	84	2,466	19,227	12,001		15	207	1	5	61	—	259	702	81	3,436	18,605	11,745
University/College (4yr)		9	366	1	5	14	—	117	190	18	1,082	596	18		9	353	1	5	14	—	117	202	18	1,087	596	18
Unrefrigerated Warehouse-No Rail		<1	42	<1	2	8	—	2	286	<1	383	6,354	—		<1	49	<1	3	8	—	2	351	<1	657	6,222	—
Unrefrigerated Warehouse-Rail		<1	42	<1	2	8	—	2	286	<1	383	6,354	—		<1	49	<1	3	8	—	2	351	<1	657	6,222	—
Arena		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160
Automobile Care Center		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160
Bank (with Drive-Through)		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160
Convenience Market (24 hour)		21	188	1	24	61	42	118	237	80	9,140	18,400	11,925		19	191	1	8	60	25	179	385	79	3,650	18,247	12,001
Convenience Market with Gas Pumps		21	188	1	24	61	42	118	237	80	9,140	18,400	11,925		19	191	1	8	60	25	179	385	79	3,650	18,247	12,001
Day-Care Center	3	23	425	4	1	—	—	179	72	34	236	429	130	4	19	409	4	<1	<1	—	291	63	34	143	429	130
Discount Club		1	93	<1	2	1	—	14	416	9	1,972	1,732	132		16	68	<1	2	1	—	23	248	9	816	1,719	131
Electronic Superstore		1	93	<1	2	1	—	14	416	9	1,972	1,732	132		16	68	<1	2	1	—	23	248	9	816	1,719	131
Elementary School		23	425	4	1	—	—	179	72	34	236	429	130		19	409	4	<1	<1	—	291	63	34	143	429	130
Fast Food Restaurant w/o Drive Thru		114	174	928	1	76	—	263	338	4,918	6,231	16,105	5,303		115	145	883	3	72	—	174	603	4,684	3,282	15,344	5,074
Fast Food Restaurant with Drive Thru		114	174	928	1	76	—	263	338	4,918	6,231	16,105	5,303		115	145	883	3	72	—	174	603	4,684	3,282	15,344	5,074
Free-Standing Discount store		1	93	<1	2	1	—	14	416	9	1,972	1,732	132		16	68	<1	2	1	—	23	248	9	816	1,719	131
Free-Standing Discount Superstore		1	93	<1	2	1	—	14	416	9	1,972	1,732	132		16	68	<1	2	1	—	23	248	9	816	1,719	131
Gasoline/Service Station		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160
General Heavy Industry		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160
General Light Industry		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160
General Office Building		1	291	<1	50	49	—	15	146	27	4,926	5,646	13		1	219	<1	20	48	—	50	292	27	3,207	5,605	13

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Government (Civic Center)		1	291	<1	50	49	—	15	146	27	4,926	5,646	13		1	219	<1	20	48	—	50	292	27	3,207	5,605	13
Government Office Building		1	291	<1	50	49	—	15	146	27	4,926	5,646	13		1	219	<1	20	48	—	50	292	27	3,207	5,605	13
Hardware/Paint Store		1	93	<1	2	1	—	14	416	9	1,972	1,732	132		16	68	<1	2	1	—	23	248	9	816	1,719	131
Health Club		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160
High School		23	425	4	1	—	—	179	72	34	236	429	130		19	409	4	<1	<1	—	291	63	34	143	429	130
High Turnover (Sit Down Restaurant)		114	174	928	1	76	—	263	338	4,918	6,231	16,105	5,303		115	145	883	3	72	—	174	603	4,684	3,282	15,344	5,074
Home Improvement Superstore		1	93	<1	2	1	—	14	416	9	1,972	1,732	132		16	68	<1	2	1	—	23	248	9	816	1,719	131
Hospital		217	228	9	<1	174	—	226	152	99	9,658	19,656	136		239	240	9	3	172	—	153	79	98	7,115	19,508	135
Hotel		86	243	13	2	16	—	5	106	20	614	2,769	260		78	212	9	4	16	—	102	143	20	323	2,743	260
Industrial Park		1	291	<1	50	49	—	15	146	27	4,926	5,646	13		1	219	<1	20	48	—	50	292	27	3,207	5,605	13
Junior College (2yr)		11	92	1	7	14	—	46	57	18	1,444	596	18		10	319	<1	7	14	—	70	123	18	1,214	596	18
Junior High School		23	425	4	1	—	—	179	72	34	236	429	130		19	409	4	<1	<1	—	291	63	34	143	429	130
Library		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160
Manufacturing		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160
Medical Office Building		1	291	<1	50	49	—	15	146	27	4,926	5,646	13		1	219	<1	20	48	—	50	292	27	3,207	5,605	13
Motel		86	243	13	2	16	—	5	106	20	614	2,769	260		78	212	9	4	16	—	102	143	20	323	2,743	260
Movie Theater (No Matinee)		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160
Office Park		1	291	<1	50	49	—	15	146	27	4,926	5,646	13		1	219	<1	20	48	—	50	292	27	3,207	5,605	13
Pharmacy/Drugstore w/o Drive Thru		1	93	<1	2	1	—	14	416	9	1,972	1,732	132		16	68	<1	2	1	—	23	248	9	816	1,719	131
Pharmacy/Drugstore with Drive Thru		1	93	<1	2	1	—	14	416	9	1,972	1,732	132		16	68	<1	2	1	—	23	248	9	816	1,719	131
Place of Worship		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160
Quality Restaurant		114	174	928	1	76	—	263	338	4,918	6,231	16,105	5,303		115	145	883	3	72	—	174	603	4,684	3,282	15,344	5,074
Racquet Club		31	130	1	4	244	—	193	264	15	2,550	5,569	161		36	130	1	5	244	—	136	171	9	1,147	5,555	160

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Refrigerated Warehouse-No Rail		<1	13	<1	7	8	7	7	16	<1	76	6,225	14,860		<1	7	<1	1	34	7	7	17	<1	51	6,563	15,631
Refrigerated Warehouse-Rail		<1	13	<1	7	8	7	7	16	<1	76	6,225	14,860		<1	7	<1	1	34	7	7	17	<1	51	6,563	15,631
Regional Shopping Center		1	93	<1	2	1	—	14	416	9	1,972	1,732	132		16	68	<1	2	1	—	23	248	9	816	1,719	131
Research & Development		1	291	<1	50	49	—	15	146	27	4,926	5,646	13		1	219	<1	20	48	—	50	292	27	3,207	5,605	13
Strip Mall		1	93	<1	2	1	—	14	416	9	1,972	1,732	132		16	68	<1	2	1	—	23	248	9	816	1,719	131
Supermarket		21	188	1	24	61	42	118	237	80	9,140	18,400	11,925		19	191	1	8	60	25	179	385	79	3,650	18,247	12,001
University/College (4yr)		11	92	1	7	14	—	46	57	18	1,444	596	18		10	319	<1	7	14	—	70	123	18	1,214	596	18
Unrefrigerated Warehouse-No Rail		<1	35	<1	8	8	—	3	375	<1	646	6,236	—		<1	43	<1	4	8	—	3	447	<1	414	6,610	—
Unrefrigerated Warehouse-Rail		<1	35	<1	8	8	—	3	375	<1	646	6,236	—		<1	43	<1	4	8	—	3	447	<1	414	6,610	—
Arena	5	31	130	1	5	244	—	200	256	15	2,674	5,573	161	6	42	126	1	7	246	—	51	40	11	1,069	5,564	160
Automobile Care Center		31	130	1	5	244	—	200	256	15	2,674	5,573	161		42	126	1	7	246	—	51	40	11	1,069	5,564	160
Bank (with Drive-Through)		31	130	1	5	244	—	200	256	15	2,674	5,573	161		42	126	1	7	246	—	51	40	11	1,069	5,564	160
Convenience Market (24 hour)		21	180	1	25	61	45	110	204	80	9,488	18,433	11,954		15	164	1	6	61	—	259	542	80	3,356	18,439	11,678
Convenience Market with Gas Pumps		21	180	1	25	61	45	110	204	80	9,488	18,433	11,954		15	164	1	6	61	—	259	542	80	3,356	18,439	11,678
Day-Care Center		24	423	4	1	—	—	163	70	34	236	429	130		12	394	4	<1	—	—	447	72	34	116	430	125
Discount Club		1	94	<1	2	1	—	13	425	9	2,095	1,735	132		<1	56	<1	2	1	—	35	119	9	493	1,736	130
Electronic Superstore		1	94	<1	2	1	—	13	425	9	2,095	1,735	132		<1	56	<1	2	1	—	35	119	9	493	1,736	130
Elementary School		24	423	4	1	—	—	163	70	34	236	429	130		12	394	4	<1	—	—	447	72	34	116	430	125
Fast Food Restaurant w/o Drive Thru		113	164	900	—	74	—	257	258	4,776	6,342	15,654	5,197		129	88	933	12	76	—	85	790	4,944	4,072	16,186	5,317
Fast Food Restaurant with Drive Thru		113	164	900	—	74	—	257	258	4,776	6,342	15,654	5,197		129	88	933	12	76	—	85	790	4,944	4,072	16,186	5,317
Free-Standing Discount store		1	94	<1	2	1	—	13	425	9	2,095	1,735	132		<1	56	<1	2	1	—	35	119	9	493	1,736	130

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Free-Standing Discount Superstore		1	94	<1	2	1	—	13	425	9	2,095	1,735	132		<1	56	<1	2	1	—	35	119	9	493	1,736	130
Gasoline/Service Station		31	130	1	5	244	—	200	256	15	2,674	5,573	161		42	126	1	7	246	—	51	40	11	1,069	5,564	160
General Heavy Industry		31	130	1	5	244	—	200	256	15	2,674	5,573	161		42	126	1	7	246	—	51	40	11	1,069	5,564	160
General Light Industry		31	130	1	5	244	—	200	256	15	2,674	5,573	161		42	126	1	7	246	—	51	40	11	1,069	5,564	160
General Office Building		1	297	<1	52	49	—	12	129	27	5,059	5,660	13		1	162	<1	14	49	—	83	422	27	3,128	5,653	14
Government (Civic Center)		1	297	<1	52	49	—	12	129	27	5,059	5,660	13		1	162	<1	14	49	—	83	422	27	3,128	5,653	14
Government Office Building		1	297	<1	52	49	—	12	129	27	5,059	5,660	13		1	162	<1	14	49	—	83	422	27	3,128	5,653	14
Hardware/Paint Store		1	94	<1	2	1	—	13	425	9	2,095	1,735	132		<1	56	<1	2	1	—	35	119	9	493	1,736	130
Health Club		31	130	1	5	244	—	200	256	15	2,674	5,573	161		42	126	1	7	246	—	51	40	11	1,069	5,564	160
High School		24	423	4	1	—	—	163	70	34	236	429	130		12	394	4	<1	—	—	447	72	34	116	430	125
High Turnover (Sit Down Restaurant)		113	164	900	—	74	—	257	258	4,776	6,342	15,654	5,197		129	88	933	12	76	—	85	790	4,944	4,072	16,186	5,317
Home Improvement Superstore		1	94	<1	2	1	—	13	425	9	2,095	1,735	132		<1	56	<1	2	1	—	35	119	9	493	1,736	130
Hospital		215	219	9	—	174	—	237	153	99	9,901	19,677	136		284	228	9	7	174	—	14	2	99	7,567	19,644	135
Hotel		87	240	13	<1	16	—	2	94	20	622	2,770	260		68	149	13	11	17	—	55	165	20	416	2,762	262
Industrial Park		1	297	<1	52	49	—	12	129	27	5,059	5,660	13		1	162	<1	14	49	—	83	422	27	3,128	5,653	14
Junior College (2yr)		11	74	1	7	14	—	43	48	18	1,446	597	18		9	329	1	5	14	—	120	178	18	1,026	596	18
Junior High School		24	423	4	1	—	—	163	70	34	236	429	130		12	394	4	<1	—	—	447	72	34	116	430	125
Library		31	130	1	5	244	—	200	256	15	2,674	5,573	161		42	126	1	7	246	—	51	40	11	1,069	5,564	160
Manufacturing		31	130	1	5	244	—	200	256	15	2,674	5,573	161		42	126	1	7	246	—	51	40	11	1,069	5,564	160
Medical Office Building		1	297	<1	52	49	—	12	129	27	5,059	5,660	13		1	162	<1	14	49	—	83	422	27	3,128	5,653	14
Motel		87	240	13	<1	16	—	2	94	20	622	2,770	260		68	149	13	11	17	—	55	165	20	416	2,762	262
Movie Theater (No Matinee)		31	130	1	5	244	—	200	256	15	2,674	5,573	161		42	126	1	7	246	—	51	40	11	1,069	5,564	160
Office Park		1	297	<1	52	49	—	12	129	27	5,059	5,660	13		1	162	<1	14	49	—	83	422	27	3,128	5,653	14

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Pharmacy/Drugstore w/o Drive Thru		1	94	<1	2	1	—	13	425	9	2,095	1,735	132		<1	56	<1	2	1	—	35	119	9	493	1,736	130
Pharmacy/Drugstore with Drive Thru		1	94	<1	2	1	—	13	425	9	2,095	1,735	132		<1	56	<1	2	1	—	35	119	9	493	1,736	130
Place of Worship		31	130	1	5	244	—	200	256	15	2,674	5,573	161		42	126	1	7	246	—	51	40	11	1,069	5,564	160
Quality Restaurant		113	164	900	—	74	—	257	258	4,776	6,342	15,654	5,197		129	88	933	12	76	—	85	790	4,944	4,072	16,186	5,317
Racquet Club		31	130	1	5	244	—	200	256	15	2,674	5,573	161		42	126	1	7	246	—	51	40	11	1,069	5,564	160
Refrigerated Warehouse-No Rail		<1	14	<1	8	8	8	7	16	—	79	6,563	15,671		<1	5	<1	—	8	8	7	16	<1	49	6,563	15,373
Refrigerated Warehouse-Rail		<1	14	<1	8	8	8	7	16	—	79	6,563	15,671		<1	5	<1	—	8	8	7	16	<1	49	6,563	15,373
Regional Shopping Center		1	94	<1	2	1	—	13	425	9	2,095	1,735	132		<1	56	<1	2	1	—	35	119	9	493	1,736	130
Research & Development		1	297	<1	52	49	—	12	129	27	5,059	5,660	13		1	162	<1	14	49	—	83	422	27	3,128	5,653	14
Strip Mall		1	94	<1	2	1	—	13	425	9	2,095	1,735	132		<1	56	<1	2	1	—	35	119	9	493	1,736	130
Supermarket		21	180	1	25	61	45	110	204	80	9,488	18,433	11,954		15	164	1	6	61	—	259	542	80	3,356	18,439	11,678
University/College (4yr)		11	74	1	7	14	—	43	48	18	1,446	597	18		9	329	1	5	14	—	120	178	18	1,026	596	18
Unrefrigerated Warehouse-No Rail		<1	36	<1	8	8	—	3	383	<1	662	6,562	—		1	48	<1	3	8	—	2	347	<1	709	6,562	—
Unrefrigerated Warehouse-Rail		<1	36	<1	8	8	—	3	383	<1	662	6,562	—		1	48	<1	3	8	—	2	347	<1	709	6,562	—
Arena	7	29	89	3	43	263	1	94	490	15	2,363	909	50	8	28	92	3	38	265	1	85	490	15	2,209	812	50
Automobile Care Center		29	89	3	43	263	1	94	490	15	2,363	909	50		28	92	3	38	265	1	85	490	15	2,209	812	50
Bank (with Drive-Through)		29	89	3	43	263	1	94	490	15	2,363	909	50		28	92	3	38	265	1	85	490	15	2,209	812	50
Convenience Market (24 hour)		6	23	5	2	132	1	32	290	43	417	1,849	18,389		5	22	5	2	133	—	31	263	42	290	1,830	18,451
Convenience Market with Gas Pumps		6	23	5	2	132	1	32	290	43	417	1,849	18,389		5	22	5	2	133	—	31	263	42	290	1,830	18,451
Day-Care Center		16	81	1	9	102	—	58	95	55	856	384	88		16	85	1	10	102	—	51	97	55	824	381	86
Discount Club		2	6	<1	7	41	4	33	60	35	1,262	1,287	216		1	6	<1	7	42	4	32	59	35	1,193	1,281	213

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Electronic Superstore		2	6	<1	7	41	4	33	60	35	1,262	1,287	216		1	6	<1	7	42	4	32	59	35	1,193	1,281	213
Elementary School		16	81	1	9	102	—	58	95	55	856	384	88		16	85	1	10	102	—	51	97	55	824	381	86
Fast Food Restaurant w/o Drive Thru		116	46	855	49	81	5	46	386	1,841	3,427	5,399	8,281		113	45	857	48	82	5	44	379	1,750	3,246	5,352	8,150
Fast Food Restaurant with Drive Thru		116	46	855	49	81	5	46	386	1,841	3,427	5,399	8,281		113	45	857	48	82	5	44	379	1,750	3,246	5,352	8,150
Free-Standing Discount store		2	6	<1	7	41	4	33	60	35	1,262	1,287	216		1	6	<1	7	42	4	32	59	35	1,193	1,281	213
Free-Standing Discount Superstore		2	6	<1	7	41	4	33	60	35	1,262	1,287	216		1	6	<1	7	42	4	32	59	35	1,193	1,281	213
Gasoline/Service Station		29	89	3	43	263	1	94	490	15	2,363	909	50		28	92	3	38	265	1	85	490	15	2,209	812	50
General Heavy Industry		29	89	3	43	263	1	94	490	15	2,363	909	50		28	92	3	38	265	1	85	490	15	2,209	812	50
General Light Industry		29	89	3	43	263	1	94	490	15	2,363	909	50		28	92	3	38	265	1	85	490	15	2,209	812	50
General Office Building		27	150	1	23	52	<1	71	594	13	3,699	2,381	16		26	163	1	23	52	<1	70	630	12	3,661	2,352	14
Government (Civic Center)		27	150	1	23	52	<1	71	594	13	3,699	2,381	16		26	163	1	23	52	<1	70	630	12	3,661	2,352	14
Government Office Building		27	150	1	23	52	<1	71	594	13	3,699	2,381	16		26	163	1	23	52	<1	70	630	12	3,661	2,352	14
Hardware/Paint Store		2	6	<1	7	41	4	33	60	35	1,262	1,287	216		1	6	<1	7	42	4	32	59	35	1,193	1,281	213
Health Club		29	89	3	43	263	1	94	490	15	2,363	909	50		28	92	3	38	265	1	85	490	15	2,209	812	50
High School		16	81	1	9	102	—	58	95	55	856	384	88		16	85	1	10	102	—	51	97	55	824	381	86
High Turnover (Sit Down Restaurant)		116	46	855	49	81	5	46	386	1,841	3,427	5,399	8,281		113	45	857	48	82	5	44	379	1,750	3,246	5,352	8,150
Home Improvement Superstore		2	6	<1	7	41	4	33	60	35	1,262	1,287	216		1	6	<1	7	42	4	32	59	35	1,193	1,281	213
Hospital		188	156	9	13	180	<1	414	802	98	7,640	8,052	330		183	163	9	16	181	—	354	796	98	7,290	8,043	322
Hotel		75	72	25	—	117	—	199	3,830	70	2,663	1,838	1,172		74	76	25	—	117	—	199	3,890	69	2,602	1,832	1,167
Industrial Park		27	150	1	23	52	<1	71	594	13	3,699	2,381	16		26	163	1	23	52	<1	70	630	12	3,661	2,352	14
Junior College (2yr)		51	360	1	11	75	<1	353	1,078	70	2,488	1,462	403		49	361	1	11	75	—	333	996	69	2,178	1,444	387
Junior High School		16	81	1	9	102	—	58	95	55	856	384	88		16	85	1	10	102	—	51	97	55	824	381	86
Library		29	89	3	43	263	1	94	490	15	2,363	909	50		28	92	3	38	265	1	85	490	15	2,209	812	50

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Manufacturing		29	89	3	43	263	1	94	490	15	2,363	909	50		28	92	3	38	265	1	85	490	15	2,209	812	50
Medical Office Building		27	150	1	23	52	<1	71	594	13	3,699	2,381	16		26	163	1	23	52	<1	70	630	12	3,661	2,352	14
Motel		75	72	25	—	117	—	199	3,830	70	2,663	1,838	1,172		74	76	25	—	117	—	199	3,890	69	2,602	1,832	1,167
Movie Theater (No Matinee)		29	89	3	43	263	1	94	490	15	2,363	909	50		28	92	3	38	265	1	85	490	15	2,209	812	50
Office Park		27	150	1	23	52	<1	71	594	13	3,699	2,381	16		26	163	1	23	52	<1	70	630	12	3,661	2,352	14
Pharmacy/Drugstore w/o Drive Thru		2	6	<1	7	41	4	33	60	35	1,262	1,287	216		1	6	<1	7	42	4	32	59	35	1,193	1,281	213
Pharmacy/Drugstore with Drive Thru		2	6	<1	7	41	4	33	60	35	1,262	1,287	216		1	6	<1	7	42	4	32	59	35	1,193	1,281	213
Place of Worship		29	89	3	43	263	1	94	490	15	2,363	909	50		28	92	3	38	265	1	85	490	15	2,209	812	50
Quality Restaurant		116	46	855	49	81	5	46	386	1,841	3,427	5,399	8,281		113	45	857	48	82	5	44	379	1,750	3,246	5,352	8,150
Racquet Club		29	89	3	43	263	1	94	490	15	2,363	909	50		28	92	3	38	265	1	85	490	15	2,209	812	50
Refrigerated Warehouse-No Rail		3	1	<1	—	186	61	9	1	<1	84	1,664	15,484		3	1	<1	—	186	56	9	1	<1	77	1,656	14,520
Refrigerated Warehouse-Rail		3	1	<1	—	186	61	9	1	<1	84	1,664	15,484		3	1	<1	—	186	56	9	1	<1	77	1,656	14,520
Regional Shopping Center		2	6	<1	7	41	4	33	60	35	1,262	1,287	216		1	6	<1	7	42	4	32	59	35	1,193	1,281	213
Research & Development		27	150	1	23	52	<1	71	594	13	3,699	2,381	16		26	163	1	23	52	<1	70	630	12	3,661	2,352	14
Strip Mall		2	6	<1	7	41	4	33	60	35	1,262	1,287	216		1	6	<1	7	42	4	32	59	35	1,193	1,281	213
Supermarket		6	23	5	2	132	1	32	290	43	417	1,849	18,389		5	22	5	2	133	—	31	263	42	290	1,830	18,451
University/College (4yr)		51	360	1	11	75	<1	353	1,078	70	2,488	1,462	403		49	361	1	11	75	—	333	996	69	2,178	1,444	387
Unrefrigerated Warehouse-No Rail		4	2	<1	1	185	—	9	26	<1	128	1,251	—		4	2	<1	2	186	—	9	25	<1	118	1,242	—
Unrefrigerated Warehouse-Rail		4	2	<1	1	185	—	9	26	<1	128	1,251	—		4	2	<1	2	186	—	9	25	<1	118	1,242	—
Arena	9	34	103	2	49	260	1	128	503	15	2,870	1,226	76	10	36	76	3	54	259	1	118	404	15	2,491	913	54
Automobile Care Center		34	103	2	49	260	1	128	503	15	2,870	1,226	76		36	76	3	54	259	1	118	404	15	2,491	913	54
Bank (with Drive-Through)		34	103	2	49	260	1	128	503	15	2,870	1,226	76		36	76	3	54	259	1	118	404	15	2,491	913	54

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Convenience Market (24 hour)		7	37	5	6	126	5	36	395	47	1,460	2,628	17,583		7	22	5	5	130	<1	32	286	42	909	1,989	18,138
Convenience Market with Gas Pumps		7	37	5	6	126	5	36	395	47	1,460	2,628	17,583		7	22	5	5	130	<1	32	286	42	909	1,989	18,138
Day-Care Center		17	152	2	7	91	—	89	191	55	1,062	391	99		16	118	1	6	99	—	102	145	55	1,052	418	100
Discount Club		2	7	<1	10	38	3	35	72	33	1,839	1,304	211		2	3	<1	10	41	4	40	35	35	1,589	1,313	218
Electronic Superstore		2	7	<1	10	38	3	35	72	33	1,839	1,304	211		2	3	<1	10	41	4	40	35	35	1,589	1,313	218
Elementary School		17	152	2	7	91	—	89	191	55	1,062	391	99		16	118	1	6	99	—	102	145	55	1,052	418	100
Fast Food Restaurant w/o Drive Thru		129	75	866	39	81	5	63	559	2,665	4,172	6,421	8,407		128	46	839	44	80	5	40	415	2,243	3,460	5,538	9,070
Fast Food Restaurant with Drive Thru		129	75	866	39	81	5	63	559	2,665	4,172	6,421	8,407		128	46	839	44	80	5	40	415	2,243	3,460	5,538	9,070
Free-Standing Discount store		2	7	<1	10	38	3	35	72	33	1,839	1,304	211		2	3	<1	10	41	4	40	35	35	1,589	1,313	218
Free-Standing Discount Superstore		2	7	<1	10	38	3	35	72	33	1,839	1,304	211		2	3	<1	10	41	4	40	35	35	1,589	1,313	218
Gasoline/Service Station		34	103	2	49	260	1	128	503	15	2,870	1,226	76		36	76	3	54	259	1	118	404	15	2,491	913	54
General Heavy Industry		34	103	2	49	260	1	128	503	15	2,870	1,226	76		36	76	3	54	259	1	118	404	15	2,491	913	54
General Light Industry		34	103	2	49	260	1	128	503	15	2,870	1,226	76		36	76	3	54	259	1	118	404	15	2,491	913	54
General Office Building		25	258	1	30	52	<1	64	838	15	4,239	2,482	15		28	168	1	25	52	<1	86	731	12	3,604	2,406	15
Government (Civic Center)		25	258	1	30	52	<1	64	838	15	4,239	2,482	15		28	168	1	25	52	<1	86	731	12	3,604	2,406	15
Government Office Building		25	258	1	30	52	<1	64	838	15	4,239	2,482	15		28	168	1	25	52	<1	86	731	12	3,604	2,406	15
Hardware/Paint Store		2	7	<1	10	38	3	35	72	33	1,839	1,304	211		2	3	<1	10	41	4	40	35	35	1,589	1,313	218
Health Club		34	103	2	49	260	1	128	503	15	2,870	1,226	76		36	76	3	54	259	1	118	404	15	2,491	913	54
High School		17	152	2	7	91	—	89	191	55	1,062	391	99		16	118	1	6	99	—	102	145	55	1,052	418	100
High Turnover (Sit Down Restaurant)		129	75	866	39	81	5	63	559	2,665	4,172	6,421	8,407		128	46	839	44	80	5	40	415	2,243	3,460	5,538	9,070
Home Improvement Superstore		2	7	<1	10	38	3	35	72	33	1,839	1,304	211		2	3	<1	10	41	4	40	35	35	1,589	1,313	218
Hospital		206	218	9	4	178	—	593	1,051	101	8,315	9,011	306		197	215	9	6	179	—	507	1,232	98	7,844	8,108	347

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Hotel		79	102	23	<1	98	—	160	4,156	69	2,953	1,759	1,035		78	82	24	<1	115	—	232	5,338	69	3,299	1,844	1,213
Industrial Park		25	258	1	30	52	<1	64	838	15	4,239	2,482	15		28	168	1	25	52	<1	86	731	12	3,604	2,406	15
Junior College (2yr)		45	328	1	15	58	—	350	1,034	63	2,367	1,230	315		52	416	1	17	73	—	536	1,650	68	2,286	1,516	422
Junior High School		17	152	2	7	91	—	89	191	55	1,062	391	99		16	118	1	6	99	—	102	145	55	1,052	418	100
Library		34	103	2	49	260	1	128	503	15	2,870	1,226	76		36	76	3	54	259	1	118	404	15	2,491	913	54
Manufacturing		34	103	2	49	260	1	128	503	15	2,870	1,226	76		36	76	3	54	259	1	118	404	15	2,491	913	54
Medical Office Building		25	258	1	30	52	<1	64	838	15	4,239	2,482	15		28	168	1	25	52	<1	86	731	12	3,604	2,406	15
Motel		79	102	23	<1	98	—	160	4,156	69	2,953	1,759	1,035		78	82	24	<1	115	—	232	5,338	69	3,299	1,844	1,213
Movie Theater (No Matinee)		34	103	2	49	260	1	128	503	15	2,870	1,226	76		36	76	3	54	259	1	118	404	15	2,491	913	54
Office Park		25	258	1	30	52	<1	64	838	15	4,239	2,482	15		28	168	1	25	52	<1	86	731	12	3,604	2,406	15
Pharmacy/Drugstore w/o Drive Thru		2	7	<1	10	38	3	35	72	33	1,839	1,304	211		2	3	<1	10	41	4	40	35	35	1,589	1,313	218
Pharmacy/Drugstore with Drive Thru		2	7	<1	10	38	3	35	72	33	1,839	1,304	211		2	3	<1	10	41	4	40	35	35	1,589	1,313	218
Place of Worship		34	103	2	49	260	1	128	503	15	2,870	1,226	76		36	76	3	54	259	1	118	404	15	2,491	913	54
Quality Restaurant		129	75	866	39	81	5	63	559	2,665	4,172	6,421	8,407		128	46	839	44	80	5	40	415	2,243	3,460	5,538	9,070
Racquet Club		34	103	2	49	260	1	128	503	15	2,870	1,226	76		36	76	3	54	259	1	118	404	15	2,491	913	54
Refrigerated Warehouse-No Rail		1	2	<1	2	159	59	3	4	<1	100	2,052	18,137		4	<1	<1	—	184	75	11	1	<1	96	1,755	18,119
Refrigerated Warehouse-Rail		1	2	<1	2	159	59	3	4	<1	100	2,052	18,137		4	<1	<1	—	184	75	11	1	<1	96	1,755	18,119
Regional Shopping Center		2	7	<1	10	38	3	35	72	33	1,839	1,304	211		2	3	<1	10	41	4	40	35	35	1,589	1,313	218
Research & Development		25	258	1	30	52	<1	64	838	15	4,239	2,482	15		28	168	1	25	52	<1	86	731	12	3,604	2,406	15
Strip Mall		2	7	<1	10	38	3	35	72	33	1,839	1,304	211		2	3	<1	10	41	4	40	35	35	1,589	1,313	218
Supermarket		7	37	5	6	126	5	36	395	47	1,460	2,628	17,583		7	22	5	5	130	<1	32	286	42	909	1,989	18,138
University/College (4yr)		45	328	1	15	58	—	350	1,034	63	2,367	1,230	315		52	416	1	17	73	—	536	1,650	68	2,286	1,516	422
Unrefrigerated Warehouse-No Rail		4	8	<1	2	152	—	11	121	<1	190	1,742	—		5	2	<1	1	182	—	14	32	<1	110	1,304	—

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Unrefrigerated Warehouse-Rail		4	8	<1	2	152	—	11	121	<1	190	1,742	—		5	2	<1	1	182	—	14	32	<1	110	1,304	—
Arena		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48
Automobile Care Center		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48
Bank (with Drive-Through)		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48
Convenience Market (24 hour)		7	20	5	5	131	—	31	252	42	899	1,875	18,180	12	5	56	24	1	97	—	45	184	492	479	1,793	16,782
Convenience Market with Gas Pumps		7	20	5	5	131	—	31	252	42	899	1,875	18,180		5	56	24	1	97	—	45	184	492	479	1,793	16,782
Day-Care Center		16	116	1	6	100	—	99	137	55	1,067	420	99		12	71	1	4	70	—	180	299	171	936	446	84
Discount Club		2	2	<1	10	41	4	40	31	35	1,611	1,311	218		1	7	<1	5	30	1	49	20	24	1,090	904	176
Electronic Superstore		2	2	<1	10	41	4	40	31	35	1,611	1,311	218		1	7	<1	5	30	1	49	20	24	1,090	904	176
Elementary School		16	116	1	6	100	—	99	137	55	1,067	420	99		12	71	1	4	70	—	180	299	171	936	446	84
Fast Food Restaurant w/o Drive Thru		127	44	839	45	80	5	39	392	2,199	3,515	5,451	9,121		99	74	890	4	57	1	170	470	3,641	2,812	5,370	7,874
Fast Food Restaurant with Drive Thru	11	127	44	839	45	80	5	39	392	2,199	3,515	5,451	9,121		99	74	890	4	57	1	170	470	3,641	2,812	5,370	7,874
Free-Standing Discount store		2	2	<1	10	41	4	40	31	35	1,611	1,311	218		1	7	<1	5	30	1	49	20	24	1,090	904	176
Free-Standing Discount Superstore		2	2	<1	10	41	4	40	31	35	1,611	1,311	218		1	7	<1	5	30	1	49	20	24	1,090	904	176
Gasoline/Service Station		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48
General Heavy Industry		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48
General Light Industry		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48
General Office Building		29	169	1	25	52	<1	86	731	12	3,629	2,396	15		25	230	1	26	39	<1	108	646	30	2,664	2,328	36
Government (Civic Center)		29	169	1	25	52	<1	86	731	12	3,629	2,396	15		25	230	1	26	39	<1	108	646	30	2,664	2,328	36
Government Office Building		29	169	1	25	52	<1	86	731	12	3,629	2,396	15		25	230	1	26	39	<1	108	646	30	2,664	2,328	36
Hardware/Paint Store		2	2	<1	10	41	4	40	31	35	1,611	1,311	218		1	7	<1	5	30	1	49	20	24	1,090	904	176
Health Club		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
High School		16	116	1	6	100	—	99	137	55	1,067	420	99		12	71	1	4	70	—	180	299	171	936	446	84
High Turnover (Sit Down Restaurant)		127	44	839	45	80	5	39	392	2,199	3,515	5,451	9,121		99	74	890	4	57	1	170	470	3,641	2,812	5,370	7,874
Home Improvement Superstore		2	2	<1	10	41	4	40	31	35	1,611	1,311	218		1	7	<1	5	30	1	49	20	24	1,090	904	176
Hospital		196	211	9	6	179	—	520	1,255	98	7,939	8,024	351		221	111	9	204	126	—	1,593	2,670	202	5,658	6,328	452
Hotel		78	81	24	—	116	—	233	5,394	69	3,353	1,850	1,227		85	259	15	<1	83	—	33	2,013	235	2,307	2,038	1,135
Industrial Park		29	169	1	25	52	<1	86	731	12	3,629	2,396	15		25	230	1	26	39	<1	108	646	30	2,664	2,328	36
Junior College (2yr)		53	418	1	18	74	—	540	1,675	69	2,307	1,534	429		33	432	1	103	53	—	1,280	2,459	158	1,915	1,741	367
Junior High School		16	116	1	6	100	—	99	137	55	1,067	420	99		12	71	1	4	70	—	180	299	171	936	446	84
Library		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48
Manufacturing		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48
Medical Office Building		29	169	1	25	52	<1	86	731	12	3,629	2,396	15		25	230	1	26	39	<1	108	646	30	2,664	2,328	36
Motel		78	81	24	—	116	—	233	5,394	69	3,353	1,850	1,227		85	259	15	<1	83	—	33	2,013	235	2,307	2,038	1,135
Movie Theater (No Matinee)		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48
Office Park		29	169	1	25	52	<1	86	731	12	3,629	2,396	15		25	230	1	26	39	<1	108	646	30	2,664	2,328	36
Pharmacy/Drugstore w/o Drive Thru		2	2	<1	10	41	4	40	31	35	1,611	1,311	218		1	7	<1	5	30	1	49	20	24	1,090	904	176
Pharmacy/Drugstore with Drive Thru		2	2	<1	10	41	4	40	31	35	1,611	1,311	218		1	7	<1	5	30	1	49	20	24	1,090	904	176
Place of Worship		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48
Quality Restaurant		127	44	839	45	80	5	39	392	2,199	3,515	5,451	9,121		99	74	890	4	57	1	170	470	3,641	2,812	5,370	7,874
Racquet Club		36	76	3	55	259	1	118	406	15	2,540	875	52		32	162	3	13	193	<1	80	608	47	1,835	938	48
Refrigerated Warehouse-No Rail		4	<1	<1	—	185	75	11	1	<1	96	1,746	18,101		4	<1	<1	—	123	68	12	2	<1	67	1,544	16,519
Refrigerated Warehouse-Rail		4	<1	<1	—	185	75	11	1	<1	96	1,746	18,101		4	<1	<1	—	123	68	12	2	<1	67	1,544	16,519
Regional Shopping Center		2	2	<1	10	41	4	40	31	35	1,611	1,311	218		1	7	<1	5	30	1	49	20	24	1,090	904	176
Research & Development		29	169	1	25	52	<1	86	731	12	3,629	2,396	15		25	230	1	26	39	<1	108	646	30	2,664	2,328	36

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Strip Mall		2	2	<1	10	41	4	40	31	35	1,611	1,311	218		1	7	<1	5	30	1	49	20	24	1,090	904	176
Supermarket		7	20	5	5	131	—	31	252	42	899	1,875	18,180		5	56	24	1	97	—	45	184	492	479	1,793	16,782
University/College (4yr)		53	418	1	18	74	—	540	1,675	69	2,307	1,534	429		33	432	1	103	53	—	1,280	2,459	158	1,915	1,741	367
Unrefrigerated Warehouse-No Rail		5	2	<1	1	183	—	14	27	<1	110	1,288	—		2	2	<1	2	141	—	33	28	<1	133	1,158	—
Unrefrigerated Warehouse-Rail		5	2	<1	1	183	—	14	27	<1	110	1,288	—		2	2	<1	2	141	—	33	28	<1	133	1,158	—
Arena		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154
Automobile Care Center		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154
Bank (with Drive-Through)		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154
Convenience Market (24 hour)		22	78	1	<1	55	45	117	184	82	3,764	14,809	12,946		19	151	1	23	53	40	107	188	71	8,026	12,948	11,137
Convenience Market with Gas Pumps		22	78	1	<1	55	45	117	184	82	3,764	14,809	12,946		19	151	1	23	53	40	107	188	71	8,026	12,948	11,137
Day-Care Center	13	24	197	4	—	<1	—	192	2,940	35	217	455	139	14	23	398	4	1	—	—	164	72	34	242	449	132
Discount Club		60	27	<1	<1	1	—	9	306	9	1,367	1,498	141		1	76	<1	2	1	—	12	429	8	1,878	1,308	123
Electronic Superstore		60	27	<1	<1	1	—	9	306	9	1,367	1,498	141		1	76	<1	2	1	—	12	429	8	1,878	1,308	123
Elementary School		24	197	4	—	<1	—	192	2,940	35	217	455	139		23	398	4	1	—	—	164	72	34	242	449	132
Fast Food Restaurant w/o Drive Thru		140	134	865	—	65	—	118	506	4,833	4,041	12,650	5,830		95	109	651	—	54	—	148	183	3,621	4,433	9,442	4,176
Fast Food Restaurant with Drive Thru		140	134	865	—	65	—	118	506	4,833	4,041	12,650	5,830		95	109	651	—	54	—	148	183	3,621	4,433	9,442	4,176
Free-Standing Discount store		60	27	<1	<1	1	—	9	306	9	1,367	1,498	141		1	76	<1	2	1	—	12	429	8	1,878	1,308	123
Free-Standing Discount Superstore		60	27	<1	<1	1	—	9	306	9	1,367	1,498	141		1	76	<1	2	1	—	12	429	8	1,878	1,308	123
Gasoline/Service Station		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154
General Heavy Industry		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154
General Light Industry		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154
General Office Building		1	285	<1	—	46	—	14	395	29	4,356	4,969	15		1	236	<1	42	42	—	11	81	24	4,424	4,233	12

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Government (Civic Center)		1	285	<1	—	46	—	14	395	29	4,356	4,969	15		1	236	<1	42	42	—	11	81	24	4,424	4,233	12
Government Office Building		1	285	<1	—	46	—	14	395	29	4,356	4,969	15		1	236	<1	42	42	—	11	81	24	4,424	4,233	12
Hardware/Paint Store		60	27	<1	<1	1	—	9	306	9	1,367	1,498	141		1	76	<1	2	1	—	12	429	8	1,878	1,308	123
Health Club		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154
High School		24	197	4	—	<1	—	192	2,940	35	217	455	139		23	398	4	1	—	—	164	72	34	242	449	132
High Turnover (Sit Down Restaurant)		140	134	865	—	65	—	118	506	4,833	4,041	12,650	5,830		95	109	651	—	54	—	148	183	3,621	4,433	9,442	4,176
Home Improvement Superstore		60	27	<1	<1	1	—	9	306	9	1,367	1,498	141		1	76	<1	2	1	—	12	429	8	1,878	1,308	123
Hospital		217	170	9	—	161	—	279	292	104	9,484	16,339	147		209	203	9	—	170	—	250	139	102	9,273	15,907	140
Hotel		96	357	3	—	15	—	—	259	21	495	2,341	287		82	199	12	<1	15	—	2	92	19	534	2,083	253
Industrial Park		1	285	<1	—	46	—	14	395	29	4,356	4,969	15		1	236	<1	42	42	—	11	81	24	4,424	4,233	12
Junior College (2yr)		13	296	—	24	13	—	3	50	19	1,372	518	20		11	63	1	7	14	—	63	44	18	1,515	504	18
Junior High School		24	197	4	—	<1	—	192	2,940	35	217	455	139		23	398	4	1	—	—	164	72	34	242	449	132
Library		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154
Manufacturing		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154
Medical Office Building		1	285	<1	—	46	—	14	395	29	4,356	4,969	15		1	236	<1	42	42	—	11	81	24	4,424	4,233	12
Motel		96	357	3	—	15	—	—	259	21	495	2,341	287		82	199	12	<1	15	—	2	92	19	534	2,083	253
Movie Theater (No Matinee)		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154
Office Park		1	285	<1	—	46	—	14	395	29	4,356	4,969	15		1	236	<1	42	42	—	11	81	24	4,424	4,233	12
Pharmacy/Drugstore w/o Drive Thru		60	27	<1	<1	1	—	9	306	9	1,367	1,498	141		1	76	<1	2	1	—	12	429	8	1,878	1,308	123
Pharmacy/Drugstore with Drive Thru		60	27	<1	<1	1	—	9	306	9	1,367	1,498	141		1	76	<1	2	1	—	12	429	8	1,878	1,308	123
Place of Worship		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154
Quality Restaurant		140	134	865	—	65	—	118	506	4,833	4,041	12,650	5,830		95	109	651	—	54	—	148	183	3,621	4,433	9,442	4,176
Racquet Club		31	135	1	—	229	—	204	113	—	862	4,668	171		28	111	1	4	226	—	201	246	15	2,352	4,226	154

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Refrigerated Warehouse-No Rail		<1	3	<1	<1	52	8	6	8	<1	117	4,305	15,847		<1	15	<1	5	9	8	8	18	—	62	4,595	17,064
Refrigerated Warehouse-Rail		<1	3	<1	<1	52	8	6	8	<1	117	4,305	15,847		<1	15	<1	5	9	8	8	18	—	62	4,595	17,064
Regional Shopping Center		60	27	<1	<1	1	—	9	306	9	1,367	1,498	141		1	76	<1	2	1	—	12	429	8	1,878	1,308	123
Research & Development		1	285	<1	—	46	—	14	395	29	4,356	4,969	15		1	236	<1	42	42	—	11	81	24	4,424	4,233	12
Strip Mall		60	27	<1	<1	1	—	9	306	9	1,367	1,498	141		1	76	<1	2	1	—	12	429	8	1,878	1,308	123
Supermarket		22	78	1	<1	55	45	117	184	82	3,764	14,809	12,946		19	151	1	23	53	40	107	188	71	8,026	12,948	11,137
University/College (4yr)		13	296	—	24	13	—	3	50	19	1,372	518	20		11	63	1	7	14	—	63	44	18	1,515	504	18
Unrefrigerated Warehouse-No Rail		<1	25	<1	—	8	—	3	328	<1	758	4,279	—		<1	32	<1	6	8	—	3	372	—	521	3,934	—
Unrefrigerated Warehouse-Rail		<1	25	<1	—	8	—	3	328	<1	758	4,279	—		<1	32	<1	6	8	—	3	372	—	521	3,934	—
Arena	15	28	110	1	4	227	—	198	240	11	2,130	4,241	154	16	23	69	2	43	215	1	79	379	12	1,996	2,220	39
Automobile Care Center		28	110	1	4	227	—	198	240	11	2,130	4,241	154		23	69	2	43	215	1	79	379	12	1,996	2,220	39
Bank (with Drive-Through)		28	110	1	4	227	—	198	240	11	2,130	4,241	154		23	69	2	43	215	1	79	379	12	1,996	2,220	39
Convenience Market (24 hour)		19	150	1	17	53	38	116	200	72	6,949	13,007	11,303		4	17	4	2	109	—	24	179	32	367	1,654	13,782
Convenience Market with Gas Pumps		19	150	1	17	53	38	116	200	72	6,949	13,007	11,303		4	17	4	2	109	—	24	179	32	367	1,654	13,782
Day-Care Center		23	388	4	1	<1	—	178	64	34	231	449	132		16	77	1	7	98	—	51	82	51	894	1,130	81
Discount Club		12	69	<1	1	1	—	13	395	8	1,649	1,315	123		1	4	<1	7	34	3	24	28	27	1,249	2,867	162
Electronic Superstore		12	69	<1	1	1	—	13	395	8	1,649	1,315	123		1	4	<1	7	34	3	24	28	27	1,249	2,867	162
Elementary School		23	388	4	1	<1	—	178	64	34	231	449	132		16	77	1	7	98	—	51	82	51	894	1,130	81
Fast Food Restaurant w/o Drive Thru		94	105	645	<1	53	—	142	199	3,590	4,116	9,362	4,145		90	37	702	48	67	4	35	268	1,279	3,254	8,965	6,236
Fast Food Restaurant with Drive Thru		94	105	645	<1	53	—	142	199	3,590	4,116	9,362	4,145		90	37	702	48	67	4	35	268	1,279	3,254	8,965	6,236
Free-Standing Discount store		12	69	<1	1	1	—	13	395	8	1,649	1,315	123		1	4	<1	7	34	3	24	28	27	1,249	2,867	162

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Free-Standing Discount Superstore		12	69	<1	1	1	—	13	395	8	1,649	1,315	123		1	4	<1	7	34	3	24	28	27	1,249	2,867	162
Gasoline/Service Station		28	110	1	4	227	—	198	240	11	2,130	4,241	154		23	69	2	43	215	1	79	379	12	1,996	2,220	39
General Heavy Industry		28	110	1	4	227	—	198	240	11	2,130	4,241	154		23	69	2	43	215	1	79	379	12	1,996	2,220	39
General Light Industry		28	110	1	4	227	—	198	240	11	2,130	4,241	154		23	69	2	43	215	1	79	379	12	1,996	2,220	39
General Office Building		1	234	<1	39	43	—	13	83	25	4,208	4,327	13		20	119	1	18	43	<1	46	396	9	3,103	2,714	11
Government (Civic Center)		1	234	<1	39	43	—	13	83	25	4,208	4,327	13		20	119	1	18	43	<1	46	396	9	3,103	2,714	11
Government Office Building		1	234	<1	39	43	—	13	83	25	4,208	4,327	13		20	119	1	18	43	<1	46	396	9	3,103	2,714	11
Hardware/Paint Store		12	69	<1	1	1	—	13	395	8	1,649	1,315	123		1	4	<1	7	34	3	24	28	27	1,249	2,867	162
Health Club		28	110	1	4	227	—	198	240	11	2,130	4,241	154		23	69	2	43	215	1	79	379	12	1,996	2,220	39
High School		23	388	4	1	<1	—	178	64	34	231	449	132		16	77	1	7	98	—	51	82	51	894	1,130	81
High Turnover (Sit Down Restaurant)		94	105	645	<1	53	—	142	199	3,590	4,116	9,362	4,145		90	37	702	48	67	4	35	268	1,279	3,254	8,965	6,236
Home Improvement Superstore		12	69	<1	1	1	—	13	395	8	1,649	1,315	123		1	4	<1	7	34	3	24	28	27	1,249	2,867	162
Hospital		210	204	9	<1	170	—	245	124	101	8,897	15,857	140		184	121	9	14	181	—	290	610	93	8,688	18,450	297
Hotel		82	201	10	1	15	—	8	93	19	502	2,076	253		60	66	20	—	96	—	145	2,805	54	2,226	2,059	903
Industrial Park		1	234	<1	39	43	—	13	83	25	4,208	4,327	13		20	119	1	18	43	<1	46	396	9	3,103	2,714	11
Junior College (2yr)		11	140	1	8	14	—	40	51	18	1,481	505	18		43	364	1	4	75	—	276	682	65	3,268	3,761	362
Junior High School		23	388	4	1	<1	—	178	64	34	231	449	132		16	77	1	7	98	—	51	82	51	894	1,130	81
Library		28	110	1	4	227	—	198	240	11	2,130	4,241	154		23	69	2	43	215	1	79	379	12	1,996	2,220	39
Manufacturing		28	110	1	4	227	—	198	240	11	2,130	4,241	154		23	69	2	43	215	1	79	379	12	1,996	2,220	39
Medical Office Building		1	234	<1	39	43	—	13	83	25	4,208	4,327	13		20	119	1	18	43	<1	46	396	9	3,103	2,714	11
Motel		82	201	10	1	15	—	8	93	19	502	2,076	253		60	66	20	—	96	—	145	2,805	54	2,226	2,059	903
Movie Theater (No Matinee)		28	110	1	4	227	—	198	240	11	2,130	4,241	154		23	69	2	43	215	1	79	379	12	1,996	2,220	39
Office Park		1	234	<1	39	43	—	13	83	25	4,208	4,327	13		20	119	1	18	43	<1	46	396	9	3,103	2,714	11

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Pharmacy/Drugstore w/o Drive Thru		12	69	<1	1	1	—	13	395	8	1,649	1,315	123		1	4	<1	7	34	3	24	28	27	1,249	2,867	162
Pharmacy/Drugstore with Drive Thru		12	69	<1	1	1	—	13	395	8	1,649	1,315	123		1	4	<1	7	34	3	24	28	27	1,249	2,867	162
Place of Worship		28	110	1	4	227	—	198	240	11	2,130	4,241	154		23	69	2	43	215	1	79	379	12	1,996	2,220	39
Quality Restaurant		94	105	645	<1	53	—	142	199	3,590	4,116	9,362	4,145		90	37	702	48	67	4	35	268	1,279	3,254	8,965	6,236
Racquet Club		28	110	1	4	227	—	198	240	11	2,130	4,241	154		23	69	2	43	215	1	79	379	12	1,996	2,220	39
Refrigerated Warehouse-No Rail		<1	13	<1	3	18	8	8	17	<1	61	4,537	16,845		3	<1	<1	—	150	57	7	<1	<1	68	1,931	13,133
Refrigerated Warehouse-Rail		<1	13	<1	3	18	8	8	17	<1	61	4,537	16,845		3	<1	<1	—	150	57	7	<1	<1	68	1,931	13,133
Regional Shopping Center		12	69	<1	1	1	—	13	395	8	1,649	1,315	123		1	4	<1	7	34	3	24	28	27	1,249	2,867	162
Research & Development		1	234	<1	39	43	—	13	83	25	4,208	4,327	13		20	119	1	18	43	<1	46	396	9	3,103	2,714	11
Strip Mall		12	69	<1	1	1	—	13	395	8	1,649	1,315	123		1	4	<1	7	34	3	24	28	27	1,249	2,867	162
Supermarket		19	150	1	17	53	38	116	200	72	6,949	13,007	11,303		4	17	4	2	109	—	24	179	32	367	1,654	13,782
University/College (4yr)		11	140	1	8	14	—	40	51	18	1,481	505	18		43	364	1	4	75	—	276	682	65	3,268	3,761	362
Unrefrigerated Warehouse-No Rail		<1	33	<1	6	8	—	3	393	<1	487	4,060	—		3	2	<1	1	152	—	7	21	<1	120	1,905	—
Unrefrigerated Warehouse-Rail		<1	33	<1	6	8	—	3	393	<1	487	4,060	—		3	2	<1	1	152	—	7	21	<1	120	1,905	—
Arena		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46
Automobile Care Center		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46
Bank (with Drive-Through)		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46
Convenience Market (24 hour)	17	5	17	4	3	108	—	22	158	32	666	1,650	13,737	18	5	75	5	—	102	36	26	348	61	1,082	3,498	13,311
Convenience Market with Gas Pumps		5	17	4	3	108	—	22	158	32	666	1,650	13,737		5	75	5	—	102	36	26	348	61	1,082	3,498	13,311
Day-Care Center		16	75	1	11	100	—	37	82	52	1,077	1,066	78		15	156	1	57	98	<1	107	887	72	2,397	1,135	109
Discount Club		1	2	<1	8	34	3	26	12	27	1,520	2,796	164		3	18	<1	3	32	1	8	118	25	1,770	1,932	197

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Electronic Superstore		1	2	<1	8	34	3	26	12	27	1,520	2,796	164		3	18	<1	3	32	1	8	118	25	1,770	1,932	197
Elementary School		16	75	1	11	100	—	37	82	52	1,077	1,066	78		15	156	1	57	98	<1	107	887	72	2,397	1,135	109
Fast Food Restaurant w/o Drive Thru		92	33	698	44	67	4	29	270	1,390	4,098	8,344	6,443		90	55	755	16	64	2	66	233	1,739	4,338	10,345	6,772
Fast Food Restaurant with Drive Thru		92	33	698	44	67	4	29	270	1,390	4,098	8,344	6,443		90	55	755	16	64	2	66	233	1,739	4,338	10,345	6,772
Free-Standing Discount store		1	2	<1	8	34	3	26	12	27	1,520	2,796	164		3	18	<1	3	32	1	8	118	25	1,770	1,932	197
Free-Standing Discount Superstore		1	2	<1	8	34	3	26	12	27	1,520	2,796	164		3	18	<1	3	32	1	8	118	25	1,770	1,932	197
Gasoline/Service Station		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46
General Heavy Industry		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46
General Light Industry		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46
General Office Building		21	120	1	18	43	<1	49	411	9	3,032	2,608	11		30	11	1	<1	41	<1	13	46	17	3,240	5,482	29
Government (Civic Center)		21	120	1	18	43	<1	49	411	9	3,032	2,608	11		30	11	1	<1	41	<1	13	46	17	3,240	5,482	29
Government Office Building		21	120	1	18	43	<1	49	411	9	3,032	2,608	11		30	11	1	<1	41	<1	13	46	17	3,240	5,482	29
Hardware/Paint Store		1	2	<1	8	34	3	26	12	27	1,520	2,796	164		3	18	<1	3	32	1	8	118	25	1,770	1,932	197
Health Club		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46
High School		16	75	1	11	100	—	37	82	52	1,077	1,066	78		15	156	1	57	98	<1	107	887	72	2,397	1,135	109
High Turnover (Sit Down Restaurant)		92	33	698	44	67	4	29	270	1,390	4,098	8,344	6,443		90	55	755	16	64	2	66	233	1,739	4,338	10,345	6,772
Home Improvement Superstore		1	2	<1	8	34	3	26	12	27	1,520	2,796	164		3	18	<1	3	32	1	8	118	25	1,770	1,932	197
Hospital		187	99	9	6	180	—	341	492	92	10,138	16,824	305		178	230	10	12	167	1	1,241	497	98	7,896	19,788	358
Hotel		60	52	20	—	96	—	155	2,418	54	2,450	2,030	922		72	238	14	—	85	—	6	3,116	124	1,467	4,319	956
Industrial Park		21	120	1	18	43	<1	49	411	9	3,032	2,608	11		30	11	1	<1	41	<1	13	46	17	3,240	5,482	29
Junior College (2yr)		43	388	1	13	76	—	182	360	66	3,894	3,546	347		52	422	1	5	74	2	36	491	80	3,253	4,385	521
Junior High School		16	75	1	11	100	—	37	82	52	1,077	1,066	78		15	156	1	57	98	<1	107	887	72	2,397	1,135	109
Library		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Manufacturing		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46
Medical Office Building		21	120	1	18	43	<1	49	411	9	3,032	2,608	11		30	11	1	<1	41	<1	13	46	17	3,240	5,482	29
Motel		60	52	20	—	96	—	155	2,418	54	2,450	2,030	922		72	238	14	—	85	—	6	3,116	124	1,467	4,319	956
Movie Theater (No Matinee)		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46
Office Park		21	120	1	18	43	<1	49	411	9	3,032	2,608	11		30	11	1	<1	41	<1	13	46	17	3,240	5,482	29
Pharmacy/Drugstore w/o Drive Thru		1	2	<1	8	34	3	26	12	27	1,520	2,796	164		3	18	<1	3	32	1	8	118	25	1,770	1,932	197
Pharmacy/Drugstore with Drive Thru		1	2	<1	8	34	3	26	12	27	1,520	2,796	164		3	18	<1	3	32	1	8	118	25	1,770	1,932	197
Place of Worship		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46
Quality Restaurant		92	33	698	44	67	4	29	270	1,390	4,098	8,344	6,443		90	55	755	16	64	2	66	233	1,739	4,338	10,345	6,772
Racquet Club		26	57	2	50	214	1	79	268	12	2,533	2,164	40		23	93	2	12	206	<1	141	443	14	2,753	10,260	46
Refrigerated Warehouse-No Rail		2	<1	<1	—	150	60	7	<1	<1	92	1,896	12,896		4	<1	<1	—	137	65	7	<1	<1	109	2,911	5,213
Refrigerated Warehouse-Rail		2	<1	<1	—	150	60	7	<1	<1	92	1,896	12,896		4	<1	<1	—	137	65	7	<1	<1	109	2,911	5,213
Regional Shopping Center		1	2	<1	8	34	3	26	12	27	1,520	2,796	164		3	18	<1	3	32	1	8	118	25	1,770	1,932	197
Research & Development		21	120	1	18	43	<1	49	411	9	3,032	2,608	11		30	11	1	<1	41	<1	13	46	17	3,240	5,482	29
Strip Mall		1	2	<1	8	34	3	26	12	27	1,520	2,796	164		3	18	<1	3	32	1	8	118	25	1,770	1,932	197
Supermarket		5	17	4	3	108	—	22	158	32	666	1,650	13,737		5	75	5	—	102	36	26	348	61	1,082	3,498	13,311
University/College (4yr)		43	388	1	13	76	—	182	360	66	3,894	3,546	347		52	422	1	5	74	2	36	491	80	3,253	4,385	521
Unrefrigerated Warehouse-No Rail		3	2	<1	2	151	—	8	19	<1	144	1,860	—		4	3	<1	1	135	—	7	47	<1	761	2,087	—
Unrefrigerated Warehouse-Rail		3	2	<1	2	151	—	8	19	<1	144	1,860	—		4	3	<1	1	135	—	7	47	<1	761	2,087	—
Arena	19	27	42	2	—	254	—	305	929	75	12,990	8,428	47	State	32	105	2	21	239	<1	132	334	17	2,603	3,968	102
Automobile Care Center		27	42	2	—	254	—	305	929	75	12,990	8,428	47		32	105	2	21	239	<1	132	334	17	2,603	3,968	102
Bank (with Drive-Through)		27	42	2	—	254	—	305	929	75	12,990	8,428	47		32	105	2	21	239	<1	132	334	17	2,603	3,968	102

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Convenience Market (24 hour)		7	31	6	—	131	42	96	249	520	2,495	10,826	16,764		12	95	4	7	91	17	100	308	109	3,123	9,564	14,306
Convenience Market with Gas Pumps		7	31	6	—	131	42	96	249	520	2,495	10,826	16,764		12	95	4	7	91	17	100	308	109	3,123	9,564	14,306
Day-Care Center		20	32	1	—	96	—	139	1,730	397	9,644	45	198		18	232	2	6	50	<1	179	382	70	1,130	513	115
Discount Club		1	27	<1	2	38	—	10	175	24	6,035	2,601	301		6	36	<1	4	20	1	26	168	20	1,594	1,695	171
Electronic Superstore		1	27	<1	2	38	—	10	175	24	6,035	2,601	301		6	36	<1	4	20	1	26	168	20	1,594	1,695	171
Elementary School		20	32	1	—	96	—	139	1,730	397	9,644	45	198		18	232	2	6	50	<1	179	382	70	1,130	513	115
Fast Food Restaurant w/o Drive Thru		74	60	849	—	78	—	194	257	7,180	11,975	19,627	10,585		112	87	840	20	72	2	110	446	3,574	4,413	11,064	6,691
Fast Food Restaurant with Drive Thru		74	60	849	—	78	—	194	257	7,180	11,975	19,627	10,585		112	87	840	20	72	2	110	446	3,574	4,413	11,064	6,691
Free-Standing Discount store		1	27	<1	2	38	—	10	175	24	6,035	2,601	301		6	36	<1	4	20	1	26	168	20	1,594	1,695	171
Free-Standing Discount Superstore		1	27	<1	2	38	—	10	175	24	6,035	2,601	301		6	36	<1	4	20	1	26	168	20	1,594	1,695	171
Gasoline/Service Station		27	42	2	—	254	—	305	929	75	12,990	8,428	47		32	105	2	21	239	<1	132	334	17	2,603	3,968	102
General Heavy Industry		27	42	2	—	254	—	305	929	75	12,990	8,428	47		32	105	2	21	239	<1	132	334	17	2,603	3,968	102
General Light Industry		27	42	2	—	254	—	305	929	75	12,990	8,428	47		32	105	2	21	239	<1	132	334	17	2,603	3,968	102
General Office Building		47	8	1	—	51	—	20	51	366	10,998	11,371	58		15	182	1	23	47	<1	51	392	39	4,063	4,428	18
Government (Civic Center)		47	8	1	—	51	—	20	51	366	10,998	11,371	58		15	182	1	23	47	<1	51	392	39	4,063	4,428	18
Government Office Building		47	8	1	—	51	—	20	51	366	10,998	11,371	58		15	182	1	23	47	<1	51	392	39	4,063	4,428	18
Hardware/Paint Store		1	27	<1	2	38	—	10	175	24	6,035	2,601	301		6	36	<1	4	20	1	26	168	20	1,594	1,695	171
Health Club		27	42	2	—	254	—	305	929	75	12,990	8,428	47		32	105	2	21	239	<1	132	334	17	2,603	3,968	102
High School		20	32	1	—	96	—	139	1,730	397	9,644	45	198		18	232	2	6	50	<1	179	382	70	1,130	513	115
High Turnover (Sit Down Restaurant)		74	60	849	—	78	—	194	257	7,180	11,975	19,627	10,585		112	87	840	20	72	2	110	446	3,574	4,413	11,064	6,691
Home Improvement Superstore		1	27	<1	2	38	—	10	175	24	6,035	2,601	301		6	36	<1	4	20	1	26	168	20	1,594	1,695	171

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Hospital		257	151	9	3	173	—	1,725	519	1,043	14,329	113	2,899		219	195	9	16	172	<1	474	572	154	8,470	14,157	379
Hotel		91	126	14	—	114	—	525	1,650	1,322	3,475	89	316		77	164	16	2	62	—	114	1,892	122	1,644	2,255	653
Industrial Park		47	8	1	—	51	—	20	51	366	10,998	11,371	58		15	182	1	23	47	<1	51	392	39	4,063	4,428	18
Junior College (2yr)		87	90	1	2	72	—	347	1,428	1,684	12,069	138	1,183		32	295	1	14	44	<1	255	673	135	2,510	1,361	258
Junior High School		20	32	1	—	96	—	139	1,730	397	9,644	45	198		18	232	2	6	50	<1	179	382	70	1,130	513	115
Library		27	42	2	—	254	—	305	929	75	12,990	8,428	47		32	105	2	21	239	<1	132	334	17	2,603	3,968	102
Manufacturing		27	42	2	—	254	—	305	929	75	12,990	8,428	47		32	105	2	21	239	<1	132	334	17	2,603	3,968	102
Medical Office Building		47	8	1	—	51	—	20	51	366	10,998	11,371	58		15	182	1	23	47	<1	51	392	39	4,063	4,428	18
Motel		91	126	14	—	114	—	525	1,650	1,322	3,475	89	316		77	164	16	2	62	—	114	1,892	122	1,644	2,255	653
Movie Theater (No Matinee)		27	42	2	—	254	—	305	929	75	12,990	8,428	47		32	105	2	21	239	<1	132	334	17	2,603	3,968	102
Office Park		47	8	1	—	51	—	20	51	366	10,998	11,371	58		15	182	1	23	47	<1	51	392	39	4,063	4,428	18
Pharmacy/Drugstore w/o Drive Thru		1	27	<1	2	38	—	10	175	24	6,035	2,601	301		6	36	<1	4	20	1	26	168	20	1,594	1,695	171
Pharmacy/Drugstore with Drive Thru		1	27	<1	2	38	—	10	175	24	6,035	2,601	301		6	36	<1	4	20	1	26	168	20	1,594	1,695	171
Place of Worship		27	42	2	—	254	—	305	929	75	12,990	8,428	47		32	105	2	21	239	<1	132	334	17	2,603	3,968	102
Quality Restaurant		74	60	849	—	78	—	194	257	7,180	11,975	19,627	10,585		112	87	840	20	72	2	110	446	3,574	4,413	11,064	6,691
Racquet Club		27	42	2	—	254	—	305	929	75	12,990	8,428	47		32	105	2	21	239	<1	132	334	17	2,603	3,968	102
Refrigerated Warehouse-No Rail		5	<1	<1	—	182	—	13	1	<1	109	3,803	15,490		2	4	<1	1	95	34	8	8	<1	77	3,838	15,176
Refrigerated Warehouse-Rail		5	<1	<1	—	182	—	13	1	<1	109	3,803	15,490		2	4	<1	1	95	34	8	8	<1	77	3,838	15,176
Regional Shopping Center		1	27	<1	2	38	—	10	175	24	6,035	2,601	301		6	36	<1	4	20	1	26	168	20	1,594	1,695	171
Research & Development		47	8	1	—	51	—	20	51	366	10,998	11,371	58		15	182	1	23	47	<1	51	392	39	4,063	4,428	18
Strip Mall		1	27	<1	2	38	—	10	175	24	6,035	2,601	301		6	36	<1	4	20	1	26	168	20	1,594	1,695	171
Supermarket		7	31	6	—	131	42	96	249	520	2,495	10,826	16,764		12	95	4	7	91	17	100	308	109	3,123	9,564	14,306
University/College (4yr)		87	90	1	2	72	—	347	1,428	1,684	12,069	138	1,183		32	295	1	14	44	<1	255	673	135	2,510	1,361	258

Table E-15.2. Commercial Energy Consumption by End Use,[1] Electricity Demand Forecast Zone, and Building Type (cont.)

Building Type	EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)						EDFZ[1]	Natural Gas (Therm/yr/KSF)						Electricity (kWh/yr/KSF)					
		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.		Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.	Water Heater	Primary Heat	Cooking	Cooling	Misc.	Refrig.
Unrefrigerated Warehouse-No Rail		5	5	<1	—	181	—	11	63	<1	1,459	7,338	—		2	20	<1	3	91	—	8	194	<1	448	3,789	—
Unrefrigerated Warehouse-Rail		5	5	<1	—	181	—	11	63	<1	1,459	7,338	—		2	20	<1	3	91	—	8	194	<1	448	3,789	—

Source: ICF calculations; California Energy Commission (CEC). 2021. Excel database with the 2018-2030 Uncalibrated Commercial Sector Forecast, provided to ICF. January 21, 2021.

EDFZ = Electricity Demand Forecast Zone; yr = year; yr = year; KSF = thousand square feet

[1] The sample size in the commercial end use forecast data for several end uses and building types was limited. Accordingly, the data should be used with caution.

[2] Data for some EDFZ were not available in the commercial end use forecast, and a representative EDFZ was assumed (refer to Table E-1.1).

[3] The 12 building types used by the commercial end use forecast have been cross walked to the 49 non-residential land types in CalEEMod, as shown in Table E-1.6.

B3 Attach #1 of 3

Table W-1.1. Water Energy Intensity Factors by Hydrologic Region and Process

Hydrologic Region[1]	Water Energy Intensity Factors (kWh per AF)			
	Extraction + Conveyance	Pre-Treatment[2]	Distribution	Total
North Coast	54	144	163	362
San Francisco Bay	233	144	318	695
Central Coast	449	144	163	757
South Coast	1,591	144	163	1,898
Sacramento River	45	144	18	207
San Joaquin River	90	144	18	252
Tulare Lake	263	144	18	425
North Lahontan	43	144	18	205
South Lahontan	724	144	163	1,031
Colorado River	105	144	18	267

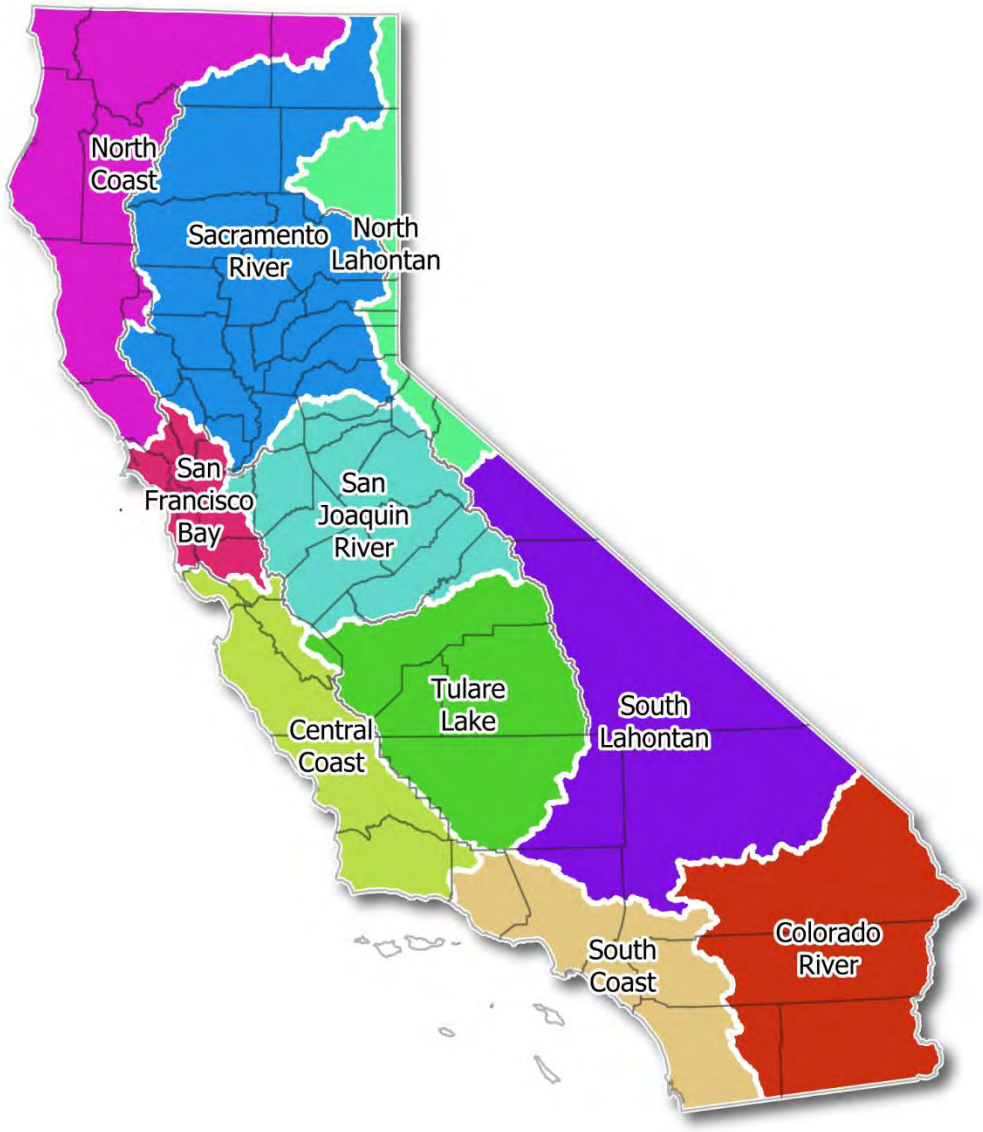
Source: ICF calculations; Navigant 2014. Water-Energy Calculator. Version 1.05. Prepared for the California Public Utilities Commission.

kWh = kilowatt-hours; AF = acre feet

[1] See Figure W-1.1.

[2] Pre-treatment factor assumes conventional treatment.

Figure W-1.1. Hydrologic Regions in California



Source: California Department of Water Resources (DWR). 2021. Hydrologic Regions. Available: https://atlas-dwr.opendata.arcgis.com/datasets/2a572a181e094020bdaeb5203162de15_0/explore?location=35.989124%2C-119.270000%2C5.96. Accessed: July 2021.

Table W-4.1. Residential Water Consumption Percentages by End Use

End-Use/Fixture (z)	% of Indoor Water Use[1]
Toilet	24%
Showerhead	19%
Bathroom and Kitchen Faucet	19%
Dishwashers	1%
Clothes Washers	16%
Leaks & Other	18%
Bath	3%

Source: Water Research Foundation 2016. Residential End Uses of Water, Version 2. Available: https://www.waterrf.org/research/projects/residential-end-uses-water-version-2. Accessed: January 2021

[1] Indoor water use percentages calculated based on data from the Water Research Foundation 2016.

Table W-4.2. Non-Residential Water Consumption Percentages by End Use

End-Use/Fixture (z)	Office		Hotel		Restaurant		Grocery Store		Non-Grocery Retail Store		K-12 School		Other School	
	Total[1]	Indoor[2]	Total[1]	Indoor[2]	Total[1]	Indoor[2]	Total[1]	Indoor[2]	Total[1]	Indoor[2]	Total[1]	Indoor[2]	Total[1]	Indoor[2]
Restroom	26%	—	51%	—	34%	—	17%	—	26%	—	20%	—	20%	—
Toilets (72% of Restroom)	—	48%	—	46%	—	27%	—	26%	—	46%	—	51%	—	37%
Urinals (17% of Restroom)	—	11%	—	11%	—	6%	—	6%	—	11%	—	12%	—	9%
Faucets (4% of Restroom)	—	3%	—	3%	—	1%	—	1%	—	3%	—	3%	—	2%
Showers (7% of Restroom)	—	5%	—	4%	—	3%	—	2%	—	4%	—	5%	—	4%
Kitchen	3%	—	10%	—	46%	—	9%	—	4%	—	2%	—	1%	—
Faucets (57% of Kitchen)	—	4%	—	7%	—	29%	—	11%	—	6%	—	4%	—	1%
Dishwashers (24% of Kitchen)	—	2%	—	3%	—	12%	—	5%	—	2%	—	2%	—	1%
Ice Making (19% of Kitchen)	—	1%	—	2%	—	10%	—	4%	—	2%	—	1%	—	0%
Laundry	0%	0%	14%	18%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%
Other	10%	26%	5%	6%	12%	13%	22%	46%	11%	27%	6%	21%	17%	44%
Landscaping	38%	—	10%	—	6%	—	3%	—	38%	—	72%	—	61%	—
Cooling	23%	—	10%	—	2%	—	49%	—	21%	—	*[3]	—	*[3]	—
Total[4]	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Pacific Institute. 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California. November. Available: https://pacinst.org/wp-content/uploads/2013/02/waste_not_want_not_full_report3.pdf. Accessed: January 2021.

[1] Water end-use data from Figures E-1, E-2, E-5, E-6, E-7, E-8, and E-9 of Appendix E of the Pacific Institute report.

[2] Indoor end-use data calculated based on the total water use data for the relevant building category and Figure 4-3 and Figure 4-4 of the Pacific Institute report. Figure 4-3 shows the breakdown of restroom water use by end-use in the commercial & industry sector. Figure 4-4 shows the breakdown of kitchen water-use by end-use in the commercial & industry sector; it was assumed that all end-uses except dishwashing and ice making are associated with faucet water use.

[3] No data.

[4] Totals may not add to 100% due to rounding.

Table W-4.3. Residential Baseline and Reduced Flow Rates for End Uses

End-Use/Fixture (z)	Existing Rate[1]	Reduced Rate	Applicable Standards[2]	Units
Toilet	1.28	—	—	gal/flush
Showerhead	1.8	—	—	gal/min @ 80 psi
Bathroom Faucet	1.2	—	—	gal/min @ 60 psi
Kitchen Faucet	1.8	1.5	2019 GBC Voluntary	gal/min @ 60 psi
Dishwashers				
Standard	5.0	3.5 or 4.25	EnergyStar or 2019 GBC Voluntary	gal/cycle
Compact	3.5	3.1 or 3.5	EnergyStar or 2019 GBC Voluntary	gal/cycle
Clothes Washers				
Top-loading, Compact	12.0	4.2	EnergyStar	gal/cycle/ft^3
Top-loading, Standard	6.5	4.3	EnergyStar	gal/cycle/ft^3
Front-loading, Compact	8.3	4.2	EnergyStar	gal/cycle/ft^3
Front-loading, Standard	4.7	3.2	EnergyStar	gal/cycle/ft^3

Sources: 2019 California Green Building Standards Code. Title 24, Part 11. Available: https://codes.iccsafe.org/content/CAGBSC2019. Accessed: January 2021.

EnergyStar. Clothes Washers Key Product Criteria. Available: https://www.energystar.gov/products/appliances/clothes_washers/key_product_criteria. Accessed: January 2021.

EnergyStar. Commercial Dishwashers Key Product Criteria. Available: https://www.energystar.gov/products/commercial_food_service_equipment/commercial_dishwashers/key_product_criteria. Accessed: January 2021.

EnergyStar. Commercial Kitchen Equipment Calculator. Available: http://www.energystar.gov/buildings/sites/default/uploads/files/commercial_kitchen_equipment_calculator.xlsx. Accessed: January 2021.

EnergyStar. Dishwashers Key Product Criteria. Available: https://www.energystar.gov/products/appliances/dishwashers/key_product_criteria. Accessed: January 2021.

gal = gallons; min = minute; psi = pounds per square inch = ft^3 = cubic feet; GBC = Green Building Code; @ = at

[1] Existing rates are calculated from (1) the 2019 Green Building Code Mandatory Measures – for toilet, showerhead, faucets; and (2) California Code of Regulations, Title 20, Division 2, Article 4, 1605.1. Federal and State Standards for Federally-Regulated Appliances – for dishwashers and clothes washers.

[2] 2019 GBC = 2019 California Green Building Code, voluntary measures

Table W-4.4. Non-Residential Baseline and Reduced Flow Rates for End Uses

End-Use/Fixture (z)	Existing Rate[1]	Reduced Rate	Applicable Standards[2]	Units
Toilet	1.28	1.12	2019 GBC Voluntary	gal/flush
Urinals				
Wall-Mounted	0.125	0.11	2019 GBC Voluntary	gal/flush
Floor-Mounted	0.5	0.44	2019 GBC Voluntary	gal/flush
Showerhead	1.8	—	2019 GBC Voluntary	gal/min. @ 80 psi
Bathroom Faucet	0.5	0.35	2019 GBC Voluntary	gal/min. @ 60 psi
Kitchen Faucet	1.8	1.6	2019 GBC Voluntary	gal/min. @ 60 psi
Dishwashers - High Temperature				
Under Counter	1.09	0.86	2019 GBC Voluntary	gal/rack
Single Tank Door	1.29	0.89	2019 GBC Voluntary	gal/rack
Single Tank Conveyor	0.87	0.70	2019 GBC Voluntary	gal/rack
Multi-Tank Conveyor	0.97	0.54	2019 GBC Voluntary	gal/rack
Dishwashers - Low Temperature				
Under Counter	1.73	1.19	2019 GBC Voluntary	gal/rack
Single Tank Door	2.1	1.18	2019 GBC Voluntary	gal/rack
Single Tank Conveyor	1.31	0.79	2019 GBC Voluntary	gal/rack
Multi-Tank Conveyor	1.04	0.54	2019 GBC Voluntary	gal/rack
Clothes Washer				
Top-loading	8.8	7.9	2019 GBC Voluntary	gal/cycle/ft^3
Front-loading	4.1	3.7 or 4.0	2019 GBC Voluntary or EnergyStar	gal/cycle/ft^3

Sources: 2019 California Green Building Standards Code. Title 24, Part 11. Available: https://codes.iccsafe.org/content/CAGBSC2019. Accessed: January 2021.

EnergyStar. Clothes Washers Key Product Criteria. Available: https://www.energystar.gov/products/appliances/clothes_washers/key_product_criteria. Accessed: January 2021.

gal = gallons; min = minute; psi = pounds per square inch = ft^3 = cubic feet; GBC = Green Building Code; @ = at

[1] Baseline rates are calculated from (1) the 2019 Green Building Code Mandatory Measures (and 2019 California Plumbing Code) – for toilet, urinal, showerhead, faucets; (2) EnergyStar calculator for commercial kitchen equipment – for dishwashers, and (3) California Code of Regulations, Title 20, Division 2, Article 4, 1605.1. Federal and State Standards for Federally-Regulated Appliances – for clothes washers.

[2] 2019 GBC = 2019 California Green Building Code, voluntary measures

B3 Attach #1 of 3

Table LL-1.1. Landscape Equipment Horsepower and Load Factors by Equipment Type

Equipment	Tech Type	Average HP	Load Factor
Chainsaws	G2	2	0.70
Chainsaws Preempt	G2	2	0.70
Chippers/Stump Grinders	G4	5	0.78
Lawn Mowers	G4	4	0.36
Leaf Blowers/Vacuums	G2	2	0.94
Leaf Blowers/Vacuums	G4	4	0.94
Other Lawn & Garden Equipment	G4	6	0.58
Riding Mowers	G4	21	0.38
Tillers	G2	1	0.40
Tillers	G4	4	0.40
Trimmers/Edgers/Brush Cutters	G2	1	0.91
Trimmers/Edgers/Brush Cutters	G4	2	0.91
Wood Splitters	G4	7	0.69

Source: California Air Resources Board (CARB). 2020. 2020 Emissions Model for Small Off-Road Engines—SORE2020. Version 1.1. September. Available: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-announcements. Database queried by Ramboll and provided electronically to ICF. September 2021.

HP = horsepower; G2 = two-stroke gasoline; G4= four-stroke gasoline

B3 Attach #1 of 3

Table S-1.1. Annual Residential Waste Disposal Rates by Location

County	Single-Family	Multi-Family	County	Single-Family	Multi-Family
Alameda	0.25	0.26	Placer	0.26	0.28
Alpine	0.19	0.29	Plumas	0.26	0.35
Amador	0.26	0.33	Riverside	0.26	0.23
Butte	0.23	0.29	Sacramento	0.25	0.26
Calaveras	0.24	0.31	San Benito	0.26	0.23
Colusa	0.27	0.26	San Bernardino	0.26	0.22
Contra Costa	0.25	0.26	San Diego	0.25	0.27
Del Norte	0.24	0.31	San Francisco	0.20	0.32
El Dorado	0.26	0.29	San Joaquin	0.25	0.23
Fresno	0.26	0.23	San Luis Obispo	0.26	0.31
Glenn	0.26	0.27	San Mateo	0.26	0.26
Humboldt	0.25	0.33	Santa Barbara	0.26	0.26
Imperial	0.27	0.21	Santa Clara	0.26	0.25
Inyo	0.23	0.33	Santa Cruz	0.26	0.28
Kern	0.26	0.23	Shasta	0.25	0.30
Kings	0.26	0.24	Sierra	0.24	0.32
Lake	0.24	0.31	Siskiyou	0.24	0.33
Lassen	0.24	0.32	Solano	0.26	0.26
Los Angeles	0.27	0.25	Sonoma	0.25	0.29
Madera	0.26	0.23	Stanislaus	0.26	0.23
Marin	0.25	0.31	Sutter	0.25	0.24
Mariposa	0.24	0.35	Tehama	0.25	0.29
Mendocino	0.26	0.31	Trinity	0.24	0.35
Merced	0.26	0.22	Tulare	0.26	0.22
Modoc	0.22	0.31	Tuolumne	0.25	0.33
Mono	0.21	0.31	Ventura	0.27	0.25
Monterey	0.26	0.22	Yolo	0.26	0.27
Napa	0.25	0.27	Yuba	0.26	0.26
Nevada	0.26	0.33	All counties (statewide)	0.26	0.25
Orange	0.27	0.25			

Source: CalRecycle. n.d. Residential Waste Stream by Material Type. Available: https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams. Accessed: April 2021.

B3 Attach #1 of 3

Table S-1.2. Annual Statewide Non-Residential Waste Disposal Rates by Business Type

Business Type	Tons/employee/year
Arts, Entertainment, & Recreation	1.94
Durable Wholesale & Trucking	0.57
Education	0.38
Hotels & Lodging	1.40
Manufacturing -Electronic Equipment	0.31
Manufacturing - Food & Nondurable Wholesale	1.23
Manufacturing - All Other	0.44
Medical & Health	0.57
Public Administration	0.30
Restaurants	1.57
Retail Trade - Food & Beverage Stores	0.94
Retail Trade - All Other	1.74
Services - Management, Administrative, Support, & Social	0.60
Services - Professional, Technical, & Financial	1.61
Services - Repair & Personal	0.85
Not Elsewhere Classified[1]	0.46
Multifamily (administrative services)	0.74

Source: CalRecycle. n.d. Business Group Waste Stream Calculator. Available https://www2.calrecycle.ca.gov/WasteCharacterization/BusinessGroupCalculator. Accessed: January 2021.

[1] Represents a large and varied business group, ranging from farming through resource extraction, utilities, and transportation to waste management.

Table S-1.3. Waste Profile by Building Type

Building Type	Material															
	Mixed Paper (general)	Glass	Mixed Metals	Mixed Electronics	Mixed Plastics	Food Waste	Yard Trimmings	Mixed Organics	Mixed MSW	Carpet	Concrete	Asphalt Concrete	Asphalt Shingles	Dimensional Lumber	Fly Ash	Tires
Arts, Entertainment, & Recreation	21%	3%	2%	0%	14%	34%	12%	5%	6%	1%	2%	0%	0%	1%	1%	0%
Durable Wholesale & Trucking	26%	2%	4%	1%	14%	10%	3%	3%	29%	0%	2%	0%	2%	5%	0%	0%
Education	33%	0%	2%	0%	13%	34%	5%	4%	5%	3%	0%	0%	0%	0%	0%	0%
Hotels & Lodging	22%	7%	4%	0%	11%	32%	6%	4%	10%	0%	0%	2%	0%	0%	1%	0%
Manufacturing -Electronic Equipment	30%	0%	4%	2%	19%	11%	3%	5%	23%	0%	0%	0%	0%	2%	0%	0%
Manufacturing - Food & Nondurable Wholesale	23%	1%	2%	1%	17%	38%	4%	4%	10%	0%	0%	0%	0%	1%	0%	0%
Manufacturing - All Other	25%	1%	8%	1%	14%	7%	3%	6%	30%	0%	0%	0%	0%	5%	0%	0%
Medical & Health	26%	0%	2%	0%	9%	22%	4%	25%	10%	2%	0%	0%	0%	0%	0%	0%
Public Administration	35%	1%	7%	0%	13%	17%	3%	5%	16%	1%	2%	0%	0%	1%	0%	0%
Restaurants	26%	3%	2%	0%	12%	51%	2%	1%	2%	0%	0%	0%	0%	0%	1%	0%
Retail Trade - Food & Beverage Stores	28%	2%	2%	0%	16%	42%	1%	2%	5%	1%	1%	0%	0%	0%	0%	0%
Retail Trade - All Other	26%	2%	6%	0%	14%	18%	3%	7%	22%	2%	0%	0%	0%	0%	0%	0%
Services - Management, Administrative, Support, & Social	24%	1%	4%	2%	11%	25%	9%	8%	14%	1%	0%	0%	0%	1%	0%	0%
Services - Professional, Technical, & Financial	29%	1%	4%	2%	13%	8%	7%	5%	24%	1%	2%	1%	1%	1%	0%	0%

Table S-1.3. Waste Profile by Building Type (cont.)

Building Type	Material															
	Mixed Paper (general)	Glass	Mixed Metals	Mixed Electronics	Mixed Plastics	Food Waste	Yard Trimmings	Mixed Organics	Mixed MSW	Carpet	Concrete	Asphalt Concrete	Asphalt Shingles	Dimensional Lumber	Fly Ash	Tires
Services - Repair & Personal	30%	3%	9%	1%	15%	7%	4%	5%	21%	1%	0%	0%	2%	1%	0%	1%
Not Elsewhere Classified[1]	28%	5%	3%	0%	12%	16%	11%	9%	15%	0%	1%	0%	0%	1%	0%	0%
Multi Family	19%	9%	0%	1%	10%	25%	4%	1%	31%	0%	0%	0%	0%	0%	0%	0%
Single Family	20%	2%	4%	1%	14%	20%	8%	2%	28%	1%	0%	0%	0%	1%	0%	0%

Sources: CalRecycle. n.d. Business Group Waste Stream Calculator. Available https://www2.calrecycle.ca.gov/WasteCharacterization/BusinessGroupCalculator.

CalRecycle. 2020. 2018 Facility-Based Characterization of Solid Waste in California. https://www2.calrecycle.ca.gov/WasteCharacterization/Study. Accessed: January 2021.

[1] Represents a large and varied business group, ranging from farming through resource extraction, utilities, and transportation to waste management.

B3 Attach #1 of 3

Table N-1.1 Above- and Below-ground Biomass Carbon Accumulation (metric tons) per Hectare by Land Cover Type and Air Basin

Air Basin[1]	Cover Type	MT C/ha	Accumulation Period (Yr)	MT C/ha/yr
Great Basin Valleys	Broadleaf Forest	94.2	60	1.57
Great Basin Valleys	Conifer Forest	118.4	60	1.97
Great Basin Valleys	Grassland	6.5	20	0.32
Great Basin Valleys	Mixed Forest (Conifer Broadleaf)	111.2	60	1.85
Great Basin Valleys	Shrubland	5.6	35	0.16
Lake County	Broadleaf Forest	134.0	60	2.23
Lake County	Conifer Forest	171.9	60	2.87
Lake County	Grassland	7.2	20	0.36
Lake County	Mixed Forest (Conifer Broadleaf)	131.0	60	2.18
Lake County	Shrubland	76.0	35	2.17
Lake Tahoe	Broadleaf Forest	101.5	60	1.69
Lake Tahoe	Conifer Forest	203.6	60	3.39
Lake Tahoe	Grassland	6.1	20	0.31
Lake Tahoe	Mixed Forest (Conifer Broadleaf)	181.6	60	3.03
Lake Tahoe	Shrubland	66.1	35	1.89
Mojave Desert	Broadleaf Forest	97.7	60	1.63
Mojave Desert	Conifer Forest	113.1	60	1.89
Mojave Desert	Grassland	6.3	20	0.31
Mojave Desert	Mixed Forest (Conifer Broadleaf)	107.3	60	1.79
Mojave Desert	Shrubland	6.9	35	0.20
Mountain Counties	Broadleaf Forest	99.2	60	1.65
Mountain Counties	Conifer Forest	183.5	60	3.06
Mountain Counties	Grassland	5.8	20	0.29
Mountain Counties	Mixed Forest (Conifer Broadleaf)	169.2	60	2.82
Mountain Counties	Shrubland	62.1	35	1.77
North Central Coast	Broadleaf Forest	92.9	60	1.55
North Central Coast	Conifer Forest	152.4	60	2.54
North Central Coast	Grassland	5.7	20	0.29
North Central Coast	Mixed Forest (Conifer Broadleaf)	113.1	60	1.88
North Central Coast	Shrubland	68.9	35	1.97
North Coast	Broadleaf Forest	92.9	60	1.55
North Coast	Conifer Forest	152.4	60	2.54
North Coast	Grassland	5.7	20	0.29
North Coast	Mixed Forest (Conifer Broadleaf)	113.1	60	1.88
North Coast	Shrubland	68.9	35	1.97
Northeast Plateau	Broadleaf Forest	102.9	60	1.72
Northeast Plateau	Conifer Forest	167.7	60	2.80
Northeast Plateau	Grassland	6.6	20	0.33
Northeast Plateau	Mixed Forest (Conifer Broadleaf)	139.6	60	2.33

B3 Attach #1 of 3

Table N-1.1 Above- and Belowground Biomass Carbon Accumulation (metric tons) per Hectare by Land Cover Type and Air Basin (cont.)

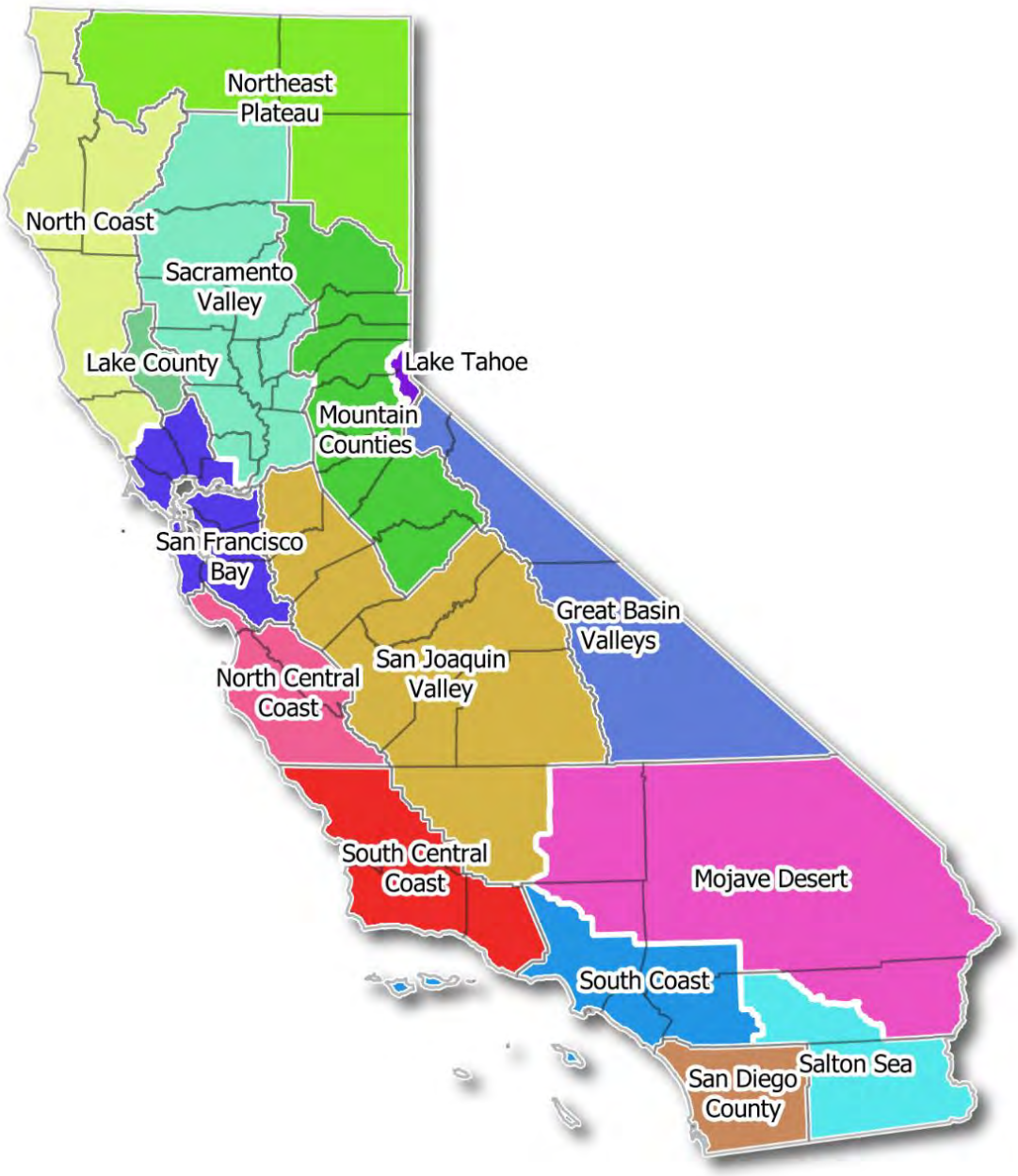
Air Basin	Cover Type	MT C/ha	Accumulation Period (Yr)	MT C/ha/yr
Northeast Plateau	Shrubland	17.4	35	0.50
Sacramento Valley	Broadleaf Forest	112.3	60	1.87
Sacramento Valley	Conifer Forest	168.5	60	2.81
Sacramento Valley	Grassland	6.7	20	0.33
Sacramento Valley	Mixed Forest (Conifer Broadleaf)	157.7	60	2.63
Sacramento Valley	Shrubland	73.5	35	2.10
Salton Sea	Broadleaf Forest	82.2	60	1.37
Salton Sea	Conifer Forest	108.0	60	1.80
Salton Sea	Grassland	5.9	20	0.30
Salton Sea	Mixed Forest (Conifer Broadleaf)	103.0	60	1.72
Salton Sea	Shrubland	18.8	35	0.54
San Diego County	Broadleaf Forest	104.3	60	1.74
San Diego County	Conifer Forest	104.6	60	1.74
San Diego County	Grassland	6.6	20	0.33
San Diego County	Mixed Forest (Conifer Broadleaf)	93.4	60	1.56
San Diego County	Shrubland	56.0	35	1.60
San Francisco Bay	Broadleaf Forest	130.3	60	2.17
San Francisco Bay	Conifer Forest	178.8	60	2.98
San Francisco Bay	Grassland	6.3	20	0.31
San Francisco Bay	Mixed Forest (Conifer Broadleaf)	123.7	60	2.06
San Francisco Bay	Shrubland	65.3	35	1.86
San Joaquin Valley	Broadleaf Forest	90.3	60	1.50
San Joaquin Valley	Conifer Forest	154.5	60	2.57
San Joaquin Valley	Grassland	5.9	20	0.29
San Joaquin Valley	Mixed Forest (Conifer Broadleaf)	138.1	60	2.30
San Joaquin Valley	Shrubland	51.3	35	1.46
South Central Coast	Broadleaf Forest	99.0	60	1.65
South Central Coast	Conifer Forest	104.2	60	1.74
South Central Coast	Grassland	6.0	20	0.30
South Central Coast	Mixed Forest (Conifer Broadleaf)	103.9	60	1.73
South Central Coast	Shrubland	54.1	35	1.55
South Coast	Broadleaf Forest	91.1	60	1.52
South Coast	Conifer Forest	118.1	60	1.97
South Coast	Grassland	6.5	20	0.33
South Coast	Mixed Forest (Conifer Broadleaf)	98.2	60	1.64
South Coast	Shrubland	59.8	35	1.71

Source: California Air Resources Board (CARB). 2021. Carbon Accumulation Values for Major Cover Types for Each California Air Basin. Database provided to ICF in March 2021.

MT = metric tons; C = carbon; ha = hectare; yr = year

[1] Refer to Figure N-1.1 for a graphic illustrating the air basin boundaries.

Figure N-1.1. California Air Basins



Source: California Air Resources Board (CARB). 2021. California Air Basin Map. Available: https://www.arb.ca.gov/ei/maps/statemap/abmap.htm. Accessed: July 2021.

B3 Attach #1 of 3

Table N-1.2. Annualized Soil Carbon Accumulation (metric tons) per Hectare by Soil Type and Land Use Type

Soil Type	IPCC Soil Classification	Soil Carbon Accumulation (MT C/ha/yr[1,2])		
		Conversion to Cropland	Conversion to Grazing Land	Conversion to Forest
Alfisols	High Activity Clay Soils	1.85	2.37	2.53
Andisols	Volcanic Soils	6.20	7.95	8.49
Aquic	Wetland Soils	2.40	3.08	3.29
Aridisols	High Activity Clay Soils	1.85	2.37	2.53
Entisols	Low Activity Clay Soils	1.25	1.60	1.71
Gelisols	Low Activity Clay Soils	1.25	1.60	1.71
Inceptisols	High Activity Clay Soils	1.85	2.37	2.53
Mollisols	High Activity Clay Soils	1.85	2.37	2.53
Oxisols	Low Activity Clay Soils	1.25	1.60	1.71
>70% Sand	Sandy Soils	0.80	1.03	1.10
Spodosols	Spodic Soils	4.30	5.51	5.89
Ultisols	Low Activity Clay Soils	1.25	1.60	1.71
Vertisols	High Activity Clay Soils	1.85	2.37	2.53
Histosol	N/A	0.00	0.00	0.00

Sources: California Air Resources Board. 2020. Benefits Calculator Tool, Agricultural Land Conservation, California Climate Investments. Available: https://ww2.arb.ca.gov/resources/documents/cci-quantification-benefits-and-reporting-materials. Accessed: March 2021.

MT = metric tons; C = carbon; ha = hectare; IPCC = Intergovernmental Panel on Climate Change; yr = year

[1]Assumes a soil carbon accumulation period of 20 years.

[2] Based on a carbon stock change factor of 1 for cropland, 1.28 for grazing land, and 1.37 for forest (California Air Resources Board 2020).

B3 Attach #1 of 3

Table C-1-B.1. Average Horsepower for Diesel, Gasoline, and Compressed Natural Gas Equipment

Equipment	HP	Equipment	HP
Aerial Lifts (CNG)	19	Pavers (Diesel)	81
Aerial Lifts (Diesel)	46	Paving Equipment (Diesel)	89
Aerial Lifts (Gasoline)	33	Paving Equipment (Gasoline)	8
Air Compressors (Diesel)	37	Plate Compactors (Diesel)	8
Air Compressors (Gasoline)	6	Plate Compactors (Gasoline)	6
Bore/Drill Rigs (Diesel)	83	Pressure Washers (Diesel)	14
Bore/Drill Rigs (Gasoline)	17	Pressure Washers (Gasoline)	7
Cement and Mortar Mixers (Diesel)	10	Pumps (Diesel)	11
Cement and Mortar Mixers (Gasoline)	7	Pumps (Gasoline)	6
Concrete/Industrial Saws (Diesel)	33	Rollers (Diesel)	36
Concrete/Industrial Saws (Gasoline)	10	Rollers (Gasoline)	12
Cranes (Diesel)	367	Rough Terrain Forklifts (Diesel)	96
Cranes (Gasoline)	74	Rough Terrain Forklifts (Gasoline)	85
Crawler Tractors (Diesel)	87	Rubber Tired Dozers (Diesel)	367
Crushing/Proc. Equipment (Gasoline)	12	Rubber Tired Loaders (Diesel)	150
Dumpers/Tenders (Diesel)	16	Rubber Tired Loaders (Gasoline)	72
Dumpers/Tenders (Gasoline)	9	Scrapers (Diesel)	423
Excavators (Diesel)	36	Signal Boards (Diesel)	6
Forklifts (CNG)	70	Signal Boards (Gasoline)	8
Forklifts (Diesel)	82	Skid Steer Loaders (Diesel)	71
Forklifts (Gasoline)	70	Skid Steer Loaders (Gasoline)	19
Generator Sets (CNG)	83	Surfacing Equipment (Diesel)	399
Generator Sets (Diesel)	14	Surfacing Equipment (Gasoline)	8
Generator Sets (Gasoline)	11	Sweepers/Scrubbers (Diesel)	36
Graders (Diesel)	148	Sweepers/Scrubbers (Gasoline)	13
Off-Highway Tractors (Diesel)	38	Tractors/Loaders/Backhoes (Diesel)	84
Off-Highway Trucks (Diesel)	376	Tractors/Loaders/Backhoes (Gasoline)	63
Other Construction Equipment (Diesel)	82	Trenchers (Diesel)	40
Other Construction Equipment (Gasoline)	126	Trenchers (Gasoline)	15
Other General Industrial Equipment (Diesel)	35	Welders (Diesel)	46
Other General Industrial Equipment (Gasoline)	11	Welders (Gasoline)	16
Other Material Handling Equipment (Diesel)	93		
Other Material Handling Equipment (Gasoline)	54		

Source: California Air Resources Board (CARB). 2021. OFFROAD2017 – ORION. Available: https://arb.ca.gov/emfac/emissions-inventory. Database queried by Ramboll and provided electronically to ICF. September 2021.

CNG = compressed natural gas; HP = horsepower

B3 Attach #1 of 3

Table C-3.1. Average Home-Based-Work Trip Length by California County

County	Trip Length (mi)	County	Trip Length (mi)
Alameda	11.98	Placer	13.71
Alpine	16.99	Plumas	19.06
Amador	23.12	Riverside	16.91
Butte	10.41	Sacramento	11.08
Calaveras	22.56	San Benito	21.19
Colusa	26.70	San Bernardino	15.29
Contra Costa	14.21	San Diego	11.80
Del Norte	9.05	San Francisco	9.51
El Dorado	16.21	San Joaquin	18.80
Fresno	11.35	San Luis Obispo	10.58
Glenn	19.61	San Mateo	10.89
Humboldt	10.76	Santa Barbara	7.57
Imperial	9.68	Santa Clara	10.14
Inyo	16.01	Santa Cruz	12.98
Kern	12.05	Shasta	9.63
Kings	14.18	Sierra	28.04
Lake	15.32	Siskiyou	14.04
Lassen	14.81	Solano	16.15
Los Angeles	12.04	Sonoma	11.58
Madera	16.95	Stanislaus	15.62
Marin	11.98	Sutter	13.24
Mariposa	26.94	Tehama	15.24
Mendocino	11.94	Trinity	29.35
Merced	17.47	Tulare	11.58
Modoc	12.73	Tuolumne	14.50
Mono	16.03	Ventura	13.56
Monterey	10.41	Yolo	12.41
Napa	12.32	Yuba	17.85
Nevada	14.13	All counties (statewide)	12.64
Orange	11.54		

Source: 2015 California Statewide Travel Demand Model (CSTDM).

mi = miles

B3 Attach #1 of 3

Table R-1.1 Global Warming Potentials of Commonly Used Refrigerants

Refrigerant Name	Trade/Common Name (if one exists)	GWP
R-717	Ammonia	0
R-1234ze(E)	Solstice® ze	1
R-1224yd(Z)	AMOLEA™ 1224yd	1
R-744	CO_2	1
R-1234zd(E)	Solstice® zd	1
R-514A	Opteon™ XP30	2
R-290	Propane	4
R-600a	Isobutane	5
R-170	Ethane	6
R-601	Pentane	11
R-161	HFC-161	12
R-123	HCFC-123	77
R-225ca	HCFC-225ca	122
R-152a	HFC-152a	124
R-454B	Opteon™ XL41	466
R-225cb	HCFC-225cb	595
R-450A	Solstice® N13	601
R-124	HCFC-124	609
R-513A	Opteon™ XP10	631
R-32	HFC-32	675
R-452B	Opteon™ XL55	676
R-141b	HCFC-141b	725
R-466A	—	733
R-365mfc	HFC-365mfc	794
R-401C	Suva® MP-52	933
R-245fa	HFC-245fa	1,030
R-416A	FRIGC FR-12	1,085
R-401A	MP39	1,183
R-401B	MP66	1,288
R-414B	Hot Shot™	1,362
R-448A	Solstice® N40	1,387
R-449A	Opteon™ XP40	1,397
R-134a	HFC-134a	1,430
R-414A	GHX4	1,478
R-426A	RS-24	1,508
R-420A	Choice® Refrigerant	1,536
Free Zone	—	1,569
R-409A	FX-56	1,585
R-411A	—	1,597
Freeze 12	—	1,606
R-407D	—	1,627

B3 Attach #1 of 3

Table R-1.1 Global Warming Potentials of Commonly Used Refrigerants (cont.)

Refrigerant Name	Trade/Common Name (if one exists)	GWP
R-4310mee	HFC-43-10mee, HFC-4310mee, R-43-10mee	1,640
R-411B	—	1,705
G2018C	—	1,731
R-453A	RS-70, RS-44b	1,765
R-407C	—	1,774
R-437A	MO49 Plus	1,805
R-417C	Hot Shot™ 2	1,809
R-22	HCFC-22, Freon	1,810
R-407F	—	1,825
R-442AF	RS-50	1,888
GHG-HP	—	1,893
R-406A	—	1,938
R-413A	MO49	2,053
R-434A	RS-45	2,070
R-410A	Puron®, AZ-20	2,088
R-407A	KLEA® 60	2,107
R-427A	—	2,138
R-452A	Opteon™ XP44	2,141
R-410B	AC9100	2,229
R-438A	MO99	2,265
R-423A	39TC	2,280
R-142b	HCFC-142b	2,310
R-417A	MO59, NU22	2,346
NARM-502	—	2,375
GHG-X5	—	2,377
R-402B	HP-81	2,416
R-424A	RS-44	2,440
R-422B	NU-22B	2,526
R-421A	—	2,631
R-422D	MO29	2,730
R-402A	HP-80	2,788
R-407B	—	2,804
R-422C	One Shot™	3,085
R-422A	—	3,143
R-421B	Choice® 421B	3,190
R-227ea	HFC-227ea	3,220
R-408A	FX-10	3,432
R-125	HFC-125	3,500
R-428A	RS-52	3,607
Isceon® MO89	—	3,805
R-404A	HP-62	3,900

B3 Attach #1 of 3

Table R-1.1 Global Warming Potentials of Commonly Used Refrigerants (cont.)

Refrigerant Name	Trade/Common Name (if one exists)	GWP
R-507	AZ-50	3,985
R-403B	—	4,458
R-143a	HFC-143a	4,470
R-502	—	4,657
R-11	CFC-11	4,750
R-113	CFC-113	6,130
EP-88	—	6,427
R-13b1	Halon 1301	7,140
R-115	CFC-115	7,370
R-14	PFC-14, CF4	7,390
R-500	—	8,077
R-218	PFC-218	8,830
R-236fa	HFC-236fa	9,810
R-114	CFC-114	10,000
R-12	CFC-12	10,900
R-116	PFC-116	12,200
R-508B	—	13,396
R-13	CFC-13	14,400
R-503	—	14,560
R-23	HFC-23	14,800

Sources: California Air Resource Board (CARB). 2020. Refrigerant Management Program: Service Technicians & Contractors. Available: https://ww2.arb.ca.gov/our-work/programs/refrigerant-management-program/rmp-service-technicians-contractors. Accessed: January 2021.

Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available: https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021.

World Meteorological Organization (WMO). 2018. Scientific Assessment of Ozone Depletion: 2018, Global Ozone Research and Monitoring Project—Report No. 58, 5886 pp., Geneva, Switzerland.

— = no common name; R= refrigerant; HFC = hydrofluorocarbon; PFC = perfluorocarbon; CFC = Chlorofluorocarbons; GHG = greenhouse gas; GWP = global warming potential

Table R-1.2. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type

Land Use Type	Equipment Type	Refrigerant Charge (kg)	Leak Rate	Service Rate	Total Leak Rate[1]
Single Family Housing	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Apartments Low Rise	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Apartments Mid Rise	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Apartments High Rise	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Condo/Townhouse	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Condo/Townhouse High Rise	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Mobile Home Park	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Retirement Community	Household refrigerators and/or freezers	0.04	0.6%	0.0%	0.6%
Congregate Care	Household refrigerators and/or freezers	0.04	0.6%	0.0%	0.6%
User Defined Residential	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Day-Care Center	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Elementary School	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Junior High School	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
High School	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Junior College (2yr)	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
University/College (4yr)	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Library	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Place of Worship	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
User Defined Educational	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
City Park	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Golf Course	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Recreational Swimming Pool	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Racquet Club	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Health Club	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Movie Theater (No Matinee)	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Arena	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Quality Restaurant	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%

Table R-1.2. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type (cont.)

Land Use Type	Equipment Type	Refrigerant Charge (kg)	Leak Rate	Service Rate	Total Leak Rate[1]
High Turnover (Sit Down Restaurant)	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Fast Food Restaurant with Drive Thru	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Fast Food Restaurant w/o Drive Thru	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Hotel	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Motel	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
User Defined Recreational	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Free-Standing Discount store	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Free-Standing Discount Superstore	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Discount Club	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Regional Shopping Center	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Electronic Superstore	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Home Improvement Superstore	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Strip Mall	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Hardware/Paint Store	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Supermarket	Supermarket refrigeration and condensing units	1,360.0	16.5%	16.5%	33.0%
Convenience Market (24 hour)	Supermarket refrigeration and condensing units	1,360.0	16.5%	16.5%	33.0%
Convenience Market with Gas Pumps	Supermarket refrigeration and condensing units	1,360.0	16.5%	16.5%	33.0%
Automobile Care Center	Supermarket refrigeration and condensing units	1,360.0	16.5%	16.5%	33.0%
Gasoline/Service Station	Supermarket refrigeration and condensing units	1,360.0	16.5%	16.5%	33.0%
User Defined Retail	Supermarket refrigeration and condensing units	1,360.0	16.5%	16.5%	33.0%
Bank (with Drive-Through)	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
General Office Building	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Office Park	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Research & Development	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Government Office Building	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Government (Civic Center)	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Pharmacy/Drugstore with Drive Thru	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Pharmacy/Drugstore w/o Drive Thru	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%

Table R-1.2. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type (cont.)

Land Use Type	Equipment Type	Refrigerant Charge (kg)	Leak Rate	Service Rate	Total Leak Rate[1]
Medical Office Building	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
Hospital	Household refrigerators and/or freezers	0.15	0.6%	0.0%	0.6%
User Defined Commercial	Other commercial A/C and heat pumps	13.0	4.0%	4.0%	8.0%
Unrefrigerated Warehouse-No Rail	Cold storage	565.0	7.5%	7.5%	15.0%
Unrefrigerated Warehouse-Rail	Cold storage	565.0	7.5%	7.5%	15.0%
Refrigerated Warehouse-No Rail	Cold storage	565.0	7.5%	7.5%	15.0%
Refrigerated Warehouse-Rail	Cold storage	565.0	7.5%	7.5%	15.0%
General Light Industry	Other commercial A/C and heat pumps	13.0	4.0%	4.0%	8.0%
General Heavy Industry	Other commercial A/C and heat pumps	13.0	4.0%	4.0%	8.0%
Industrial Park	Other commercial A/C and heat pumps	13.0	4.0%	4.0%	8.0%
Manufacturing	Other commercial A/C and heat pumps	13.0	4.0%	4.0%	8.0%
User Defined Industrial	Other commercial A/C and heat pumps	13.0	4.0%	4.0%	8.0%

Source: U.S. Environmental Protection Agency. 2016. Accounting Tool to Support Federal Reporting of Hydrofluorocarbon Emissions: Supporting Documentation. October 2016. Available: https://www.epa.gov/sites/production/files/2015-09/documents/hfc_emissions_accounting_tool_supporting_documentation.pdf. Accessed: January 2021.

A/C = air conditioning; yr = year

[1] Total leak rate is the sum of the operational leak rate and the service leak rate. This total value would only occur in those years in which servicing is required, which may not be every year of the equipment life.

Table R-1.3. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type

Land Use Type	Equipment Type	Refrigerant Charge (kg)	Leak Rate	Service Rate	Total Leak Rate[1]
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	2.75	2.5%	2.5%	5.0%
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	2.75	2.5%	2.5%	5.0%
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	2.75	2.5%	2.5%	5.0%
Apartments High Rise	Average room A/C & Other residential A/C and heat pumps	2.75	2.5%	2.5%	5.0%
Condo/Townhouse	Average room A/C & Other residential A/C and heat pumps	2.75	2.5%	2.5%	5.0%
Condo/Townhouse High Rise	Average room A/C & Other residential A/C and heat pumps	2.75	2.5%	2.5%	5.0%
Mobile Home Park	Average room A/C & Other residential A/C and heat pumps	2.75	2.5%	2.5%	5.0%

Table R-1.3. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type (cont.)

Land Use Type	Equipment Type	Refrigerant Charge (kg)	Leak Rate	Service Rate	Total Leak Rate[1]
Retirement Community	Average room A/C & Other residential A/C and heat pumps	2.75	2.5%	2.5%	5.0%
Congregate Care	Average room A/C & Other residential A/C and heat pumps	2.75	2.5%	2.5%	5.0%
User Defined Residential	Average room A/C & Other residential A/C and heat pumps	2.75	2.5%	2.5%	5.0%
Day-Care Center	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Elementary School	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Junior High School	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
High School	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Junior College (2yr)	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
University/College (4yr)	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Library	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
Place of Worship	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
User Defined Educational	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%
City Park	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Golf Course	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Recreational Swimming Pool	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Racquet Club	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Health Club	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Movie Theater (No Matinee)	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Arena	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Quality Restaurant	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
High Turnover (Sit Down Restaurant)	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Fast Food Restaurant with Drive Thru	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Fast Food Restaurant w/o Drive Thru	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Hotel	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Motel	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
User Defined Recreational	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%

Table R-1.3. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type (cont.)

Land Use Type	Equipment Type	Refrigerant Charge (kg)	Leak Rate	Service Rate	Total Leak Rate[1]
Free-Standing Discount store	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Free-Standing Discount Superstore	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Discount Club	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Regional Shopping Center	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Electronic Superstore	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Home Improvement Superstore	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Strip Mall	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Hardware/Paint Store	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Supermarket	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Convenience Market (24 hour)	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Convenience Market with Gas Pumps	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Automobile Care Center	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Gasoline/Service Station	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
User Defined Retail	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Bank (with Drive-Through)	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
General Office Building	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Office Park	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Research & Development	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Government Office Building	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Government (Civic Center)	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Pharmacy/Drugstore with Drive Thru	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Pharmacy/Drugstore w/o Drive Thru	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Medical Office Building	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Hospital	Stand-alone retail refrigerators and freezers	0.40	1.0%	0.0%	1.0%

Source: U.S. Environmental Protection Agency. 2016. Accounting Tool to Support Federal Reporting of Hydrofluorocarbon Emissions: Supporting Documentation. October 2016. Available: https://www.epa.gov/sites/production/files/2015-09/documents/hfc_emissions_accounting_tool_supporting_documentation.pdf. Accessed: January 2021.

A/C = air conditioning; yr = year

[1] Total leak rate is the sum of the operational leak rate and the service leak rate. This total value would only occur in those years in which servicing is required, which may not be every year of the equipment life.

Table R-1.4. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type

Land Use Type	Equipment Type	Refrigerant Charge (kg)	Leak Rate	Service Rate	Total Leak Rate[1]
Day-Care Center	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Elementary School	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Junior High School	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
High School	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Junior College (2yr)	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
University/College (4yr)	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Library	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Place of Worship	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
User Defined Educational	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Movie Theater (No Matinee)	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Arena	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Quality Restaurant	Household refrigerators and/or freezers	0.00	0.6%	0.0%	0.6%
High Turnover (Sit Down Restaurant)	Household refrigerators and/or freezers	0.00	0.6%	0.0%	0.6%
Fast Food Restaurant with Drive Thru	Household refrigerators and/or freezers	0.00	0.6%	0.0%	0.6%
Fast Food Restaurant w/o Drive Thru	Household refrigerators and/or freezers	0.00	0.6%	0.0%	0.6%
Hotel	Household refrigerators and/or freezers	0.00	0.6%	0.0%	0.6%
Motel	Household refrigerators and/or freezers	0.00	0.6%	0.0%	0.6%
User Defined Recreational	Household refrigerators and/or freezers	0.00	0.6%	0.0%	0.6%
Free-Standing Discount Superstore	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Strip Mall	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%
Hospital	Walk-in refrigerators and freezers	10.00	7.5%	7.5%	15.0%

Source: U.S. Environmental Protection Agency. 2016. Accounting Tool to Support Federal Reporting of Hydrofluorocarbon Emissions: Supporting Documentation. October 2016. Available: https://www.epa.gov/sites/production/files/2015-09/documents/hfc_emissions_accounting_tool_supporting_documentation.pdf. Accessed: January 2021.

A/C = air conditioning; yr = year

[1] Total leak rate is the sum of the operational leak rate and the service leak rate. This total value would only occur in those years in which servicing is required, which may not be every year of the equipment life.

Table R-1.5. Charge Size, Service Rate, and Leak Rate for Various Equipment Types by Land Use Type

Land Use Type	Equipment Type	Refrigerant Charge (kg)	Leak Rate	Service Rate	Total Leak Rate[1]
Day-Care Center	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Elementary School	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Junior High School	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
High School	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Junior College (2yr)	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
University/College (4yr)	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Library	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Place of Worship	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
User Defined Educational	Other commercial A/C and heat pumps	13.00	4.0%	4.0%	8.0%
Hospital	Chillers	500.00	2.0%	2.0%	4.0%

Source: U.S. Environmental Protection Agency. 2016. Accounting Tool to Support Federal Reporting of Hydrofluorocarbon Emissions: Supporting Documentation. October 2016. Available: https://www.epa.gov/sites/production/files/2015-09/documents/hfc_emissions_accounting_tool_supporting_documentation.pdf. Accessed: January 2021.

A/C = air conditioning; yr = year

[1] Total leak rate is the sum of the operational leak rate and the service leak rate. This total value would only occur in those years in which servicing is required, which may not be every year of the equipment life.

Climate Vulnerability Worksheets

APPENDIX D

This appendix contains worksheets that planners can use to assess climate vulnerability.

STEP 1 Identify the Extent to which the Measure Reduces Potential Impacts

Exposure

How does the measure remove exposure?

How much does the project design reduce future exposure?

How much does the post-construction operations and management reduce future exposure?

Sensitivity

How much does the measure mitigate the hazard's effect on fragile or critical components of the project?

Does the measure lower the hazard's effect on individuals, particularly members of vulnerable populations?

Does the measure lower the impact to an operational component impacted by the climate hazard?

Potential Impacts: Exposure + Sensitivity

What is the net effect of the measure on reducing exposure and sensitivity?

Impacts Reduction Rating Scale:

0. No Effect 1. Low 2. Medium 3. High 4. Very High

Notes on Rating:

STEP 2 Quantify the Extent to which the Measure Bolsters Adaptive Capacity

Does the measure incorporate policies or standards that account for climate change?

How does the measure improve the project's management of climate hazards?

Does the measure reduce how exposed individuals, and specifically vulnerable populations are exposed to the hazard?

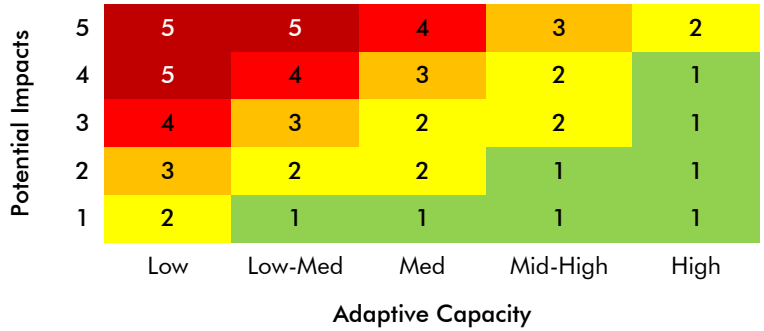
Adaptive Capacity Gains Rating Scale: 0. No Effect 1. Low 2. Medium 3. High 4. Very High

Notes on Rating:

STEP 3 Estimate the Impact on Vulnerability Reduction

How much does the reduction in potential impacts and adaptive capacity lower your overall vulnerability score?

- Identify original vulnerability score
- Subtract potential impacts benefit from existing score
- Add adaptive capacity benefit from existing score
- Update vulnerability score



Note: Color coding indicates severity of the score, with green cells showing the lowest (least vulnerable) scores and dark red showing the highest (most vulnerable)

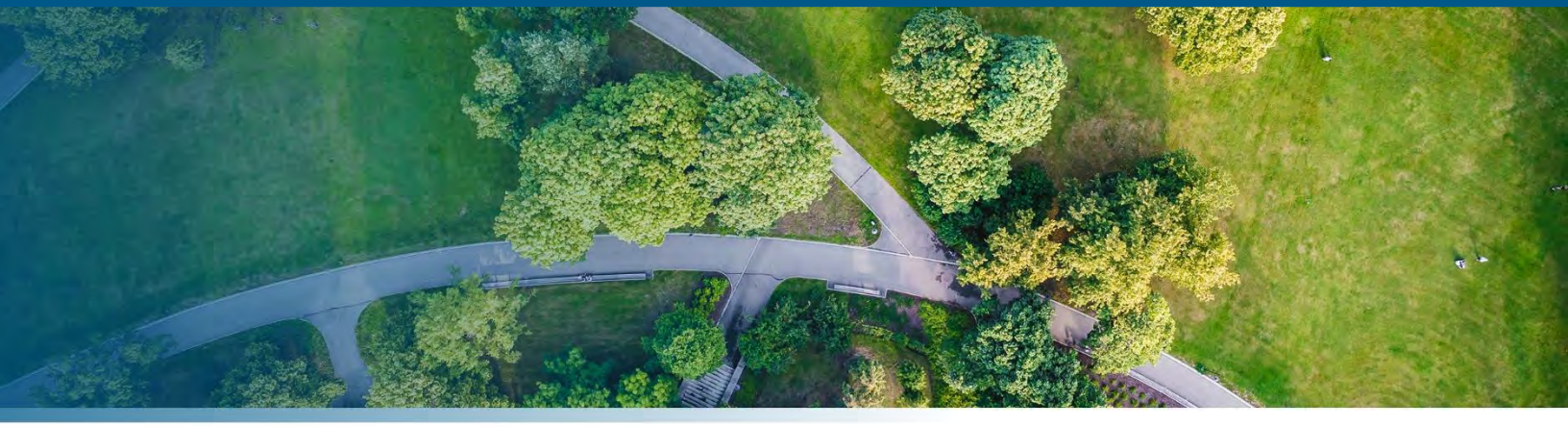
STEP 4 Consider Co-benefits

Consult the co-benefits listed under each measure in Table 4-7 in Chapter 4, *Assessing Climate Exposures and Measures to Reduce Vulnerabilities*. Some measures' co-benefits can be more quantitatively estimated as explained in the Chapter 3, *Measures to Reduce GHG Emissions*.

Improved Air Quality	Energy and Fuel Savings	VMT Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety
Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity

Measure Index

APPENDIX E



This appendix provides a roadmap for all measures in the Handbook—emissions reduction, climate risk reduction, and health and equity—by topic or focus area. While not a true index, it aims to assist users to find measures based on concepts, themes, and topics across all chapters in the Handbook. A user primarily interested in addressing tree canopy, for example, can find all relevant measures quickly using the index, regardless of chapter.

The index organizes measures by the following concepts, themes, and topics.

Active transportation: Measures that facilitate or increase human-powered transportation, such as walking, bicycling, rollerskating, or skateboarding.

Affordable housing: Measures that support increased access to affordable housing.

Air quality exposure reduction: Measures that reduce people's direct exposure to air pollution.

Climate resilience: Measures that support an individual, project, community, or jurisdiction's ability and capacity to withstand, respond to, and recover from climate change-related impact and disruptions.

Community ownership and self-determination: Measures that increase a community's capacity to meaningfully participate in and have ownership over the decisionmaking, planning, and outcomes that affect their community.

B3 Attach #1 of 3

Economic resilience: Measures that enhance the local economy's capacity to withstand, respond to, and recover from disruptions, both natural and human-caused.

Energy and grid resilience: Measures that increase individual and community energy savings, support renewable energy generation, and enhance grid resilience.

Food justice and access: Measures that increase food access for all and address structural barriers to food access.

Green infrastructure and low-impact development (LID): Measures that support systems and practices to manage stormwater using natural processes—through infiltration, evapotranspiration, or storage and use—to protect water quality and water resources, reduce flood risk, recharge groundwater, and protect habitat. LID and green infrastructure generally seek to protect, restore, or create green spaces (U.S. EPA n.d.).

Job development: Measures that generate jobs, support emerging industries, and increase employment.

Nature-based solutions: Measures that enlist natural processes, habitats, and ecosystems to help address environmental or socioeconomic challenges while simultaneously benefiting the environment.

Passive survivability: Measures that support a building's ability to maintain livable conditions when facing extreme heat and weather, particularly when disconnected from utilities.

Poverty: Measures that help to address poverty and socio-economic deprivation.

Racial equity: Measures that advance racial justice, address historical racial inequities, and support conditions in which racial identity no longer predicts one's socioeconomic outcomes, health, and wellbeing.

Social inclusion: Measures that support the just and fair inclusion of all individuals into society in which all can participate, prosper, and reach their full potential (PolicyLink n.d.).

Social resilience: Measures that support the ability of people and communities to respond to and recover collectively from traumas, disruptions, and stresses. While social resilience is intangible and a reflection of the strength of community bonds, it can be fostered by the built environment through the creation of social spaces that facilitate relationship-building.

Tree canopy: Measures that support tree planting as well as care and maintenance of existing trees in developed areas.

Urban heat island (UHI) reduction: Measures that reduce the urban heat island effect and extreme heat in developed areas through the use of passive cooling strategies and design features.

B3 Attach #1 of 3

Active Transportation

Chapter 3

T-3. Provide Transit-Oriented Development

T-6. Implement Commute Trip Reduction Program (Mandatory Implementation and Monitoring)

T-9. Implement Subsidized or Discounted Transit Program

T-10. Provide End-of-Trip Bicycle Facilities

T-17. Improve Street Connectivity

T-18. Provide Pedestrian Network Improvement

T-19-A. Construct or Improve Bike Facility

T-19-B. Construct or Improve Bike Boulevard

T-20. Expand Bikeway Network

T-22-A. Implement Pedal (Non-Electric) Bikeshare Program

T-22-B. Implement Electric Bikeshare Program

T-25. Extend Transit Network Coverage or Hours

T-26. Increase Transit Service Frequency

T-28. Provide Bus Rapid Transit

T-29. Reduce Transit Fares

T-31-A. Locate Project in Area with High Destination Accessibility

T-31-B. Improve Destination Accessibility in Underserved Areas

T-32. Orient Project Toward Transit, Bicycle, or Pedestrian Facility

T-33. Locate Project near Bike Path/ Bike Lane

T-34. Provide Bike Parking

T-35. Provide Traffic Calming Measures

T-36. Create Urban Non-Motorized Zones

T-37. Dedicate Land for Bike Trails

T-46. Improve Transit Access, Safety, and Comfort

T-47. Provide Bike Parking Near Transit

Chapter 4

MH-14. Maintain Trails and Parks

MH-16. Identify At-Risk Transportation Corridors

MH-17. Identify Alternative Routes for Transit Service

EH-2. Provide Heat Mitigation for Public Walkways and Transit Stops

Chapter 5

CE-1. Create a Construction Plan with Community Input

CE-2. Ensure Active Modes Access During Construction

PH-2. Increase Urban Tree Canopy and Green Spaces

IC-2. Adopt Design Standards

IC-3. Promotes Accessibility

IC-8. Enhanced Access to Community Resources

AH-2. Promote Affordable Housing in Transit-Rich Areas

Affordable Housing

Chapter 3

T-1. Increase Residential Density

T-3. Provide Transit-Oriented Development

T-4. Integrate Affordable and Below Market Rate Housing

T-16. Unbundle Residential Parking Costs from Property Cost

Chapter 4

MH-27. Provide Greater Affordable Housing Options

B3 Attach #1 of 3

Chapter 5

AH-1. Support Community Land Trusts

AH-2. Promote Affordable Housing in Transit-Rich Areas

AH-3. Protection for Existing Tenants of Redevelopment Projects

AH-4. Incorporates Permanent Supportive Housing

AH-5. Make Housing Units Permanently Affordable

AH-6. Support the Formation of Collective Ownership Models: Limited-Equity Housing Cooperatives or Mutual Housing Associations

AH-7. No Net Loss of Affordable Housing Units/One-For-One Affordable Housing Policies

Air Quality Exposure Reduction

Chapter 3

T-36. Create Urban Non-Motorized Zones

T-49. Replace Traffic Controls with Roundabout

T-52. Designate Zero Emissions Delivery Zones

T-53. Electrify Loading Docks

E-1. Buildings Exceed 2019 Title 24 Building Envelope Energy Efficiency Standards

E-2. Require Energy Efficient Appliances

E-3-A. Require Energy Efficient Residential Boilers

E-3.B. Require Energy Efficient Commercial Packaged Boilers

E-4. Install Cool Roofs and/or Cool Walls in Residential Development

E-5. Install Green Roofs in Place of Dark Roofs

E-12. Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences

E-13. Install Electric Ranges in Place of Gas Ranges

E-14. Limit Wood Burning Devices and Natural Gas/Propane Fireplaces in Residential Development

E-15. Require All-Electric Development

E-25. Install Electric Heat Pumps

LL-1. Replace Gas Powered Landscape Equipment with Zero-Emission Landscape Equipment

LL-2. Implement Yard Equipment Exchange Program

C-1-A. Use Electric or Hybrid Powered Equipment

C-1-B. Use Cleaner-Fuel Equipment

C-2. Limit Heavy-Duty Diesel Vehicle Idling

Chapter 4

MH-30. Establish Community Resilience Hubs

WF-1. Implement Fire-safe Landscaping

WF-2. Install Fire Suppression Systems and Improve Structural Strength

WF-8. Implement Fuel Management

WF-9. Install Air Filters

EH-4. Enhance Building Envelope Efficiency

EH-9. Expand Urban Tree Canopy

Chapter 5

CE-4. Portable Indoor Air Filtration for Nearby Residents During Construction

CE-5. Air Quality Monitoring and Response Plan

PH-1. Establish Vegetative Barriers to Reduce Pollution Exposure

PH-2. Increase Urban Tree Canopy and Green Spaces

B3 Attach #1 of 3

PH-3. Highly Rated Air Filtration

PH-4. Create Healthful, Sustainable Indoor Spaces

IC-2. Adopt Design Standards

CR-2. Support the Development and Operations of Community Resilience Centers

Climate Resilience

Chapter 3

T-17. Improve Street Connectivity

T-18. Provide Pedestrian Network Improvement

T-19-A. Construct or Improve Bike Facility

T-19-B. Construct or Improve Bike Boulevard

T-20. Expand Bikeway Network

T-32. Orient Project Toward Transit, Bicycle, or Pedestrian Facility

T-33. Locate Project near Bike Path/Bike Lane

E-1. Buildings Exceed 2019 Title 24 Building Envelope Energy Efficiency Standards

E-4. Install Cool Roofs and/or Cool Walls in Residential Development

E-5. Install Green Roofs in Place of Dark Roofs

E-6. Encourage Residential Participation in Existing Demand Response Program(s)

E-10-A. Establish Onsite Renewable Energy Systems—Generic

E-10-B. Establish Onsite Renewable Energy Systems—Solar Power

E-10-C. Establish Onsite Renewable Energy Systems—Wind Power

E-16. Require Zero Net Energy Buildings

E-17. Require Renewable-Surplus Buildings

E-20. Install Whole-House Fans

E-21. Install Cool Pavements

E-23. Use Microgrids and Energy Storage

E-24. Provide Battery Storage

E-25. Install Electric Heat Pumps

W-1. Use Reclaimed Non-Potable Water

W-2. Use Grey Water

W-3. Use Locally Sourced Water Supply

W-4. Require Low-Flow Water Fixtures

W-5. Design Water-Efficient Landscapes

W-6. Reduce Turf in Landscapes and Lawns

W-7. Adopt a Water Conservation Strategy

S-3. Require Edible Food Recovery Program Partnerships with Food Generators

S-5. Source Wood Materials from Urban Wood Re-Use Program

N-1. Create New Vegetated Open Space

N-2. Expand Urban Tree Planting

N-3. Implement Management Practices to Improve the Health and Function of Natural and Working Lands

N-5. Establish a Local Farmer's Market

N-6. Establish Community Gardens

C-4. Use Local and Sustainable Building Materials

Chapter 4

All measures in the chapter.

Chapter 5

CCD-4. Conduct Community Asset Mapping

IE-1. Prioritize Outreach to Communities of Color and Underserved Groups

IE-3. Elevate Voices of Underrepresented Groups in Project Direction and Outreach

IE-4. Inclusive Community Meetings

PH-1. Establish Vegetative Barriers to Reduce Pollution Exposure

PH-2. Increase Urban Tree Canopy and Green Spaces

PH-3. Highly Rated Air Filtration

B3 Attach #1 of 3

PH-5. Provide Equitable Food Access and Food Justice

IC-2. Adopt Design Standards

IC-4. Enhanced Open and Green Spaces

IC-5. Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets

IC-8. Enhanced Access to Community Resources

AH-1. Support Community Land Trusts

CR-1. Adapt and Re-use Vacant Lots for Green Infrastructure

CR-2. Support the Development and Operations of Community Resilience Centers

CR-3. Passive Survivability

Community Ownership and Self-Determination

Chapter 3

T-31-B. Improve Destination Accessibility in Underserved Areas

N-6. Establish Community Gardens

Chapter 4

MH-11. Encourage/Actively Engage Community in Local Planning

MH-12. Enhance Community Network Support

MH-13. Support Local Food Systems

MH-35. Increase Parks in Underserved Communities

MH-36. Decentralize and Localize Energy Production and Storage

MH-37. Develop Climate Hazard Notification System

Chapter 5

CCD-1. Consult Pre-existing Community Knowledge/Priorities

CCD-2. Conduct a Stakeholder Analysis and Develop a Community-Centered Outreach Plan

CCD-3. Conduct a Community Needs Assessment

CCD-4. Conduct Community Asset Mapping

CCD-5. Establish a Community Benefits Agreement

IE-2. Establish or Join a Community Project Steering Committee

IE-3. Elevate Voices of Underrepresented Groups in Project Direction and Outreach

IE-6. Conduct an Equity Assessment with Community Project Steering Committee

A-1. Use Participatory Budgeting

A-2. Establish Incentive and Penalty Provisions for Community Priorities

A-3. Evaluate Project Performance with Community Project Steering Committee/CBO

A-5. Public Disclosure of Project Commitments

PH-2. Increase Urban Tree Canopy and Green Spaces

IC-1. Invests in Local Arts and Culture to Affirm Community Identity

IC-5. Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets

IC-8. Enhanced Access to Community Resources

AH-1. Support Community Land Trusts

AH-6. Support the Formation of Collective Ownership Models: Limited-Equity Housing Cooperatives or Mutual Housing Associations

CR-1. Adapt and Re-use Vacant Lots for Green Infrastructure

CR-2. Support the Development and Operations of Community Resilience Centers

B3 Attach #1 of 3

Economic Resilience

Chapter 3

T-1. Increase Residential Density

T-4. Integrate Affordable and Below Market Rate Housing

T-21-A. Implement Conventional Carshare Program

T-21-B. Implement Electric Carshare Program

T-22-A. Implement Pedal (Non-Electric) Bikeshare Program

T-22-B. Implement Electric Bikeshare Program

T-22-C. Implement Scootershare Program

T-25. Extend Transit Network Coverage or Hours

T-31-B. Improve Destination Accessibility in Underserved Areas

E-6. Encourage Residential Participation in Existing Demand Response Program(s)

E-23. Use Microgrids and Energy Storage

E-24. Provide Battery Storage

S-5. Source Wood Materials from Urban Wood Re-Use Program

N-5. Establish a Local Farmer's Market

N-6. Establish Community Gardens

C-4. Use Local and Sustainable Building Materials

Chapter 4

MH-1. Strengthen Energy Infrastructure

MH-2. Use Climate-Resilient Design for Infrastructure

MH-3. Coordinate Redundant Transportation Access

MH-4. Strengthen Building Structures

MH-5. Use Green Infrastructure for Stormwater Management

MH-6. Upgrade Water Systems

MH-7. Construct Water Storage Facilities

MH-8. Decrease Road Vulnerability to Landslides

MH-9. Support Business Resiliency

MH-13. Support Local Food Systems

MH-15. Identify Alternative Activities in Climate Sensitive Recreation Areas

MH-16. Identify At-Risk Transportation Corridors

MH-24. Develop Climate Emergency/Business Resilience Plan

MH-28. Transition to Climate-Smart Energy

MH-29. Identify Climate Hazard Overlay Zones

MH-36. Decentralize and Localize Energy Production and Storage

SLR-3. Implement Natural Coastline Infrastructure

SLR-4. Strengthen Building Against Flood

SLR-5. Use Moveable Infrastructure

SLR-7. Require Consideration of Sea Level Rise for New Development

SLR-10. Sell off High-Risk Area Development Rights

SLR-11. Site Outside Coastal Hazard Zone

SLR-13. Provide Removal Options in Flood Zones

EP-4. Waterproof Operational Equipment

EP-5. Upgrade Wastewater Systems

EP-6. Site Outside Floodplain

EP-7. Maintain Stormwater Infrastructure on Key Routes

WF-1. Implement Fire-safe Landscaping

WF-2. Install Fire Suppression Systems and Improve Structural Strength

WF-3. Strengthen Vulnerable Assets in High Wildfire Risk Areas

B3 Attach #1 of 3

WF-4. Educate on Wildfire Resistant Landscaping

WF-5. Site Outside WUI

WF-6. Designate and Strengthen Wildfire Emergency Routes

WF-7. Develop Fire Risk Assessment for New Development

WF-8. Implement Fuel Management

WF-10. Adopt WUI Building Standards

EH-4. Enhance Building Envelope Efficiency

EH-5. Upgrade to Efficient Equipment/Infrastructure

EH-7. Install Equipment Cooling System

D-6. Build Alternatives Forms of Water Recreation

D-7. Diversify Water Supply Sources

D-8. Develop Groundwater Sustainability Plan

Chapter 5

CCD-5. Establish a Community Benefits Agreement

CE-6. Provide Funds to Businesses Impacted by Construction Activities

PH-5. Provide Equitable Food Access and Food Justice

IEP-1. Local Labor and Apprenticeships (Construction)

IEP-2. Local Labor and Apprenticeships (Operations)

IEP-3. Contract with Diverse Suppliers

IEP-4. Use of Locally/Regionally Manufactured Products and Materials

IEP-5. Higher Wage and Working Condition Standards

IC-5. Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets

IC-6. Create Non-Standard Commercial or Retail Spaces

IC-8. Enhanced Access to Community Resources

AH-3. Protection for Existing Tenants of Redevelopment Projects

AH-4. Incorporates Permanent Supportive Housing

Energy and Grid Resilience

Chapter 3

T-53. Electrify Loading Docks

T-54. Install Hydrogen Fueling Infrastructure

Energy section – all measures except E-14

Water section – all measures

LL-1. Replace Gas Powered Landscape Equipment with Zero-Emission Landscape Equipment

C-1-A. Use Electric or Hybrid Powered Equipment

C-1-B. Use Cleaner-Fuel Equipment

Chapter 4

MH-1. Strengthen Energy Infrastructure

MH-28. Transition to Climate-Smart Energy

MH-36. Decentralize and Localize Energy Production and Storage

MH-40. Address Energy/Water Efficiency Funding Barriers

EH-3. Install Heat-Reducing Roof

EH-4. Enhance Building Envelope Efficiency

EH-14. Develop Low-Income Energy Programs

CR-3. Passive Survivability

B3 Attach #1 of 3

Food Justice and Access

Chapter 3

S-3. Require Edible Food Recovery Program Partnerships with Food Generators

N-3. Implement Management Practices to Improve the Health and Function of Natural and Working Lands

N-5. Establish a Local Farmer's Market

N-6. Establish Community Gardens

Chapter 4

MH-13. Support Local Food Systems

MH-18. Maintain Soil Health

MH-41. Expand Urban Greening/Agriculture

Chapter 5

PH-5. Provide Equitable Food Access and Food Justice

IC-5. Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets

IC-6. Create Non-Standard Commercial or Retail Spaces

IC-8. Enhanced Access to Community Resources

CR-1. Adapt and Re-use Vacant Lots for Green Infrastructure

Green Infrastructure and Low-Impact Development (LID)

Chapter 3

E-5. Install Green Roofs in Place of Dark Roofs

W-5. Design Water-Efficient Landscapes

W-7. Adopt a Water Conservation Strategy

N-1. Create New Vegetated Open Space

N-2. Expand Urban Tree Planting

N-3. Implement Management Practices to Improve the Health and Function of Natural and Working Lands

N-6. Establish Community Gardens

Chapter 4

MH-5. Use Green Infrastructure for Stormwater Management

MH-23 Landscape with Climate Considerations

MH-32. Establish Urban Tree Management Plan

MH-33. Implement Park and Natural Resources Protection

MH-35. Increase Parks in Underserved Communities

MH-39. Implement Pervious and Climate-Smart Surfaces

MH-41. Expand Urban Greening/Agriculture

EP-3. Install Stormwater Cistern/Retention Basin

EH-1. Install Green Infrastructure

EH-8. Use Alternative Pavement Surfaces

EH-9. Expand Urban Tree Canopy

D-3. Install Drought Resistant Landscaping

Chapter 5

PH-1. Establish Vegetative Barriers to Reduce Pollution Exposure

PH-2. Increase Urban Tree Canopy and Green Spaces

IC-4. Enhanced Open and Green Spaces

CR-1. Adapt and Re-use Vacant Lots for Green Infrastructure

Job Development

Chapter 3

T-2. Increase Job Density

T-3. Provide Transit-Oriented Development

B3 Attach #1 of 3

T-25. Extend Transit Network Coverage or Hours

T-26. Increase Transit Service Frequency

T-31-B. Improve Destination Accessibility in Underserved Areas

T-40. Implement School Bus Program

E-22. Obtain Third-party HVAC Commissioning and Verification of Energy Savings

S-1. Institute or Extend Recycling Services

S-5. Source Wood Materials from Urban Wood Re-Use Program

N-4. Require Best Management Practices for Manure Management

N-5. Establish a Local Farmer's Market

C-3. Use Local Construction Contractors

C-4. Use Local and Sustainable Building Materials

R-1. Use Alternative Refrigerants Instead of High-GWP Refrigerants

R-2. Install Secondary Loop and/or Cascade Supermarket Systems in Place of Direct Expansion Systems

R-3. Install Transcritical CO2 Supermarket Systems in Place of High-GWP Systems

R-4. Install Microchannel Heat Exchangers in A/C Equipment in Place of Conventional Heat Exchanger

Chapter 4

MH-13. Support Local Food Systems

MH-24. Develop Climate Emergency/Business Resilience Plan

MH-36. Decentralize and Localize Energy Production and Storage

MH-40. Address Energy/Water Efficiency Funding Barriers

MH-41. Expand Urban Greening/Agriculture

WF-8. Implement Fuel Management

D-6. Build Alternatives Forms of Water Recreation

Chapter 5

CCD-5. Establish a Community Benefits Agreement

IEP-1. Local Labor and Apprenticeships (Construction)

IEP-2. Local Labor and Apprenticeships (Operations)

IEP-3. Contract with Diverse Suppliers

IEP-4. Use of Locally/Regionally Manufactured Products and Materials

IEP-5. Higher Wage and Working Condition Standards

IC-1. Invests in Local Arts and Culture to Affirm Community Identity

IC-5. Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets

IC-6. Create Non-Standard Commercial or Retail Spaces

Nature-Based Solutions

All measures listed for *Green Infrastructure and Low-Impact Development (LID)*.

S-5. Source Wood Materials from Urban Wood Re-Use Program

MH-34. Implement Integrated Watershed Management

SLR-3. Implement Natural Coastline Infrastructure

Passive Survivability

Chapter 3

T-14. Provide Electric Vehicle Charging Infrastructure

E-1. Buildings Exceed 2019 Title 24 Building Envelope Energy Efficiency Standards

E-2. Require Energy Efficient Appliances

B3 Attach #1 of 3

E-3-A. Require Energy Efficient Residential Boilers

E-4. Install Cool Roofs and/or Cool Walls in Residential Development

E-5. Install Green Roofs in Place of Dark Roofs

E-10-A. Establish Onsite Renewable Energy Systems—Generic

E-10-B. Establish Onsite Renewable Energy Systems—Solar Power

E-10-C. Establish Onsite Renewable Energy Systems—Wind Power

E-12. Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences

E-13. Install Electric Ranges in Place of Gas Ranges

E-15. Require All-Electric Development

E-16. Require Zero Net Energy Buildings

E-17. Require Renewable-Surplus Buildings

E-20. Install Whole-House Fans

E-23. Use Microgrids and Energy Storage

E-24. Provide Battery Storage

E-25. Install Electric Heat Pumps

W-1. Use Reclaimed Non-Potable Water

W-2. Use Grey Water

W-4. Require Low-Flow Water Fixtures

Chapter 4

MH-2. Use Climate-Resilient Design for Infrastructure

MH-4. Strengthen Building Structures

MH-5. Use Green Infrastructure for Stormwater Management

MH-12. Enhance Community Network Support

MH-13. Support Local Food Systems

MH-28. Transition to Climate-Smart Energy

MH-29. Identify Climate Hazard Overlay Zones

MH-36. Decentralize and Localize Energy Production and Storage

MH-41. Expand Urban Greening/Agriculture

SLR-2. Raise Building Floor Elevations

SLR-4. Strengthen Building Against Flood

SLR-5. Use Moveable Infrastructure

SLR-7. Require Consideration of Sea Level Rise for New Development

SLR-8. Develop Setbacks

SLR-11. Site Outside Coastal Hazard Zone

SLR-12. Limit Basements in Flood Zones

EP-1. Incorporate Runoff Projections in Hydrologic Designs

EP-2. Install Stormwater Outfall Pumps/Lift Station for Water Drainage

EP-3. Install Stormwater Cistern/Retention Basin

EP-4. Waterproof Operational Equipment

EP-6. Site Outside Floodplain

WF-1. Implement Fire-safe Landscaping

WF-2. Install Fire Suppression Systems and Improve Structural Strength

WF-4. Educate on Wildfire Resistant Landscaping

WF-5. Site Outside WUI

WF-6. Designate and Strengthen Wildfire Emergency Routes

WF-9. Install Air Filters

WF-10. Adopt WUI Building Standards

EH-1. Install Green Infrastructure

EH-3. Install Heat-Reducing Roof

EH-4. Enhance Building Envelope Efficiency

EH-5. Upgrade to Efficient Equipment/Infrastructure

B3 Attach #1 of 3

EH-12. Provide Backup Power for Cooling Centers

EH-14. Develop Low-Income Energy Programs

EH-15. Provide Low-Income Air Conditioning

D-1. Install Water Efficient Appliances

D-2. Install Water Reuse Infrastructure

Chapter 5

PH-3. Highly Rated Air Filtration

PH-4. Create Healthful, Sustainable Indoor Spaces

PH-5. Provide Equitable Food Access and Food Justice

IC-2. Adopt Design Standards

IC-3. Promotes Accessibility

CR-1. Adapt and Re-use Vacant Lots for Green Infrastructure

CR-3. Passive Survivability

Poverty

Chapter 3

T-3. Provide Transit-Oriented Development

T-4. Integrate Affordable and Below Market Rate Housing

T-9. Implement Subsidized or Discounted Transit Program

T-11. Provide Employer-Sponsored Vanpool

T-16. Unbundle Residential Parking Costs from Property Cost

T-23. Community-Based Travel Planning

T-25. Extend Transit Network Coverage or Hours

T-26. Increase Transit Service Frequency

T-29. Reduce Transit Fares

T-31-B. Improve Destination Accessibility in Underserved Areas

E-4. Install Cool Roofs and/or Cool Walls in Residential Development

E-16. Require Zero Net Energy Buildings

E-17. Require Renewable-Surplus Buildings

E-25. Install Electric Heat Pumps

S-3. Require Edible Food Recovery Program Partnerships with Food Generators

N-6. Establish Community Gardens

Chapter 4

MH-12. Enhance Community Network Support

MH-13. Support Local Food Systems

MH-21. Ensure Homeless Services' Availability in Hazardous Conditions

MH-27. Provide Greater Affordable Housing Options

MH-30. Establish Community Resilience Hubs

MH-35. Increase Parks in Underserved Communities

MH-36. Decentralize and Localize Energy Production and Storage

EH-14. Develop Low-Income Energy Programs

EH-15. Provide Low-Income Air Conditioning

EH-16. Establish a Shuttle System to Cooling Centers

Chapter 5

CCD-5. Establish a Community Benefits Agreement

PH-5. Provide Equitable Food Access and Food Justice

IEP-1. Local Labor and Apprenticeships (Construction)

IEP-2. Local Labor and Apprenticeships (Operations)

IEP-3. Contract with Diverse Suppliers

B3 Attach #1 of 3

IEP-5. Higher Wage and Working Condition Standards

IC-5. Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets

IC-8. Enhanced Access to Community Resources

AH-2. Promote Affordable Housing in Transit-Rich Areas

AH-3. Protection for Existing Tenants of Redevelopment Projects

AH-4. Incorporates Permanent Supportive Housing

AH-5. Make Housing Units Permanently Affordable

AH-6. Support the Formation of Collective Ownership Models: Limited-Equity Housing Cooperatives or Mutual Housing Associations

AH-7. No Net Loss of Affordable Housing Units/One-For-One Affordable Housing Policies

Racial Equity

Chapter 4

MH-11. Encourage/Actively Engage Community in Local Planning

MH-12. Enhance Community Network Support

MH-35. Increase Parks in Underserved Communities

Chapter 5

CCD-1. Consult Pre-existing Community Knowledge/Priorities

CCD-2. Conduct a Stakeholder Analysis and Develop a Community-Centered Outreach Plan

CCD-3. Conduct a Community Needs Assessment

CCD-5. Establish a Community Benefits Agreement

IE-1. Prioritize Outreach to Communities of Color and Underserved Groups

IE-2. Establish or Join a Community Project Steering Committee

IE-3. Elevate Voices of Underrepresented Groups in Project Direction and Outreach

IE-4. Inclusive Community Meetings

IE-5. Provide Education on Essential Topics Related to Project

IE-6. Conduct an Equity Assessment with Community Project Steering Committee

A-1. Use Participatory Budgeting

A-3. Evaluate Project Performance with Community Project Steering Committee/CBO

PH-2. Increase Urban Tree Canopy and Green Spaces

PH-5. Provide Equitable Food Access and Food Justice

IEP-1. Local Labor and Apprenticeships (Construction)

IEP-2. Local Labor and Apprenticeships (Operations)

IEP-3. Contract with Diverse Suppliers

IEP-5. Higher Wage and Working Condition Standards

IC-1. Invests in Local Arts and Culture to Affirm Community Identity

IC-5. Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets

Social Inclusion

Chapter 3

T-4. Integrate Affordable and Below Market Rate Housing

B3 Attach #1 of 3

T-31-B. Improve Destination Accessibility in Underserved Areas

T-46. Improve Transit Access, Safety, and Comfort

E-4. Install Cool Roofs and/or Cool Walls in Residential Development

E-5. Install Green Roofs in Place of Dark Roofs

E-16. Require Zero Net Energy Buildings

E-17. Require Renewable-Surplus Buildings

E-25. Install Electric Heat Pumps

S-3. Require Edible Food Recovery Program Partnerships with Food Generators

N-2. Expand Urban Tree Planting

Chapter 4

MH-10. Implement Community-wide Climate Change Outreach Program

MH-11. Encourage/Actively Engage Community in Local Planning

MH-12. Enhance Community Network Support

MH-21. Ensure Homeless Services' Availability in Hazardous Conditions

MH-27. Provide Greater Affordable Housing Options

MH-30. Establish Community Resilience Hubs

MH-32. Establish Urban Tree Management Plan

MH-35. Increase Parks in Underserved Communities

MH-36. Decentralize and Localize Energy Production and Storage

MH-38. Integrate Climate into Health Programs

EH-11. Work with Schools to Reduce Heat Exposure

EH-12. Provide Backup Power for Cooling Centers

EH-14. Develop Low-Income Energy Programs

EH-15. Provide Low-Income Air Conditioning

EH-16. Establish a Shuttle System to Cooling Centers

Chapter 5

All measures in the chapter.

Social Resilience

Chapter 3

T-4. Integrate Affordable and Below Market Rate Housing

T-17. Improve Street Connectivity

T-31-A. Locate Project in Area with High Destination Accessibility

T-31-B. Improve Destination Accessibility in Underserved Areas

T-41. Implement a School Pool Program

N-1. Create New Vegetated Open Space

N-2. Expand Urban Tree Planting

N-5. Establish a Local Farmer's Market

N-6. Establish Community Gardens

Chapter 4

MH-11. Encourage/Actively Engage Community in Local Planning

MH-12. Enhance Community Network Support

MH-30. Establish Community Resilience Hubs

MH-32. Establish Urban Tree Management Plan

MH-35. Increase Parks in Underserved Communities

MH-41. Expand Urban Greening/Agriculture

EH-1. Install Green Infrastructure

EH-2. Provide Heat Mitigation for Public Walkways and Transit Stops

B3 Attach #1 of 3

EH-9. Expand Urban Tree Canopy

EH-11. Work with Schools to Reduce Heat Exposure

Chapter 5

CCD-4. Conduct Community Asset Mapping

CCD-5. Establish a Community Benefits Agreement

PH-2. Increase Urban Tree Canopy and Green Spaces

PH-5. Provide Equitable Food Access and Food Justice

IEP-1. Local Labor and Apprenticeships (Construction)

IEP-2. Local Labor and Apprenticeships (Operations)

IEP-3. Contract with Diverse Suppliers

IC-1. Invests in Local Arts and Culture to Affirm Community Identity

IC-2. Adopt Design Standards

IC-3. Promotes Accessibility

IC-4. Enhanced Open and Green Spaces

IC-5. Designated Space for Community-Based Organizations, Disadvantaged Businesses, and Community Assets

IC-8. Enhanced Access to Community Resources

AH-1. Support Community Land Trusts

AH-2. Promote Affordable Housing in Transit-Rich Areas

AH-3. Protection for Existing Tenants of Redevelopment Projects

AH-4. Incorporates Permanent Supportive Housing

AH-6. Support the Formation of Collective Ownership Models: Limited-Equity Housing Cooperatives or Mutual Housing Associations

CR-1. Adapt and Re-use Vacant Lots for Green Infrastructure

CR-2. Support the Development and Operations of Community Resilience Centers

Tree Canopy

Chapter 3

N-1. Create New Vegetated Open Space

N-2. Expand Urban Tree Planting

Chapter 4

MH-32. Establish Urban Tree Management Plan

MH-35. Increase Parks in Underserved Communities

MH-41. Expand Urban Greening/Agriculture

EH-9. Expand Urban Tree Canopy

Chapter 5

PH-2. Increase Urban Tree Canopy and Green Spaces

IC-4. Enhanced Open and Green Spaces

CR-1. Adapt and Re-use Vacant Lots for Green Infrastructure

Urban Heat Island Reduction

Chapter 3

T-1. Increase Residential Density

T-15. Limit Residential Parking Supply

E-4. Install Cool Roofs and/or Cool Walls in Residential Development

E-5. Install Green Roofs in Place of Dark Roofs

E-21. Install Cool Pavements

N-1. Create New Vegetated Open Space

N-2. Expand Urban Tree Planting

N-3. Implement Management Practices to Improve the Health and Function of Natural and Working Lands

N-6. Establish Community Gardens

B3 Attach #1 of 3

Chapter 4

MH-5. Use Green Infrastructure for Stormwater Management

MH-23. Landscape with Climate Considerations

MH-32. Establish Urban Tree Management Plan

MH-33. Implement Park and Natural Resources Protection

MH-35. Increase Parks in Underserved Communities

MH-39. Implement Pervious and Climate-Smart Surfaces

MH-41. Expand Urban Greening/Agriculture

EH-1. Install Green Infrastructure

EH-3. Install Heat-Reducing Roof

EH-8. Use Alternative Pavement Surfaces

EH-9. Expand Urban Tree Canopy

EH-10. Install Covered Parking

Chapter 5

PH-2. Increase Urban Tree Canopy and Green Spaces

IC-4. Enhanced Open and Green Spaces

CR-1. Adapt and Re-use Vacant Lots for Green Infrastructure

References

PolicyLink. n.d. *The Equity Manifesto*. Available: https://www.policylink.org/about-us/equity-manifesto. Accessed: October 2021.

U.S. Environmental Protection Agency (U.S. EPA). n.d. *Urban Runoff: Low Impact Development*. Available: https://www.epa.gov/nps/urban-runoff-low-impact-development. Accessed: October 2021.

FRESNO General Plan

Adopted:
December 18, 2014

Development and Resource Management Department

City of FRESNO

ACKNOWLEDGEMENTS

Mayor

Ashley Swearengin

City Manager

Bruce Rudd
Mark Scott

City Council

Blong Xiong
Steve Brandau
Oliver L. Baines III
Paul Caprioglio
Sal Quintero
Lee Brand
Clint Olivier
Andreas Borgeas
Larry Westerlund

Planning Commission

Jaime Holt
Serop Torossian
Andy Hansen-Smith
Luisa Medina
Rojelio Vasquez
Lawrence Garcia
Carey Catalano
Randy Reed
Rama Dawar

Long Range Planning Team

Jennifer Clark, Director
Keith Bergthold
Trai Her
Talia Kolluri
Casey Lauderdale
Arnoldo Rodriguez
Edward Smith
Michelle Zumwalt
Franklin Spees
Darrell Unruh
Eric VonBerg

City Staff

Byron Beagles
Sandra Brock
Brock Buche
Shannon Chaffin
John Dugan
John Fox
Jill Gormley
Karana Hattersley-Drayton
Steve Hogg
Byron Horn
Scott Mozier
Kevin Norgaard
Joseph Oldham
Sophia Pagoulatos
Martin Querin
Mike Reid
Scott Tyler
Jack VanPatten
Irma Yepez-Perez
James Anders, Intern
Alec Kimmel, Intern
Charles Harris, Intern
Drew Nitschke, Intern
Conrad Trembath, Intern

Consulting Team

Dyett & Bhatia (Lead Consultant)
Calthorpe Associates
Economic and Planning Systems
Fehr & Peers, Inc.
First Carbon Solutions
MW Steele Group Inc.

General Plan Citizens Committee

Francine Farber, Co-Chair
Eric Payne, Co-Chair
Ryan Calvert
Austin Ewell III
Sameh El Kharbawy
Kiel Famellos-Schmidt
Paul Humphrey
Gerard Lozano
William Eric McComas
Ali Nekumanesh
Larry Raven
Michael Renberg
Mike Wells
Louise Yenovkian
Nick Yovino
Melissa White

Front Cover photo credit: Heather Heinks (left photo)

FRESNO General Plan

December 18, 2014

Prepared by:

Development and Resource Management Department

DYETT & BHATIA
Urban and Regional Planners

for

City of FRESNO

AMENDMENTS

Adopted Date / Plan Amendment No.

12-03-15 / A-15-003
- Updated Chapter 3: Tables 3-1 and 3-3
- Updated Chapter 11: Tables 11-3, 11-4, 11-5, 11-7, 11-8, 11-9, 11-10, 11-11, 11-12 and 11-13
- Updated Chapter 12: Table 12-1

04-28-16 / A-16-001
- Added Section 3.7 regarding Disadvantaged Unincorporated Communities to Chapter 3
- Added language regarding the City's Flood Plain Ordinance to Chapter 9
- Replaced Chapter 11

10-20-16 / A-16-008, R-16-011, TA-16-002
- Updated Chapter 3: Table 3-1, Table 3-2 (removed), Table 3-3 (now 3-2), Table 3-4 (now 3-3)
- Changed language in Chapter 3 to reflect the adoption of Downtown Plans and Code
- Updated Chapter 12: Table 12-1

3-02-17 / A-16-015 ATP
- Updated Chapter 4: Table 4-3 (updated)
- Changed language in Chapter 4, 10, 12 and Glossary to match Active Transportation Plan definitions

4-13-17 / A-17-001 Housing Element Amendment
- Updated Chapter 11 with the adoption of the Housing Element amendment

1-25-18 / A-17-016 PMP
- Updated Chapter 5 to reflect the adoption of the Parks Master Plan

12-13-18 / P18-03553
- Changed language in Chapter 7 regarding the Farmland Preservation Program

5-21-20 / P20-01529
- Updated the Local Hazard Mitigation section of the Noise & Safety Element

9-30-2021 / P19-04226
- Removed references to mitigation in relation to the Level of Service (LOS) transportation metric
- Added a new policy affirming the use of Vehicle Miles Traveled (VMT) as the new transportation metric under CEQA

10-13-2022 / P22-02413
- Updated Chapter 3 to reflect adoption of the Mixed-Use Text Amendment

NOTE: Information regarding updates to individual figures can be found on the figures themselves.

TABLE OF CONTENTS

1 INTRODUCTION 1-1

1.1 Context 1-2

1.2 Planning Context 1-11

1.3 Development Under The Plan – Dwellings, Population, and Jobs 1-19

1.4 Plan Organization 1-25

1.5 Planning Factor Figures 1-30

2 ECONOMIC DEVELOPMENT AND FISCAL SUSTAINABILITY 2-1

2.1 Introduction 2-2

2.2 Objectives and Policies 2-21

3 URBAN FORM, LAND USE, AND DESIGN 3-1

3.1 Context 3-2

3.2 Citywide Urban Form 3-4

3.3 Infill Development 3-13

3.4 Development Areas 3-19

3.5 Land Use 3-28

3.6 Buildings and Design 3-57

3.7 Disadvantaged Unincorporated Communities 3-66

4 MOBILITY AND TRANSPORTATION 4-1

4.1 Context 4-2

4.2 Strategic Initiatives 4-3

4.3 Roadways and Automobiles 4-7

4.4 Bikes and Pedestrians 4-16

4.5 Transit Service 4-22
4.6 Objectives and Policies 4-26
5 PARKS, OPEN SPACE, AND SCHOOLS 5-1
5.1 Context 5-2
5.2 Parks and Recreation 5-4
5.3 Open Space Action Plan 5-16
5.4 Valley Arboretum 5-27
5.5 Open Space and Biological Resources 5-30
5.6 Schools 5-38
6 PUBLIC UTILITIES AND SERVICES 6-1
6.1 Police 6-3
6.2 Fire 6-10
6.3 Wastewater Collection and Treatment 6-17
6.4 Water 6-23
6.5 Solid Waste 6-28
6.6 Disadvantaged Unincorporated Communities 6-30
7 RESOURCE CONSERVATION AND RESILIENCE 7-1
7.1 Context 7-2
7.2 Use of Infrastructure and Resources 7-7
7.3 Air Quality and Greenhouse Gas Emissions 7-12
7.4 Water Resources 7-23
7.5 Energy Resources 7-37
7.6 Farmland 7-41
7.7 Mineral Resources 7-43
7.8 Waste Reduction 7-46
8 HISTORIC AND CULTURAL RESOURCES ELEMENT 8-1
8.1 Context 8-2
8.2 Citywide Historic and Cultural Preservation 8-9
8.3 The New City Beautiful 8-13
9 NOISE AND SAFETY 9-1
9.1 Context 9-2

9.2 Noise....9-2
9.3 Seismic and Geologic Hazards....9-22
9.4 Storm Drainage and Flood Control....9-25
9.5 Wildland Fire Hazards....9-32
9.6 Hazardous Materials....9-32
9.7 Airport Safety....9-35
9.8 Emergency Response....9-37
10 HEALTHY COMMUNITIES....10-1
10.1 Planning for Community Health....10-2
10.2 Health....10-5
10.3 Access to Parks and Recreation....10-14
10.4 Access to Healthy Food....10-16
10.5 Objectives and Policies....10-29
11 HOUSING ELEMENT CONSISTENCY CHAPTER....11-1
11.1 Context....11-2
11.2 Consistency with Regional Housing Needs Allocation Plan....11-3
11.3 Consistency Matrix....11-5
12 IMPLEMENTATION....12-1
12.1 Overview....12-2
12.2 Responsibilities....12-3
12.3 Infill Initiatives....12-10
12.4 Implementation in the Public Realm....12-15
12.5 Implementation by the Private Sector....12-17
12.6 Defining and Supporting Infill....12-22
12.7 Summary of Implementation Actions....12-28

GLOSSARY....G-1

LIST OF FIGURES

Figure I-1: Historic Growth Patterns 1-15
Figure I-2: Existing Regional Setting 1-16
Figure I-3: Residential Capacity Allocation 1-22
Figure I-4: Existing Land Use 1-31
Figure I-5: Age – Population Under 17 1-33
Figure I-6: Race – White/Hispanic 1-33
Figure I-7: Race – Asian/African-American 1-33
Figure I-8: Language – Spanish Only 1-33
Figure I-9: Linguistically Isolated – English Proficiency in the Home 1-33
Figure I-10: Income – Family Income 1-35
Figure I-11: Poverty – Family Poverty 1-35
Figure I-12: Employment – Employment By Census Tract 1-35
Figure I-13: Education – Education Level 1-35
Figure I-14: Housing Unit Occupancy Status – Owner And Renter Occupied 1-35
Figure UF-1: West Development Area Land Use Diagram 3-21
Figure UF-2: Southwest Development Area Land Use Diagram 3-23
Figure UF-3: Southeast Development Area Land Use Diagram 3-26
Figure LU-1: Fresno General Plan Land Use Diagram 3-31
Figure LU-2: Dual Designation 3-33

Figure LU-3 Disadvantaged Unincorporated Communities 3-74
Figure LU-4: DUCs & District Boundaries 3-75
Figure MT-1: Circulation 4-11
Figure MT-2: Paths and Trails 4-18
Figure MT-3: Regional Transportation 4-25
Figure MT-4: Traffic Impact Zones (TIZs) 4-34
Figure POSS-1: Parks and Open Space.....5-17
Figure POSS-2: River Parkway Trails Access Points 5-19
Figure POSS-3: Schools and School Districts 5-42
Figure PU-1: Existing Wastewater System 6-19
Figure PU-2: Existing Water Distribution System.....6-25
Figure PU-3: Existing Regional Groundwater Contamination 6-26
Figure RC-1: Population Growth vs Depth to Groundwater 7-25
Figure RC-2: Existing Kings Subbasin Groundwater Aquifer and Watershed Area 7-27
Figure NS-1: Typical Sound Levels 9-6
Figure NS-2: Existing Noise Contours (Vehicles) 9-11
Figure NS-3: Future Noise Contours (Vehicles) 9-12
Figure NS-4: Existing Fresno Yosemite International Airport Noise and Safety Zones 9-13
Figure NS-5: Existing Fresno Chandler Executive Airport Noise and Safety Zones 9-14
Figure NS-6: Existing Sierra Skypark Airport Noise and Safety Zones.....9-15
Figure NS-7: Existing Floodplains 9-27
Figure HC-1: Public Transit 10-24
Figure IM-1: Priority Incentive Areas for Development 12-26
Figure IM-2: Sequencing of Development 12-27

LIST OF TABLES

Table 1-1: Required and Optional Elements with Corresponding General Plan Elements 1-11

Table 1-2: Residential Development Capacity Under Horizon and Buildout 1-21

Table 1-3: Residential Development Capacity Under General Plan Horizon 1-21

Table 1-4: Residential Development Capacity Under Buildout (Beyond 2035) 1-23

Table 1-5: Population Estimate Under Horizon and Buildout 1-24

Table 1-6: Additional Estimated Non-Residential Floor Area Under Horizon and Buildout 1-24

Table 2-1: Income Comparisons 2-4

Table 2-2: Education Level Comparisons 2-5

Table 2-3: Valley Higher Education Institutions 2-6

Table 2-4: Economic Sector Comparisons 2-7

Table 2-5: Employment Projections by Type, Fresno County 2-9

Table 2-6: Land Uses in 2035 - Percentage of Floor Area in Downtown and the Broader Planning Area 2-12

Table 2-7: Screening Criteria for Targeted Industries 2-13

Table 3-1: Citywide Standards for Density and Development Intensity 3-36

Table 3-2: General Plan Land Use Designations and Zone Districts 3-45

Table 3.3: DUC Infrastructure Conditions Summary 3-69

Table 4-1: Roadway Characteristic Matrix 4-12

Table 4-2: Multi-Modal Level of Service Indicators 4-15

Table 4-3: Bicycle Network 4-22

Table 5-1: Desirable Park Facility Standards 5-7

Table 5-2: City Park Space and Ratio Per 1,000 Residents by Park Category 5-9

Table 5-3: Park Acreage in Development Areas 5-10

Table 5-4: Existing City Park Space and Pocket/Neighborhood/ Community Park Space Needs Based on 5 Acres and 3 Acres Per 1,000 Residents Ratios 5-15

Table 5-5: Total Existing and Future Park Needs Scenarios 5-16

Table 9-1: Measured Existing Noise Levels 9-7

Table 9-2: Transportation (Non-Aircraft) Noise Sources 9-17

Table 9-3: Stationary Noise Sources 9-17

Table 11-1: Plan Housing Capacity Comparison 11-4

Table 11-2: General Plan Capacity by Proposed Land Use Designation 11-5

Table 11-3: Consistency Matrix 11-5

Table 11-4: Term Equivalency Matrix 11-15

Table 11-5: Zoning Districts Translation Matrix 11-16

Table 11-6: Acreage Distribution Existing Zones to Proposed New Downtown Planning Area Zones 11-17

Table 11-7: Housing Types Permitted by Zoning Districts in General Plan 11-18

Table 11-8: Lot and Density Standards—Residential Single-Family in General Plan 11-20

Table 11-9: Building Form, Lot and Density Standards—Residential Multi-Family Districts in General Plan 11-21

Table 11-10: Lot and Density Standards—Mixed-Use Districts in General Plan 11-22

Table 11-11: Required On-Site Parking Spaces for Zone Districts in General Plan 11-23

Table 12-1: General Plan Land Use Designations and Zoning Districts Consistency 12-18

Table 12-2: Summary of Implementation Actions for Plan Policies 12-29

1 INTRODUCTION

The Fresno General Plan[1] articulates a vision for the city and presents a set of policies and implementation actions to achieve that vision. The Plan capitalizes on opportunities inherent in Fresno's assets and regional location—on its human and natural resources; its economic resources, and proud history. The Plan draws from the ideas and visions of the many citizens, business owners, elected officials, and City staff who participated in the planning process, under the leadership provided by the General Plan Citizens Advisory Committee (GPCC), the Planning Commission, the Mayor, and the City Council.

[1] This document uses the terms "Fresno General Plan," "The General Plan," "the General Plan," "this General Plan," and "The Plan" interchangeably.

1.1 CONTEXT

The City of Fresno[2] last comprehensively updated its General Plan in 2002. Since then, the city has undergone a significant demographic and urban transformation. The legal environment governing land use, environmental preservation, housing, and other planning issues has also changed. A major, comprehensive revision of the General Plan is therefore necessary to eliminate any obsolete elements and policies, ensure legal conformity, and address new challenges, such as the need to prudently manage growth and enhance the city's economy.

The Fresno General Plan is forward-looking, comprehensive, and long-range. It supports the community's vision to preserve the desirable qualities that make the city of Fresno an ideal place to live, work, and play. The Plan recommends strategies to address prevalent existing conditions and trends that impede achieving and maintaining greater human, community, environmental, and economic health and prosperity. The Plan envisions Fresno as a vibrant, growing city, infused with a sense of heritage and community.

The primary purpose of a general plan is to outline a long-range vision for the physical development of the city that reflects the aspirations of the community. Since economic, social, transportation, environmental, public facilities and services, and other outcomes are interrelated with land use and development and are important to the community, the Plan includes applicable policies related to these complementary areas as well. The Plan presents a blueprint to guide economic development initiatives, as well as needed investments in improvements to increase competitiveness and promote economic growth. Planning and investment partnerships among landowners, developers, public agencies, and institutions will ensure effective and collaborative planning, efficient processing, shared public facilities and services financing. Under this Plan, the City will become a role model for Central Valley communities for growth management planning, regional cooperation, resilient urban development, economic vitality, revitalization of Downtown and established neighborhoods, resource efficiency, and environmental quality. The Plan also addresses a number of important community concerns, including:

- High concentrated poverty, high unemployment, and extreme disparities in quality-of-life circumstances and opportunities in different parts of the city;
- Neglected and disinvested established neighborhoods and Downtown Planning Area;

[2] The term "City of Fresno" or "City" with an upper case "C" used in this document refers to the City organization and institution governed and managed by the Mayor, City Council and City Staff. The term "city of Fresno" using a lower case "c' or the word "Fresno" or "city" alone refers to the geographic urban area and built environment commonly, or the population as a whole, known as the city of Fresno.

- Poor air quality, and environmental and community health issues;
- Residential growth patterns that negatively impact natural resources and deplete strategic farmland; and
- Fiscal instability related to the city's existing spread-out urban form and land use inefficiencies.

Overarching Principles of Resilience

The theme of resilience runs throughout the Plan and its strategies to address the city's challenges and capitalize on its opportunities and assets. There are five principles of resilience that guide the intent and demonstrate the interrelationships among Plan goals, objectives, and implementing policies. These principles serve as an overarching framework for a healthy and prosperous Fresno.

1. Quality-of-Life and Basic Services in All Neighborhoods;
2. A Prosperous City - Centered on a Vibrant Downtown;
3. Ample Industrial and Employment Land Ready for Job Creation;
4. Care for the Built and Natural Environment; and
5. Fiscally Responsible and Sustainable Land Use Policies and Practices.

The Plan describes a balanced city with an appropriate proportion of its growth and reinvestment focused in the central core, Downtown, established neighborhoods, and along Bus Rapid Transit (BRT) corridors. A successful and vibrant Downtown is necessary to attract investment needed for infill development and rehabilitation of established neighborhoods, which are priorities for the Plan. Balancing a vibrant Downtown will be self-sufficient suburban Development Areas. This will result in a city with a revitalized Downtown and established neighborhoods and with livable new suburban neighborhoods supporting one another. The Plan contemplates subsequent adoption of community and Specific Plans to further refine and guide development in the Downtown Planning Area.

The Plan is not merely a compendium of ideas and wish lists. While it is general and long-range in scope, the Plan is also comprehensive with many near-term actions. It lays out policies and implementation strategies from the date of adoption to 2035 and beyond. The defined policies, figures, standards, guidelines and actions to be undertaken by the City focus on what is concrete and achievable in order to accommodate the future population. Broad objectives such as "economic development," "quality of life," and "neighborhood character" are meaningful only if translated into actions that are tangible and can be implemented. State law requires that many City

regulations, requirements, and actions be consistent with the Plan. Therefore, regular ongoing use and updating of the Plan is essential.[3]

Santa Fe Depot, pictured above, is the railroad station in the Downtown that is used by Amtrak California for its San Joaquin passenger train service. The historic renovated station is a local icon for the Fresno community. Photo: Joe Moore

Goals of the General Plan

The update process that created this General Plan was initiated to take a comprehensive look at where the city is, where it would like to be by General Plan Horizon (2035), and by General Plan Buildout beyond 2035 (see description for both on page 1-19). Some areas of Fresno may change very little in this timeframe, and others may change dramatically. This Plan focuses on current community needs, neighborhood character, economic development challenges and opportunities, mixed-use and infill development strategies, development considerations outside the current city limits, and the fiscal resources and management strategies needed to attain the City's goals. Many of the existing community conditions are displayed in a series of figures at the end of this element, including Figure 1-4: Existing Land Use and a number of figures that show the geographic distribution of the city's existing demographic conditions. Lastly, the Plan responds to residents' preferences about where different land uses such as

[3] As a Charter city the City's zoning ordinance does not have to be consistent with the General Plan, but the City has chosen to require consistency in its Development Code.

housing, shopping, industry, parks and recreation, and public facilities should be located and how City resources should be used to achieve the Plan's goals.

Key themes of the Plan include the strengthening of existing centers of activity and commercial corridors in the city, as well as expansion of the city's industrial capacity, retail base, and new residential neighborhoods. Thus, this Plan has been prepared to do the following:

- Establish a long-range vision that reflects the aspirations of the community and outlines steps to achieve this vision;
- Establish long-range land use development policies that will guide development decision-making by City departments by providing a basis for judging whether specific development proposals and public projects are in harmony with the outcomes envisioned in the Fresno General Plan policies;
- Reflect the City's current planning, resource conservation, and economic development efforts;
- Guide development in a manner that improves the quality of life for the whole community and meets future land needs based on the projected population and job growth;
- Allow the City, other public agencies, and private developers to design projects that will preserve and enhance community character and environmental resources, promote resiliency, and minimize hazards; and
- Provide the basis for establishing detailed plans and implementation programs, such as the zoning and subdivision regulations, community plans, Specific Plans, neighborhood plans, Concept Plans, and the Capital Improvement Program.

The Plan establishes 17 goals for the City. The introduction to each element of the Plan highlights which of these goals it supports:

1. Increase opportunity, economic development, business and job creation.

   Use urban form, land use, and Development Code policies to streamline permit approval, promote local educational excellence and workforce relevance, significantly increase business development and expansion, retain and attract talented people, create jobs and sustained economic growth, strategically locate employment lands and facilities, and avoid over-saturation of a single type of housing, retail or employment.

2. Support a successful and competitive Downtown.

   Emphasize infill development and a revitalized central core area as the primary activity center for Fresno and the region by locating substantial growth in the

Downtown, and along the corridors leading to the Downtown. Use vision-based policies in a development code specific to the Downtown, when adopted, to ensure the creation of a unique sense of place in the central core.

3. Emphasize conservation, successful adaptation to climate and changing resource conditions, and performance effectiveness in the use of energy, water, land, buildings, natural resources, and fiscal resources required for the long-term sustainability of Fresno.

4. Emphasize achieving healthy air quality and reduced greenhouse gas emissions.

5. Support agriculture and food production as an integral industry.

   Emphasize the economic and cultural role of Fresno as a center of agriculture and food production systems by conserving farmland through a focus on developing vacant and underutilized land within the established Sphere of Influence of the City, limiting any further urban boundary expansion, and developing urban agriculture within the city and designated growth areas.

6. Protect, preserve, and enhance natural, historic, and cultural resources.

   Emphasize the continued protection of important natural, historic and cultural resources in the future development of Fresno. This includes both designated historic structures and neighborhoods, but also "urban artifacts" and neighborhoods that create the character of Fresno.

7. Provide for a diversity of districts, neighborhoods, housing types (including affordable housing), residential densities, job opportunities, recreation, open space, and educational venues that appeal to a broad range of people throughout the city.

8. Develop Complete Neighborhoods and districts with an efficient and diverse mix of residential densities, building types, and affordability which are designed to be healthy, attractive, and centered by schools, parks, and public and commercial services to provide a sense of place and that provide as many services as possible within walking distance.

   Intentionally plan for Complete Neighborhoods as an outcome and not a collection of subdivisions which do not result in Complete Neighborhoods.

9. Promote a city of healthy communities and improve quality of life in established neighborhoods.

   Emphasize supporting established neighborhoods in Fresno with safe, well maintained, and accessible streets, public utilities, education and job training, proximity to jobs, retail services, health care, affordable housing, youth development opportunities, open space and parks, transportation options, and opportunities for home grown businesses.

10. Emphasize increased land use intensity and mixed-use development at densities supportive of greater use of transit in Fresno.

    Greater densities can be achieved through encouragement, infrastructure and incentives for infill and revitalization along major corridors and in Activity Centers.

11. Emphasize and plan for all modes of travel on local and Major Streets in Fresno.

    Facilitate travel by walking, biking, transit, and motor vehicle with interconnected and linked neighborhoods, districts, major campuses and public facilities, shopping centers and other service centers, and regional transportation such as air, rail, bus and highways.

12. Resolve existing public infrastructure and service deficiencies, make full use of existing infrastructure, and invest in improvements to increase competitiveness and promote economic growth.

    Emphasize the fair and necessary costs of maintaining sustainable water, sewer, streets, and other public infrastructure and service systems in rates, fees, financing and public investments to implement the General Plan. Adequately address accumulated deferred maintenance, aging infrastructure, risks to service continuity, desired standards of service to meet quality-of-life goals, and required infrastructure to support growth, economic competitiveness and business development.

13. Emphasize the City as a role model for good growth management planning, efficient processing and permit streamlining, effective urban development policies, environmental quality, and a strong economy. Work collaboratively with other jurisdictions and institutions to further these values throughout the region.

    Positively influence the same attributes in other jurisdictions of the San Joaquin Valley—and thus the potential for regional sustainability—and improve the standing and credibility of the City to pursue appropriate State, LAFCO, and other regional policies that would curb sprawl and prevent new unincorporated community development which compete with and threaten the success of sustainable policies and development practices in Fresno.

14. Provide a network of well-maintained parks, open spaces, athletic facilities, and walking and biking trails connecting the city's districts and neighborhoods to attract and retain a broad range of individuals, benefit the health of residents, and provide the level of public amenities required to encourage and support development of higher density urban living and transit use.

15. Improve Fresno's visual image and enhance its form and function through urban design strategies and effective maintenance.

16. Protect and improve public health and safety.

17. Recognize, respect, and plan for Fresno's cultural, social, and ethnic diversity, and foster an informed and engaged citizenry.

    Emphasize shared community values and genuine engagement with and across different neighborhoods, communities, institutions, businesses and sectors to solve difficult problems and achieve shared goals for the success of Fresno and all its residents.

Key Planning and Design Features

Some of the key planning and design features in this General Plan include:

- **Economic Development, Downtown Revitalization, and Neighborhood Revitalization** through new initiatives, policies and programs designed to meet the city's most pressing needs.
- **Updated Urban Form** based upon a revitalized Downtown and established neighborhoods, enhanced corridors with BRT and vibrant Activity Centers supported by concept planned new neighborhoods.
- **Maximization of Urban and Fiscal Efficiency** through a new balance and integration of infill, rehabilitation, and growth area development that will benefit the city as a whole, compared to the historical near monolithic 100 percent of investment in outlying growth areas only.
- **Minimization of Farmland Conversion** by avoiding premature and inefficient farmland conversion, focusing development within a defined planning boundary, and seeking long-term preservation of farmland acreage.
- **Complete Neighborhoods** developed around parks and schools within walking distance with a mix of densities, building types, incomes, opportunities, and commercial services.
- **Complete Streets, Connector Streets, Safer Routes to School, and Multi-Modal Connectivity** by emphasizing neighborhood and street design that allows and encourages walking, biking, transit, and auto options.
- **Measurable Results** achieved by integrating design and implementing policies to produce measurable benefits related to reductions in greenhouse gas emissions, vehicle miles traveled, public health and household costs, consumption of water, energy, and land, and costs for infrastructure, operations, maintenance.

Relation of the General Plan to the Master EIR

The Fresno General Plan Master Environmental Impact Report (MEIR) will provide an analysis of the environmental impacts for the General Plan, and other projects as

required by the California Environmental Quality Act (CEQA). After certification of the MEIR, the document may be used to provide the environmental analysis for individual planning approvals that implement the Plan when those "subsequent projects" are within the scope of the MEIR. CEQA Guidelines §15177 allows for limited environmental review when the lead agency determines that a subsequent project is within the scope of the MEIR. This provides for streamlining the CEQA process, saving time and money.

Under CEQA, the MEIR can provide streamlining opportunities for a variety of projects ranging from individual parcels, tract maps, and BRT Corridor to community, Specific, neighborhood and Concept Plans. A MEIR may be used for more than five years after it has been certified if it is either updated or if the City can make certain findings.

General Plan Requirements

State law requires each California municipality to prepare a general plan, which is a comprehensive, long-term vision "for the physical development of the county or city, and any land outside its boundaries which in the planning agency's judgment bears relation to its planning." State requirements call for general plans that "comprise an integrated, internally consistent and compatible statement of policies for the adopting agency."

A city's general plan has been described as its constitution for all future development—the framework within which decisions on how to grow, provide public services and facilities, and protect and enhance the environment must be made. California's tradition of allowing local authority over land use decisions means that the State's cities have considerable flexibility in preparing their general plans.

While allowing considerable flexibility, State planning laws do establish some requirements for the issues that general plans must address. The California Government Code (Section 65300) establishes both the content of general plans and rules for their adoption and subsequent amendment. Together, State law and judicial decisions establish three overall guidelines for general plans:

- **The General Plan Must Be Comprehensive.** This requirement has two aspects. First, the general plan must be geographically comprehensive. That is, it must apply throughout the entire incorporated area and it should include other areas that a jurisdiction determines bears a relation to its planning, as well as the equal context of the general plan. Second, the general plan must address the full range of relevant issues that affect the jurisdiction's physical development (California Government Code Section 65301(c)).
- **The General Plan Must Be Internally Consistent.** This requirement means that the general plan must fully integrate its separate parts and relate them to each other

without conflict. "Horizontal," or internal, consistency applies both to figures and diagrams as well as general plan text. It also applies to data and analysis, as well as policies. All adopted elements of the general plan, whether required by State law or not, have equal legal weight. None may supersede another, so the general plan must balance and reconcile policies so there are no conflicts among the provisions of each element.

- **The General Plan Must Be Long-Range.** Because anticipated development will affect the jurisdiction and the people who live or work there for years to come, State law requires every general plan to take a long-term perspective. Time frames for effective planning may vary between elements.

Consistency Requirements within the General Plan

State law requires general plans to include seven elements. This General Plan includes the seven required elements: Land Use, Circulation, Open Space, Conservation, Safety, Noise, and Housing. The seventh required element, the Housing Element, which was adopted by the City in 2008 and certified by the State in 2009, will be updated in 2015. This Plan includes a Housing Element Consistency chapter that addresses consistency of the General Plan with the previously adopted Housing Element. Thus, all of the mandatory elements required by State law are included in this Plan.[4]

This Plan also includes optional elements[5] that address local concerns: Economic Development and Fiscal Sustainability, Public Utilities and Services, Historic and Cultural Resources, Healthy Communities, and Implementation. Upon adoption of the Plan, these optional elements have equal weight under State law. Table 1-1 outlines how the required elements and optional elements correspond with this Plan.

[4] Two or more mandated elements may be combined in a single element per California Government Code Section 65301(a) which has been done in this General Plan by combining into a single element the "Noise and Safety" elements.
[5] The Government Code specifically states that the General Plan may include any other optional elements or address any other subjects that the City determines relate to the physical development of the city (California Government Code Section 65303).

TABLE 1-1: REQUIRED AND OPTIONAL ELEMENTS WITH CORRESPONDING GENERAL PLAN ELEMENTS	
Required and Optional Elements	General Plan Element
Optional	1: Introduction
Optional	2: Economic Development and Fiscal Sustainability
Land Use	3: Urban Form, Land Use, and Design
Circulation	4: Mobility and Transportation
Open Space	5: Parks, Open Space, and Schools
Optional	6: Public Utilities and Services
Conservation	7: Resource Conservation and Resilience
Optional	8: Historic and Cultural Resources
Safety	9: Noise and Safety
Noise	9: Noise and Safety
Optional	10: Healthy Communities
Housing	11: Housing Element Consistency
Optional	12: Implementation

Source: Dyett & Bhatia, 2014.

Environmental Justice

While environmental justice is not a mandatory element in a general plan, there is a strong case for its inclusion, as State law now requires general plans to include consideration of environmental justice in preparing policies and implementation programs, and in creating the physical framework for development. The issues of environmental justice that the general plan can address include procedural inequities and geographic inequities.

Several new policies, distributed throughout this General Plan, are included to address environmental justice.

1.2 PLANNING CONTEXT

History of Fresno

Figure 1-1: Historic Growth Patterns illustrates Fresno's historic rate and pattern of growth. The city of Fresno's story begins in 1871, when the Central Pacific Railroad was selecting station sites along the Central Pacific's line through California's San Joaquin Valley. In the midst of an otherwise dry prairie, Fresno was founded in 1872 with the establishment of the Fresno station. Since the railroad followed the lay of the San Joaquin Valley from northwest to southeast, the original surveyors of Fresno laid out the town's parent grid to match the railroad tracks. Only when Fresno's original diagonal grid met the north to south grid of the outlying agricultural colonies in the 1880s would the city adjust its streets to match the existing rural roads. This distinctive 45-degree adjustment at the edge of the original downtown core is shared by many San Joaquin Valley cities today.

In 1885, Fresno was incorporated with a land area of three square miles and a population of approximately 4,000. Today, the original townsite is home to the largest concentration of historic structures and landmarks in Central California. A number of mid-rise buildings were erected in the Central Business District between 1915 and 1925, followed by a second building wave in the 1960s, giving Downtown the most distinctive skyline in the region.

Unlike the early 1890s, when it was estimated that roughly 40 percent of the city's population lived southwest of Downtown, the dominant development pattern in the post WWII era has been to extend to the north and to a lesser degree to the east. This development was partially spurred by the extended streetcar system, the rise of the automobile, relatively cheap and abundant supply of land, evolving retail trends, and federal programs that enabled people to purchase single-family homes.

In 1957, a California Department of Highways plan called for construction of State Routes 99, 41, and 180 to form a freeway loop around Downtown, redirecting traffic around the City's core rather than through it. The construction of the freeway loop system has had a devastating impact on the Downtown and its surrounding neighborhoods. Formerly unified neighborhoods were cut in two by freeways without surface crossings. Facilitated by the freeways, the City continued to stretch onto inexpensive land to the north and east, aiding the flight of people and businesses away from the center of the city.

Regional Location

The city of Fresno, located in the Central Valley, covers an area of 113 square miles. Most of the remaining land uses surrounding the city are rural residential and agricultural in nature, although the city of Clovis is adjacent to the northeast edge of Fresno. With a 2010 population of 495,000, Fresno is the largest city in Fresno County and fifth largest in California. Figure 1-2 shows the regional location.

State Route 99 runs northwest-southeast on the western edge of the city, connecting it with Sacramento, the San Francisco Bay Area, Bakersfield, and Los Angeles. It is designated as a *High Emphasis Focus Route* on the Caltrans Interregional Transportation Strategic Plan. State Route 41 runs north-south through the heart of the city, connecting it with Yosemite National Park. State Route 168 links the Downtown to Clovis, and State Route 180 runs east-west to both agricultural communities and Kings Canyon National Park.

The northern border of the city is largely defined by the San Joaquin River, which flows on to the Sacramento-San Joaquin River Delta and San Francisco Bay. No major rivers or creeks run through the city, although many irrigation canals cross Fresno.

Planning Area

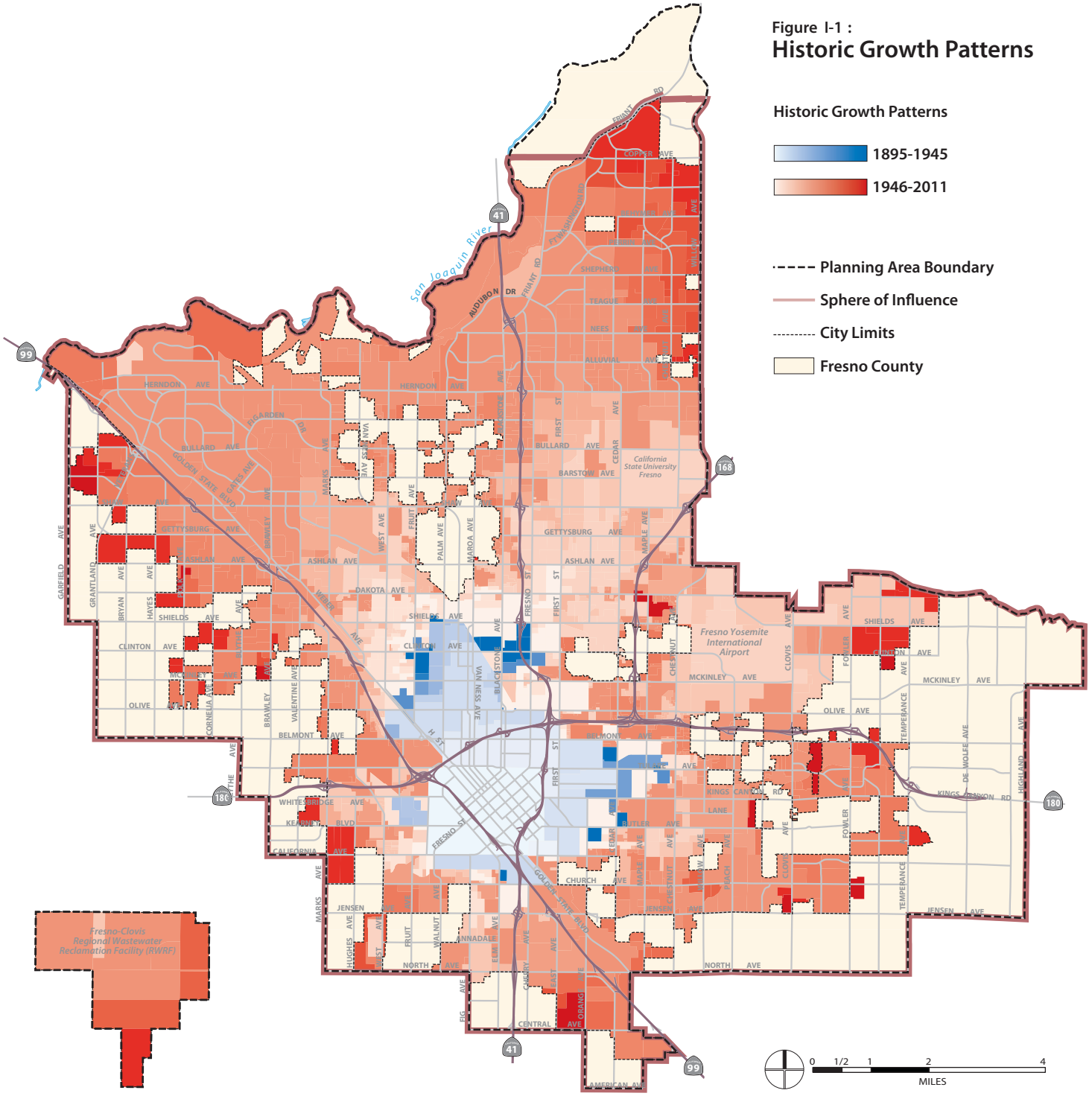
The City's Planning Area is the geographic area for which the General Plan establishes policies about future urban growth, long-term agricultural activity, and natural resource conservation. The boundary of the Planning Area was determined by City staff, and initiated by City Council, in response to State law requiring each City to include in its General Plan all territory within the boundaries of the incorporated area as well as "any land outside its boundaries which in the planning agency's judgment bears relation to its planning" (California Government Code Section 65300).

The Planning Area includes the area within the City Limits, the City's Sphere of Influence (SOI), and land to the north adjacent to the SOI that serves as a logical boundary along Willow Avenue and east of the San Joaquin River, as well as land to the southwest of the SOI dedicated to the Fresno-Clovis Regional Wastewater Reclamation Facility (RWRF). The area to the north has open space and low density residential land use designations consistent with the rural residential and open space properties that exist there now.

Sphere of Influence (SOI)

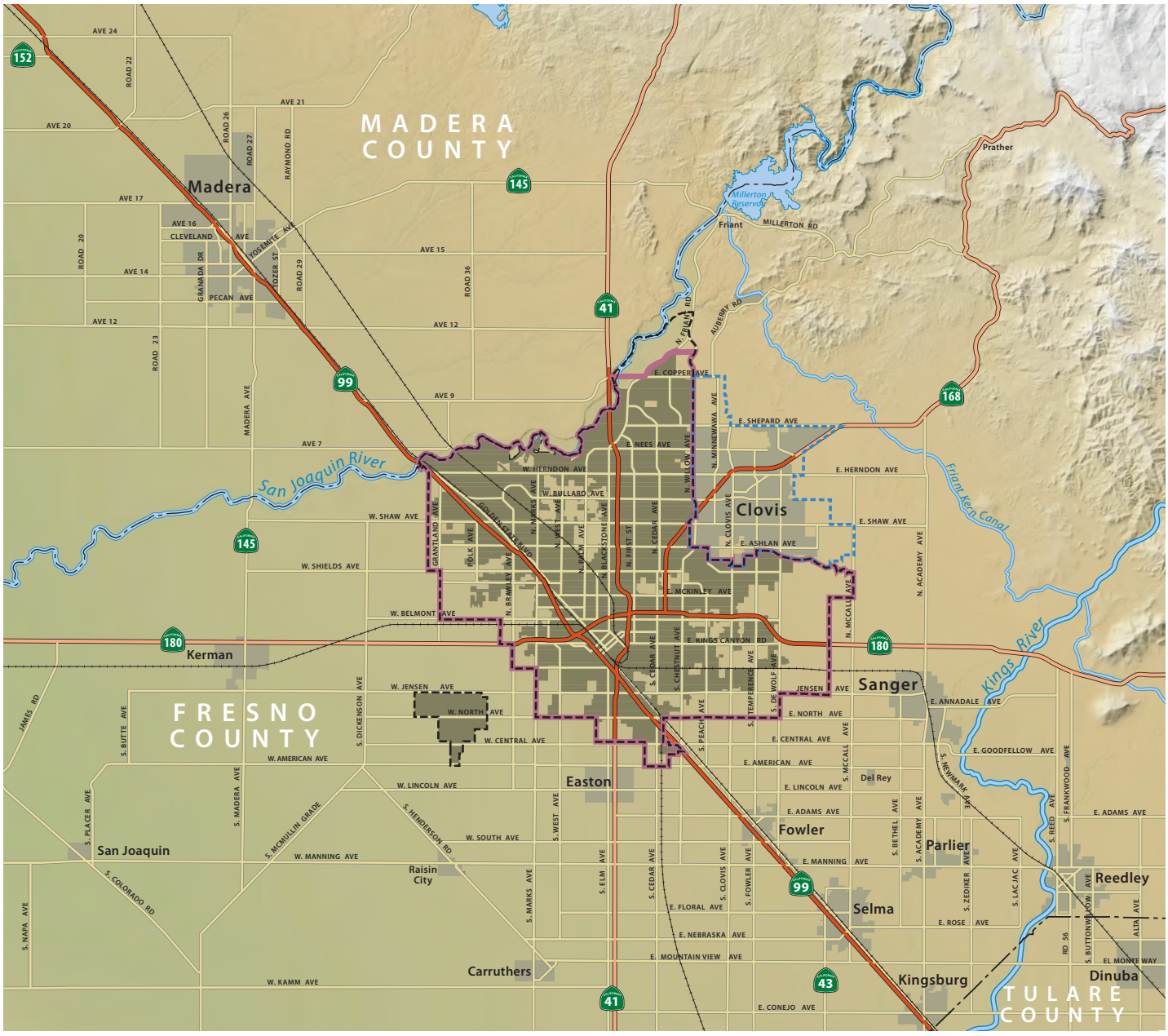
The SOI is a boundary that encompasses lands that are expected to ultimately be annexed by the City, although until annexed it falls under the jurisdiction of the County of Fresno. The City's SOI is determined by the Fresno Local Agency Formation Commission (LAFCO), which is an entity empowered to review and approve proposed boundary changes and annexations by incorporated municipalities. The City's SOI comprises all land within the City Limits (excluding the RWRF), as well as County Islands (unincorporated land entirely surrounded by the city) and land beyond the outer City Limits on all sides (see Figure 1-2). The SOI encompasses 157 square miles in total, of which 44 square miles is unincorporated land.

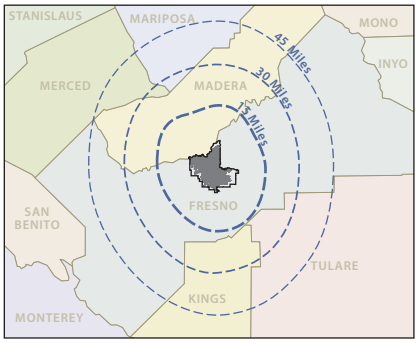
Much of the city is surrounded by agricultural and rural residential land uses, and to the east, the Sierra Nevada Mountains serve as a beautiful backdrop, as shown in this picture (looking east). Photo: Heather Heinks



Source: City of Fresno Development and Resource Management Department, 2010.

Figure I-2: Existing Regional Setting





0 1 2 4 8
MILES

- Planning Area Boundary
- Sphere of Influence
- Fresno City Limits
- Clovis Sphere of Influence
- County Line
- Other Cities

Source: City of Fresno, 2014.

Public Participation Process

The General Plan update study and formulation process was initiated by City planning staff in the summer of 2010. In order for the Plan to accurately address community needs and values, a comprehensive public process of obtaining the input of residents, businesses, and property owners, as well as City officials was initiated. The General Plan Citizens Advisory Committee (GPCC) provided leadership throughout this process, which involved the sharing of information and ideas between elected and appointed officials, City staff, the planning consultants, and residents. The following methods were used over the course of the Plan update to ensure the community's full participation:

- **Stakeholder Interviews.** Over 160 interviews were conducted with City officials and representatives of various community stakeholders and organizations.
- **Stakeholder Outreach.** Outreach included neighborhood meetings, focus groups and other agencies. City staff was invited to make over 100 presentations before neighborhood associations, as well as business, educational, social, and non-profit segments of the community to discuss the Fresno General Plan and the Alternatives Report.
- **Community Workshops.** Over 20 public workshops were held on various topics including visioning and guiding principles, economic development, urban form, healthy communities, transportation, resource conservation, and the Fresno General Plan conceptual alternative scenarios.
- **General Plan Citizens Advisory Committee.** The GPCC served as a "sounding board" for ideas and alternatives during the update process, formulating consensus and providing direction for City staff and consultant team work. The GPCC also heard public comment and participated with invited speakers in discussions on a range of planning topics. Moreover, GPCC members attended public workshops to facilitate dialogue and understand community concerns. The GPCC held 24 meetings throughout the process through May 2012.
- **Planning Commission of the City of Fresno and City Council of the City of Fresno.** City staff appeared at more than 10 Planning Commission and City Council meetings that included discussion items on the Fresno General Plan with specific issues requiring policy direction. These meetings were also open to the public.
- **Other City Commissions and Committees.** Other City commissions and advisory committees also met periodically to discuss issues and concerns pertaining to the Fresno General Plan and provide comments on documents prepared.
- **Newsletter and Survey.** The City published a newsletter in English and Spanish to introduce the planning process and provide details on means of participation. The newsletter was distributed in August 2011. The City also conducted a telephone survey on issues and priorities for the Fresno General Plan.

- **Fresno General Plan Website.** A website was created for the Fresno General Plan process, linked to the main City website. All meeting agendas, staff reports, workshop summaries, planning documents, and figures created during the update process were posted on the site.
- **Fresno General Plan Mailing List.** Those who requested to receive information and notices were placed on the Fresno General Plan email distribution list.
- **Availability of Documents.** Copies of the results from GPCC, Planning Commission and City Council meetings, workshops, and presentations were made available on the Fresno General Plan website and at City Hall.

Planning Process

The planning process for the General Plan update consisted of an initial phase of information gathering and correspondence that resulted in a Map Atlas of Existing Conditions Report and a Service Provider Summaries report, followed by an in-depth exploration of targeted issues and potential policy initiatives via a series of working papers reviewed with the GPCC and at public workshops. These findings, along with the GPCC's visioning process setting goals for the Plan, culminated in the alternatives phase.

Alternatives

The alternatives process explored four fundamentally different approaches to accommodate projected population and job growth while meeting the proposed vision for Fresno. The Alternatives Report for the General Plan Citizens Committee, issued in March 2012, reviewed the four options, which differed by the type, density, mix, and location of future growth. The report evaluated the alternative scenarios against one another in terms of their relative (1) ability to meet housing and job demand, (2) provision of parks and open space, (3) impact on transportation and mobility, and (4) adherence to the proposed goals. A Fiscal Impact Analysis of the Concept Alternatives was prepared that assessed the comparative fiscal impacts of four alternative scenarios, and a RapidFire scenario impact assessment was also conducted that compared alternatives in terms of relative greenhouse gas emissions; household costs; land consumption; vehicle miles traveled per capita and fuel use; public health; building energy, water consumed, and related costs; and cumulative infrastructure and operations and maintenance costs. These reports were reviewed in numerous public outreach meetings, at a community workshop, and at public hearings by the GPCC, Planning Commission, and City Council.

Alternative A with Modifications

The City Council endorsed Alternative A with modifications. Alternative A focused on rebuilding the primary corridors as a series of neighborhood and regional mixed-use

centers surrounded by higher density housing, with roughly half of future housing in the City Limits and roughly half in growth areas on the urban edge. The Council's modified Alternative A shifted more development to single-family housing and with more focus on growth west and southwest of State Route 99, but maintained a strong commitment to Downtown and major corridor revitalization, Complete Neighborhoods, and more compact development.

1.3 DEVELOPMENT UNDER THE PLAN – DWELLINGS, POPULATION, AND JOBS

General Plan Horizon and General Plan Buildout

The "General Plan Horizon" will occur in the year 2035. Complete development under the General Plan past the horizon year of 2035 is referred to as "General Plan Buildout." Designation of a site for a certain use does not necessarily mean that the site will be built/redeveloped with the designated use by Plan Horizon in 2035.

The City Council called for no expansion of the City's SOI under the General Plan Horizon. It elected not to expand the SOI in part to fully develop Development Areas west and southwest of State Route 99, and to plan for the phased development of the Southeast Development Area (SEDA), formerly known as Southeast Growth Area (SEGA), which requires its development through adoption of a Specific Plan that includes comprehensive provision of public infrastructure. Portions of SEDA are anticipated to develop by 2035, with General Plan Buildout not occurring until 2050 or beyond.

The preservation of the SOI boundary for the General Plan not only serves to promote the successful development of SEDA, which will be built out over the longer term, but also will increase the opportunity to focus needed resources in Downtown and established neighborhoods, benefitting current home and property owners. Ultimately, it will lead to thoughtfully conceived and quality development in all Development Areas. In addition, the strategic investment upgrades to the City's surface water treatment facilities and distribution system, as well as the City's wastewater reclamation facilities and distribution system needed to serve the greater development capacities called for by this Plan can only be justified by a fixed SOI boundary over the planning period as noted by goals, objectives and policies in this Plan.

Two levels of development under the Plan are described below and analyzed in the accompanying MEIR:

- **General Plan Horizon (2035).** The General Plan has a horizon year of 2035, which means that figures for growth in residential units, non-residential square footage,

population, and jobs under the Plan are estimated through 2035. The Plan guides future development to Established Neighborhoods and Development Areas (see Figure 1-3: Residential Capacity Allocation) that include both sites within the current city limits and sites within the growth areas that require future annexation to the city, consistent with the adopted Alternative A modified, and as described in the Urban Form, Land Use, and Design Element. Even with complete development under this Plan Horizon of 2035, it is anticipated that some areas in the City's SOI will remain undeveloped.

- **General Plan Buildout (beyond 2035).** After the 2035 horizon year, it is anticipated that the city will continue to develop beyond the General Plan Horizon. It will grow into the remaining portions of the SOI that were not developed during the horizon of the General Plan. Full Buildout of this SOI is anticipated to occur well after 2035, under the land uses, policies, and plans of this General Plan and as shown in Figure LU-1: Land Use Diagram.

The reason that two scenarios are contemplated and discussed is because the General Plan Land Use Diagram designates land uses for the entire SOI, and it is unlikely that all the vacant and underutilized land available to develop on within the City's SOI will be developed on by the year 2035, which is the extent of this General Plan, and so additional consideration must be given to the remaining vacant and underutilized land that will be available to build on after the year 2035. This Plan has been analyzed and presented under the General Plan Horizon development level. However, the MEIR analyzes the environmental impacts of the General Plan under the Buildout of the SOI, so the complete buildout figures of the SOI were used, as opposed to the figures for the horizon year of the Plan. Figures for both the Plan and the subsequent SOI development are presented on the following pages.

Residential Development

Table 1-2 provides the existing and additional housing units expected under the General Plan Horizon and the General Plan Buildout. As shown, approximately 191,000 units currently exist in the SOI. The Plan is intended to accommodate an additional 76,000 units. In total, General Plan Horizon will result in an estimated 267,000 housing units in the SOI by 2035. Around 32,000 of these new units would be located in the existing city limits, including Downtown (see Table 1-3). After the 2035 horizon of the General Plan, development will continue to occur in the SOI raising the estimated number of residential units to be built to 145,000. Complete Buildout will result in approximately 336,000 in the SOI. Around 55,610 of these new units would be located in the existing city limits, including Downtown (see Table 1-4).

Table 1-3 details the General Plan residential buildout capacity by housing type (multi-family and townhouse, or single-family) and location (inside City Limits or requiring annexation), as shown in Figure 1-3.

TABLE 1-2: RESIDENTIAL DEVELOPMENT CAPACITY UNDER HORIZON AND BUILDOUT[1]

Residential Dwelling Units	General Plan Horizon	General Plan Buildout
Existing[2]	191,000	191,000
Additional Capacity	76,000	145,000
Total Capacity	267,000	336,000

1. Calculations are based on August 9, 2012 Land Use Diagram Draft Figure 2 of the Initiation Draft.
2. Existing dwelling unit count is based on the 2010 Census for dwelling units within the City Limits (approximately 171,000 dwelling units) added to the Fresno Council of Government informal aerial photo and census tract study estimate of 2010 population and dwelling units within the area located outside of the City Limits and inside the City's Sphere of Influence boundary (approximately 20,000 dwelling units) for a total of approximately 191,000 dwelling units.

TABLE 1-3[1]: RESIDENTIAL DEVELOPMENT CAPACITY[2] UNDER GENERAL PLAN HORIZON

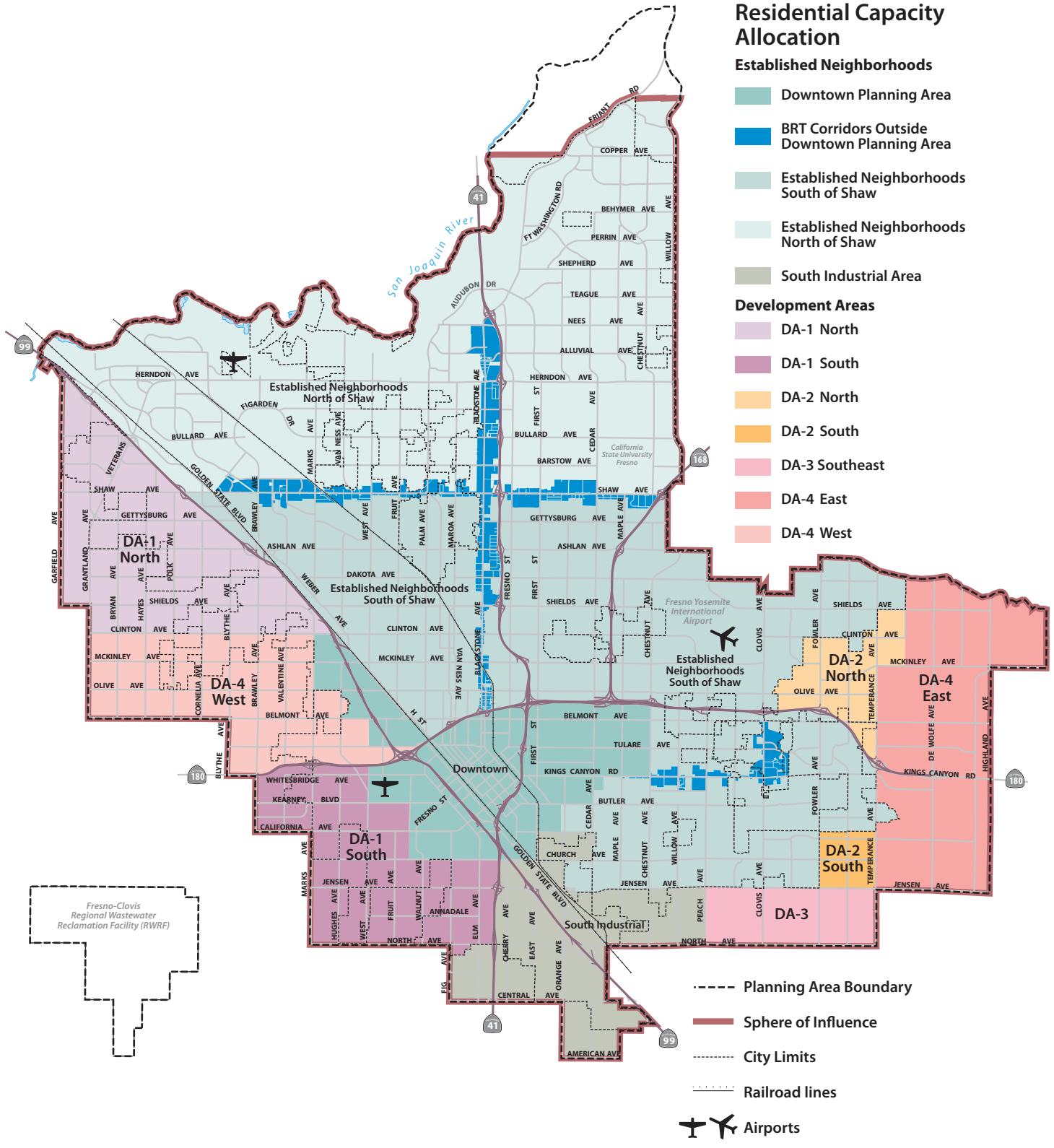
Area[3]	Type of Dwelling Unit		Location of Dwelling Unit		Total
	Multi-family and Townhouse	Single-family	Development on Sites in Current City Limits	Development on Sites in Growth Areas Requiring Annexation	
Downtown Planning Area	7,800	1,200	9,000	0	9,000
BRT Corridors	6,000	0	6,000	0	6,000
Established Neighborhoods South of Shaw	4,700	3,000	5,700	2,000	7,700
Established Neighborhoods North of Shaw	4,000	2,400	6,200	200	6,400
South Industrial	0	0	0	0	0
DA-1: North	6,500	10,500	2,600	14,400	17,000
DA-1: South	4,000	6,500	2,500	8,000	10,500
DA-2: North	500	2,000	0	2,500	2,500
DA-2: South	500	1,500	0	2,000	2,000
DA-3: Southeast	2,500	3,500	0	6,000	6,000
DA-4: East	5,100	3,800	0	8,900	8,900
DA-4: West	0	0	0	0	0
Sub Totals	**41,600**	**34,400**	**32,000**	**44,000**	**76,000**
Total Dwelling Units under General Plan Horizon	**76,000**		**76,000**		

1. Calculations are based on August 9, 2012 Land Use Diagram Draft Figure 2 of the Initiation Draft.
2. The term "capacity" is intended to mean a Development Area's ability to accommodate a specified number of units and is not intended to indicate the number of actual units built.
3. DA is Development Area. See Figure I-3: Residential Capacity Allocation.

Source: City of Fresno and Dyett & Bhatia, 2014.

Figure I-3:

Residential Capacity Allocation



Source: City of Fresno

Note: The Corridor along Shaw Avenue is to be supported by enhanced bus service.

Table 1-4 presents residential dwelling unit capacity by Development Area in General Plan Buildout, which is beyond 2035. An additional 55,610 residential units are projected to develop in the City Limits, while 89,764 units are projected to develop in Growth Areas requiring annexation, for an additional 145,374 residential units in the SOI at the end of General Plan Buildout. The analysis relied on vacant land sites available for all areas of the SOI, except for the BRT corridors which relied on a residential capacity analysis of existing commercial built land on BRT corridors, and the Downtown Planning Area which is based on projections.

TABLE 1-4[1]: RESIDENTIAL DEVELOPMENT CAPACITY UNDER BUILDOUT (BEYOND 2035)

Area[2]	Number of Dwelling Units on Sites in Current City Limits	Number of Dwelling Units in Growth Areas Requiring Annexation	Total
Downtown Planning Area	10,000	0	10,000
BRT Corridors	10,471	0	10,471
Established Neighborhoods South of Shaw	8,925	2,227	11,152
Established Neighborhoods North of Shaw	9,017	486	9,503
South Industrial	7	0	7
DA-1: North	7,072	18,723	25,795
DA-1: South	9,085	11,564	20,649
DA-2: North	52	2,996	3,048
DA-2: South	206	2,238	2,444
DA-3: Southeast	0	9,092	9,092
DA-4: East	0	35,008	35,008
DA-4: West	775	7,430	8,205
Total Dwelling Units under Buildout	**55,610**	**89,764**	**145,374**

1. Calculations are based on August 9, 2012 Land Use Diagram Draft Figure 2 of the Initiation Draft.
2. DA is Development Area. See Figure I-3: Residential Capacity Allocation.

Source: City of Fresno.

Horizon and Buildout Population

The existing and estimated future population figures are presented in Table 1-5 for both the General Plan Horizon and General Plan Buildout.[1]

The city's population of 495,000 in 2010 represents a 16 percent increase over its 2000 population of 428,000—an annual growth rate of 1.25 percent. The entire SOI had a 2010 population of 545,000, so around 50,000 people live in unincorporated land within the SOI. The General Plan Horizon will accommodate a population of approximately 226,000 new residents by 2035 within the SOI, resulting in a total

[1] Calculations are based on August 9, 2012 Land Use Diagram Draft Figure 2 of the Initiation Draft.

population of 771,000 and an average annual growth rate of 1.24 percent. Meanwhile, General Plan Buildout anticipates an additional 425,000 new residents over the existing population by an unspecified date within the SOI, resulting in a total population of 970,000.

TABLE 1-5[1]: POPULATION ESTIMATE UNDER HORIZON AND BUILDOUT

Population	General Plan Horizon	General Plan Buildout
Existing[2]	545,000	545,000
Additional Estimated	226,000	425,000
Total	**771,000**	**970,000**

1. Calculations are based on August 9, 2012 Land Use Diagram Draft Figure 2 of the Initiation Draft.
2. Existing Population includes the entire SOI area population from 2010 Census Data.

Source: City of Fresno.

Non-Residential Development

The amount of new non-residential development expected under General Plan Horizon and General Plan Buildout are detailed in Table 1-6. Under the General Plan Horizon, an estimated 55,000,000 square feet of non-residential use capacity is calculated as possible by 2035, while nearly 104,000,000 square feet of non-residential use capacity above current levels (approximately 49,000,000 square feet more than the 2035 horizon) is anticipated under General Plan Buildout. The new space is fairly evenly split between retail, office, and other uses (industrial, research and development, flex space, etc.).[1]

TABLE 1-6[1]: ADDITIONAL ESTIMATED NON-RESIDENTIAL FLOOR AREA UNDER HORIZON AND BUILDOUT

	Additional Floor Area Above Current Levels In Square Feet	
Type	General Plan Horizon	General Plan Buildout
Retail[2]	10,925,293	20,613,762
Office[3]	18,334,371	34,593,153
Industry and Business Parks[4]	25,759,611	48,603,040
Total	**55,019,275**	**103,809,955**

1. Calculations are based on August 9, 2012 Land Use Diagram Draft Figure 2 of the Initiation Draft.
2. Sum of commercial floor area plus 50 percent of non-residential CMX floor area, 80 percent non-residential NMX floor area, 87.5 percent of non-residential RMX floor area, and 10 percent of BP/RBP floor area.
3. Sum of office floor area plus 50 percent of non-residential CMX floor area, 20 percent non-residential NMX floor area, 12.5 percent of non-residential RMX floor area, and 60 percent of BP/RBP floor area.
4. Sum of light and heavy industry land use floor area plus 30 percent of BP/RBP floor area.

Source: City of Fresno and Dyett & Bhatia, 2014.

[1] Calculations are based on August 9, 2012 Land Use Diagram Draft Figure 2 of the Initiation Draft.

Horizon and Buildout Employment and Jobs/Resident Balance

A city's ratio of jobs/employed residents would be 1:1 if the number of jobs in the city equaled the number of employed residents. In theory, such a balance would eliminate the need for commuting outside of the city for employment opportunities. More realistically, a balance means that in-commuting and out-commuting are matched, leading to efficient use of the transportation system, particularly during peak hours.

At the Horizon Year of 2035, the General Plan can accommodate 0.48 jobs per new resident, roughly equivalent to the current percentage of the city's population in the labor force (46 percent according to the 2010 US Census). Therefore, at General Plan Horizon, the SOI could accommodate approximately a total of 108,000 new jobs above current levels based on 0.48 jobs per 226,000 new residents anticipated by 2035 (see Table 1-5 for population). These new jobs would be roughly broken down into:

- Retail = 50,000 new jobs
- Office = 32,500 new jobs
- Other = 25,500 new jobs

At General Plan Buildout, well after 2035, it is estimated that there would be 0.45 jobs per new resident, roughly equivalent to the current percentage of the city's population in the labor force (46 percent according to the 2010 US Census). At General Plan Buildout, the SOI could accommodate approximately a total of 189,500 new jobs above current levels based on 0.45 jobs per 425,000 new residents anticipated (see Table 1-5 for population). These new jobs would be roughly broken down into:

- Retail = 87,700 new jobs
- Office = 57,000 new jobs
- Other = 44,700 new jobs

1.4 PLAN ORGANIZATION

General Plan Structure

The General Plan is organized into the following elements:

- **Introduction.** This introductory element includes General Plan goals, State requirements, and requirements for administration of the Plan. In addition, the projected development under General Plan Horizon and General Plan Buildout are summarized, and overarching themes of the Plan are presented.
- **Economic Development and Fiscal Sustainability.** This element addresses strategies for the City to boost the strength and range of existing businesses, expand

economic opportunities for current and future residents, and ensure the long-term ability of the City to deliver a high level of public services.

- **Urban Form, Land Use and Design.** This element provides the physical framework for development in the city. It establishes policies related to the location and intensity of new development, citywide land use and growth management policies.
- **Mobility and Transportation.** This element includes policies, programs, and standards to maintain efficient circulation for vehicles and alternative modes of transportation. It creates a framework for provision of Complete Streets; identifies future street and bikeway improvements; and addresses trails, parking, public transit, goods movement, and long-term plans for the municipal airport.
- **Parks, Open Space, and Schools.** This element provides an inventory of existing and planned parks, recreation facilities, other open space, and public schools, and defines policies and standards relating to these services and amenities. This element also outlines policies relating to the preservation of open space and natural resources.
- **Public Utilities and Services.** The element addresses the provision of police, fire, wastewater treatment, drinking water, drainage, and solid waste disposal services.
- **Resource Conservation and Resilience.** This element provides strategies for improving critical environmental conditions regarding air quality and greenhouse gas emissions, ensuring long-term water and energy supplies, and strengthening the city for potential future changes in resource supply and climate change. The element complies with the requirements of AB 170[6] for jurisdictions in the San Joaquin Valley to amend their general plans to include goals, data and analysis, policies and feasible implementation strategies designed to improve air quality.
- **Historic and Cultural Resources.** This element provides policy guidance to protect, preserve, and celebrate the city's history and its architectural and cultural heritage.
- **Noise and Safety.** This element addresses the risks posed by geologic hazards, wildland fire, hazardous materials, and flooding. It also discusses emergency response, safety service response standards, and evacuation routes. The element also includes policies and standards to limit the impacts of noise sources throughout the city. Future noise contours are illustrated in order to facilitate administration of noise policies and standards.
- **Healthy Communities.** This element focuses specifically on subjects not fully discussed in other elements, in particular the relationships between the built, natural, and social environments, community health and wellness outcomes, youth leadership and community engagement, healthy food access, community gardens and urban agriculture.

[6] Assembly Bill 170, Reyes (AB 170), was adopted by State lawmakers in 2003, creating Government Code Section 65302.1.

- **Housing Element Consistency.** This chapter provides information regarding the consistency between the General Plan and the adopted Housing Element, including a matrix showing how the General Plan consistently implements the requirements of the Housing Element.
- **Implementation.** The Implementation element provides an implementation and monitoring program for this General Plan.

Structure of the Elements

Each element of the General Plan typically contains:

- *Introduction* to provide a short overview of the element;
- *Goals* of the General Plan supported by the particular element;
- *General background* information and supporting narrative to provide context;
- *Objectives* that provide intermediate steps toward attaining the goals;
- *Policies* to guide decision making and commitment to particular actions to implement the objectives, which may include existing programs or call for the establishment of new ones; and
- *Commentary or Policy Guidance* to further discuss and clarify certain policies.

The Housing Element Consistency chapter varies somewhat from this format by focusing on how the General Plan's goals, objectives and policies are consistent with the existing Housing Element, which has already been adopted and is incorporated into this Plan. The Implementation Element also has a different format to show how each policy has an implementation measure, including an action, procedure or program or technique that carries out the policy.

Together, the goals, objectives and policies articulate a vision for Fresno that the Plan seeks to achieve. They also provide protection for the city's resources by establishing planning requirements, programs, standards, and criteria for project review.

Understanding the Plan

To help understand how this Plan is intended to be applied, consider the following when reading this document:

- **Mandatory and Flexible Directives:** Terms in goals, objectives, policies and implementation measures such as "shall," "must," and "require" signify an unequivocal directive, which shall be narrowly construed. Any other language such as "may" or "should" signifies a less rigid directive, to be implemented in the

absence of compelling or contravening considerations. Unless clearly identified as an unequivocal directive, terms should be interpreted to be a flexible directive.

- **Consistency:** Goals, objectives, policies and implementation measures should not be interpreted so broadly or narrowly such that they become inconsistent with one another or the law. One way to do this when reviewing the Plan is to mentally add "as otherwise consistent with the Plan and as authorized by law" to every policy or other item.

- **Priorities:** Some objectives, policies, etc., may identify certain items as being a priority or prioritized, and sometimes multiple priorities are identified for the same subject matter. A "priority" in an unequivocal directive means the topic must be considered, along with any other priorities for the same subject matter, before a decision is reached. It does not require precedent over another item or priority for the same subject matter.

- **Commentary:** The commentary in italics following certain goals, objectives and policies is not part of the goal, objective or policy itself, but is instead advisory and informational narrative intended to further discuss and clarify the goal to help guide the objectives of the General Plan. The same applies to commentary in italics following certain objectives and policies, which is not part of the objective or policy, is instead advisory and informational narrative intended to help guide the understanding and relevancy of the General Plan.

- **Narrative:** Any discussion that is not a goal, objective, policy or implementation measure is considered to be narrative. Narrative includes background information, pictures, illustrations, italicized commentary and other discussion to provide basic context. Often the narrative may contain illustrations or discussions generally explaining certain principles or concepts. These are not requirements of the General Plan, unless otherwise the items are independently required by a goal, objective, policy or implementation measure.[7] Other than the discussion in this "Understanding the Plan" section, narrative cannot be used to vary, expand or restrict any goal, objective, policy or implementation measure.

- **Glossary:** The Glossary defines terms and phrases. The narrative can potentially expand the context of terms and phrases to the extent the narrative is not inconsistent or acts to otherwise vary, expand, or restrict any goal, objective, policy or implementation measure.

- **Language of Approximation:** Terms such as "about," "approximately" or "roughly" are intended to be utilized flexibly, and should not be read to either represent a

[7] The following Figures and Tables, as may be amended from time to time, are policies – even if not specifically referenced by an individual policy: Figure LU-1; Figure LU-2; Figure MT-1; Figure MT-2; Figure MT-4; Figure POSS-1; Figure POSS-2; Figure POSS-3; Figure NS-2; Figure NS-3; Figure NS-4; Figure NS-5; Figure NS-6; Figure NS-7; Figure IM-1; Figure IM-2; Table 3-1; Table 3-3; Table 4-1; Table 9-2; Table 9-3; Table 11-3; Table 11-4; Table 11-5; Table 11-7; Table 11-8; Table 11-9; Table 11-10; Table 11-11; Table 11-12; Table 11-13; Table 12-1.

specific amount or to mandate ratios or a particular margin of variation. Further, such terms should not be read to imply a specific timeline requirement for implementation of goals and objectives. Rather, all goals and objectives are generally expected to be complete at or near the close of the General Plan Horizon in 2035.

- **Titles:** Titles have sometimes been provided for programs, regulations, ordinances or other items anticipated to be approved at some future date. These titles are for informational purposes only, and a different title may be used if the program or ordinance otherwise meets the underlying intent of the goal, objective, policy or implementation measure.
- **Reasonableness:** The Plan should be read to provide the City with the greatest discretion as to what is reasonable or appropriate under applicable law. For example, if a policy requires the City to take action "as resources are available," the City is solely responsible for determining what is reasonably available. In making this determination, the City may look at a variety of factors including this Plan and public health, welfare and safety.

Administration of the Plan

The General Plan is intended to be a dynamic document. As such, it may be subject to more site-specific and comprehensive amendments over time, including mandatory amendments to update the Housing Element as required by law, amendments that may be needed to conform to State or federal law passed after adoption, or to eliminate or modify policies that may become obsolete or unrealistic over time due to changed conditions, such as the completion of a task or project, development on a site, or adoption of an ordinance or plan.

Annual Report

It is good planning practice to provide an annual report to the local legislative body on the status of the General Plan and progress in its implementation. This report provides an opportunity to investigate and make recommendations to the legislative body regarding reasonable and practical means for implementing the Plan, so that it will serve as an effective guide for orderly growth and development, preservation and conservation of open-space land and natural resources, and the efficient expenditure of public funds relating to the subjects addressed in the Plan. The report should include a summary of all Plan amendments adopted during the preceding year, as well as a work program for the upcoming year. The work program should outline upcoming projects and any Plan issues that need to be addressed.

All cities must submit an annual progress report to the State on Housing Element implementation, which must include an analysis of the progress in meeting the city's

share of regional housing needs and local efforts to remove governmental constraints to maintenance, improvement, and development of workforce housing (California Government Code Sections 65583, 65584). City staff will continue to submit the Housing Element report to the State annually.

1.5 PLANNING FACTOR FIGURES

On the following pages are figures (Figures 1-4 through 1-14) showing key planning factors that guided policy development for this General Plan, including existing land use, socioeconomic factors, and housing ownership.

Figure I-4:
Existing Land Use

- Rural Residential
- Single Family Residential
- Multiple Family Residential
- Commercial & Office
- Public/Institutional
- Industrial
- Parks
- Golf Course
- Open Space/Agriculture
- Vacant

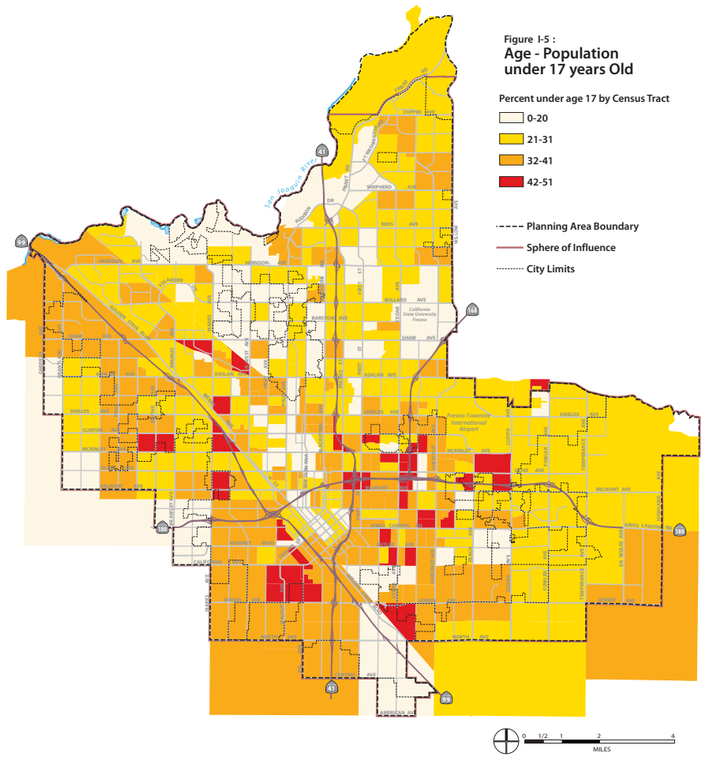
- Planning Area Boundary
- Sphere of Influence
- City Limits
- SEDA Boundary

Fresno-Clovis Regional Wastewater ReclamationFacility

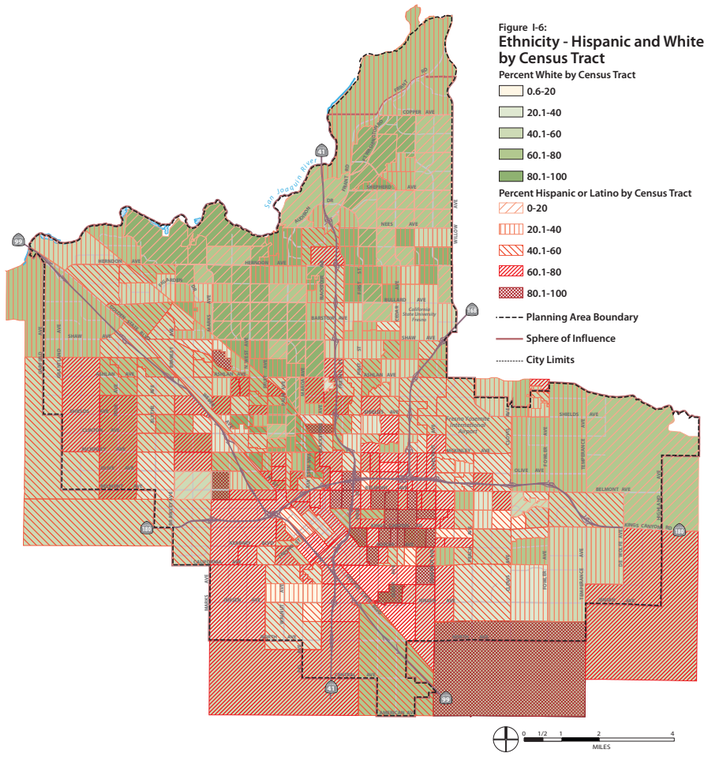
0 1/2 1 2 4
MILES

Source: City of Fresno, DARM Dept., 2010; Primary Land Use, Fresno County, 2010.

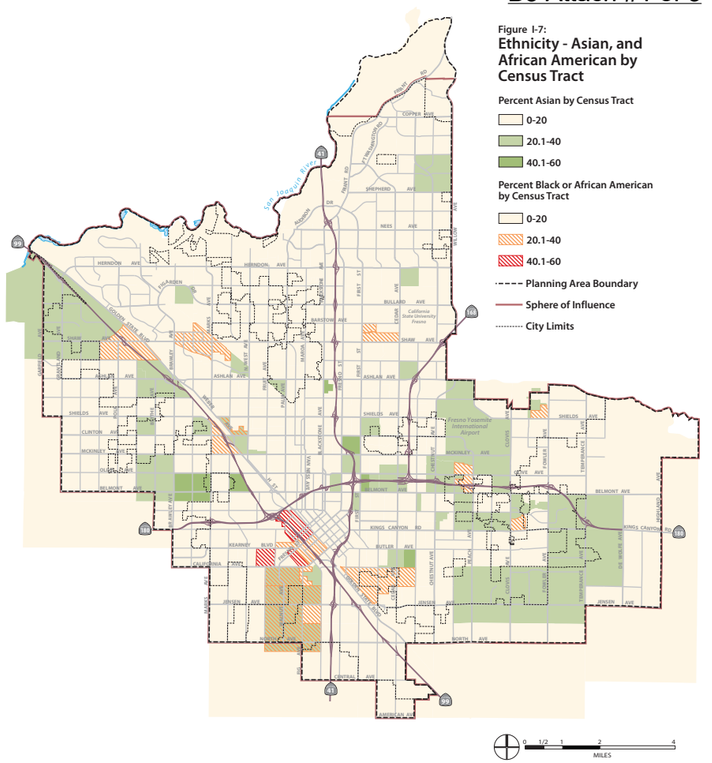
This page intentionally left blank.



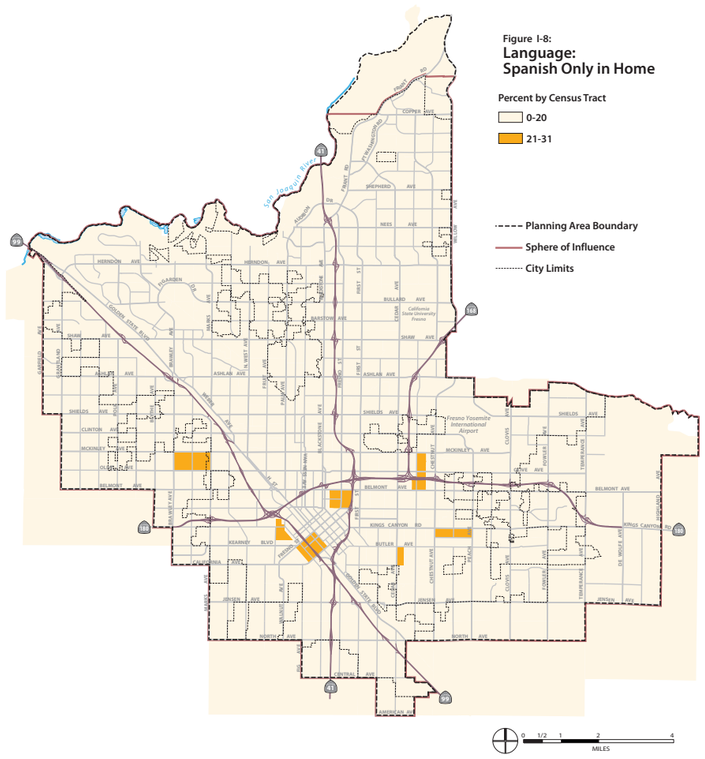
Source: U.S. Census American Community Survey 2008-2012



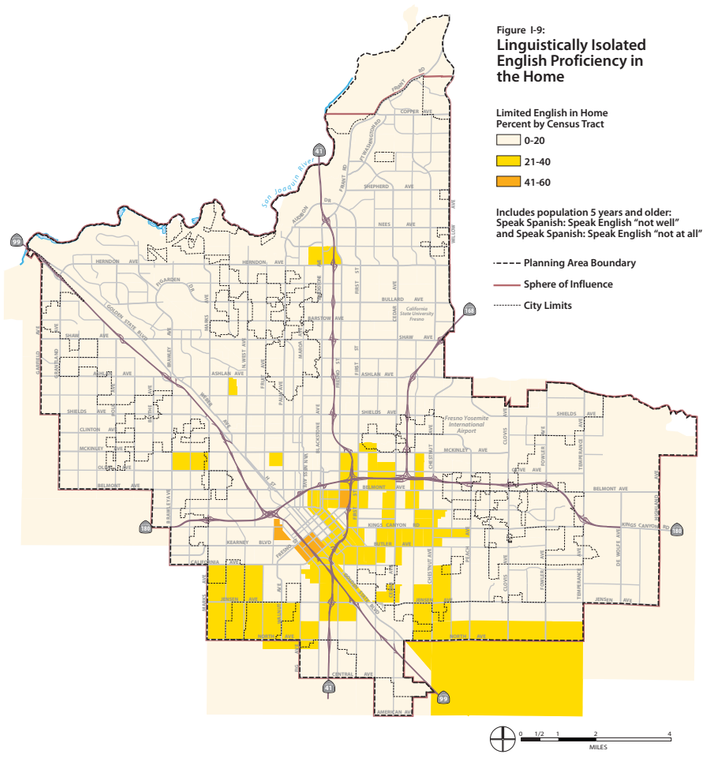
Source: U.S. Census American Community Survey 2008-2012



Source: U.S. Census American Community Survey 2008-2012

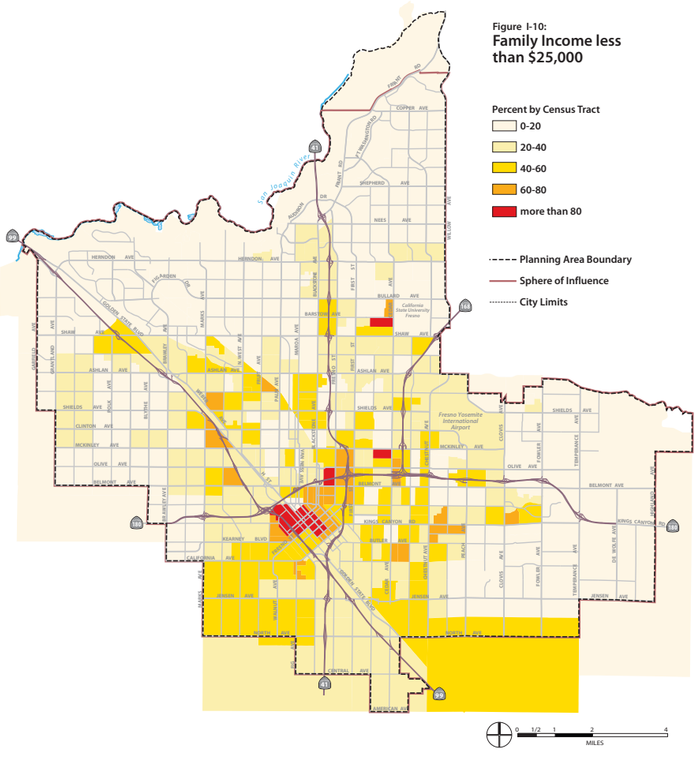


Source: U.S. Census American Community Survey 2008-2012

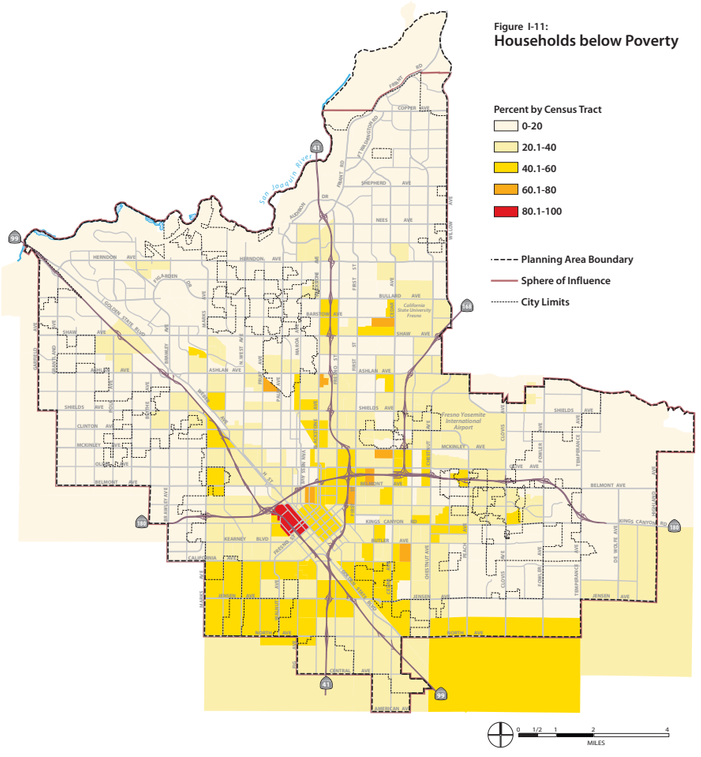


Source: U.S. Census American Community Survey 2008-2012

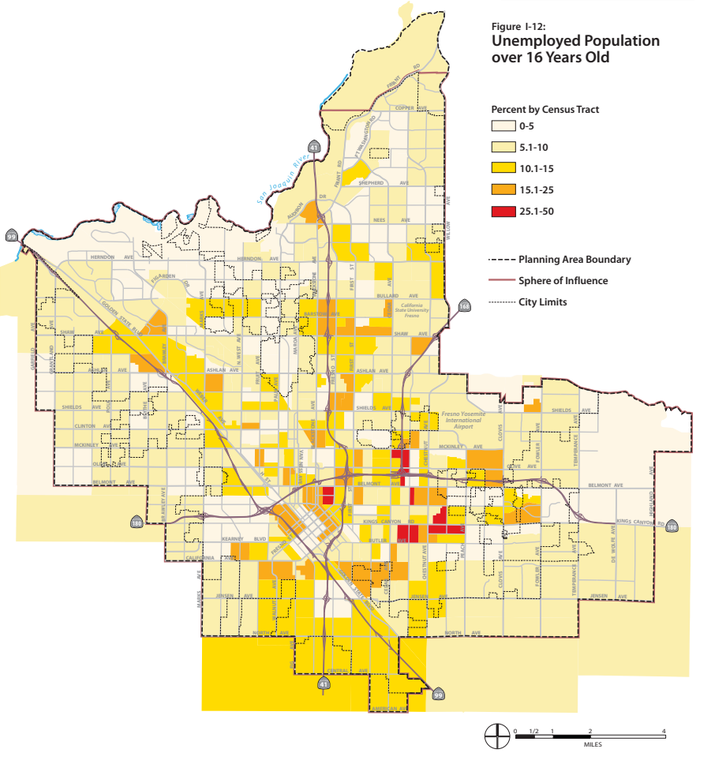
This page intentionally left blank.



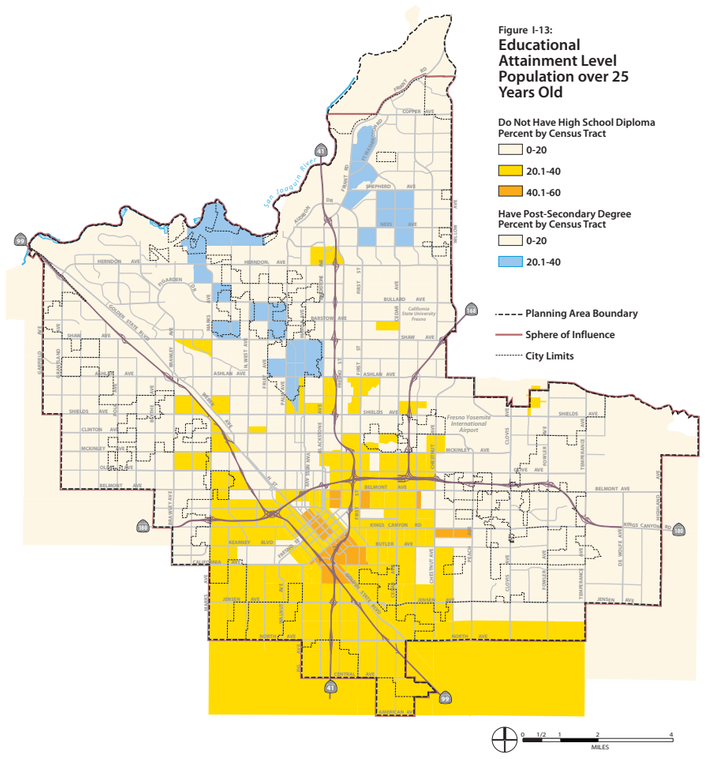
Source: U.S. Census American Community Survey 2008-2012



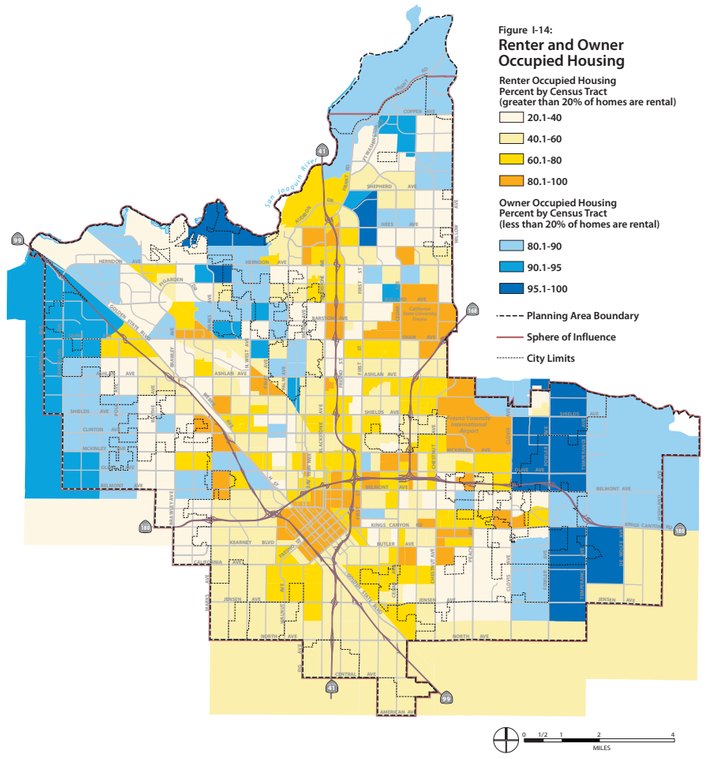
Source: U.S. Census American Community Survey 2008-2012



Source: U.S. Census American Community Survey 2008-2012



Source: U.S. Census American Community Survey 2008-2012



Source: U.S. Census American Community Survey 2008-2012

This page intentionally left blank.

2 ECONOMIC DEVELOPMENT AND FISCAL SUSTAINABILITY

Fresno's economy plays a crucial role in the physical development of the Planning Area and the City's ability to support implementation of General Plan policies and programs. The City is committed to economic development and fiscal sustainability. In fact, the outcome of many other General Plan initiatives is tied to the city's economic success. More specifically, to further this commitment, this element focuses on improving the business climate, retaining local businesses, developing a high-skilled labor force, attracting new industries, supporting the tax base, and sustaining the City's ability to provide public services for current and future residents.

2.1 INTRODUCTION

Fresno has a substantial array of opportunities to act upon for long-term economic development and job creation potential. These include its strategic geographic location within the California market, world-class agriculture industry, urban water resources, and the ability to capitalize on renewable energy and energy efficiency opportunities, as well as further the initiatives that the Swearengin Administration has put into place. There are, however, a growing number of severe conditions and challenges that must be addressed and successfully overcome to realize Fresno's future economic potential and ensure fiscal sustainability over the long term. These opportunities and issues represent major themes for this element and will involve:

- Responding to the city's relatively low household income and high rates of poverty, and the related importance of education and workforce development for raising income and quality of life in the long term;
- Expanding the export oriented industry sectors that build on Fresno's inherent strengths, such as agricultural and food value industries, and the potential of leveraging key assets, such as the Downtown, California State University, Fresno, and similar institutions of higher education;
- Understanding the relationship between the City's fiscal health, capacity for action, and economic development policies in the General Plan; and
- Formulating appropriate economic development policies to support job creation for all Fresno residents.

This General Plan recognizes that solutions to current fiscal problems must be structural and long-term, as opposed to merely deferring costs or increasing debt. The policies in this element are intended to support the City's fiscal health and the long-term viability of employment, housing, education, civic and cultural programs in Fresno - all of which require the delivery of efficient and effective municipal services from the City of Fresno.

Entertainment and recreation facilities, such as Chukchansi Park pictured above, are some of the key assets that play an important role in improving the quality of life in Fresno and the economic vitality of the city. Photo: Don Davis

Relationship to City of Fresno General Plan Update Goals

The objectives and policies in this element support a wide range of General Plan goals. In particular, this element supports the following General Plan goals:[1]

1. Increase opportunity, economic development, business, and job creation.

   Use urban form, land use, and Development Code policies to streamline permit approval, promote local educational excellence and workforce relevance, significantly increase business development and expansion, retain and attract talented people, create jobs and sustained economic growth, strategically locate employment lands and facilities, and avoid the over-saturation of a single type of housing, retail or employment.

12. Resolve existing public infrastructure and service deficiencies, make full use of existing infrastructure, and invest in improvements to increase competitiveness and promote economic growth.

[1] The commentary in italics following certain goals is not part of the goal itself, but is instead advisory and informational language intended to further discussion, clarify the goal, and help guide the objectives of the General Plan.

Emphasize the fair and necessary costs of maintaining sustainable water, sewer, streets, and other public infrastructure and service systems in rates, fees, financing and public investments to implement the General Plan. Adequately address accumulated deferred maintenance, aging infrastructure, risks to service continuity, desired standards of service to meet quality-of-life goals, and required infrastructure to support growth, economic competitiveness and business development.

Key Economic Factors

The city and surrounding areas are expected to continue experiencing high rates of population growth over the planning horizon of this General Plan, although this growth is expected to be at half of the rate as that of the past 30 years. The overall county population, including that of the city, is projected to increase in age and become increasingly Hispanic or Latino in composition, trends that create new leadership opportunities and economic possibilities.

Fresno's population has low rates of income in comparison to the rest of California. In fact, Fresno has a poverty rate twice as high as the State and 14 percent higher than Fresno County. Its extreme poverty (family income less than $10,000) rate is more than double that of the State. In addition, the percentage of families receiving food stamps is significantly higher in the city than that of the state. Table 2-1 provides details.

Related, the city also has a relatively low level of education attainment, as shown in Table 2-2, with fewer than six percent of the labor force holding graduate or professional degrees, about half the statewide rate. The proportion of the labor force with bachelor's degrees is about two-thirds that of the State average. In addition, one quarter of the city's labor force never graduated from high school. This is 25 percent higher than the State percentage. These characteristics are reflected in Fresno's low median household income and per capita income that are both 35 percent below the State average. These linked factors impact the City's main revenues—sales tax and property tax—and directly affect economic development. To put it in actual dollars, per capita, city residents have $9,910 less to spend yearly compared to their State counterparts, and $995 less than Fresno County residents. Per family, the amount is $23,172 less per year compared to their State counterpart.

TABLE 2-1: INCOME COMPARISONS

Family/Per Capita Income	City of Fresno	Fresno County	California
Median Family Income	$44,286	$49,177	$67,458
Families with Income Below Poverty Level	25.1%	22.0%	12.3%

Family Income Less than $25,000	30.2%	26.4%	16.6%
Family Income Less than $10,000	10.0%	8.4%	4.6%
Families with Food Stamp Benefits	21.2%	18.4%	8.3%
Per Capita Income	$18,666	$19,621	$28,576

Source: U.S. Census 2010-12 American Community Survey

TABLE 2-2: EDUCATION LEVEL COMPARISONS

Education Level	City of Fresno	Fresno County	California
Less than 9th Grade	14.3%	16.3%	10.3%
9th to 12th No Diploma	11.2%	10.7%	8.6%
No High School Diploma (Total)	25.5%	27.0%	18.9%
High School Diploma or Equivalent	23.6%	22.8%	20.8%
Bachelor's Degree	13.7%	13.0%	19.4%
Graduate or Professional Degree	5.7%	6.1%	11.1%

Source: U.S. Census 2010-12 American Community Survey.

Labor Force

Fresno's labor force as a percentage of the total population remained relatively steady over the past decade, then began slightly declining after the 2008 recession, indicating that many adults have been dropping out of the work force or are no longer searching for work. At the same time, the city has suffered job losses and watched its unemployment rate markedly increase, which has contributed to discouragement amongst the labor force. However, as of September 2014, the unemployment rate in the City has fallen to 8.9 percent.

A contributing factor to Fresno's declining labor force appears to be the mismatch between available jobs and the skills of the available labor force. The recent economic downturn has not had an equal effect on all sectors of the economy. In many cases, the sectors suffering the most losses are those that require low-skill labor—jobs that fit the educational attainment of many of Fresno's workers. A February 2011 article in the *Washington Post* reported that while Fresno's unemployment was then at 16.9 percent, "managers at the 7,000-employee Community Medical Centers say they cannot find enough qualified technicians, therapists, or even custodians willing and able to work with medical waste. The situation is much the same at Jain Irrigation, which cannot find all the workers it wants for $15-an-hour jobs running expensive machinery that

spins out precision irrigation tubing at 600 feet a minute, 24 hours a day, 7 days a week."[2]

One positive aspect of this trend is that the city is still adding jobs that pay living wages, are career-oriented positions, and require specialized skills or training. Ultimately, it is precisely these types of jobs that will buoy the city's long-term economic base. At the same time, much of the current workforce is not equipped for these positions, pointing to the need for a significant and long-term focus on workforce training and education. Fresno Regional Workforce Investment Board, California State University, Fresno, Fresno Pacific University, State Center Community College District (SCCCD), West Hills Community College District (WHCCD), the local school districts, and the many private technical and educational institutions are among the region's most important assets. Together, they are providing training beyond high school to almost 100,000 Fresno Area residents each year (See Table 2-3). The Fresno Area is the "education capital" of the Central San Joaquin Valley because of its education and training infrastructure. These institutions are doing a significant amount to address the region's "skills gap" issue, but this must continue to be the area's top economic development priority for the next decade or more.

TABLE 2-3: VALLEY HIGHER EDUCATION INSTITUTIONS

Institution	Number of Students
California State University, Fresno	21,728
Fresno Pacific University	2,649
State Center Community College District (SCCCD)	
Fresno City College	33,763
Reedley College	8,839
Willow International	8,155
Madera Center	4,118
Oakhurst	1,033
SCCCD Sub Total	55,908
West Hills Community District (WHCCD)	
Coalinga	3,830
Firebaugh	2,860
Lemoore	7,557
Lemoore/NAS	170
WHCCD Sub Total	14,417
Grand Total	**94,702**

Source: Fresno Works. *Expression of Interest for CAHSR, Heavy Maintenance Facility*. 15 January 2010.

[2] Fletcher, Michael. "Why does Fresno have thousands of job openings – and high unemployment?" *The Washington Post*. 2 February 2011.

Jobs and Employment

The growth potential for Fresno's major employment sectors was an important economic factor used for programming land use and development under this General Plan. Table 2-4 shows employment projections by economic sector for the city as well as Fresno County.

The current and future health of the real estate market to support those sectors is important, as well as the fiscal impact of those uses on the City's budgetary ability to maintain high levels of services and overall quality of life for residents. Generally, jobs in health and professional services, educational services, manufacturing (including water technology and food manufacturing), information technology, government, and finance are relatively high-income jobs that support a growing economy. In contrast, lower skill jobs in retail, wholesale trade, and hospitality services may also support the economy, but are characterized by much lower pay scales.

TABLE 2-4: ECONOMIC SECTOR COMPARISONS

Economic Sector	City of Fresno	Fresno County	Difference +/-
Agriculture	5.9%	10.7%	4.8
Construction	5.3%	5.7%	0.4
Manufacturing	6.8%	6.8%	0
Wholesale trade	3.7%	4.1%	0.4
Retail trade	12.0%	11.0%	-1.0
Transportation and warehousing	5.1%	5.1%	0
Information	1.5%	1.4%	-0.1
Finance and insurance	6.1%	5.1%	-1.0
Professional, scientific, and management	9.1%	8.4%	-0.7
Educational services, and health care	23.9%	22.7%	-1.2
Arts, entertainment, and food services	10.1%	8.4%	-1.7
Other services, except public administration	5.1%	4.8%	-0.3
Public Administration	5.6%	5.8%	0.2

Source: U.S. Census 2010-2012 American Community Survey.

Direct and indirect employment in production agriculture and finished food products remains the economic base of the San Joaquin Valley—the most productive food and beverage producing region in the country and a critical area for the nation and world's food supply. Fresno County is at the heart of the Valley and still sees a significant number of its jobs in the agricultural sector—both in direct farming and in related food processing, storage, and shipping. Total farm employment in Fresno County in 2013 was 49,200 jobs.[3] While employment in this industry is projected to decrease to approximately 11.7 percent of total jobs by 2020, because of its job multiplier effect, the

[3] State of CA. Employment Development Department, Labor Market Information, Fresno County, 2013.

sector still retains its importance and is expected to remain an important driver of related industries moving forward.

A balance of jobs across all industry sectors throughout the county ensures that jobs are offered across the income spectrum and support all aspects of a healthy local economy. The strong industries identified above—government, healthcare, and others—provide a range of middle-class, living wage jobs. Table 2.5 shows a range of other industries that generally pay high salaries and provide opportunities for career advancement are Financial Activities (3.7 percent of jobs in 2010), Information (0.9 percent), Education Services and Healthcare (11.2 percent), Professional and Business Services (7.3 percent), and Manufacturing (6.6 percent). While this data is for the entire county and these sectors do not currently represent a very high percentage of total jobs, except for manufacturing and financial activities, all are projected to increase its share over the next decade. Since the large majority of the county's job base is located in the city, this is an encouraging statistic for the city. Fresno's challenge will be to continue to attract high-skilled workers—and to improve training of workers already here to be able to meet the demands of these jobs.

Fresno still must seek to diversify its economic base into other sectors to meet job creation goals, keep revenue local, and fully serve the population. One of the primary factors for doing this, and a critical contingency in expanding existing industries and developing new ones, is the education and skill level of the local workforce. The General Plan includes policies and implementation strategies that support expanding economic activity, but the quality and wage levels of the jobs will be related to the capacities and competencies of the workforce to meet the demands of business and industry.

TABLE 2-5: EMPLOYMENT PROJECTIONS BY TYPE, FRESNO COUNTY[1]			
Total	Annual Average Employment		Growth
	2010	2020	
Total Employment	364,200	423,100	58,900
Self-Employment	28,400	30,900	2,500
Unpaid Family & Private Household Workers	10,300	11,700	1,400
Total Farm	46,000	49,400	3,400
Total Nonfarm	279,500	331,100	51,600
Industry	Percent of Total Employment		% Change
	2010	2020	
Construction	3.3%	4.4%	1.1%
Manufacturing	6.6%	6.2%	-0.4%
Trade, Transportation, and Utilities	15.1%	15.5%	0.4%
Information	0.09%	0.09%	0%
Financial Activities	3.7%	3.5%	-0.2%
Professional and Business Services	7.3%	8.0%	0.7%
Education Services, Health Care, and Social Assistance	11.2%	12.0%	0.8%
Leisure and Hospitality	7.4%	7.9%	0.5%
Other Services	2.7%	2.7%	0.0%
Federal and State Government	5.8%	5.2%	-0.6%
Local Government	12.6%	11.9%	-0.7%
Subtotal	*76.7%*	*78.2%*	*1.5%*
Self-Employment, Family Workers, and Private Household	10.6%	10.1%	-0.5%
Total Farm	12.6%	11.7%	-0.9%
Subtotal	*23.3%*	*21.7%*	*1.6%*
Total	**100.0%**	**100.0%**	

1. Totals may not sum precisely due to rounding.

Source: California Employment Development Department, 2013.

Obstacles to Job Creation

The 2012 Fresno County Employment Study included input from 4,937 area employers within seven industry and two occupational clusters and documented numerous obstacles that employers identified as constraints to doing business, expanding business, and creating more jobs. Twenty-four percent of respondents cited "market conditions" as an impediment, including a tight banking climate, low sales, and customers' difficulty in accessing financing. Labor availability and cost was identified by 18 percent of respondents, including lack of qualified workers for technical and high-skill positions, high turnover, job seekers' poor skills and lack of training, lending support to some of

the trends described earlier surrounding the labor force. Regulatory constraints were identified by 11 percent of respondents, including issues such as the permitting process, regulations continuing to change with no efficient way to stay informed, difficulty attaining air quality and emissions standards, and licensing and certification requirements. Sixteen percent felt constrained by the cost of doing business, mentioning cost of compliance, and costs associated with taxes, workers' compensation, healthcare, utilities, and labor.

Opportunities for Action

This General Plan seeks to improve Fresno's overall economic competitiveness by supporting employment opportunities for residents and maintaining and improving community livability. Expanding, retaining, attracting and creating businesses is one of the greatest challenges facing the city today.

Providing for Professional, High-Paying Jobs

There is a connection between the education level of the work force and our ability to support the economy required for resilient land use and a healthy built environment. The lack of high-tech, professional, high-paying jobs is leading to the departure of educated people from the city. Young people often leave Fresno for higher education or career opportunities and do not come back. Recent efforts to stem this outflow and retain local talent have been successful, including the Creative Economy Council, Creative Fresno, FLYP (Fresno's Leading Young Professionals), Creative Fresno's Boomerang Project, and Bitwise, a private business incubator.

Traditional and Emerging Industries

Industries well-suited to Fresno's location and workforce include agricultural technologies, supply chain management, agricultural services (brokering and export), food innovation and processing facilities, water technology, and other precision manufacturers. A recent boost in medical industries is a trend worth supporting, as is the developing concentration of green industries in the region, such as solar, biofuels, recycling and other forms of alternative energy. Another bright spot are tech start-ups. Bitwise Industries opened in the summer of 2013, and as of 2014, its 8,000 square-foot building is filled with 24 small tech companies on its first floor, with 26 more on a waiting list. Their Geekwise Academy on the second floor has trained over 100 students in the basics of software coding and website development. From 2009 to 2014, the annual competition "59 Days of Code" provided an opportunity for Valley coders to access a world-class network of advisors to help with every aspect of business, to directly connect to seed and venture capital, and to show off the creative programmers located here in Fresno and the San Joaquin Valley.

The revitalization of Downtown Fresno is anticipated to boost the economic health and vitality of the city. Photo: Fresno Bee

Downtown Revitalization: A Positive Impact

Ongoing Downtown revitalization efforts have potential for a significant positive impact on the city's economy. A healthy and vibrant Downtown boosts the economic health and quality of life in a community. Specifically, it helps the city attract and retain "knowledge workers" who prefer a vibrant, urban center for their live/work/play spaces. A revitalized Downtown creates jobs, incubates small businesses, reduces sprawl, protects and improves property values, and increases the community's options for goods and services. In the case of Fresno, it will also increase the property values of currently vacant or underutilized land, thereby increasing tax revenues. In other vibrant cities, downtowns are a symbol of community pride and history.

As shown in Table 2-6, the magnitude of reinvestment in Downtown is projected to account for about 31 percent of the city's total office growth, 21 percent of total retail growth, and 14 percent of total housing unit growth within the 2035 planning horizon for the General Plan. This General Plan anticipates and supports the revitalization of Downtown by targeting infill development in Downtown and along the major corridors within the city. It is anticipated that a subsequent community plan, such as the proposed Downtown Neighborhoods Community Plan and the Fulton Corridor Specific Plan, may further refine and implement a strategic development and regulatory plan for Downtown to support this projected growth.

TABLE 2-6: LAND USES IN 2035 - PERCENTAGE OF FLOOR AREA IN DOWNTOWN AND THE BROADER PLANNING AREA

Development Type	Downtown	Planning Area Outside Downtown
Office	31 %	69 %
Retail	21 %	79 %
Residential	14 %	86 %

Source: City of Fresno.

Role of the City

Overall, Fresno possesses a number of assets that make it attractive to business and industry. These include its central location on the West Coast and access to major transportation corridors; airports; affordability; good neighborhoods; and training and educational opportunities that occur at institutions such as California State University, Fresno. The key to capitalizing on these assets is to market them effectively.

Looking ahead, the City needs to continue to take an active role in supporting local businesses and expanding and attracting both traditional and emerging industries. Cities throughout the Western U.S. are competing for employers. So, Fresno needs to be aggressive in marketing itself and be accommodating to businesses, with development permitting processes that are easy to navigate, streamlined, predictable, and priced competitively with other comparative cities. One way to support expanding industry in Fresno is to identify and reserve large areas of land with state route and railroad access for industrial development and provide infrastructure to these areas: water, sewer, roads, and Information Technology (IT) capability, including fiber connectivity.

Priorities set in the General Plan include creating new, large employment areas targeted for development, as shown on Figure LU-1: Land Use Diagram. There are an estimated 3,625 acres of vacant land in six clusters within the planning area, out of a total of approximately 5,000 acres of vacant industrial and business park designated land, which are being assessed as to the cost of major street and utility infrastructure improvements. Existing industrial areas also need to be cleaned-up; in some cases, physical and technology infrastructure need to be improved and landscaped so there is better "curb appeal" and productivity capabilities. This will help attract research and development and other professional industries.

Defining an Economic Development Strategy

A coordinated economic strategy is essential to support the City's economic development objectives. Such a strategy includes initiatives targeted to specific economic sectors of the local economy, a managed program of fiscal development,

strategic public improvements, and a balanced approach to land use, consistent with the goals, objectives and policies of the Plan.

In 2010 and again in November 2013, Mayor Swearengin outlined the City's economic development plan to the City Council. The plan notes the difference between "primary" and "secondary" industries in the Fresno region. Primary industries are defined as those that export products and services outside the local economy and, as a result, have the highest job multiplier effect and best economic impact on the city. Secondary industries are defined as "people serving" industries (e.g. residential development, retail, etc.) that generate a level of economic activity, but do not tend to drive the major improvements needed in the local economy, such as lowering unemployment or improving wage levels.

The City's economic development plan recognizes that different strategies are needed to support differing types of industry segments, whether they are "exporting" or "people serving." Table 2-7 provides a useful description of targeted, export-oriented businesses, which are the primary focus of the City's economic development plan.

TABLE 2-7: SCREENING CRITERIA FOR TARGETED INDUSTRIES

Economic Characteristics	Business Firm Characteristics
Above average wages	High value added; may include training for workers
Employs local residents	Labor-intensive
Basic sector or primary engine of growth[1]	Purchases local goods and services
Labor or service driven	Requires minimal public investment
Large investment per employee[2]	

1. Basic sector and primary growth businesses typically generate secondary uses and are export oriented. They cater to the region, rather than just the local market. For example, a company manufacturing automobiles would require suppliers and distributors (thus generating secondary businesses), while a car dealership is local serving and generates few (if any) secondary uses. Earnings generated are forwarded outside the region.
2. Businesses with larger local investment tend to be more permanent.

Source: Dyett & Bhatia, 2014.

The components of the City's economic development plan include:

- **Strategies to Support the Expansion of "Export Oriented" (Primary) Industries**
    - *Preparation of Industrial Land and Infrastructure.* Activities include prioritizing industrial land in the General Plan; ensuring the City's water, wastewater and transportation capital improvement plans are aligned with servicing targeted industrial parts of the city; and supporting the private development of industrial parks, particularly with a focus on providing on-site, affordable, clean and renewable energy to the park locations. Financing for infrastructure

will need to be secured, and major public infrastructure improvements can be made to achieve "shovel ready" sites that will attract desired and targeted industry and business park uses.

- *Industrial Business Expansion and Retention.* This is the "bread and butter" of a solid economic development program for any City. The City of Fresno has lacked regular communication with its major industrial businesses and, as a result, has missed opportunities to support the expansion of our existing industrial businesses. The City has now begun a communications program to make contact with industrial firms in the city to let them know of incentives that exist to expand their operations in Fresno. This effort was initiated on a pilot basis in March 2013 and has already yielded several expansion opportunities. If the City does nothing else in terms of economic development, this outreach to our existing industrial businesses must continue. It will most certainly reap opportunities for business expansion and job creation.

- *Incentives.* Incentives for industrial expansion are difficult to come by in the State of California. However, the City of Fresno collaborated with Pacific Gas & Electric to establish a very powerful incentive in the Enhanced Economic Development Rate approved by the California Public Utilities Commission in early 2014. The incentive can be used to support business expansion, retention, and location. In addition, the City of Fresno has adopted an impact fee waiver for industrial development within city limits, which provides another tool to incentivize business expansion. Lastly, the State of California announced in April 2014 the *New Employment Credit* (NEC), which is a hiring credit for businesses in California communities with the highest rates of unemployment and poverty. Fresno was selected as one of the five Pilot Areas for this tax credit.

- *Integrating the "Food Value Chain."* Following the example of several agricultural communities elsewhere in the state, the City will be taking its industry targeting one step further to capitalize on its strategic edge in agricultural-related employment. The idea is to more closely integrate businesses involved in food production, processing, storage, distribution, and marketing by working with current and potential employers to identify shared needs and resources. This will help support the expansion of Fresno's existing food "cluster" and the attraction of new businesses.

- *Business Trade Show.* An early initiative to further enhance Fresno's food related industry is the launch of a trade show to support local food producers and manufacturers. Known as the Fresno Food Expo, the trade show attracts hundreds of buyers from retail, wholesale, and industrial markets all over the United States and several international locations. Now in its fourth year, the Fresno Food Expo has grown each year and provides area businesses the opportunities to pitch their products to some of the biggest food buyers in the

world. As the Fresno Area food manufacturers are successful in growing their businesses and expanding their customer bases, the City of Fresno benefits from the additional jobs those businesses will create.

- *Export Commission.* The City's economic development plan also calls for the creation of an "export commission," which would be tasked with helping local businesses gain access to export markets they are not currently serving. This initiative is in development and will rely on involvement from the business community and local economic development organizations to be successful.
- *Investing in Human Capital: Workforce Development and Adult Education.* The City's economic development plan recognizes the critical importance of workforce development and adult education to support economic development. The City works with the Adult Education Task Force, the Fresno Housing Authority, the Fresno Regional Workforce Investment Board, the Fresno County Economic Opportunities Commission, area school districts and community colleges, and local universities on a number of initiatives, including Learn2Earn to promote the expansion of adult education and job training.
- *Efficient and Effective Development Processes.* The City of Fresno has a direct role in how efficiently and effectively development applications are processed in the City. While a number of agencies and utilities are involved in approving and processing development within the city limits, the City of Fresno is the lead agency on the process and, as a result, can either add value to industrial and other types of development with its application process, or create road blocks that hinder job creation. Ensuring an efficient and effective development process is a key strategy for supporting the expansion of both "export oriented" industries, as well as "people serving" industries. The Business Friendly Fresno (BFF) initiative is aimed at providing high quality customer service for development applications. Business Friendly Fresno was initiated in October 2013 with the first major report from the work delivered to the City Council in summer 2014. While there is much work to be done to ensure the successful implementation of the BFF work, significant changes are under way.

- **Strategies to Support the "People Serving" (Secondary) Industries**

Several of the strategies listed above as being a support to exporters actually also benefit "people serving" businesses and industries in Fresno, namely Workforce Development and Adult Education and establishing Efficient and Effective Development Processes. In addition, the City's economic development plan includes the following strategies that are specifically focused on supporting retail and real estate-related industries.

- *Development Code Changes.* In conjunction with the General Plan update in 2014, the City has conducted a comprehensive review of its development code. In that process, several opportunities to streamline CUP processes for retail establishments have been identified.
- *Buy Local Initiative: Small, Local, and/or Owned by Historically Underrepresented Groups.* The City's economic development plan includes a focus on supporting small and local businesses as well as those that are owned by historically underrepresented groups, including women and people of color. Planned efforts include providing City Hall procurement briefings to ensure these entities know about opportunities to bid on City projects. The City also offers an excellent certification program for small businesses and businesses owned by women and minorities in accordance with the United States Department of Transportation Disadvantaged Business Enterprise Program. Lastly, the City has committed to tracking progress on diversifying its supply chain and reporting those efforts to the public.
- *Infill & Revitalization.* A major focus of the City's economic development plan includes supporting and incentivizing investment in parts of the city that have experienced significant decline and neglect over the last 50 years. This is an important aspect of the City's economic development plan, not just because of the importance of improving sales and property tax revenues in distressed parts of the city, but because attracting and retaining the human capital needed to compete in a knowledge-based economy depends on the creation of an attractive, urban environment. Local work by the Creative Economy Council and Creative Fresno, along with national and international publications, all point to the trend of young, creative professionals and "empty nest" professionals (the fastest growing segments of the population with discretionary income), desiring walkable, mixed-use urban neighborhoods.

The General Plan objectives and policies are a tool the City uses to implement this part of its economic development plan. The City recognizes that much work has to be done in order to see investment flow back into the established neighborhoods south of Herndon Avenue, along the Bus Rapid Transit (BRT) corridors, and in Downtown. There are clearly major barriers to investment in these parts of the city; if there weren't, then there would already be investment dollars flowing to these neighborhoods. The changes recommended in the Fulton Corridor Specific Plan, Downtown Neighborhoods Community Plan, General Plan Update, Downtown Development Code, and Development Code are intended to line up the City's policies and zoning code to create a better environment for investing in older parts of the city. Furthermore, the incentives described in this plan and in the Implementation chapter are designed to help change the investment environment in infill and revitalization parts of our city.

In addition to the above, the City of Fresno's economic development work needs to include expanded efforts in the following areas:

- **Marketing.** Marketing is more than just a mere promotion of place. Marketing can define Fresno's image and increase its visibility to potential investors and the world at large, stressing opportunities for innovation. The City will work to create a stronger web presence and make more information available online (since this is the most economical way of marketing), in addition to the marketing efforts listed under ED-3-b, *Commentary*.
- **Improving quality of life to attract and retain professionals to live in Fresno.** The City will work in partnership with Creative Fresno, FLYP, the arts community, and other business and professional groups to create programs to attract and retain professional class workers to Fresno. This can be accomplished through measures such as ensuring there are enough housing and neighborhood choices for both mid-career and young professionals and their families, partnering with local schools to improve school quality, and ensuring there are enough retail, entertainment, and recreation facilities that cater to families. Additionally, as indicated above, creating land use opportunities for higher intensity development types will attract young professionals (the "creative class") who are more attracted to active urban environments than single family neighborhoods.
- **Developing a strategy for the City's own real property assets.** One of the City's firmest investments is in its own land. Using City-owned property for "catalyst projects" will be a key tool for enabling physical development of a desired type and spurring further development in the surrounding area. The City's economic development strategy will strive to include taking stock of, evaluating the potential of, and planning for its own real estate assets.
- **Working regionally.** The current operating environment for cities is increasingly being impacted by the need to create cooperative processes and solutions to problems region-wide. Because cities do not exist by themselves but always in close proximity to others, many issues are best approached with a "think globally, plan regionally, act locally" mindset. This is especially true for issues that require cooperation with other jurisdictions in the greater metropolitan area, such as traffic flow, unemployment, crime prevention, and air quality. Good practices include keeping communication lines open with peer cities, surrounding and adjacent counties, non-profits and other agencies, as well as participating in regional economic alliances to ensure that the city's needs and interests are adequately represented.

Fiscal Sustainability

The Great Recession wreaked havoc on our nation and its communities over the last five years. The City of Fresno was particularly hard hit as the foreclosure crisis

impacted more families in Central California cities than other cities in the state. The Great Recession revealed long-term, structural imbalance in the City's General Fund, as well as the lack of a cash reserve. As a result of lessons learned from the Great Recession, ensuring fiscal sustainability over the long term is imperative. The City cannot repeat the mistakes of the past. Despite extensive and painful cuts, the most recent five-year projections demonstrate the continuing need for fiscal prudence, including incorporating long-term objectives and policies for fiscal sustainability in the General Plan. Those objectives and policies include: (1) restoring the City's overall financial health; (2) achieving financial targets; (3) ensuring that new development pays its way; and (4) matching ongoing expenditures to ongoing revenues and identifying options to build an adequate reserve. This discussion provides a context and describes the concepts and benefits of fiscal sustainability. The specific Economic Development policies are found in Section 2.2.

Background

The City is at an important juncture in its efforts to control costs and maintain essential public services. Given the effects of the recent economic recession, the long-term structural imbalance of the City's General Fund, and increasing expenses, it is increasingly difficult for the City to deliver services that are critical to the health, safety, and well-being of Fresno residents: police protection; fire protection; street and traffic system maintenance; and maintenance and operation of parks.

In fact, the largest General Fund costs are associated with employee salaries, fringe benefits (including health benefit costs), and pension and other post-employment benefit costs. Eighty percent of the General Fund is dedicated to covering personnel expenses. Currently, essential City services are at a minimum level, and further reductions could have an adverse impact on the overall health and safety of residents. Less-essential City programs have been eliminated or severely curtailed, including parks maintenance and operations that come out of the City's General Fund. Many of these changes are likely for the foreseeable future. Similarly, Fresno's aging utility infrastructure has suffered from deferred maintenance. Utility rates had not been kept current to help cover costs.

The City has sought opportunities to increase revenues, including adoption of Commercial Solid Waste and Commercial Recycling franchises, an increase in the PG&E gas service franchise fee, increased building permit fees, and an aggressive Business License Tax audit program. Local revenues have been weak the past five years and are expected to rebound gradually, while longer-term prospects are stronger, based on the fiscal impact analysis and financial modeling done for the City.

With this in mind, in order for the City to achieve and support long-term fiscal sustainability, the following steps could be included in implementing Objective ED-5: Achieve Fiscal Sustainability and its associated implementing policies:

- **Improve the City's Credit Rating.** The most current five-year projections indicate the City is on track to address its structural imbalance and pay off remaining internal loans. If the City continues down the path outlined in the five-year projections, by 2019, the City will have paid off internal loans, begun to restore public safety services, and have a minimum cash reserve.

  The recent poor financial health of the City has resulted in significant downgrades in the City's bond rating by all major bond rating agencies. Good credit ratings ensure access to debt markets at competitive rates and improve the City's ability to do lease-purchase acquisition of police and fire vehicle replacements and safety equipment. Restoring the City's financial health will depend on the City's ability to achieve positive fund balances in its accounts, have a long-term operating balance in the General Fund, and rebuild emergency cash reserves to levels appropriate for a City with a budget the size of Fresno's. The Reserve Management Act adopted by the City Council in 2011 provides the policy framework needed to ensure that reserves are at appropriate levels and that our credit rating improves. This would include maintaining appropriate financial reserves in Enterprise Funds to provide necessary bond debt coverage ratios and emergency reserves for these essential utilities.

- **Achieve Long-Term Fiscal Sustainability.** In March 2012, the City Council adopted the Fiscal Sustainability Policy, which provided a path for the City to achieve financial health. Future City Councils and Administrations need to remain committed to implementation of the Fiscal Sustainability Policy in order to address the underlying, structural drivers of the City's financial problems. In addition, the City should remain committed to the following: 1) proactive management, 2) eliminating developer subsidies for infrastructure (primarily transportation infrastructure funded through the local sales tax transportation program which has historically paid for roads to growth areas), and 3) reducing public service and maintenance costs in growth areas.

In sum, the objectives and policies in this element provide a viable framework for fiscal sustainability by restructuring operations to match expenditures to available revenues and restoring General Fund reserve fund balances. The City exists to provide core services to the public. In 2014, there are very few remaining service level cuts possible without the possibility of serious effects on public health, welfare, and safety. For this reason, the General Plan's policies for fiscal sustainability are a priority.

Link between Land Use and Fiscal Condition of the City

The fiscal analysis conducted by Economic & Planning Systems demonstrates the link between land use characteristics and the economic and fiscal well-being of the City. Land use and public policy priorities in the General Plan have broad implications for Fresno's economic and fiscal well-being. As such, land use and physical development decision-making needs to be understood within this broader context of interdependence with many different and related outcomes and impacts. While this has always been true, it is particularly important in these times of economic stress and volatility in California. In the face of such challenges, the major question is whether future land use planning will continue historical expansionist patterns or whether a focus on distinct urban boundaries, infill development, and revitalization of existing urban areas is adopted.

Specifically, if this General Plan succeeds in improving Fresno's quality of life by supporting strong public safety, other municipal services, good schools, an efficient transportation system, improved air quality, diverse housing opportunities, and attractive recreational and commercial amenities, it will attract and retain residents and employers who might otherwise choose other locations in the San Joaquin Valley or beyond. An improving employment base can, in turn, create a positive feedback loop by boosting property values and household incomes, and improving economic and social conditions. Achieving these quality of life factors will also boost the City's tax base and enable further investment in the type of public services and infrastructure needed to maintain economic growth and quality of life.

Of course, the City's economic and fiscal health are also affected by a variety of factors outside of its control, including the national business cycle, State and federal budget decisions, business climate, international trade, and the performance of key local industries. Thus, a key challenge during recessionary periods is to guard against a negative economic and fiscal spiral triggered by declining tax revenues and further exacerbated by disinvestment in critical public services and infrastructure that in turn reduces quality of life and ultimately the loss of valuable jobs and employed residents.

As part of General Plan implementation, the City should continually treat its land use, economic, and fiscal performance as fundamental and integrally linked components that over the long run will rise and/or fall together. The City, through the General Plan, will be able to approach, analyze, and evaluate contingent and related items holistically, rather than as distinct or independent items. For example, an over-emphasis on creating additional capacity for revenue generating land uses, such as "big-box" retail, will not necessarily improve the City's long-term fiscal health if household incomes do not support growth in consumer demand or if new store sales "cannibalize" existing retail areas. Likewise, overly permissive land use or development standards may result

in an urban landscape that is unappealing, one-dimensional, discontinuous, or neglectful of established neighborhoods.

In this context, the focus of this General Plan is on improving Fresno's quality of life and related social and economic fabric through interrelated land use strategies, even if immediate budget constraints make the desired investments and municipal service standards difficult in the short-term. In the long-run, Fresno cannot win the economic and fiscal interplay by "competing for the bottom" (being a low-cost provider) or expecting a "silver bullet." A balanced and integrated approach to planning future land use and investing in municipal services and facilities that improves quality of life for existing and future residents is the best way to ensure viable growth and the City's economic and fiscal well-being.

2.2 OBJECTIVES AND POLICIES

OBJECTIVE

ED-1 Support economic development by maintaining a strong working relationship with the business community and improving the business climate for current and future businesses.

IMPLEMENTING POLICIES

ED-1-a **Economic Development Strategy.** Ensure the City of Fresno has appropriate resources in place to implement its economic development strategy and work in close coordination with other public agencies, private entities, the nonprofit-sector, and multicultural communities to coordinate of economic development efforts on a region-wide basis.

ED-1-b **Monitor Trends.** Conduct bi-annual monitoring of economic trends in the economic base to identify emerging industries, new market opportunities, and the performance and mix of businesses in the city to allow the City to be proactive and adjust to market changes.

ED-1-c **Buy Local.** Promote, educate, and market the benefits of a "Buy Local" campaign. Explore a "Buy Local" requirement for Public Works and other City purchasing decisions.

ED-1-d **Strategic Land Regulation.** Explore increasing the amount of land properly zoned, consistent with the General Plan, and ready to be expeditiously developed, redeveloped, and/or revitalized for economic

development and job creation purposes. Establish a priority infill development program for sites and districts.

ED-1-e **Ready-to-Go Sites.** Establish a list of "ready-to-go" or "shovel-ready" sites in consultation with property owners, and provide the list to interested developers and businesses seeking sites in the city.

ED-1-f **Economic Base Profile.** Maintain a detailed description of the economic base of the city and metropolitan statistical area which identifies businesses by type of firm, number of employees, total payroll, and location, and make this database available to all interested parties for an appropriate fee that covers cost of preparation and maintenance.

ED-1-g **Economic Development Communication Plan.** Ensure the City of Fresno develops and executes a strategic communications plan for economic development that targets the city's existing businesses for expansion, as well as businesses with the potential to open new facilities in Fresno. The plan should include the development of all tools needed to most effectively support economic development and positively brand the Fresno Region.

ED-1-h **Regional Coordination.** Work with regional economic development organizations and surrounding cities on job creation programs of mutual interest.

ED-1-i **Economic Progress Report.** Submit an economic development progress report to the City Council, as part of the annual General Plan Report.

ED-1-j **Permit Streamlining and Incentives.** Continue implementation of the BFF initiative endorsed by the City Council, including needed technology upgrades. Monitor the BFF initiative and make modifications as needed. Monitor effectiveness of the impact fee waiver for industrial development, Enhanced Economic Development Rate, and other incentives and advocate for their extension if proven to be successful. Continue to identify any additional incentives for projects that are consistent with City plans and policies; that encourage increased business development, business expansion, utilization of existing vacant industrial and commercial buildings; and that increase job creation.

OBJECTIVE

ED-2 Support local business start-ups and encourage innovation by improving access to resources and capital and help overcome obstacles hampering economic development.

IMPLEMENTING POLICIES

ED-2-a **Technical and Financial Support.** Support efforts that provide technical and financial assistance for start-up businesses.

Commentary: *There are a number of entities in the Fresno Region that provide support to early stage businesses, including the Central Valley Business Incubator, the Water Energy Technology Center, the Fresno Area Hispanic Chamber of Commerce's Downtown Business Hub, the Lyles Center for Innovation and Entrepreneurship, the Small Business Development Center, the University Business Center, and the Fresno County Economic Opportunities Commission. In addition, Bitwise is a private business incubator in Downtown Fresno that provides space for early stage technology businesses.*

ED-2-b **Revolving Loan Program and Other Partnerships for Initial Capital.** Seek private sector or grant support for existing revolving loan programs and other types of micro-lending and start-up capital for Fresno-based businesses needing temporary financial assistance.

OBJECTIVE

ED-3 Attract and recruit businesses and offer incentives for economic development.

IMPLEMENTING POLICIES

ED-3-a **Business Expansion and Attraction Program.** Create, adopt, and implement programs to expand existing businesses and attract new businesses.

Commentary: *This program will focus on desirable businesses and industries, which are those that:*

- *Possess a high growth potential, such as food- and medical-related businesses, water and renewable resource technologies, regional and local-serving retail, hotel and conference facilities;*
- *Generate net fiscal benefits to the City through increased tax revenues;*

- *Provide a range of jobs that match the local workforce and provide opportunities for skill training;*
- *Create higher-paying and/or higher-quality jobs for local residents;*
- *Complement or augment existing goods and services in Fresno;*
- *Create less than significant impacts on the environment; and*
- *Don't require public investment beyond infrastructure and public safety services already available through the City of Fresno.*

ED-3-b **Marketing to Desired Businesses and Industries.** Expand the City's marketing efforts, focusing on desired industries and businesses.

Commentary: *Actions may include, but are not limited to:*

- *Regularly contact existing City of Fresno industrial businesses and seek their input on how the City can support their expansion;*
- *Advertise in industry publications;*
- *Publicize local business success stories; and*
- *Prepare, update, and publish marketing materials, including an inventory of assets that Fresno offers, such as available development sites (and buildings), incentives, streamlined processing, affordable cost of living, quality of life, proximity to quality educational institutions and medical facilities, ease of access to communities throughout the Central Valley, and its multiethnic community.*

ED-3-c **Targeted Incentives Program.** Create a list of incentives as part of a package to approach targeted industries and businesses about relocating to Fresno.

Commentary: *As part of this program:*

- *Identify quantifiable benchmarks to monitor and measure the progress of these incentives;*
- *Create a monitoring program to track the progress of the incentives, and*
- *Adjust and fine-tune the incentives as necessary to ensure they deliver the desired benefits to the city.*

ED-3-d **Strategic Catalysts.** Undertake strategic initiatives to attract new retail and commercial development in key locations:

- Promote catalyst projects at key locations to stimulate private investment and revitalize existing neighborhoods in need of such projects;
- Encourage quality retail and restaurant uses to locate near existing successes and in neighborhoods deficient in such uses; and
- Build on synergies that could occur between complementary businesses.

Commentary: *Initially the catalyst projects are likely to be in the Downtown, the Fulton Corridor and the Mixed-Use Centers shown on the Land Use Diagram (Figure LU-1). This will help spur infill development and investment in Downtown, the surrounding established neighborhoods, and along future BRT corridors, which is one of the goals of the General Plan.*

ED-3-e **Competitive Utility Costs.** Strive to achieve and maintain price structures in Fresno for electricity, fuels, water, wastewater treatment and drainage that are competitive with other regions. Promote the Enhanced Economic Development Rate.

ED-3-f **Strategic Infrastructure.** Strive to provide necessary major street infrastructure and utility capacities for properly zoned land, consistent with the General Plan, so this land can be efficiently and effectively developed in a timely manner. Ensure the City's public works, public utilities, and transit capital improvement plans are aligned to support the economic development objectives in the General Plan.

Commentary: *This is particularly important for fostering reuse of infill sites in areas where infrastructure and utilities are deficient.*

OBJECTIVE

ED-4 Cultivate a skilled, educated, and well-trained workforce by increasing educational attainment and the relevant job skill levels in order to appeal to local and non-local businesses.

IMPLEMENTING POLICIES

ED-4-a **Industry-Education Partnerships.** Facilitate partnerships between area businesses and training and education partners. Support the continuation of the Fresno Regional Workforce Investment Board's bi-annual employment study to provide accurate information to the training community about job trends. Support expansion of Career

Technical Education in area schools. Promote adult education for residents who require basic education and training.

ED-4-b **Connect Residents to Jobs**. Pilot a "Jobs in Your Neighborhood" initiative to ensure residents are aware of job opportunities in their immediate neighborhood.

ED-4-c **Job Training Program Incentives.** Strive to create a program to provide incentives for local businesses to offer internship, mentoring, and apprenticeship programs to high school and college students in partnership with California State University, Fresno and other educational institutions and major employers.

ED-4-d **Employment Development Conference.** Participate in an employment development conference every two years to discuss employment training needs, collaboration opportunities, internship and apprenticeship opportunities, job and labor trends, and the educational performance of local schools, to come up with a list actions and strategies.

ED-4-e **Access to Education and Training.** Improve access to education and skills training by locating housing and employment opportunities near academic and vocational training facilities and programs.

ED-4-f **Private-Public Partnerships.** Support the use of private-public partnerships that bring together academic programs and employers through internships, mentoring, and outreach initiatives.

OBJECTIVE

ED-5 Achieve fiscal sustainability.

Commentary: *Fiscal sustainability will occur when (1) core services are funded, (2) all fund balances are positive, and (3) emergency and maintenance reserves have attained at least minimally acceptable levels. To attain this objective, the City should periodically prepare and implement mid-term actions that achieve fiscal sustainability to support this General Plan. These will complement the normal budget process and may include specific actions needed for identified problems. Chapter 12, Implementation includes details on the strategies that the City anticipates will be established in support of fiscal sustainability.*

IMPLEMENTING POLICIES

ED-5-a **Standards and Service Districts.** Establish levels of service and development standards for necessary public infrastructure to be built and maintained with funding through capital improvement and maintenance districts.

Commentary: *These districts would be established to promote economic development in specific areas of the city, consistent with the Land Use Diagram of the General Plan (Figure LU-1).*

ED-5-b **Fair and Proportional Payments.** Require new residential and commercial development that requires annexation to the City to pay its fair and proportional share of needed community improvements through impact fees, assessment districts, and other mechanisms. Approve new residential and commercial development projects that require annexation to the City only after making findings that all of the following conditions are met:

- No City revenue will be used to replace or provide developer funding that has or would have been committed to any mitigation project;
- The development project will fully fund public facilities and infrastructure as necessary to mitigate any impacts arising from the new development;
- The development project will pay for public facilities and infrastructure improvements in proportion to the development's neighborhood and citywide impacts; and
- The development will fully fund ongoing public facility and infrastructure maintenance and public service costs.

ED-5-c **Properly Set Fees for Fee-Based Services.** Ensure City services are being delivered as efficiently as possible. Eliminate duplicative efforts and streamline the development review process. Then, adopt fee structures that cover full City costs for fee-based services (e.g. staffing, legal services, noticing, and others). Identify services for which fees will be adopted and the percentage of such service costs that should be covered by the fee.

Commentary: *The City provides a variety of services that are established on the assumption that they will be paid for in total or in part by user fees. State and local policy dictate that such fees not exceed the fully allocated costs of these services.*

ED-5-d **Periodic Fee Studies.** Periodically conduct comprehensive fee studies to determine whether development impact fees fully account for the recovery of costs, consistent with applicable law.

Commentary: *In the future, when the cost of providing services exceeds fee revenue, the City should identify such shortfalls through a comprehensive fee study. When it is not possible to reduce operating costs proportionately, the City should seek fee adjustments to avoid further subsidies. In cases where the City wishes to incentivize fee-based services, such as for infill development in established neighborhoods, the City should lower infrastructure requirements or identify other options for cost recovery.*

ED-5-e **Fiscal Impact Analyses.** Require fiscal impact analyses for development proposals requiring a General Plan amendment or annexation to assess citywide impacts and to identify any burden such projects might create for the City, any school districts, special districts, and other public agencies within the City's Sphere of Influence.

Commentary: *When preparing such measures for implementation, the City should explore the feasibility of a two-tiered system, in which larger projects must provide greater fiscal analysis than smaller projects.*

ED-5-f **Fiscal Management.** Continue to implement responsible financial management practices.

Commentary: *The City has adopted legislative polices for fiscal management including: Fiscal Sustainability Policy, Debt Management Act, Labor-Management Act, and Reserve Management Act. Collectively they provide for fiscal discipline and public transparency. When coupled with other General Plan policies, they create a framework for responsible fiscal management*

ED-5-g **Budget for Maintenance.** Balance ongoing operating costs, paying off internal debt, and building reserves with the need to plan and pay for regular, basic maintenance and replacement of equipment and property.

ED-5-h **Fund Shortage Notification.** Pursuant to the Fiscal Sustainability Policy, continue to provide decision-makers timely notification of cash insufficiency and actions needed to ensure fiscal sustainability.

Commentary: *The City Manager should continue to provide the Mayor and Council prompt written notification of the Manager's determination that a major government or enterprise fund is likely to have insufficient cash to cover its legal or budgetary obligations at year end.*

ED-5-i **Explore the use of CFDs to Offset Costs.** Explore opportunities for establishing Community Facility Districts as an ongoing revenue source for maintenance and operations of various City facilities and services.

This page intentionally left blank.

3 URBAN FORM, LAND USE, AND DESIGN

The Urban Form, Land Use, and Design Element focuses on establishing a structural framework for the city, enhancing the character of neighborhoods and districts, creating vibrant centers of activity and a public realm that is engaging and livable, crafting a tapestry of distinctive, connected communities, and strengthening Fresno's identity and sense of place. How land use underlies the experience of living, working, and visiting Fresno is also critical. Besides policy direction on urban form, this element provides a basis for land use decision-making. It establishes a land use classification system, intensity and height standards, and citywide and area-specific land use policies.

3.1 CONTEXT

Land use is one of the seven general plan topics or elements required by California's Planning and Zoning Law. While a city is required to address the mandatory seven topics or elements, State law allows a general plan format that best fits the unique circumstances of the city. The City of Fresno has chosen to combine the required components of a land use element within the larger context of an Urban Form, Land Use, and Design Element because of the close relationship that these topics have to one another in Fresno.

In preparing this element, the City considered the impact of new growth on military readiness activities, and future development under the Plan is not anticipated to have any discernible impact on the Fresno Air National Guard military installation. Continuing enforcement of the Airport Land Use Plan for Fresno Yosemite International Airport will avoid interference with the military readiness activities at the military installation. Finally, given the absence of timber, forest land, and timber harvesting industry within the Planning Area, no land use classifications provide for timber production, nor are objectives and policies needed to address this subject. Plan Horizon and Buildout calculations are presented in the Introduction. Commonly used terms are defined in the Glossary.

RELATIONSHIP TO GENERAL PLAN GOALS

The objectives and policies of this element support the following General Plan goals:[1]

1. Increase opportunity, economic development, business, and job creation.

   Use urban form, land use, and Development Code policies to streamline permit approval, promote local educational excellence and workforce relevance, significantly increase business development and expansion, retain and attract talented people, create jobs and sustained economic growth, strategically locate employment lands and facilities, and avoid over-saturation of a single type of housing, retail,, or employment.

[1] The commentary in italics following certain goals is not part of the goal itself, but is instead advisory language intended to further discuss and clarify the goal, and to help guide the objectives of this General Plan.

2. Support a successful and competitive Downtown.

   Emphasize infill development and a revitalized central core area as the primary activity center for Fresno and the region by locating substantial growth near the Downtown core and along the corridors leading to the Downtown. Use vision-based policies in a development code specific to the Downtown, when adopted, to ensure the creation of a unique sense of place in the central core.

3. Emphasize conservation, successful adaptation to climate and changing resource conditions, and performance effectiveness in the use of energy, water, land, buildings, natural resources, and fiscal resources required for the long-term sustainability of Fresno.

7. Provide for a diversity of districts, neighborhoods, housing types (including affordable housing), residential densities, job opportunities, recreation, open space, and educational venues that appeal to a broad range of people throughout the City.

8. Develop Complete Neighborhoods and districts with an efficient and diverse mix of residential densities, building types, and affordability which are designed to be healthy, attractive, and centered by schools, parks, and public and commercial services to provide a sense of place and that provide as many services as possible within walking distance.

   Intentionally plan for Complete Neighborhoods as an outcome, rather than collections of subdivisions which do not result in Complete Neighborhoods.

9. Promote a city of healthy communities and improve quality of life in established neighborhoods.

   Emphasize supporting established neighborhoods in Fresno with safe, well maintained, and accessible streets, public utilities, education and job training, proximity to jobs, retail services, and health care, affordable housing, youth development opportunities, open space and parks, transportation options, and opportunities for home grown businesses.

10. Emphasize increased land use intensity and mixed-use development at densities supportive of greater use of transit in Fresno.

    Greater densities can be achieved through encouragement, infrastructure, and incentives for infill and revitalization along major corridors and in Activity Centers.

12. Resolve existing public infrastructure and service deficiencies, make full use of existing infrastructure, and invest in improvements to increase competitiveness and promote economic growth.

    Emphasize the fair and necessary costs of maintaining sustainable water, sewer, streets, and other public infrastructure and service systems in rates, fees, financing, and public investments to implement the General Plan. Adequately address accumulated deferred maintenance, aging infrastructure, risks to service continuity, desired standards of service to meet quality-of-life goals, and required infrastructure to support growth, economic competitiveness and business development.

13. Emphasize the City as a role model for good growth management planning, efficient processing and permit streamlining, effective urban development policies, environmental quality, and a strong economy. Work collaboratively with other jurisdictions and institutions to further these values throughout the region.

    Positively influence the same attributes in other jurisdictions of the San Joaquin Valley–and thus the potential for regional sustainability–and improve the standing and credibility of the City to pursue appropriate State, LAFCO, and other regional policies that would curb sprawl and prevent new unincorporated community development which compete with and threaten the success of sustainable policies and development practices in Fresno.

15. Improve Fresno's visual image and enhance its form and function through urban design strategies and effective maintenance.

17. Recognize, respect, and plan for Fresno's cultural, social, and ethnic diversity, and foster an informed and engaged citizenry.

    Emphasize shared community values and genuine engagement with and across different neighborhoods, communities, institutions, businesses and sectors to solve difficult problems and achieve shared goals for the success of Fresno and all its residents.

3.2 CITYWIDE URBAN FORM

Urban form is the configuration of the combined physical components of the city; it is created by the interrelationship of those components as they form a cohesive whole. The components of urban form include: circulation (streets, sidewalks, transit, and bikeways), open space, buildings, and natural features. A healthy and vibrant Downtown as the Primary Activity Center of the City is an essential aspect of a diverse, attractive, and successful urban form for the City. How these

components relate to one another determines the degree to which Fresno will be walkable, with inter-related uses forming Complete Neighborhoods. Many people see urban form as the ultimate determinate of "livability."

Visualize for a moment a favorite place to vacation or take a walk. What is it about such places that draw you to them? Do you feel safe? Are there others eating, shopping, or just people watching? Is the area shaded? How wide are the sidewalks? How fast do cars move? How tall are the buildings? Is this a good place to call home, raise a family, and pursue a career?

Often it may be difficult to articulate exactly what brings a sense of attraction and satisfaction to an area. Yet no one would dispute that some cities and neighborhoods are more desirable than others. Ultimately, a number of components interconnect to make a place work well and thrive, though it is clear that significant contributions are made by physical components of a space that influence how people navigate, dwell, and work within a city. The future growth of Fresno offers the opportunity to create new neighborhoods that support a satisfying and productive lifestyle as well as to improve many established neighborhoods through careful planning.

Urban form is what organizes the city, focuses growth, creates the best possible relationships between uses, provides services and mobility, and supports a quality of life that is so important to Fresnans. The major urban form themes in this element are:

- Understanding the suburban style, auto-oriented development patterns that characterize much of Fresno today and the potential of improving that pattern in the future with walkable, pedestrian and transit-oriented development.
- Identifying areas for growth through self-supporting communities and efficient infrastructure and considering strategies for accepting future growth.
- Enhancing established neighborhoods that lack identity and an active core that supports a mix of uses and services interconnected to residences with a convenient network of pedestrian ways and bike paths.
- Supporting Downtown as the Primary Activity Center of Fresno.
- Defining parameters for growth within the City's Sphere of Influence (SOI) that will ultimately be annexed to the City.
- Establishing policies for Urban Form to achieve General Plan goals and objectives.

Making the Most of Existing Conditions: A New Emphasis

Fresno has generally grown out over the years from its first origins, Downtown. For decades that growth has been mostly of a low density suburban style development that relies heavily on the auto as the single means of mobility. This has created a condition of sprawl, sometimes leaving neglected neighborhoods and developed land uses adjacent to a number of major streets either vacant or underutilized. This can be seen in Downtown today, as well as other areas surrounding Downtown.

A 1957 California Department of Highways plan called for construction of State Routes 99, 41, and 180 to form a freeway loop around Downtown, redirecting traffic around the City's core rather than through it. The construction of this freeway loop system beyond State Route 99, starting in the 1980s, had a devastating impact on Downtown Fresno and its surrounding neighborhoods. Formerly unified neighborhoods were cut in two by freeways without surface crossings. Facilitated by the freeways, the City continued to stretch onto inexpensive land to the north and east, aiding the flight of people and businesses away from the center of the city. By 2009, Fresno had reached a population just under 495,000 in an area of 113 square miles.

Infill opportunities in and around the center of Fresno, particularly in underutilized areas, hold great promise for recasting Fresno as a city of vibrant and Complete Neighborhoods. This can be done by creating a land use pattern and implementing policies that envision the revitalization of established neighborhoods and development of complete communities in growth areas, connected by multi-use corridors served by Bus Rapid Transit (BRT) and enhanced bus service.

Through the Urban Form, Land Use, and Design Element of the General Plan, there is opportunity to enhance existing infrastructure to support a more urban and moderately higher density model of growth in the future. This can inspire creative thinking about Fresno's urban form by its increasingly diverse population.

Major Strategic Directions for Future Growth

This General Plan shifts emphasis from a city dominated by suburban growth to one that also shares increased urban development in the form of infill and rehabilitation, along with new Activity Centers with mixed-uses and neighborhoods in growth areas. The basis of this Plan's concepts are formed by balancing more efficient infill, Downtown, and neighborhood revitalization;

transit-oriented development along major streets; mixed-uses in new Activity Centers in growth areas; and the building of Complete Neighborhoods.

Major urban form components include Activity Centers with mixed-uses, intensification, and infill development. Some of these Activity Centers are generally located on land along the first phase of the BRT system. The first phase is composed of BRT corridors along Blackstone Avenue between Downtown and the major shopping centers from Herndon Avenue to Nees Avenue, and along Ventura Avenue-Kings Canyon Road from Downtown to Clovis Avenue. Concurrently there will be enhanced bus service along Shaw Avenue.

As demand necessitates, later phases of BRT may include:

- The California Avenue BRT corridor, which will connect southwest Fresno from the area located between Hughes and Marks Avenues to Downtown; and
- The Shaw Avenue corridor, which will support the opportunity for focused intensity at the West Shaw Activity Center proposed at Veterans Boulevard and Shaw Avenue west of State Route 99, extending south along Grantland Avenue to the Grantland Transit Village between Ashlan and Shields Avenues.

The Mobility and Transportation Element contains policies on developing and implementing effective, convenient, and safe public transportation and parking programs to meet the interrelated needs of Downtown and proposed BRT corridor land use development.

Employment centers in existing developed areas and in growth areas, composed of high concentrations of office, business parks and districts, and industrial clusters, are also important components of urban form. These areas have traditionally been served by freeways, freight rail, and major streets, and now will be additionally served by proposed BRT corridors with more intense land uses generating many new business and employment opportunities. New smaller scale business parks and larger scale regional business park campuses are shown on Figure LU-1: General Plan Land Use Diagram, in addition to traditional light and heavy industry locations, and will be designed to be more compatible and

appropriate to co-exist next to residential neighborhoods, retail, and mixed-use districts.

The General Plan does not expand the City's SOI[2] beyond its extent as of December 31, 2012 for residential and commercial development.[3] This strategy supports the goals of this General Plan, particularly the success of Downtown, protection of agriculture, improvement of established neighborhoods, and efficient use of existing and future public infrastructure. The Land Use section addresses annexation policy.

Concepts for Focus Areas

Infill and development in growth areas will be in accord with General Plan land use designations, goals, objectives, and policies, and updated zoning and subdivision provisions. It is anticipated that policy direction for the Downtown Planning Area will be refined by community, Specific Plans, and neighborhood plans and further implemented by a Downtown Development Code after the General Plan is approved.

In growth areas and large infill areas outside of the Downtown Planning Area, subsequent Specific Plans or Concept Plans are also anticipated to refine more discreet land use and transportation design integration and intensity with necessary public facilities, maintenance, and services financing. CEQA streamlining will facilitate this refinement because the City will have a Master Environmental Impact Report (MEIR) in place that may address the major issues from these "subsequent projects" for identified growth areas and certain large infill areas. These subsequent projects are described for CEQA purposes in the MEIR. It is anticipated that these subsequent Specific Plans will include preparation of design guidelines and standards, and infrastructure financing programs.

The sheer scale of existing developed land in need of reinvestment, coupled with Fresno's fiscal constraints, means that near-term actions need to focus on smaller geographic areas where there are opportunities to leverage public and private

[2] Except for a possible expansion south for industry and employment, proximate to the SOI boundary between SR41 and SR99, to accommodate a maintenance yard and facilities, and industrial parks surrounding and supporting High Speed Rail functions. See Policy LU-1-g: SOI Expansion.

[3] The SOI has not been expanded since 2006.

investment concurrently and build on existing assets. These areas have the best development potential and targeted investments can put in motion a positive feedback cycle, whereby a sustained level of public and private investment signals to the marketplace that something positive is happening.

Infill Incentives

This General Plan emphasizes and builds on the City's interest in supporting infill development, which includes a number of fiscal, environmental, economic, social, transportation, and resource related benefits. Land Use policies listed here establish a more cohesive city environment with vibrant neighborhoods, BRT corridors, and Activity Centers that are implemented through increased infill development. See Figure IM-1 (Chapter 12).

Infill incentives, priority areas, and project application process streamlining are the focus of the Infill Development Act (IDA) approved by the Fresno City Council on November 1, 2012 and the Fresno General Plan Implementation and Infill Finance Task Force (Task Force) Final Report prepared by the Task Force in in late 2013. Both the IDA and the recommendations in the Task Force Final Report are discussed in the Implementation Element of this General Plan which set the framework for the implementation strategies that will facilitate increased infill development in the city of Fresno. A key recommendation from the Task Force is to prioritize and incentivize rehabilitation and new construction in the Downtown Planning Area, along BRT Corridors, and within established neighborhoods generally south of Herndon Avenue.

Complete Neighborhoods

Much of Fresno has been built as discrete residential tracts bordered by strip retail centers, many of which are not accessible from the adjacent homes due to security walls or other barriers. By contrast, the Complete Neighborhoods concept will enable Fresnans to live in communities with convenient services, employment, and recreation within walking distance.

Complete Neighborhoods are not and should not be all alike. In fact, each neighborhood should express the needs, character, and values of its residents through the specific arrangement of the many possible characteristics that make up each neighborhood. All elements of a neighborhood do not need to be of the same architectural style to create a Complete Neighborhood. While it is important to use common design components to create interest and character, individuality of the various parts of the neighborhood is more important.

The defining characteristic of a Complete Neighborhood is a neighborhood that is mostly self-sufficient, walkable, and interconnected. It provides residents with most all they need on a daily basis nearby. In other words, a Complete Neighborhood anticipates and plans in advance all amenities needed in a neighborhood to ensure quality and lasting property values *before* the residential units are built instead of trying to piecemeal those amenities after the fact. This convenient and healthy lifestyle is the benefit of a Complete Neighborhood. While total self-sufficiency or even completeness is unlikely to be accomplished in each neighborhood, all or most of the following characteristics can be combined to create an enhanced quality of life and retained and increased property values:

- A range of housing choices;
- Neighborhood-serving retail;
- A range of employment opportunities;
- Public services, such as health clinics;
- Entertainment and cultural assets;
- Parks and public schools within or near the neighborhood;
- Community services, such as a library, recreation center, senior center, and/or community garden;
- Public plaza/civic space; and
- Access to public transit.

This list can be combined and arranged in each specific neighborhood in such a way as to create a true sense of place and community that improves quality of life and increases property values.

Connectivity and Walkability

In Fresno, the early street grid pattern created neighborhoods with relatively small blocks, which can still be easily walked today due to their interconnected nature. However, as Fresno developed, the street and lot patterns changed, particularly after the advent of the automobile. Rather, the norm became blocks of 200 feet wide by 600 to 1300 feet in length, which are not as easily walked. The orientation of these blocks also directly impacted the number of access points to the major roadways, with the longer block lengths running parallel to major roadway frontages, thus providing less connectivity and walkability. As subdivision design introduced the cul-de-sac and further interrupted the traditional grid patterns, neighborhoods were intentionally cut off, becoming isolated and disconnected from other adjacent uses and neighborhoods.

Wide streets and long blocks result in the need to drive for even the shortest of trips, leading to more traffic congestion and worse air quality. Smaller block sizes in a connected pattern create the opportunity to easily walk to the corner store, visit a friend, or even to work.

Complete Streets can include a substantial tree canopy and landscaping to create a sense of place, provide shade, and reduce heat build-up, as shown above.

A centerpiece of the Mobility and Transportation Element is a Complete Streets system. Complete Streets are designed and operated to enable safe, attractive, and comfortable access and travel for all users such as pedestrians, bicyclists, motorists and public transport users of all ages and abilities. Among their advantages, Complete Streets are intended to encourage health through walking and biking, create a sense of place, improve social interaction, and generally improve adjacent property values. Complete Streets can also incorporate landscaping and a substantial tree canopy as a feature to reduce heat build-up and create a tunnel effect, shown to slow down vehicle traffic.

OBJECTIVE

UF-1 Emphasize the opportunity for a diversity of districts, neighborhoods, and housing types.

IMPLEMENTING POLICIES

UF-1-a **Diverse Neighborhoods.** Support development projects that provide Fresno with a diversity of urban and suburban neighborhood opportunities.

Commentary: *Future growth will occur in a range of higher, medium, and lower densities in existing and new mixed-use urban centers, compact neighborhoods, and suburban areas. This policy also envisions making use of underutilized land, reducing long-term farmland conversion, supporting transit and multiple transportation modes, mixing and balancing compatible residential and retail uses in new growth areas, and existing infill areas to produce economic opportunities, jobs, housing options, recreation, and other choices.*

UF-1-b **Revitalized Downtown Planning Area.** Support adoption of community plans or Specific Plans, Downtown Development Code, programs, and streamlined regulations to support a revitalized Downtown Planning Area as the Primary Activity Center for Fresno and the surrounding region.

Commentary: *The General Plan anticipates the Downtown Planning Area will be further refined through specific and community plans, such as the proposed Downtown Neighborhoods Community Plan (DNCP) and the Fulton Corridor Specific Plan (FCSP), and further implemented through the adoption of a new Development Code for regulations specific to Downtown Planning Area.*

UF-1-c **Identifiable City Structure.** Focus integrated and ongoing planning efforts to achieve an identifiable city structure, comprised of a concentration of buildings, people, and pedestrian-oriented activity in Downtown; along a small number of transit-oriented, mixed-use corridors and strategically located Activity Centers; and in existing and new neighborhoods augmented with parks and connected by multi-purpose trails and tree lined bike lanes and streets.

UF-1-d **Range of Housing Types.** Provide for diversity and variation of building types, densities, and scales of development in order to reinforce the identity of individual neighborhoods, foster a variety of market-based options for living and working to suit a

large range of income levels, and further affordable housing opportunities throughout the city.

Commentary: *The Development Code will provide guidance to promote continuity in development scale and character and transitions between densities and design typologies.*

UF-1-e **Unique Neighborhoods.** Promote and protect unique neighborhoods and mixed use areas throughout Fresno that respect and support various ethnic, cultural and historic enclaves; provide a range of housing options, including furthering affordable housing opportunities; and convey a unique character and lifestyle attractive to Fresnans. Support unique areas through more specific planning processes that directly engage community members in creative and innovative design efforts.

UF-1-f **Complete Neighborhoods, Densities, and Development Standards.** Use Complete Neighborhood design concepts and development standards to achieve the development of Complete Neighborhoods and the residential density targets of the General Plan.

3.3 INFILL DEVELOPMENT

An Objective of this General Plan is to plan for infill development. The terms "infill area" and "infill development" are intended to be used interchangeably, and shall be defined as consistent with the definition of "infill area" set forth in Objective UF-12.

However, the City acknowledges that various statutes articulate alternative definitions for "infill." To the extent that the City must comply with those alternative statutory definitions, the definitions of "infill" contained within Public Resources Code 21061.3 and CEQA Guidelines 15332 may apply.

The Downtown Planning Area and the Fulton Street Corridor

The centerpiece of Fresno is the Downtown Planning Area. The General Plan anticipates the Downtown Planning Area will be further refined through specific and community plans, such as the proposed DNCP and the FCSP, and further implemented through the adoption of a new Development Code for regulations specific to the Downtown Planning Area.

The General Plan, as well as these proposed plans, envisions a new focus on land use and design along major streets and in neighborhoods that support Downtown, with an emphasis on Fulton Street. This new focus includes proposals for increased density and vibrant mixed-use centers that will emanate from the Downtown area along the Blackstone Avenue, Ventura Avenue-Kings Canyon Road, and California Avenue transportation corridors (described below), extending the reach of and connections with Downtown in all directions.

OBJECTIVES

UF-2 Enhance the unique sense of character and identity of the different subareas of the Downtown neighborhoods.

UF-3 Revitalize the Downtown to be the economic and cultural heart of Fresno and the region.

UF-4 Support and encourage arts and culture in the Downtown neighborhoods.

Commentary: *As part of Plan implementation, the City will prepare and adopt regulations and programs to support and encourage arts and culture in the Downtown neighborhoods.*

UF-5 Promote a greater concentration of buildings and people in the Downtown.

UF-6 Support new development in the Downtown through investment in public infrastructure.

UF-7 Promote a diverse mix of uses in the Downtown in order to create a community with a 24 hour entertainment district.

UF-8 Develop each of Downtown's neighborhoods and districts, according to its unique character.

UF-9 Capitalize on the High Speed Train system to help revitalize the Downtown neighborhoods.

Commentary: *As part of Plan implementation, the City intends to prepare and adopt a station area plan to capitalize on the High Speed Train system to compliment and encourage revitalization in the Downtown Planning Area.*

UF-10 Calibrate parking according to the Downtown's parking needs and make it efficient and easy to find.

UF-11 Revitalize the Fulton Corridor consistent with the reconstruction project.

BRT Corridors & Centers

Fresno's BRT corridors offer great opportunities for future growth over time in the form of mixed-use development on sites that are now underutilized or vacant. Vibrant Activity Centers with public spaces, medium-high and high-density residential, retail, and employment uses will be located on these major street corridors. The Activity Centers will also support surrounding neighborhoods, multi-modal transportation including the BRT system, and Downtown. BRT corridors proposed in the General Plan include the following:

Blackstone Avenue Corridor

Blackstone Avenue is currently the most prominent major street corridor connecting the Downtown area to the northern areas of Fresno, including the major commercial centers concentrated between Herndon and Nees Avenues. This major street is part of the first phase planned BRT route for transit supportive corridor related land use development and contains many "opportunity sites" that may be developed into Activity Centers in the future. Naturally, this development will occur over time as properties become available or landowners choose to re-develop. Initially, the BRT stops will occur every half-mile. Eventually, Blackstone Avenue is planned to have major BRT stations and surrounding mixed-use centers at one-mile intervals, located at the intersections of major east-west avenues such as Bullard, Shaw, Ashlan, Shields, and McKinley. Ultimately, the BRT stations will be the focus of mixed-use development that is pedestrian-oriented and closely ties the stations with the surrounding neighborhood.

Ventura Avenue - Kings Canyon Road Corridor

Ventura Avenue and Kings Canyon Road link the Downtown with the Southeast Development Area (SEDA) to the east. Much of the major street corridor is contained in the area anticipated to be encompassed by the DNCP, and the General Plan contains urban form and land use concepts and strategies from that proposed plan. Both north and south sides of this corridor are planned with existing and new residential neighborhoods. Like the Blackstone Avenue Corridor, the Ventura Avenue - Kings Canyon Road Corridor offers many opportunities for mixed-use development on both under-utilized properties and vacant land. This corridor is envisioned to be developed in the future with areas

of multi-family housing facing directly on the street and retail centers integrated with housing at the one-mile and half-mile road intersections. At certain intersections, such as the Clovis Avenue intersection, more intense sub-regional mixed-use development is planned to occur. Much of the Ventura Avenue – Kings Canyon Road west of Chestnut Avenue is expected to evolve over time as a "Main Street" environment. Main Street Commercial designation encourages a traditional "Main Street" character with active storefronts, outdoor seating, and pedestrian-oriented design. This land use and design type promotes primarily one to two story retail uses, with moderate office and minimal multi-family as supportive uses.

Clovis Avenue – State Route 180/Belmont Corridor

The Clovis Avenue – State Route 180/Belmont Corridor is essentially an extension of the Ventura Avenue - Kings Canyon Road Corridor and BRT system up Clovis Avenue to State Route 180 interchange area, including land along Belmont Avenue. The intent for this corridor is to promote mixed-use, transit-oriented development surrounding the planned Fancher Creek Town Center, which is to be located at the intersection of Clovis Avenue and Tulare Street. It is envisioned as an area of highly integrated residential uses with a variety of densities and types designed in and around a regional activity and commercial center. Development in this corridor will involve a combination of infill, revitalization, and new construction on large, by-passed parcels. Because of its proposed density, mix of uses, and connectivity, the area could also host a Park-and- Ride lot, especially near the State Route 180/Clovis Avenue interchange.

Shaw Avenue Corridor

The Shaw Avenue Corridor will be served by enhanced bus service and is envisioned as the primary transit corridor connecting Fresno and Clovis. This enhanced service in Fresno will extend along Shaw Avenue as far east as the intersection of State Route 168 and the California State University, Fresno, campus and as far west as the West Development Area located west of State Route 99. Shaw Avenue has been an important corridor in Fresno for decades, with much of the area's retail and employment uses located there. As opportunities arise, it is envisioned that the Shaw Avenue Corridor will be developed as mixed-use infill with a variety of building types and sizes. Particular attention will be paid to urban design to make sure that the scale and form of new buildings are always coordinated with existing development. This includes improving connectivity with new development along the Shaw Avenue Corridor with the surrounding and adjoining neighborhoods.

California Avenue and West Shaw Avenue Future Transit Corridors

The West Shaw Avenue Corridor (west of State Route 99) is discussed in the "West Development Area" section below. The California Avenue Corridor is discussed in the "Southwest Development Area" section.

Non-Corridor Infill

Fresno needs to promote well-designed infill and rehabilitation throughout the city, not just along the corridors. This includes single-family lots, small multi-family lots and small subdivisions. There will also be revitalization and rehabilitation over the years of small retail centers, employment centers and some multi-family properties. These infill developments and redevelopments will focus on creating Complete Neighborhoods in existing areas. Some tools that can be used to accomplish this include: connectivity, financial incentives for investing in established neighborhoods, design compatibility, providing missing uses such as recreation, enhanced landscaping and maintenance of public right-of-way areas, and providing community-based services.

OBJECTIVE

UF-12 Locate roughly one-half of future residential development in infill areas—defined as being within the City on December 31, 2012—including the Downtown core area and surrounding neighborhoods, mixed-use centers and transit-oriented development along major BRT corridors, and other non-corridor infill areas, and vacant land.

Commentary: *The Planning Director will provide an annual report describing the City's compliance with the Plan and progress toward meeting the goals and objectives to City Council, and prepare, every five years, an updated plan for achieving this goal, with recommended appropriate policy amendments and also new implementation strategies necessary to meet this goal by 2035. The rate of progress toward meeting this goal is not expected to occur in a linear or "one-to-one" pattern. Development in infill areas versus growth areas may progress in an uneven pattern, depending upon the schedule of relevant key incentive programs (such as those related to BRT) and the impact of market forces. However, the City expects to make steady progress toward all the goals and objectives and anticipates meeting them at or near the close of General Plan Horizon in 2035. See the Implementation Element for additional implementation strategies for this objective.*

IMPLEMENTING POLICIES

UF-12-a **BRT Corridors**. Design land uses and integrate development site plans along BRT corridors, with transit-oriented development that supports transit ridership and convenient pedestrian access to bus stops and BRT station stops.

Commentary: *Developments close to major streets encourages walking and can be connected with the adjacent neighborhoods through a network of pedestrian ways. Parking will be concealed from the street, and predominant residential uses will be considered an acceptable use in all mixed-use areas.*

UF-12-b **Activity Centers.** Mixed-use designated areas along BRT and/or transit corridors are appropriate for more intensive concentrations of urban uses. Typical uses could include commercial areas; employment centers; schools; compact residential development; religious institutions; parks; and other gathering points where residents may interact, work, and obtain goods and services in the same place.

Commentary: *Activity Centers are typified by a full range of uses, including residential, retail, employment, education, recreation, public amenities, and/or open space features. Near the mixed-use central area of the Activity Center, there are typically higher residential densities, typically 15 to 45 dwelling units per acre, but away from the center of the Activity Center, uses become predominantly residential at lower densities.*

UF-12-c **Local-Serving Neighborhood Centers.** Design Neighborhood Centers for local services and amenities that build upon the character and identity of surrounding neighborhoods and communities.

UF-12-d **Appropriate Mixed-Use.** Facilitate the development of vertical and horizontal mixed-uses to blend residential, commercial, and public land uses on one or adjacent sites. Ensure land use compatibility between mixed-use districts in Activity Centers and the surrounding residential neighborhoods.

Commentary*: Vertical mixed-use may be achieved within the same building with multiple compatible uses in multiple stories, and horizontal mixed use may be achieved across an integrated*

development site with a mix of compatible and complementary uses housed in different buildings.

UF-12-e **Access to Activity Centers.** Promote adoption and implementation of standards supporting pedestrian activities and bicycle linkages from surrounding land uses and neighborhoods into Activity Centers and to transit stops. Provide for priority transit routes and facilities to serve the Activity Centers.

UF-12-f **Mixed-Use in Activity Centers.** Adopt a new Development Code which includes use regulations and standards to allow for mixed-uses and shared parking facilities.

UF-12-g **Impacts on Surrounding Uses.** Establish design standards and buffering requirements for high-intensity Activity Centers to protect surrounding residential uses from increased impacts from traffic noise and vehicle emissions, visual intrusion, interruption of view and air movement, and encroachment upon solar access.

UF-12-h **Parking Standards for Shared Parking**. Explore opportunities to provide shared parking within mixed-use designations to reduce the need to construct large parking lots or structures needed for peak use times only.

3.4 DEVELOPMENT AREAS[4]

The pace of new development in the Development Areas needs to be balanced with the City's goals for achieving significant reinvestment within the 2012 City Limits. Development Areas are generally depicted on Figure I-3: Residential Capacity Allocation. Figure LU-1: General Plan Land Use Diagram shows the general mix of compatible uses recommended residential designations for the Development Areas. Concept Plans will achieve the optimum benefits of designing new neighborhoods as Complete Neighborhoods.

As discussed earlier, Complete Neighborhoods are a key planning concept for development of new residential areas in designated Development Areas.

[4] Development Area descriptions, densities, illustrative diagrams, land uses, circulation network, etc., are based on the August 9, 2012 Land Use Diagram Draft Figure 2 of the Initiation Draft.

Complete Neighborhoods are neighborhoods connected with a range of housing types; employment, supporting retail and service uses; parks and open space; and public/civic uses.

Concept Planning

The General Plan aims to achieve efficient, attractive, and resilient development in the Development Areas through the implementation of Complete Neighborhoods. Some key attributes of Concept Plans are described below.

- Much of the implementation will involve coordinating a harmonious integration of new growth areas and existing development.
- Subdivision and proposed commercial developments should depict how the project may impact surrounding properties, including how street connectivity will be achieved within the Concept Plan area.
- Concept Plans should envision parks, and in some cases a school, with higher densities located around the park and school, and predominantly residential development with a mix of housing types beyond the core.
- Concept Plans should capture the Complete Neighborhood potential of the area.
- Retail and employment centers should be allowed to serve the neighborhood.

West Development Area

The West Development Area (see Figure UF-1: West Development Area Land Use Diagram below) provides many opportunities for the development of Complete Neighborhoods. New neighborhoods will be integrated with the urbanized areas of Fresno to the east through the connections afforded by roadways and future BRT corridors. As each neighborhood evolves, existing subdivisions will become an integrated part of the overall plan.

West Shaw Avenue Corridor & Transit Village

The Shaw Avenue Corridor from State Route 99 to the Grantland Avenue intersection is envisioned to be developed as a mixed-use corridor supported by enhanced transit service, which includes high density and urban neighborhood residential components, along with retail, employment and civic uses. There is a proposal for a Community Park, up to 40 acres in size, along the east side of Veterans Boulevard between Shaw Avenue and Barstow Avenue, which will anchor the West Shaw Transit Village. The park is bisected by a Class 1 bike trail along the Herndon Canal. A regional mixed-use center is designated between Veterans Boulevard and Grantland Avenue. These land uses will be mixed both

vertically and horizontally, and represent the transit-oriented cores of Complete Neighborhoods connected with surrounding residential areas.

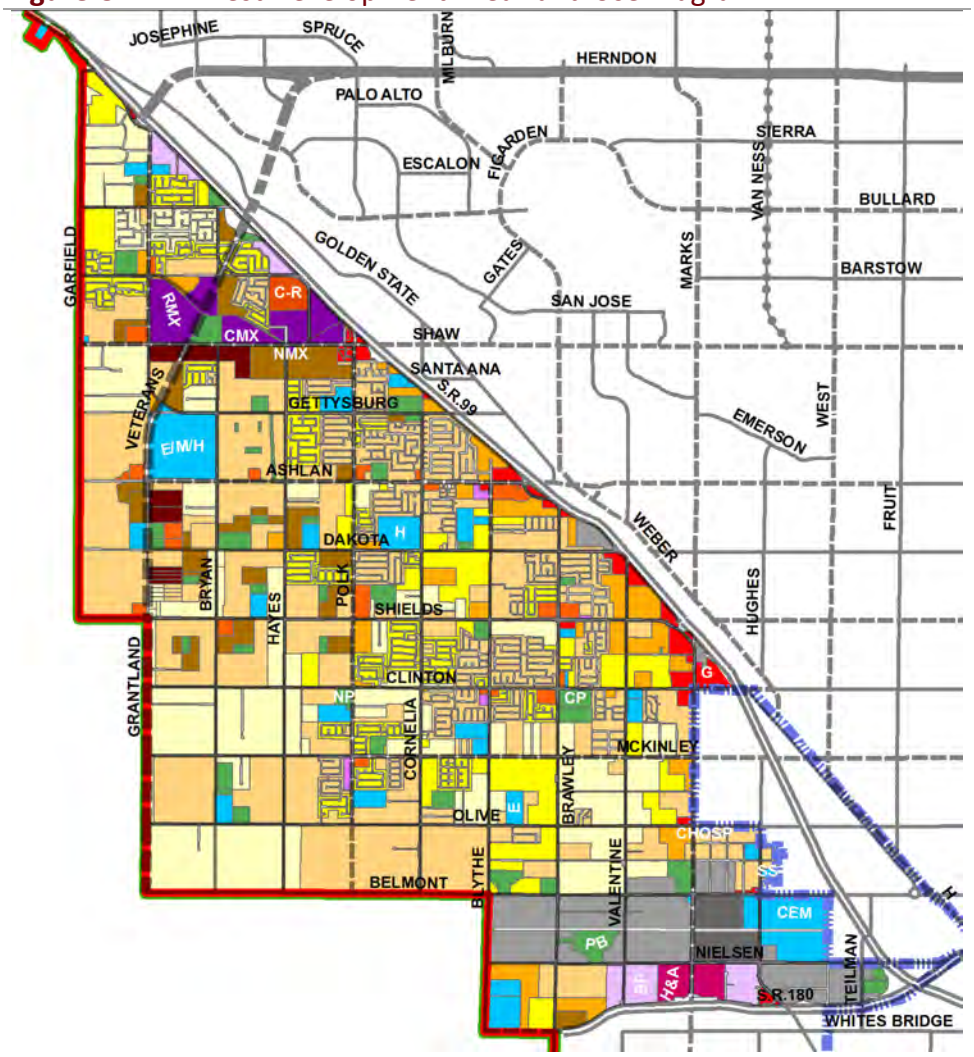
Grantland Avenue Transit Village

A mixed-use transit-oriented center is contemplated along the east side of Grantland Avenue between Ashlan and Shields Avenues, as part of the proposed Grantland-East Communities. Initial development is contemplated in the area bounded by Ashlan, Bryan, Shields, and Grantland Avenues, with multi-family, retail, park, and school uses along the east side of Grantland Avenue. The Grantland Avenue Transit Village will be an area of focus for a Complete Neighborhood, as a high density and urban neighborhood with residential development around a 15-acre Community Park and 15-acre mixed-use neighborhood shopping center, complementing a Central Unified School site on the west side of Grantland Avenue.

Grantland-East Communities

The Grantland-East Communities, generally bounded by Ashlan, Polk, Clinton, and Grantland Avenues, will be coordinated with the Grantland Avenue Transit Village developments, and support their land uses and plan configurations. Of the 12 quarter sections (160 acres per section, generally formed by the half-grid of major streets) within the Grantland-East Communities boundary, the nine sections south of Ashlan Avenue will develop via Concept Plans. This design creates access to over 600 acres of useable, but currently inaccessible land, within these quarter sections, ringed by rural residential lots. The City will work closely with property owners and developers to develop Concept Plans that capture the Complete Neighborhood potential of these areas. The concept envisions parks, and in some cases a school, located at the center, with medium-high and urban residential density multiple-family and townhome development clustered around the park and school, and predominantly medium-density residential development with a mix of housing types beyond the core.

Figure UF-1: West Development Area Land Use Diagram



Southwest Development Area

The Southwest Development Area (see Figure UF-2: Southwest Development Area Land Use Diagram) contains a significant amount of the vacant residentially designated land within the City's SOI, but the area has not yet exhibited much market demand to develop typical suburban neighborhoods with desired commercial and retail services. The area is generally characterized by a patchwork of un-coordinated existing subdivisions, industry, and farmland. However, the General Plan envisions great opportunities in southwest Fresno that can be created by focusing on the development of Complete Neighborhoods: eventually providing a BRT corridor along California Avenue, creating a Transit Village between Hughes and Marks Avenues, and building a regional shopping center and community park with surrounding neighborhood development

between Church and Jensen Avenues along Martin Luther King Boulevard (MLK) west of the Rutherford B. Gaston Middle School.

California Avenue is a primary corridor connecting the Southwest Development Area to Downtown, the Blackstone Avenue Corridor north, and the Ventura Avenue-Kings Canyon Road Corridor east to SEDA. Over time, this corridor will contain substantial new development, infill and redevelopment providing market feasible opportunities for mixed-use development that furthers the goals of the General Plan. California Avenue will have a Complete Street system and transit network to connect southwest Fresno to other metro area communities.

The Veteran's Community Activity Center will be centered by a community park next to the Veteran's Home Complex located on the southeast corner of Marks and California Avenues. This area is envisioned for high density and urban neighborhood residential density around the core with Complete Neighborhoods to the north, south, and east. The Veteran's Community Activity Center will anchor the western terminus of the California Avenue Transportation Corridor system, supplying a unique and desirable destination and urban living environment in southwest Fresno.

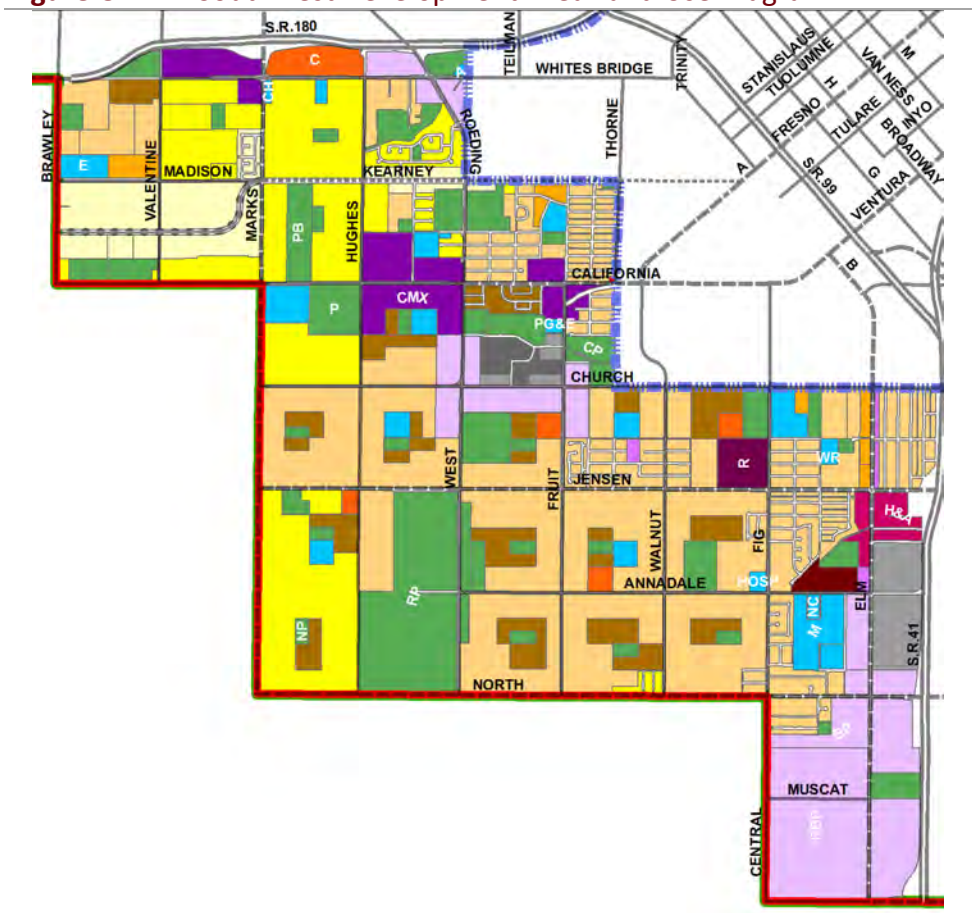
Southwest Neighborhoods

In addition to the California Avenue Corridor and Veteran's Community Activity Center, one other focus area is the Southwest Neighborhoods, which is generally bounded by Church, Marks, North, and Elm Avenues. New medium and medium low density neighborhoods adjoining existing residential areas are designed with local streets, centered by parks, multi-family, townhomes, and in some cases, schools to form a network of Complete Neighborhoods, as is proposed in other Development Areas. Neighborhood shopping centers are located to serve these new clusters of neighborhoods.

Martin Luther King Boulevard (MLK) Activity Center

A regional shopping center on the northwest corner of Jensen Avenue and MLK Boulevard is proposed to be integrated with a higher density neighborhood district between Church and Jensen Avenues along MLK, centered by a community park across from the new Fresno Unified School District Rutherford B. Gaston Middle School complex. This regional retail use will serve the Southwest Development Area, established neighborhoods in southwest Fresno, proximate residential areas in southeast Fresno, and rural areas to the south and west of Fresno. The MLK Village is on the southern edge of the Downtown Planning Area and will also serve residents in that area.

Figure UF-2: Southwest Development Area Land Use Diagram



Southeast Development Area (SEDA)

The original Southeast Growth Area Specific Plan (see Figure UF-3: Southeast Development Area Land Use Diagram), or SEGA, contains approximately 9,000 acres and was formally designated as a Growth Area in the 2025 Fresno General Plan. While originally called SEGA, this area is now referred to as the Southeast Development Area (SEDA).

SEGA was approved in 2006 by the Local Agency Formation Commission (LAFCO) for incorporation into the City with a number of provisions that included preparation of a Specific Plan and associated environmental assessment documents before any annexations of land to the City could be approved. The City started the process of preparing a Specific Plan for SEGA, but due to delays, the planning for SEGA was rolled into the City-wide General Plan Update, as the supporting environmental analysis required by CEQA was not completed, nor the

draft Specific Plan approved by the City. The planning concepts for SEGA have been used to guide the planning for the SEDA.

Planning concepts for SEGA included design and development concepts for street, block, and lot patterns; bike and pedestrian access and circulation; open spaces; mixed-use centers; neighborhoods; building orientations; energy and water saving approaches; employment areas; subdivisions; site planning; and more. These items are illustrative of configuration types suitable for the Southeast Development Area to the extent they are not inconsistent with this General Plan.

Planning now for ultimate urban land uses, circulation, intensities, and urban design for SEDA is imperative for preserving land and protecting the surrounding agriculture and rural areas. Absent new technology, treated water sources, additional recharge or offsets, or significant reduction in consumption achieved through conservation or other methods, metropolitan surface water treatment and wastewater infrastructure systems are also needed to support Fresno, Clovis, and eventual SEDA development. This Development Area also has the unique feature of an eastern border designated as a permanent buffer, which is designed to separate and preserve long-term agriculture to the east and outside SOI boundary from urban uses further to the west inside the SOI boundary.

In SEGA, each subarea was proposed to be developed with a master plan, and potentially, property owner agreements to achieve the scale and intensity required to support independent district type financing structures for necessary public infrastructure, and ongoing maintenance and public service costs. General Plan Development Areas generally follow SEGA subarea descriptions. These areas will require additional planning, such as a Specific Plan and/or concept planning in conformance with the City-County MOU for development of this area.

North SEDA (North of McKinley Avenue)

The North SEDA subarea is planned with two community centers that are surrounded by Residential-Urban Neighborhood and Residential-Medium Density land uses. A K-12 educational complex planned by Clovis Unified School District is anticipated to be located adjacent to the community center at Clinton and Highland Avenues. It is anticipated that there will also be two neighborhood centers located amidst the residential areas that are designated Public Facilities – Neighborhood Center.

Central SEDA (between McKinley & Jensen Avenues)

Central SEDA is bounded by McKinley, Highland, Jensen and Temperance Avenues. This subarea would be characterized by a regional center designated as Regional Mixed Use, three community centers designated as Corridor/Center Mixed Use, and fourteen neighborhood centers designated as Public Facilities – Neighborhood Center. It is anticipated that the regional center also will contain three employment centers. It would be desirable to integrate the regional center and community centers with mixed residential, while locating the neighborhood centers in either neighborhood residential or existing rural residential areas designated as low density residential.

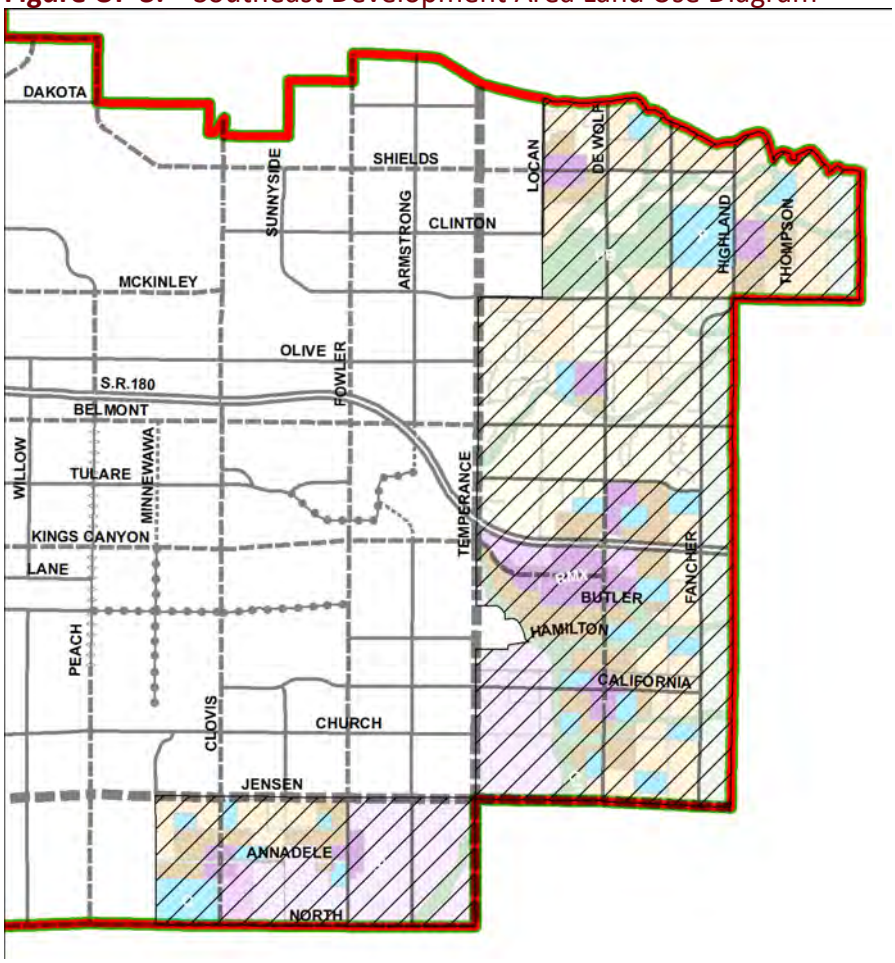
Peach – Jensen Avenues Neighborhood

The Peach-Jensen Avenues Neighborhood subarea, generally bounded by Peach, Jensen, Minnewawa, and North Avenues, is deemed appropriate for long-term residential uses. It represents an additional growth subarea opportunity in southeast Fresno for development of Complete Neighborhoods. It is just outside the SEDA boundary to the west and complements SEDA development planned around the regional education and vocational training complex proposed by the State Center Community College District (SCCCD) at Clovis and North Avenues. It is anticipated that this new neighborhood will adjoin and support a proposed Activity Center with a future community college at Clovis Avenue to the east and a business park and light industrial employment center to the west. Primarily a residential area, the area would be served with local streets, park and recreational trails, and multi-family townhomes, and it will be filled-out by medium density residential to conform with adjacent centers.

South SEDA (South of Jensen Avenue)

South SEDA is generally bounded by Temperance Avenue to North Avenue, North Avenue to Minnewawa Avenue, Minnewawa to Jensen Avenue, and Jensen back to Temperance Avenue. This subarea is also planned with two community centers and four neighborhood centers, with surrounding mixed residential and neighborhood residential beyond the centers. This area is also intended to feature a major education and vocational training complex proposed by the SCCCD and significant land designated for employment in regional business parks with light industry and a range of businesses and enterprises. Land use in South SEDA is proposed with Complete Neighborhoods anchored by mixed-use centers to be integrated and compatible with these larger institutional and employment users.

Figure UF-3: Southeast Development Area Land Use Diagram



OBJECTIVE

UF-13 Locate roughly one-half of future residential development in the Growth Areas—defined as unincorporated land as of December 31, 2012 SOI—which are to be developed with Complete Neighborhoods that include housing, services, and recreation; mixed-use centers; or along future BRT corridors.

Commentary: *The Planning Director will provide an annual report describing the City's compliance with the Plan and progress toward meeting the goals and objectives to City Council and every five years prepare an updated plan for achieving this goal, with recommended appropriate policy amendments and also new implementation strategies necessary*

to meet this goal by 2035. The rate of progress toward meeting this goal is not expected to occur in a linear or "one-to-one" pattern. Development in infill areas versus growth areas may progress in an uneven pattern, depending upon the schedule of relevant key incentive programs (such as those related to BRT) and the impact of market forces. However, the City expects to make steady progress toward all the goals and objectives and anticipates meeting them at or near the close of General Plan Horizon in 2035. See the Implementation Element for additional implementation strategies for this objective.

IMPLEMENTING POLICIES

UF-13-a **Future Planning to Require Design Principles.** Require future planning, such as Specific Plans, neighborhood plans or Concept Plans, for Development Areas and BRT Corridors designated by the General Plan to include urban design principles and standards consistent with the Urban Form, Land Use, and Design Element.

Commentary: *The General Plan requirements and regulations will be further defined through Specific Plans, neighborhood plans and Concept Plans to coordinate more discreet land use and transportation design integration and intensity with necessary public facilities, maintenance, and services financing for Development Areas following General Plan adoption and the subsequent adoption of a new Development Code.*

OBJECTIVE

UF-14 Create an urban form that facilitates multi-modal connectivity.

Commentary. *Multi-modal connectivity creates the opportunity for people to travel through a variety of modes of transportation, including biking, walking, driving, and using public transit.*

IMPLEMENTING POLICIES

UF-14-a **Design Guidelines for Walkability**. Develop and use design guidelines and standards for a walkable and pedestrian-scaled environment with a network of streets and connections for pedestrians and bicyclists, as well as transit and autos.

Commentary. *These guidelines will highlight how to achieve these design ideas and avoid barriers to access, such as:*

- *Walls and fences that separate related uses or isolate neighborhoods;*
- *Over reliance on cul-de-sacs and dead end streets that cut off access within neighborhoods;*
- *Disconnected bike and pedestrian paths;*
- *Wide streets that lack pedestrian support, such as sidewalks, median strips, and a landscaped strip that separates pedestrians from the street;*
- *Street front parking lots that separate pedestrian from commercial operations;*
- *Retail centers that are exclusively auto-oriented;*
- *Transit stops that are not easily accessible from an individual's starting point and destination; and*
- *Long blocks that discourage walking.*

UF-14-b **Local Street Connectivity.** Design local roadways to connect throughout neighborhoods and large private developments with adjacent major roadways and pathways of existing adjacent development. Create access for pedestrians and bicycles where a local street must dead end or be designed as a cul-de-sac to adjoining uses that provide services, shopping, and connecting pathways for access to the greater community area.

UF-14-c **Block Length.** Create development standards that provide desired and maximum block lengths in residential, retail, and mixed-use districts in order to enhance walkability.

Commentary: *When preparing such standards the City should assess the desirability of varying maximum block length requirements between single family residential, multi-family residential, mixed use, and commercial districts.*

3.5 LAND USE

The following sections provide the General Plan's required land use information with use classifications, maximum densities and intensities on Figure LU-1: Fresno General Plan Land Use Diagram.

The City has reviewed those areas covered by the General Plan that are subject to flooding identified by flood plain mapping prepared by the Federal Emergency Management Agency (FEMA), which can be found at Figure NS-7: Floodplains. The City will annually review those areas covered by the Plan as set out in the Implementation Element.

Land Use Diagram

The Land Use Diagram is the City's master designation of land uses for Fresno including the City's SOI. The Land Use Diagram includes the Downtown Planning Area, shown in an inset, and its designations are anticipated to be further refined and implemented through specific and community plans, such as the proposed FCSP and the DNCP. Land use designations for the Downtown Planning Area are generalized to facilitate implementation by providing some flexibility for the detailed plans.

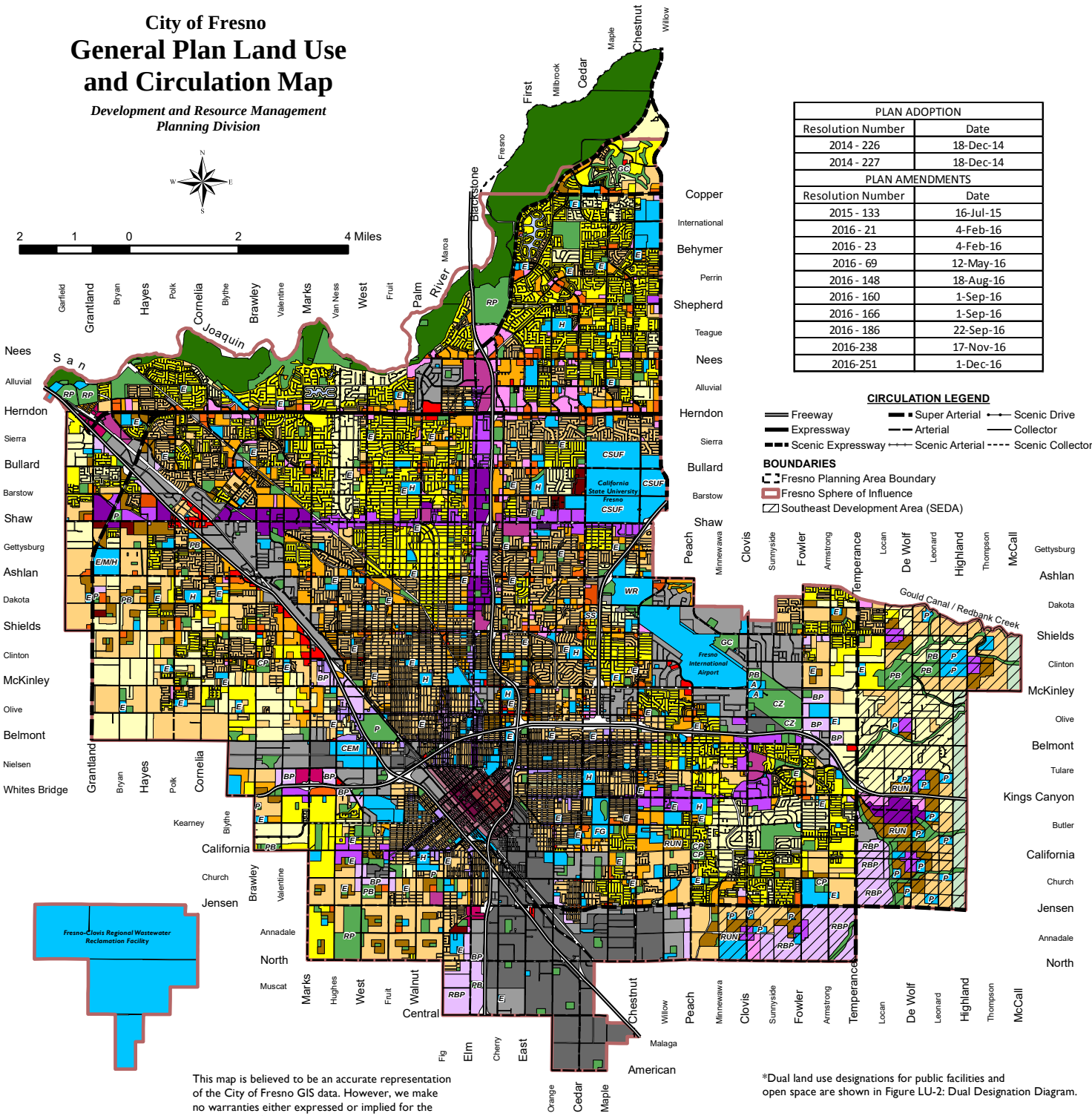
Dual Designations

All new parks, open space, and public facilities (such as school sites) carry dual land use designations, so that if that facility is not needed, private and public development consistent with zoning and development standards may be approved. These dual land use designations are shown in Figure LU-2: Dual Designation.

This page intentionally left blank

City of Fresno
General Plan Land Use and Circulation Map

Development and Resource Management
Planning Division



PLAN ADOPTION	
Resolution Number	Date
2014 - 226	18-Dec-14
2014 - 227	18-Dec-14
PLAN AMENDMENTS	
Resolution Number	Date
2015 - 133	16-Jul-15
2016 - 21	4-Feb-16
2016 - 23	4-Feb-16
2016 - 69	12-May-16
2016 - 148	18-Aug-16
2016 - 160	1-Sep-16
2016 - 166	1-Sep-16
2016 - 186	22-Sep-16
2016-238	17-Nov-16
2016-251	1-Dec-16

CIRCULATION LEGEND

- Freeway
- Expressway
- Scenic Expressway
- Super Arterial
- Arterial
- Scenic Arterial
- Scenic Drive
- Collector
- Scenic Collector

BOUNDARIES

- Fresno Planning Area Boundary
- Fresno Sphere of Influence
- Southeast Development Area (SEDA)

This map is believed to be an accurate representation of the City of Fresno GIS data. However, we make no warranties either expressed or implied for the correctness of this data.

*Dual land use designations for public facilities and open space are shown in Figure LU-2: Dual Designation Diagram.

Figure LU-1:

Fresno General Plan Land Use Diagram

RESIDENTIAL
- Low Density (1-3.5 D.U./acre)
- Medium Low Density (3.5-6 D.U./acre)
- Medium Density (5.0-12 D.U./acre)
- Medium High Density (12-16 D.U./acre)
- Urban Neighborhood (16-30 D.U./acre)
- High Density (30-45 D.U./acre)

COMMERCIAL
- Main Street
- Community
- Recreation
- General
- Highway & Auto
- Regional

EMPLOYMENT
- Office
- BP Business Park
- RBP Regional Business Park
- Light Industrial
- Heavy Industrial

MIXED USE
- Neighborhood Mixed Use
- Corridor/Center Mixed Use
- Regional Mixed Use

DOWNTOWN
- Downtown Core
- Downtown General
- Downtown Neighborhood

OPEN SPACE
- CZ Clear Zone
- CRC Commercial-Recreational
- CP Community Park
- FC Flood Control Project
- GC Golf Course
- W Lake, Pond
- Multi-Use
- Neighborhood Park
- ONA Outdoor Environmental Education Area
- OS Open Space
- P Park
- PB Ponding Basin
- PB/P Ponding Basin (Park use)
- RP Regional Park

PUBLIC FACILITIES
- Public/Quasi-public Facility
- SS Special School
- E Elementary School
- E&M Elementary & Middle School
- EMH Elementary, Middle & High School
- M Middle School
- H High School
- C College
- P School with Park
- A Airport
- CEM Cemetery
- CH Church
- CAC Community Activity Center
- CHOSP Convalescent Hospital
- FG Fairgrounds
- FS Fire Station
- G Government Offices
- HOSP Hospital
- MC Medical Center
- NC Neighborhood Center
- PGE PG & E Substation
- PD Police Dressing Station
- WR Water Recharge Basin
- WW Waste Water Treatment Facility

BUFFER
- Buffer

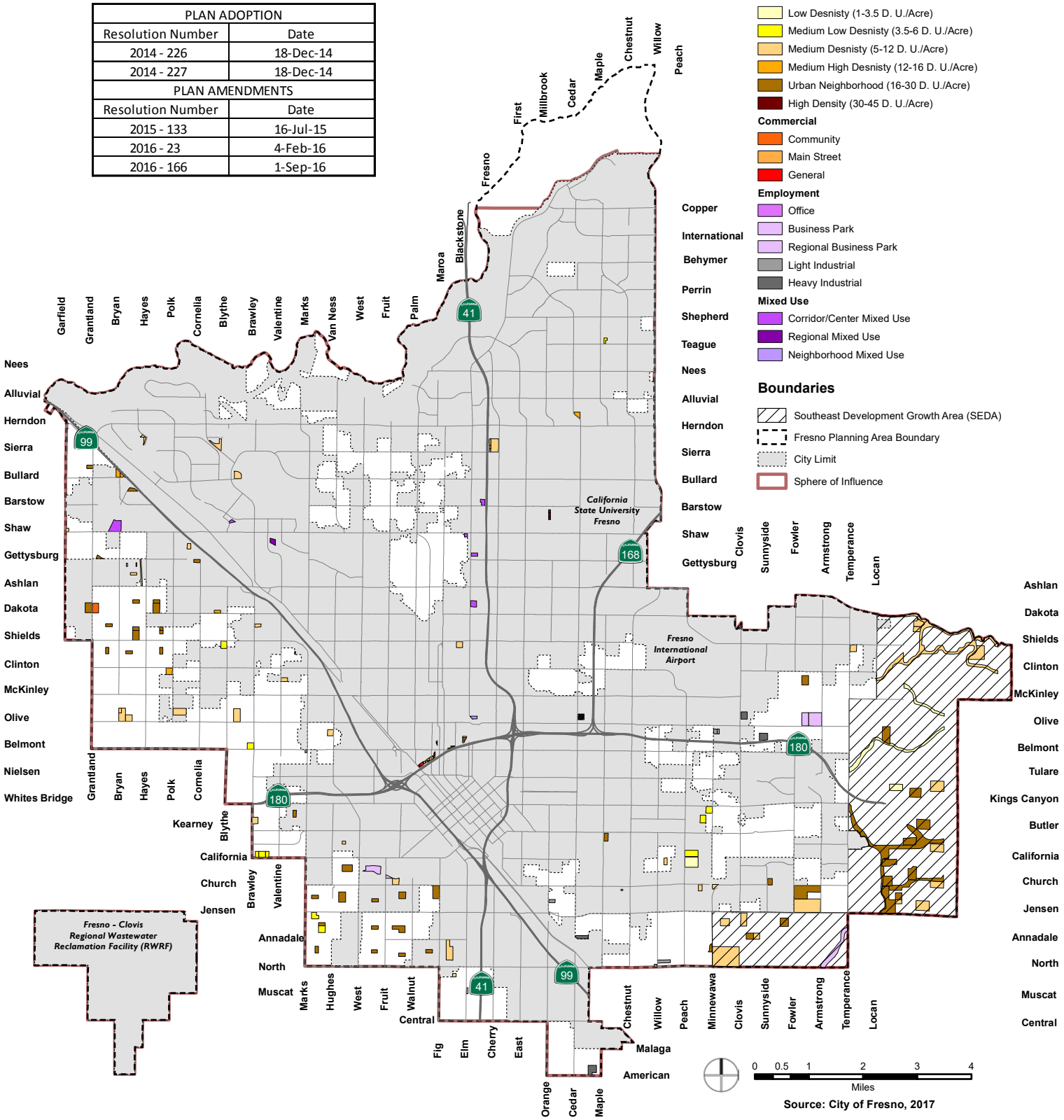
Date: 4/7/2017

This page intentionally left blank.

PLAN ADOPTION	
Resolution Number	Date
2014 - 226	18-Dec-14
2014 - 227	18-Dec-14
PLAN AMENDMENTS	
Resolution Number	Date
2015 - 133	16-Jul-15
2016 - 23	4-Feb-16
2016 - 166	1-Sep-16

Figure LU-2:

Dual Designation Diagram



Source: City of Fresno, 2017

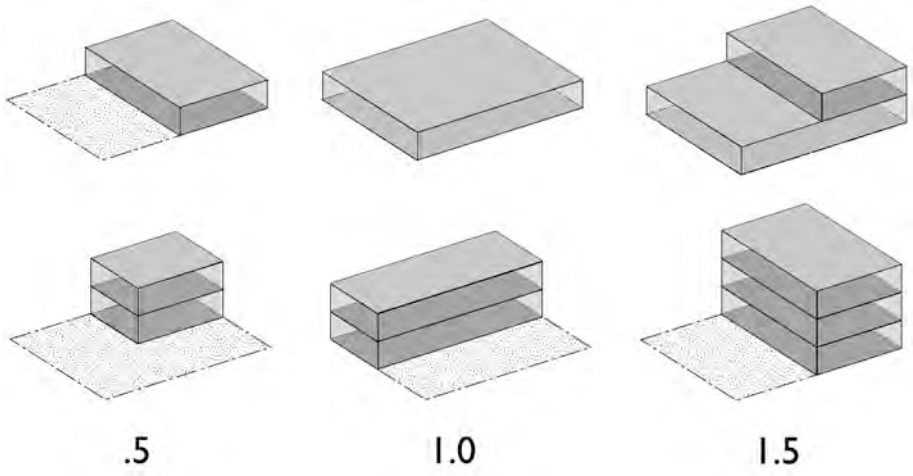
Note: All planned land uses for future parks, open space, ponding basins, schools (e.g. special, elementary, middle, high, and colleges) and schools with parks carry dual planned land use designations so that if that facility is not needed private and public development consistent with zoning and development standards may be approved. This map shows the additional land use designations.

Date: 4/7/2017 MA

This page intentionally left blank

Density and Intensity

The General Plan calculates density on net acreage, defined as the land area of a lot remaining after dedication of all areas for major streets, schools, regional trails, certified wetlands or floodplains, and land underneath electric transmission lines. For residential uses, the density and intensity standards are expressed as the number of housing units per net acre. For non-residential uses, a measure known as Floor Area Ratio (FAR) is specified. FAR is defined as the permitted ratio of gross floor area to site area. It is a measure of building bulk that controls both visual prominence and traffic generation, as shown in the diagram below.



The citywide density and intensity standards, established in Table 3-1, are intended to establish minimum and maximum densities per net acre allowed in each General Plan land use category, exclusive of the Downtown Planning Area. Minimum and maximum densities, intensities, and required land use mixes will be more precisely defined within the Development Code for purposes of determining the consistency of a proposed zone district and a property development entitlement with an applicable land use designation.

Minimum lot/parcel sizes (and corresponding lot frontage minimums and other lot design requirements) will be defined in the Development Code for each zone district. The Development Code will also provide procedures and criteria for preparing and implementing “planned development” for a given area to allow for limited reconfiguration of the planned land uses for that area and variations from base zoning district development standard, while maintaining the equivalent densities, intensities and mix of uses. Finally, the General Plan land use designation may provide overlap in the defined densities, intensities and land uses described for various land uses.

TABLE 3-1: CITYWIDE STANDARDS FOR DENSITY AND DEVELOPMENT INTENSITY

Land Use	Minimum to Maximum Residential Density (du/net acre)[1,2,3]	Maximum Floor Area Ratio
Buffer	Max = 0.05 (1 unit per 20 net acres)	-
Residential		
Low Density	Min = 1 unit per 5 acres Max = 3.5 units per acre	-
Medium Low Density	Min = 3.5 units per acre Max = 6 units per acre	-
Medium Density	Min = 5 units per acre Max = 12 units per acre	-
Medium High Density	Min = 12 units per acre Max = 16 units per acre	-
Urban Neighborhood Density	Min = 16 units per acre Max = 30 units per acre	-
High Density	Min = 30 units per acre Max = 45 units per acre	-
Commercial		
Main Street		1.0
Community		1.0
Recreation		0.5
General		2.0
Highway & Auto		0.75
Regional		1.0
Mixed-Use		
Neighborhood Mixed-Use	Min = 12 units per acre Max = No Limit	1.5
Corridor/Center Mixed-Use	Min = 16 units per acre Max = No Limit	1.5
Regional Mixed-Use	Min = 30 units per acre Max = No Limit	2.0
Downtown		
Downtown Neighborhood	Min = No limit Max = No limit	No limit
Downtown General	Min = No limit Max = No limit	No limit
Downtown Core	Min = No limit Max = No limit	No limit
Employment		
Office	-	2.0
Business Park	-	1.0
Regional Business Park	-	1.0
Light Industrial	-	1.5
Heavy Industrial	-	1.5

1. Based on Net Acreage.
2. Residential density refers to the ratio of residential dwelling units per acre (43,560 square feet) of land which is calculated by dividing the number of existing or proposed residential dwelling units by the land area of the property designated for, or proposed for development with, a residential use. The residential land area includes property upon which the residential and ancillary structures are located, together with yards and other private or common open spaces, and includes vehicle access drives and parking areas together with public and private roadways. The residential land area does not include major streets or State Routes designated by Figure MT-1: General Plan Circulation Diagram, and does not include schools or regional trails.
3. Additional density may be allowed for affordable housing or provision of community benefits (pursuant to California Government Code Sections 65915 – 65918, as may be amended).

Land Use Classifications

These land use classifications cover the entire Planning Area, with the exception of the Downtown Planning Area. The land use classifications for the Downtown Planning Area are described later in this element.

Residential

Residential land uses provide for a wide range of neighborhoods and housing types.

LOW DENSITY

This designation is intended to provide for large lot residential development. Low Density residential allows one to 3.5 housing units per acre. The resulting land use pattern is large lot residential in nature, such as rural residential, ranchettes, or estate homes.

MEDIUM LOW DENSITY

The Medium Low Density designation is intended to provide for single family detached housing with densities of 3.5 to 6 units per acre.

MEDIUM DENSITY

Medium Density residential covers developments of 5 to 12 units per acre and is intended for areas with predominantly single-family residential development, but can also accommodate a mix of housing types, including small-lot starter homes, zero-lot-line developments, duplexes, and townhouses. Much of the City's established neighborhoods fall within this designation.

MEDIUM HIGH

Medium High Density residential is intended for neighborhoods with a mix of single-family residences, townhomes, garden apartments, and multi-family units intended to support a fine-grain, pedestrian scale. This land use accommodates densities from 12 to 16 units per acre overall.

URBAN NEIGHBORHOOD

Urban Neighborhood residential covers densities from 16 to 30 units per acre, which will require multi-family dwellings but still allows for a mix of housing types including single-family houses. This land use is intended to provide for a compact community that includes community facilities and walkable access to parkland and commercial services; it also supports efficient, frequent transit

service. Urban Neighborhood is designated for targeted areas with complementary land uses adjacently located.

An example of Fresno's established residential neighborhoods, with wide streets, sidewalks, and large trees.

HIGH DENSITY

High Density residential is intended to accommodate attached homes, two- to four-plexes, and apartment buildings, and it will be supported by walkable access to frequent transit, retail and services, and community facilities such as parks and schools. High Density allows for 30 to 45 units per acre.

Commercial

Commercial land use designations allow a wide range of retail and service establishments intended to serve local and regional needs.

MAIN STREET

Main Street Commercial encourages a traditional Main Street character with active storefronts, outdoor seating and pedestrian-oriented design. This designation promotes primarily one to two story retail uses. It also preserves small-scale, fine-grain character in neighborhoods where single-family residential and townhomes are predominant. The maximum FAR is 1.0.

COMMUNITY

Community Commercial is intended for commercial development that primarily serves local needs such as convenience shopping and small offices. Many of the city's current commercial districts fall into this designation. Specific uses allowed include medium-scale retail, office, civic and entertainment uses, supermarkets, drug stores and supporting uses. The maximum FAR is 1.0.

RECREATION

The Recreation designation is intended for areas of private commercial recreation uses, such as bowling alleys and golf driving ranges. The maximum FAR is 0.5.

GENERAL

The General Commercial designation is intended for a range of retail and service uses that are not appropriate in other areas because of higher volumes of vehicle traffic and potential adverse impacts on other uses. Development such as strip malls fall into this designation. Examples of allowable uses include: building materials, storage facilities with active storefronts, equipment rental, wholesale businesses, and specialized retail not normally found in shopping centers. The maximum FAR is 2.0.

HIGHWAY & AUTO

The Highway & Auto designation is intended for limited areas near State Route 99 to accommodate uses that depend on or are supported by freeway access but do not generate a large volume of traffic. Hotels, restaurants, and auto malls are typical land uses. The maximum FAR is 0.75.

REGIONAL

The Regional Commercial designation is intended to meet local and regional retail demand, such as large-scale retail, office, civic and entertainment uses; shopping malls, with large format or "big-box" retail allowed; and supporting uses such as gas stations, and hotels. Buildings typically have relatively large footprints. Development and design standards will create a pedestrian orientation within centers and along major corridors. The maximum FAR is 1.0.

Employment

OFFICE

The Office designation is intended for administrative, financial, business, professional, medical, and public offices. This designation is mainly intended to apply to existing office uses on smaller lots, generally located on arterial

roadways. This designation is also considered compatible with existing residential neighborhoods given the smaller level of noise and traffic generated compared to commercial uses. Retail uses would be limited to business services, food services, and convenience goods for those who work in the area. The maximum FAR is 2.0.

BUSINESS PARK

The Business Park designation provides for office/business parks in campus-like settings that are well suited for large offices or multi-tenant buildings. This designation is intended to accommodate and allow for the expansion of small businesses. Given its proximity to residential uses, only limited outdoor storage will be permitted, while adequate landscaping is imperative to minimize the visual impacts. Typical land uses include research and development, laboratories, administrative and general offices, medical offices and clinics, professional offices, prototype manufacturing, testing, repairing, packaging, and printing. No free-standing retail is permitted, except for small uses serving businesses and employees. The maximum FAR is 1.0.

REGIONAL BUSINESS PARK

The Regional Business Park designation is intended for large or campus-like office and technology development that includes office, research and development, manufacturing, and other large-scale, professional uses, with limited and properly screened outdoor storage. Permitted uses include incubator-research facilities, prototype manufacturing, testing, repairing, packaging, and printing, as well as offices and research facilities. Small-scale retail and service uses serving local employees and visitors are permitted as secondary uses. The maximum FAR is 1.0.

LIGHT INDUSTRIAL

The Light Industrial designation accommodates a diverse range of light industrial uses, including limited manufacturing and processing, research and development, fabrication, utility equipment and service yards, wholesaling, warehousing, and distribution activities. Small-scale retail and ancillary office uses are also permitted. Light Industrial areas may serve as buffers between Heavy Industrial and other land uses and otherwise are generally located in areas with good transportation access, such as along railroads and State Routes. The maximum FAR is 1.5.

HEAVY INDUSTRIAL

The Heavy Industrial designation accommodates the broadest range of industrial uses including manufacturing, assembly, wholesaling, distribution, and storage activities that are essential to the development of a balanced economic base. Small-scale commercial services and ancillary office uses are also permitted. The maximum FAR is 1.5.

Mixed-Use[5]

Mixed-use designations are based on commercial uses and also require a residential or upper-floor office component.

NEIGHBORHOOD MIXED-USE

This designation allows a minimum of 50 percent residential uses and provides for mixed-use districts of local-serving, pedestrian-oriented commercial development, such as convenience shopping and professional offices in two- to three-story buildings. Development is expected to include ground-floor neighborhood retails uses and upper-level housing or offices, with a mix of small lot single family houses, townhomes, and multi-family dwelling units on side streets, in a horizontal or vertical mixed-use orientation. The built form will have a scale and character that is consistent with pedestrian-orientation, to attract and promote a walk-in clientele, with small lots and frequent roadway and pedestrian connections permitting convenient access from residences to commercial space. Automobile-oriented uses are not permitted.

CORRIDOR/CENTER MIXED-USE

The Corridor/Center Mixed-Use designation is higher intensity than Neighborhood Mixed-Use, and is intended to allow for horizontal and vertical mixed-use development in multiple story buildings along key circulation corridors where height and density can be easily accommodated. Ground-floor retail and upper-floor residential or offices are the primary uses, with personal and business services and public and institutional space as supportive uses. Development will facilitate the transformation of existing transportation corridors into vibrant, highly walkable areas with broad, pedestrian-friendly sidewalks,

[5] The General Plan is long-term in nature, and recognizes the importance of providing for an orderly evolution of existing, legal non-conforming uses during the planning period in a manner that acknowledges their current economic contributions while providing for a transition into conforming uses consistent with applicable land use designations.

trees, landscaping, and local-serving uses with new buildings that step down in relationship to the scale and character of adjacent neighborhoods. This designation will largely apply along major roadways, at targeted locations between regional Activity Centers. A minimum of 40 percent residential uses is required, and the maximum FAR is 1.5.

REGIONAL MIXED-USE

The Regional Mixed-Use land use designation is intended to accommodate mixed-use development in urban-scale buildings and retail establishments that serve residents and businesses of the region at large. Medium-scale retail, residential, office, civic and entertainment uses, and shopping malls (with large format or "big-box" retail) are allowed, as are supporting uses such as gas stations and hotels in mixed-use or single use buildings. Design standards will support a pedestrian orientation within centers and along major corridors, with parking on the side or rear in general, but automobile-oriented uses also will be accommodated on identified streets and frontages. A minimum of 30 percent residential uses is required, and the maximum FAR is 2.0.

Open Space

The Open Space designations (Parks and Recreational Facilities; Other Public Open Space) apply to open space areas that are not parks or trails, such as riparian corridors, the clear zone around Fresno-Yosemite International Airport, and the San Joaquin River bottom, which is primarily designated as open space even though it includes a limited number of existing homes.

Public Facilities

This designation applies to public facilities, such as City Hall, county buildings, schools, colleges, the municipal airports, and hospitals. It also includes public facilities, such as fire and police stations, City-operated recycling centers, sewage treatment plants, neighborhood, community and regional parks, recreational centers, and golf courses. Finally, it applies to multi-purpose trails that serve both regional and neighborhood needs.

Buffer

This designation is intended to separate urban uses from long-term agricultural uses in order to preserve long-term viable agricultural areas and intensive farming operations adjoining but outside the Planning Area. The Buffer designation will serve to prevent urban residential and related uses from developing near agricultural operations and infringing on full operation of important farmland. A variety of uses are compatible with the purpose of the Buffer, which will be defined in detail in the Development Code. General

categories include environmental habitats; water conveyance, retention and recharge; preservation and preparation of gravel resources for beneficial uses related to permanent water resource facilities; limited agriculture and necessary supportive uses, such as agricultural processing, excluding animal processing or uses that have the potential to create nuisances; and residential uses with 20 acres of land required per residence.

Downtown

Downtown designations allow a wide range of uses and the most intense development patterns in the region while creating pedestrian-oriented urban environments.

Downtown Core

The Downtown Core (DTC) is the cultural, civic, shopping, and transit center of Fresno and the region. This designation is applied to the traditional central business district of the city near the proposed High Speed Rail station and oriented around the restored section of Fulton Street. New buildings will be up to 15 stories in height and will be located at or near the sidewalk. Ground floor spaces will have active frontages with commercial, retail, multi-family housing, and office activity to support active streetscapes and walking. Upper floors and the floor area behind storefronts will accommodate a wide variety of office, civic, lodgings, housing, or additional commercial uses.

Downtown General

The Downtown General (DTG) designation will support a high concentration of regional activity generators such as governmental buildings and convention centers within a pedestrian-oriented, mixed-use urban setting. New buildings will be up to 10 stories in height and will be located at or near the sidewalk. Ground floor spaces will have active frontages with commercial, retail, multi-family housing, and office activity to support active streetscapes and walking. Upper floors and the floor area behind storefronts will accommodate a wide variety of office, civic, lodging, housing, or additional commercial uses.

Downtown Neighborhood

The Downtown Neighborhood (DTN) designation will create lively, walkable, mixed-use urban neighborhoods surrounding the Downtown Core and Downtown General areas. New buildings will be up to 6 stories in height and will be located at or near the sidewalk. Ground floor spaces will have active frontages with commercial, retail, multi-family housing, and office activity to support active streetscapes and walking. Upper floors and the floor area behind storefronts will

accommodate a wide variety of office, civic, lodging, housing, or additional commercial uses.

Downtown Neighborhood areas feature a mix of uses, including retail, office, civic, housing, and entertainment.

General Plan and Zoning Consistency

Table 3-2 summarizes the proposed zoning districts that will contain detailed development guidelines and regulations for the land uses in the General Plan.

TABLE 3-2: GENERAL PLAN LAND USE DESIGNATIONS AND ZONING DISTRICTS CONSISTENCY		
General Plan Land Use Designation	Development Code Zoning District	
Buffer	B	Buffer
Residential		
Low Density	RE	Residential Estate
	RS-1	Residential Single Family, Extremely Low Density
	RS-2	Residential Single Family, Very Low Density
	RS-3	Residential Single Family, Low Density
Medium Low Density	RS-4	Residential Single Family, Medium Low Density
Medium Density	RS-5	Residential Single Family, Medium Density
Medium High Density	RM-MH	Mobile Home Park
	RM-1	Residential Multi-Family, Medium High Density
Urban Neighborhood	RM-2	Residential Multi-Family, Urban Neighborhood
High Density	RM-3	Residential Multi-Family, High Density
Mixed-Use		
Neighborhood	NMX	Neighborhood Mixed Use
Corridor/Center	CMX	Corridor/Center Mixed Use
Regional	RMX	Regional Mixed Use
Commercial		
Main Street	CMS	Commercial - Main Street
Community	CC	Commercial - Community
Regional	CR	Commercial - Regional
General	CG	Commercial - General
Highway and Auto	CH	Commercial - Highway and Auto
Recreation	CRC	Commercial - Recreation
Downtown		
Downtown Neighborhood	DTN	Downtown Neighborhood
Downtown General	DTG	Downtown General
Downtown Core	DTC	Downtown Core
Employment		
Office	O	Office
Business Park	BP	Business Park
Regional Business Park	RBP	Regional Business Park
Light Industrial	IL	Light Industrial
Heavy Industrial	IH	Heavy Industrial
Other		
Open Space	OS	Open Space
	PR	Parks and Recreation
Public Facilities	PI	Public and Institutional

Local Plans

The City has adopted a number of plans that apply to defined areas throughout Fresno. Under the City's Local Planning and Procedures Ordinance (LPPO), Specific and Community Plans prevail when inconsistent with the General Plan. As a practical matter, this means full implementation of the General Plan may require certain Specific or Community plans to be either repealed or amended to allow consistency. As part of this process, policies and portions from certain plans have been considered in developing the General Plan, essentially resulting in a consolidation and update of planning documents through this repeal and amendment of plans. See Implementing Policy D-7-a for the list of plans being amended or repealed.

Annexation

As specified by Policy LU-1-g, this General Plan promotes the principle that the SOI not be expanded. The one exception to SOI expansion is to allow for the siting of a maintenance yard proximate to and south of the SOI boundary associated with the California High Speed Train project.

Regional Cooperation

Fresno is part of an eight-county region, each with its own Metropolitan Planning Organization. Collectively, they have approved the San Joaquin Valley Blueprint along with the Smart Growth principles listed below, which have been integrated into the General Plan. The adopted San Joaquin Valley Blueprint 12 Smart Growth principles:

1. Create a range of housing opportunities and choices;
2. Create walkable neighborhoods;
3. Encourage community and stakeholder collaboration;
4. Foster distinctive, attractive communities with a strong sense of place;
5. Make development decisions predictable, fair, and cost-effective;
6. Mix land uses;
7. Preserve open space, farmland, natural beauty, and critical environmental areas;
8. Provide a variety of transportation choices;
9. Strengthen and direct development towards existing communities;
10. Take advantage of compact building design;

11. Enhance the economic vitality of the region; and

12. Support actions that encourage environmental resource management.

The City of Fresno is also partnering with 13 of the other 15 federally defined Urbanized Areas in the San Joaquin Valley as part of the Smart Valley Places network, to plan and implement smart growth, livability, and sustainability through revised land use and transportation systems in the respective cities within all the Urbanized Areas in the eight-county Valley region. The City of Fresno also seeks to develop a regional cooperative planning and development strategy with all the city, county, and special district jurisdictions in Fresno, Madera, Tulare, and Kings counties in order to better achieve increased air quality, lower greenhouse gas emissions, farmland preservation, water and energy conservation, increased regional transportation infrastructure and economic development, and sustainable fiscal resource and mutual quality-of-life goals in the region.

OBJECTIVE

LU-1 Establish a comprehensive citywide land use planning strategy to meet economic development objectives, achieve efficient and equitable use of resources and infrastructure, and create an attractive living environment.

IMPLEMENTING POLICIES

LU-1-a **Promote Development within the Existing City Limits as of December 31, 2012.** Promote new development, infill, and rehabilitation of existing building stock in the Downtown Planning Area, along BRT corridors, in established neighborhoods generally south of Herndon Avenue, and on other infill sites and vacant land within the City.

LU-1-b **Land Use Definition and Compatibility.** Include zoning districts and standards in the Development Code that provide for the General Plan land use designations and create appropriate transitions or buffers between new development with existing uses, taking into consideration the health and safety of the community.

LU-1-c **Provision of Public Facilities and Services.** Promote orderly land use development in pace with public facilities and services needed to serve development.

Commentary: *Proposed school sites, parks, and storm water retention basin sites are shown in their most probable location, but the General Plan Land Use Diagram only represents probable placement for many of these prospective future public uses, and these various future public facility sites may be relocated or purchased in alternate locations.*

LU-1-d **Orderly Transition of Existing Uses**. Implement updates to the Fresno Municipal Code to provide for the orderly transition of existing, legal non-conforming uses on the BRT Corridors.

Commentary: *The goals, objectives and policies of this General Plan are long-term in nature. The General Plan recognizes the importance of providing for an orderly evolution of existing, legal non-conforming uses in a manner that acknowledges their current economic contributions while providing for a full transition into conforming uses consistent with applicable land use designations.*

LU-1-e **Annexation Requirements.** Adopt implementing policies and requirements that achieve annexations to the City that conform to the General Plan Land Use Designations and open space and park system, and are revenue neutral and cover all costs for public infrastructure, public facilities, and public services on an ongoing basis consistent with the requirements of ED-5-b.

Commentary: *If initiated directly with LAFCO without application by the City, the City is likely to oppose the proposed annexation unless it is consistent with the General Plan and the sequence of development discussed in the Implementation Element.*

Regarding Disadvantaged Unincorporated Communities, the City will partner with the community, if there is wide support for annexation, to coordinate terms to initiate and support the annexation process.

LU-1-f **Coordination with Fresno County Land Use Planning.** Seek a Memorandum of Understanding (MOU) with the County of Fresno to prohibit development inconsistent with this General Plan on unincorporated land within the City's SOI.

Commentary: *The MOU should also require all new development within the SOI to comply with all City development standards and policies.*

LU-1-g **SOI Expansion.** Maintain the City's current SOI boundaries without additional expansion, except to allow for the siting of a maintenance yard for the California High Speed Train project and related industrial and employment priority areas proximate to and south of the SOI boundary between State Route 41 and State Route 99. Prohibit residential uses in the expansion area.

OBJECTIVE

LU-2 Plan for infill development that includes a range of housing types, building forms, and land uses to meet the needs of both current and future residents.

IMPLEMENTING POLICIES

LU-2-a **Infill Development and Redevelopment.** Promote development of vacant, underdeveloped, and re-developable land within the City Limits where urban services are available by considering the establishment and implementation of supportive regulations and programs.

LU-2-b **Infill Development for Affordable Housing.** Establish a priority infill incentive program for residential infill development of existing vacant lots and underutilized sites within the City as a strategy to help to meet the affordable housing needs of the community.

LU-2-c **Infill Design Toolkit.** Develop and distribute an infill design toolkit, consistent with the City's Infill Development Act to support and encourage infill development.

Commentary: *The toolkit will use photos and diagrams to:*

- *Explain design and permit requirements and priority infill development incentives;*
- *Illustrate context-responsive best practices for prototype development; and*
- *Address detailed issues such as parking, scale, privacy, outdoor spaces, housing types, transitions, building design,*

siting and street orientation, setbacks, windows, and general material guidelines and buffering for adjacent uses.

LU-2-d **Infrastructure Upgrades.** Facilitate urban infill by building and upgrading community and neighborhood public infrastructure and services to enhance public health and convenience, and improve the overall experience and quality of city living.

LU-2-e **Neighborhood Preservation.** Incorporate standards in the Development Code to preserve the existing residential quality of established neighborhoods.

LU-2-f **Lot Consolidation.** Include incentives in the Development Code for streamlining the consolidation of very small, oddly shaped, and difficult to develop lots to create more efficient and developable parcels.

OBJECTIVE

LU-3 Support the successful fulfillment of plans when adopted for the Downtown Planning Area.

IMPLEMENTING POLICIES

LU-3-a **Downtown Planning Area Plans**. Prepare and adopt community plans and Specific Plans for the revitalization and continued development of the Downtown Planning Area neighborhoods, including the Fulton Street corridor, accompanied by implementing regulations that will govern future development in the area.

LU-3-b **Mixed-Use Urban Corridors that Connect the Downtown Planning Area.** Support the development of mixed-use urban corridors that connect the Downtown Planning Area with the greater Fresno-Clovis Metropolitan Area with functional, enduring, and desirable urban qualities along the Blackstone Avenue, Shaw Avenue, California Avenue, and Ventura Avenue/Kings Canyon Road corridors, as shown on Figure LU-1: General Plan Land Use Diagram.

LU-3-c **Zoning for High Density on Major BRT Corridors.** Encourage adoption of supportive zoning regulations for compact development along BRT corridors leading to the

Downtown Core that will not diminish the long-term growth and development potential for Downtown.

OBJECTIVE

LU-4 Enhance existing residential neighborhoods through regulations, code enforcement, and compatible infill development.

IMPLEMENTING POLICIES

LU-4-a **Neighborhood Nuisance Abatement.** Continue proactive and responsive code enforcement and nuisance abatement programs to improve the attractiveness of residential neighborhoods.

LU-4-b **Neighborhood Reinvestment.** Promote and consider partnerships with lending institutions that provide a variety of financing alternatives and adhere to the provisions of the federal Community Reinvestment Act.

LU-4-c **Housing Task Force.** Establish an interagency housing task force to coordinate the housing programs of the City with similar programs of other local jurisdictions and the Fresno Housing Authority to develop a coordinated affordable housing implementation plan.

OBJECTIVE

LU-5 Plan for a diverse housing stock that will support balanced urban growth, and make efficient use of resources and public facilities.

IMPLEMENTING POLICIES

LU-5-a **Low Density Residential Uses.** Promote low density residential uses only where there are established neighborhoods with semi-rural or estate characteristics.

LU-5-b **Medium-Low Density Residential Uses.** Promote medium-low density residential uses to preserve existing uses of that nature or provide a transition between low and medium density residential areas.

LU-5-c **Medium Density Residential Uses.** Promote medium density residential uses to maximize efficient use of residential property through a wide range of densities.

LU-5-d **Medium-High Density Residential Uses.** Promote medium-high density residential uses to optimize use of available or planned public facilities and services and to provide housing opportunities with convenient access to employment, shopping, services, and transportation.

LU-5-e **Urban Neighborhood Residential Uses.** Promote urban neighborhood residential uses to support compact communities and Complete Neighborhoods that include community facilities, walkable access to parkland and commercial services, and transit stops.

LU-5-f **High Density Residential Uses.** Promote high-density residential uses to support Activity Centers and BRT Corridors, and walkable access to transit stops.

LU-5-g **Scale and Character of New Development.** Allow new development in or adjacent to established neighborhoods that is compatible in scale and character with the surrounding area by promoting a transition in scale and architectural character between new buildings and established neighborhoods, as well as integrating pedestrian circulation and vehicular routes.

LU-5-h **Housing Offering Amenities.** Support housing that offers residents a range of amenities, including public and private open space, landscaping, and recreation facilities with direct access to commercial services, public transit, and community gathering spaces.

LU-5-i **Housing for Seniors.** Facilitate the development of senior housing projects that are accessible to public transportation and services.

LU-5-j **Campus-Centered Communities.** Encourage development of campus-centered communities by focusing growth around existing and planned academic facilities and by directing infrastructure to those areas.

OBJECTIVE

LU-6 Retain and enhance existing commercial areas to strengthen Fresno's economic base and site new office, retail, and lodging use districts to serve neighborhoods and regional visitors.

IMPLEMENTING POLICIES

LU-6-a **Design of Commercial Development.** Foster high quality design, diversity, and a mix of amenities in new development with uses through the consideration of guidelines, regulations and design review procedures.

LU-6-b **Commercial Development Guidelines.** Consider adopting commercial development guidelines to assure high quality design and site planning for large commercial developments, consistent with the Urban Form policies of this Plan.

Commentary: *The guidelines should address:*

- *Architectural finishes, coordinated color palette, massing, and hierarchy in scale;*
- *Pedestrian-scaled amenities, signage, and lighting;*
- *Site improvements, including parking lot landscaping, perimeter landscaping, foundation landscaping, walkways, and passageways;*
- *Ground floor transparency requirements along shopping streets and limitations on blank walls in these areas;*
- *Anti-theft glass on windows, rather than bars or roll-down metal screens, that are architecturally compatible with building design;*
- *Screening of truck loading, parking, mechanical equipment, transformers, ventilation systems, storage containers, and refuse collection areas from the street;*
- *Shading and its relationship and effects on surrounding buildings;*
- *Building entries; and*
- *Design standards for perimeter walls and fencing.*

LU-6-c **Appropriate Office Development.** Promote the establishment of development standards for new offices, addressing location, size, and intensity necessary to meet the City's needs. Integrate and support employment in adjacent and proximate neighborhoods.

- Locate office projects to provide a transition between more intensive commercial uses and residential areas;

- Facilitate office uses in conjunction with, and adjacent to, institutions and employment centers; and
- Avoid over concentrating office uses in any one part of Fresno when new office developments would create excessive vacancy rates in other established office areas.

LU-6-d **Neighborhood and Community Commercial Center Design.** Plan for neighborhood mixed use and community commercial uses to implement the Urban Form concepts of this Plan, promote the stability and identity of neighborhoods and community shopping areas, and allow efficient access without compromising the operational effectiveness of the street system.

- Neighborhoods will be anchored by community commercial centers with a mix of uses that meet the area's needs and create a sense of place; and
- Community commercial centers will be located within Activity Centers.

LU-6-e **Regional Center Planning and Design.** Promote economic growth with regional commercial centers.

- New regional commercial centers will be located with access to State Routes and/or other major transportation facilities to ensure access from throughout the region; and
- Regional shopping centers will have internally-unified building design, landscaping, and signage standards.

LU-6-f **Auto-Oriented Commercial Uses.** Direct highway-oriented and auto-serving commercial uses to locations that are compatible with the Urban Form policies of the General Plan. Ensure adequate buffering measures for adjacent residential uses, noise, glare, odors, and dust.

LU-6-g **Lodging Facilities Location.** Site lodging facilities and related accommodations near major transportation facilities.

OBJECTIVE

LU-7 Plan and support industrial development to promote job growth.

IMPLEMENTING POLICIES

LU-7-a **Incentives for a Diversity of Industries, Increased Food Processing and Manufacturing, and Related Employment Opportunities in Fresno.** Use the City's Capital Improvement Program to set priorities for locations and timing of water, sewer, and transportation infrastructure investments by the City and initiate implementation programs to encourage development of targeted industries as identified under Policy ED-3-c, in employment land use areas designated on Figure LU-1: Land Use Diagram.

Commentary: *The South Industrial Area, located generally south of Jensen Avenue within the City's SOI, intersected by State Routes 41 and 99, and containing over 1,100 vacant acres designated for industry, is one such priority industrial development area for major infrastructure improvements (See Figure I-3).*

LU-7-b **Business and Industrial Parks.** Promote business and industrial park sites that are of sufficient size, unified in design, and diversified in activity to attract a full range of business types needed for economic growth.

LU-7-c **Efficiency of Industrial Uses.** Promote industrial land use clusters to maximize the operational efficiency of similar activities.

- Provide access to a range of transportation modes through plans and incentives, ensuring that local, regional, and national connections are available to industrial uses;
- Develop a strategy to promote rail-accessible sites for industries that need such capability; and
- Ensure timely access to the full range of urban services for industrial development by coordinating proposed plans with the annual and long-range City infrastructure planning.

LU-7-d **Industrial Waste.** Establish appropriate development standards and review procedures in the Development Code for industrial waste recycling operations and waste transfer stations.

LU-7-e **Shared Parking for Industrial Uses.** Promote use of shared surface parking and other arrangements necessary to meet industrial needs with updated parking regulations.

OBJECTIVE

LU-8 Provide for the development of civic and institutional land uses to meet the educational, medical, social, economic, cultural, and religious needs of the community.

IMPLEMENTING POLICIES

LU-8-a **Civic and Institutional Use Compatibility.** Protect civic and institutional areas from incompatible uses that could affect their vitality and contributions to the city.

LU-8-b **Access to Public Facilities.** Ensure that major public facilities and institutions have adequate multi-modal access and can be easily reached by public transit.

LU-8-c **Zoning for Public Facilities.** Allow public facility uses in zoning districts where appropriate.

LU-8-d **Public Facilities and Institutions Meeting City Standards.** Request that federal, State, and local agencies locating public facilities and institutions in the City or designated growth area, meet City standards for public streets and sidewalks, access, parking, water supply, wastewater disposal, landscaping, and amenities.

OBJECTIVE

LU-9 Plan land uses, design, and development intensities to supplement and support, and not compete with, the Downtown.

IMPLEMENTING POLICIES

LU-9-a **Residential Locations.** Plan for new residential uses and types in a manner that help make the Downtown Planning Area a convenient destination for employment and regional retail shopping.

LU-9-b **Activity Centers.** Plan for future Activity Centers at appropriate locations that avoid competition with Downtown businesses.

LU-9-c **Primacy of Downtown.** Maintain the Downtown mixed-use areas as the Primary Activity Center within the city with the tallest buildings to enhance its profile and visibility.

Commentary: *Activity Centers outside of Downtown may include, but not be limited to, the vicinity of Woodward Park and the Blackstone Avenue, Kings Canyon Avenue, and Shaw Avenue corridors.*

LU-9-d **Directional Signage.** Direct travelers to the Downtown with directional signage throughout the city and along regional routes.

LU-9-e **Downtown Sightline.** Require new development to preserve existing sightlines to Downtown to the extent feasible.

LU-9-f **View Corridors.** Promote new view corridors that highlight the Downtown skyline.

LU-9-g **Improve Access**. Provide opportunities to enhance the existing physical accessibility of Downtown in order to encourage the inclusion of individuals with disabilities.

OBJECTIVE

LU-10 Promote regional cooperation and coordination on land use and planning issues among local jurisdictions.

IMPLEMENTING POLICIES

LU-10-a **Regional Land Use and Transportation Planning Program.** Continue participation efforts in a coordinated Regional Land Use and Transportation Planning Program with the City of Clovis, Fresno and Madera counties, and other cities in the region.

Commentary: *This program can undertake mutually-agreeable development strategy to:*

- *Identify areas suitable for development;*
- *Direct urban development to incorporated cities;*
- *Propose programs to meet federal, State, and local air quality requirements;*

- *Identify future regional facilities and services, including transportation corridors, water, and sewerage;*
- *Conserve agricultural land and prevent its premature conversion including requirements for an economic assessment, phasing plan, and criteria to prevent leapfrog development; and*
- *Discourage the creation of new rural residential lots and subdivisions.*

LU-10-b **Integrity of the General Plan.** Urge neighboring jurisdictions to support the integrity and implementation of the General Plan.

LU-10-c **Memorandum of Understanding (MOU).** Comply with the most recent Master Settlement Agreement and Amended and Restated MOU between the City of Fresno and County of Fresno. Update the existing MOU and Agreement as necessary to implement the goals of this Plan.

OBJECTIVE

LU-11 Encourage coordination with adjacent jurisdictions in providing public services, infrastructure and cooperative economic development.

IMPLEMENTING POLICIES

LU-11-a **Regional Programs.** Coordinate with the County of Fresno, County of Madera, the City of Clovis and other cities or special districts to:

- Promote resource management programs to avoid overlap and duplication of effort;
- Promote the development of a regional justice system program to meet future needs of the justice system, both adult and juvenile, including the judicial system and law enforcement;
- Promote the development of a regional public health program to meet future needs including community, environmental and mental health services; and
- Promote the development of a regional program to meet future library, recreational and social service needs of the region.

LU-11-b **Regional Economic Development.** Promote cooperative efforts with the County of Fresno, the County of Madera, the City of Clovis, other cities, or special districts to develop a regional approach to economic development that:

- Identifies regional economic development programs to create jobs and provide cost-effective incentives to assist business development of regional significance; and
- Promotes an agricultural-industrial synergy that will enable a significant portion of agricultural products to be fully prepared and processed locally.

LU-11-c **General Plan Consistency.** Pursue coordinated planning and development project reviews with relevant federal, State, and local public agencies to ensure consistency with this General Plan.

3.6 BUILDINGS AND DESIGN

Many well-known areas in Fresno are easily identified by their urban design and architecture. Both new and old, these areas can also serve as a basis for community dialogue when discussing design in general or specific proposed design guidelines and standards. Areas such as the Tower District, Huntington Boulevard, Wilson Island, Van Ness Boulevard in the Fresno High area, and Old Fig Garden possess architectural and urban design characteristics that are highly valued by local residents and businesses. There are other areas in Fresno that are not so well known, but are highly regarded by their neighborhood because of urban design features.

For the most part, higher density and high-rise buildings are focused in Downtown. The State Route 41/Blackstone Avenue corridor is designated in the 2025 General Plan as a high-rise/mid-rise district, originally proposed in 1984, but has not yet developed as such. Once outside Downtown, the intensity and overall mass of buildings with a few exceptions in the River Park area are relatively low and homogenous. Generally, one- and two-story buildings predominate, although in distinct areas some structures rise up to four and six stories. Going forward and in support of Downtown, LU-9 policies provide desirable guidance.

Many buildings in Fresno are conservative in design, with some exceptions, such as the City Hall and the Robert E. Coyle Federal Building. Pre-World War II homes are highly valued and exhibit considerable variety and texture. The

California ranch home movement produced notable homes in Old Fig Garden. Also, some garden office buildings are notable for the quality of their landscape and low-lying design.

OBJECTIVE

D-1 Provide and maintain an urban image that creates a "sense of place" throughout Fresno.

IMPLEMENTING POLICIES

D-1-a **Direct Access to Units**. Require all new multi-family residential development along BRT and other transit or pedestrian-oriented streets (Collector and Local), including high-rise, townhomes or other units, to provide direct pedestrian street access and to promote walkable connectivity, individualization, family-friendly development, identity, and street safety to the maximum extent reasonably feasible.

D-1-b **Active Ground Floor Frontage**. Encourage all new development located within Activity Centers and/or along BRT corridors to incorporate active ground floor frontages that engage pedestrians to the maximum extent feasible. Establish pedestrian-oriented design standards in the Development Code for building frontages, transparency, fenestration, and entries to create active streetscapes.

D-1-c **Privately Owned Public Spaces.** Consider creating and adopting design standards and incentives for providing privately owned public open spaces and plazas for gathering to enhance the pedestrian realm and provide opportunities for social interaction.

D-1-d **Public Art.** Continue to promote a citywide public art program that contributes to an awareness of the City's history and culture.

D-1-e **Graphic Identity.** Continue the preservation, promotion, procurement and strategic location of landmarks, monuments and artwork that provide orientation and represent Fresno's cultural heritage and artistic values.

D-1-f **Update Street Signs.** Consider updating street sign regulations to create a way-finding system and graphic identity without dominating city and district appearance.

D-1-g **Reducing Surface Parking.** Consider adopting and implementing incentives to replace existing large surface parking lots in centers with parking structures, and to incorporate them into high-density mixed-use developments.

D-1-h **Screening of Parking.** Consider requiring all new development with parking in Activity Centers and along corridors to be screened or concealed. Locate principal pedestrian entrances to new non-residential buildings on the sidewalk; any entrances from parking areas should be incidental or emergency use only.

D-1-i **Wrapping Parking Structures.** Consider requiring new development of above-grade parking structures to be wrapped with and provide direct access to active uses, such as dwelling units, offices, and shopping spaces.

Commentary: *If active uses are not feasible on the ground floor of parking garages, frontages should be architecturally attractive. This may be accomplished by including unique designs and materials, such as glass, articulated masonry, murals or landscaping setbacks.*

D-1-j **Lighting Standards.** Update lighting standards to reflect best practices and protect adjoining uses from glare and spillover light.

Commentary: *Security and interior lighting should not be visible from the exterior of parking garages.*

OBJECTIVE

D-2 Enhance the visual image of all "gateway" routes entering the Fresno Planning Area.

IMPLEMENTING POLICIES

D-2-a **Design Requirements for Gateways.** Create unified design requirements for gateways to welcome travelers to the City's Activity Centers.

Commentary: *Gateway route designation will be considered for application to key access routes such as State Routes 99, 41, 168, and 180; passenger rail rights-of-way; Peach Avenue, McKinley Avenue, and Clinton Way where air travelers enter Fresno; Van Ness Avenue; Fulton, Divisadero, Tulare, and*

Fresno Streets; Belmont and Olive; and Blackstone, Abby, Shaw and Herndon Avenues.

D-2-b **Funding for Gateway Enhancements.** Pursue funding to implement gateway enhancement plans and programs.

D-2-c **Highway Beautification.** Work with Caltrans, the Fresno Council of Governments, Tree Fresno, neighboring jurisdictions, and other organizations to obtain funding for highway beautification programs.

OBJECTIVE

D-3 Create unified plans for Green Streets, using distinctive features reflecting Fresno's landscape heritage.

IMPLEMENTING POLICIES

D-3-a **Green Street Tree Planting**. Create a Green Street Tree Planting Program, with a well-balanced variety and spacing of trees to establish continuous shading and visual continuity for each streetscape. Strive to achieve coherent linkages between public and private spaces, prioritizing tree planting along tree-deficient Arterial Roadways in neighborhoods characterized by lower per capita rates of vehicle ownership.

D-3-b **Funding for Green Street Tree Planting Program.** Pursue funding for the Green Street Tree Planting Program, including landscaping of median islands.

D-3-c **Local Streets as Urban Parkways.** Develop local streets as "urban parkways," where appropriate, with landscaping and pedestrian spaces.

D-3-d **Undergrounding Utilities.** Partner with utility companies to continue to pursue the undergrounding of overhead utilities as feasible.

OBJECTIVE

D-4 Preserve and strengthen Fresno's overall image through design review and create a safe, walkable and attractive urban environment for the current and future generations of residents.

IMPLEMENTING POLICIES

D-4-a **Design Review for Large Buildings.** Consider adopting and implementing a streamlined design review process for new construction and visible exterior alterations of large and significant multi-family, mixed-use and non-residential developments.

Commentary: *Thresholds of size and significance will need to be defined and review processes designed not to impede investment and development time frames.*

D-4-b **Incentives for Pedestrian-Oriented Anchor Retail.** Consider adopting and implementing incentives for new pedestrian-friendly anchor retail at intersections within Activity Centers and along corridors to attract retail clientele and maximize foot traffic.

Commentary: *Examples of incentives include increased floor area ratios, deferred impact fees, and priority processing.*

D-4-c **Appropriate Day and Night Activity.** Promote new residential, commercial and related forms of development that foster both day and appropriate night time activity; visual presence on the street level; appropriate lighting; and minimally obstructed view areas.

D-4-d **Design for Safety.** Continue to involve the City's Police Department in the development review process to ensure new buildings are designed with security and safety in mind.

D-4-e **Flexibility through Overlay Districts**. Allow innovative lot designs and patterns to enhance community livability in residential neighborhoods through new zoning provisions, with flexible development standards.

D-4-f **Design Compatibility with Residential Uses.** Strive to ensure that all new non-residential land uses are developed and maintained in a manner complementary to and compatible with adjacent residential land uses, to minimize interface problems with the surrounding environment and to be compatible with public facilities and services.

D-4-g **Development Code Update for Design Concepts.** Ensure that standards in the Development Code implement General Plan design concepts for each land use type.

Commentary: *The following will be considered in the new Development Code:*

- *Appropriate space is provided for activities proposed (e.g., indoor area for display of merchandise, as opposed to sidewalk/parking lot display);*
- *Sufficient space and access is provided for support functions, (e.g., storage, loading, parking, waste disposal/recycling);*
- *Location of customer parking areas does not discourage pedestrian and bicycle access;*
- *Access for the disabled is incorporated into project designs as required;*
- *Buildings in shopping centers are linked by pedestrian walkways;*
- *Business and industrial parks have campus-like settings, with uniformity of improvements and shared facilities for parking, loading, mass transit, and with internal and external bicycle and pedestrian access; and*
- *Structural conversions and changes of occupancy demonstrate compliance with building and zoning codes.*

D-4-h **Metal Buildings.** Promote the establishment of standards and guidelines for metal buildings to be acceptable and economical forms of structures.

- New buildings with metal walls or metal roofs shall be painted or have other appropriate finishes, as approved by the City; and
- Mechanical equipment shall be screened with parapet walls, mechanical wells, or other means. Roof vent color must match that of the roof. The distinctive pattern of ribs and joints in standing seam and other metal roofing materials should coordinate dimensionally with similar elements in exterior walls.

OBJECTIVE

D-5 Maintain and improve community appearance through programs that prevent and abate blighting influences.

IMPLEMENTING POLICIES

D-5-a **Code Enforcement.** Continue enforcement of the Fresno Municipal Code to remove or abate public nuisances in a timely manner.

D-5-b **Clean Streets.** Promote community partnerships and continued City efforts toward litter clean-up and abatement of trash stockpiles on public and private streets.

D-5-c **Façade Improvements.** Pursue funding for, and support of, building facade improvement programs.

D-5-d **Graffiti Prevention and Abatement.** Seek ways to end graffiti, continue and expand the City's effective Graffiti Abatement Program.

D-5-e **Community Sanitation.** Continue efforts in Operation Clean-Up to address rubbish/debris associated with homelessness.

OBJECTIVE

D-6 Encourage design that celebrates and supports the cultural and ethnic diversity of Fresno.

IMPLEMENTING POLICIES

D-6-a Consult with neighboring populations, including non-English speaking groups, to inform the architecture, landscape, programming, and interior design of City-owned facilities such as parks, offices, street lighting, and other visible features.

Commentary: *The intent of this policy is to incorporate local needs and desires into the design and function of local-serving public facilities, as appropriate.*

D-6-b Consider adopting and implementing incentives for, and support efforts by, private development to incorporate culturally-specific architectural elements in areas with a predominant ethnic population.

OBJECTIVE

D-7 Continue applying local urban form, land use, and design policies to specific neighborhoods and locations.

IMPLEMENTING POLICIES

D-7-a Amend or repeal the Community and Specific Plans as listed below. As appropriate, relocate specific street setback requirements found in the various plans to the Development Code. Repeal the Local Planning and Procedures Ordinance (LPPO) after adoption of the General Plan.

To Be Amended:

Bullard Community Plan (becomes Pinedale Neighborhood Plan)

Sierra Sky Park Land Use Policy Plan (for consistency with the Airport Land Use Commission's Sierra Sky Park Plan)

Tower District Specific Plan

Butler-Willow Specific Plan

North Avenue Industrial Plan

Sun Garden Acres Specific Plan

Hoover Community Plan (becomes El Dorado Park Neighborhood Plan)

To Be Repealed:

West Area Community Plan

Roosevelt Community Plan

Fulton/Lowell Specific Plan

Woodward Park Community Plan

Central Area Community Plan

McLane Community Plan

Fresno-High Roeding Plan

Yosemite School Area Specific Plan

Dakota-First Street Specific Plan

Edison Community Plan

Civic Center Master Plan

Highway City Specific Plan

D-7-b Consider preparing new community, neighborhood, and/or Specific Plans for neighborhoods and locations that were covered by repealed plans.

Commentary: *The City will work with community members in the preparation of new community, neighborhood, and/or Specific Plans after the adoption of the General Plan.*

D-7-c **Forestiere Underground Gardens.** In the event that the Highway City Specific Plan is repealed, those goals and implementation policies in the Highway City Specific Plan that are pertinent to the Forestiere Underground Gardens shall be incorporated in their entirety into this General Plan and will remain in effect.

3.7 DISADVANTAGED UNINCORPORATED COMMUNITIES

California Senate Bill 244 (Wolk, 2011; SB 244) requires local municipalities to identify Disadvantaged Unincorporated Communities (DUCs) within or adjacent to their Sphere of Influence (SOI), analyze the infrastructure needs of the DUCs (including water, wastewater, stormwater drainage, and structural fire protection), and evaluate potential funding mechanisms to make service extension feasible.

Disadvantaged Unincorporated Communities are defined as settled places not within city limits where the median household income is 80 percent or less than the statewide median household income.[6, 7] Under the policy set forth by the Fresno Local Agency Formation Commission (LAFCO), a DUC must also have at least 15 residences with a density of one unit per acre or greater. [8]

In 2015, Fresno LAFCO identified a total of 20 DUCs that are located within or adjacent to the City of Fresno SOI and which meet the full definition of a DUC (See Figure LU-3).

Infrastructure Conditions Summary of Fresno Area DUCs

Water

Water access for DUCs is served through either the City of Fresno Public Utilities Department or through private wells. Adequate water infrastructure is defined as having existing infrastructure connecting a parcel that contains one or more residences to the City's water system. The analysis does not include parcels that do not contain residences (i.e. vacant land or businesses) nor does it consider whether or not a residence has active service.

Wastewater

Similar to water, wastewater service is provided either through the City of Fresno Public Utilities Department or through private septic tanks. Adequate

[6] State of California Office of Planning and Research. Technical Advisory to SB 244.

[7] Flegal, C., Rice, S., Mann, J., & Tran, J. California Unincorporated: Mapping Disadvantaged Communities. PolicyLink, 2013

[8] Fresno Local Agency Formation Commission. City of Fresno Municipal Service Review Public Review Draft, prepared by Policy Consulting Associates, LLC. October 20, 2015.

wastewater infrastructure is likewise defined as having existing infrastructure connecting a parcel that contains one or more residences to the City's system. The analysis does not include parcels that do not contain residences nor does it make a distinction of active versus inactive service.

Stormwater Drainage

The stormwater drainage analysis includes review of the existing curb and gutter facilities in the DUC areas. Adequate stormwater drainage is defined as having curb and gutter located between a parcel containing one or more residences and the adjacent street(s) throughout the entire DUC area. FEMA Flood Zones are also given to indicate the likelihood that an area would face a significant flood threat.[9]

Zone X: Areas determined to be outside the 0.2% annual chance floodplain.

Zone XS: Zone X (shaded). Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

Zone A: No Base Flood Elevations determined.

Zone AE: Floodway Areas. The floodway is the channel of a stream [or canal] plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

Structural Fire Protection

Fire protection service is provided through the City of Fresno Fire Department and through response agreements with the City of Clovis Fire Department and the Fresno County Fire Protection District. Adequate structural fire protection is defined as having all parcels located within a four minute-response area. Only two DUC areas are not completely within this area.

[9] Flood Insurance Rate Map for Fresno County. Federal Emergency Management Agency, 2009.

Accessibility to fire hydrants is also important to the structural fire protection of DUCs, yet it was not possible to give an accurate analysis for fire hydrant coverage due to the constraints in mapping the (conservative) 500 foot range of coverage from a hydrant to a parcel via travel path. However, maps showing the 500 foot circular radius around fire hydrants is given in Appendix A to denote a general awareness of where fire hydrant coverage is sparse and where it is abundant. It should be noted that in areas without fire hydrant protection, the fire department will deploy a water tender and draft from seasonal irrigation canals as available to supplement the 500-700 gallons of fire suppression water carried on each apparatus. However, this alternate means of fire suppression results in significant delays or inability to mount an interior fire attack in a house, which affects rescue of the inhabitants and the deployment of adequate hose streams to protect adjacent structures.

In the following table, information is given for each DUC that exhibits the extent to which adequate infrastructure (as defined for each category) exists in those areas.

TABLE 3-3: DUC INFRASTRUCTURE CONDITIONS SUMMARY

#	Water[1]	Wastewater[1]	Stormwater Drainage		Structural Fire Protection
	Connected Line	Connected Line	Curb & Gutter	FEMA Flood Zone	Within 4 Minute Zone
1	4 of 18 | 22%	7 of 18 | 39%	No	Zone X	100%
2	8 of 39 | 21%	1 of 39 | 3%	No	Zone X	100%
3	0 of 249 | 0%	0 of 249 | 0%	No	Zone X & Zone XS	100%
4	131 of 221 | 59%	53 of 221 | 24%	No	Zone X & Zone XS	100%
5	0 of 14 | 0%	0 of 14 | 0%	No	Zone X & Zone XS	3.6%
6	0 of 39 | 0%	0 of 39 | 0%	No	Zone X & Zone A	100%
7	0 of 12 | 0%	0 of 12 | 0%	No	Zone X	100%
8	0 of 25 | 0%	0 of 25 | 0%	No	Zone X	100%
9	1 N/A[2]	1 N/A[2]	N/A	Zone X	60%
10	0 of 4 | 0% | 12 N/A[2]	0 of 4 | 0% | 12 N/A[2]	No	Zone X	100%
11	0 of 15 | 0%	0 of 15 | 0%	No	Zone X	100%
12	327 of 330 | 99%	324 of 330 | 98%	Yes	Zone X & Zone XS	100%
13	13 of 14 | 93%	0 of 14 | 0%	No	Zone XS	100%
14	104 N/A[3]	83 of 104 | 80%	No	Zone X, Zone XS, & Zone AE	100%
15a	462 N/A[3]	416 of 462 | 90%	No	Zone X & Zone XS	100%
15b	122 of 131 | 93% | 5 N/A[3]	125 of 136 | 92%	No	Zone X & Zone XS	100%
16	159 of 159 | 100% | 441 N/A[3]	587 of 600 | 98%	No	Zone XS	100%
17	976 of 976 | 100%	976 of 976 | 100%	No	Zone X & Zone XS	100%
18	1195 of 1195 | 100%	1195 of 1195 | 100%	Yes	Zone X, Zone XS, & Zone AE	100%
19	56 of 60 | 93%	60 of 60 | 100%	No	Zone XS	100%
20	272 of 272 | 100%	264 of 272 | 97%	No (missing 3 parcels)	Zone X	100%

[1] Counts of parcels with one or more residences are considered as a close approximation.
[2] These parcels are located within the boundaries of the Malaga Water District.
[3] These parcels are located within the boundaries of the Bakman Water District.

The number of parcels with residences within each DUC was determined through visual interpretation of aerial maps and Google Maps Street View. Maps and additional data are included in Chapter 3, Appendix A.

Water Districts

As noted in Table 3-4, some DUCs or portions of DUCs are served by the Malaga and Bakman Water Districts. While the active service in these areas may be more limited than the actual district boundaries, they are nevertheless excluded from the analysis because an activation or system upgrade in these areas would be managed by the respective water district, not the City.

Potential Funding Mechanisms to Address Deficiencies

SB 244 does not require cities to provide infrastructure directly to DUC areas, however, it does require cities to evaluate potential funding mechanisms that would make such service extensions feasible. The following alternatives are provided as potential funding mechanisms that could be utilized by entities within the governmental, private, and non-profit realms.

New Development

One way to address existing deficiencies is through new private development where the installation, upgrade, or expansion of infrastructure would be required to serve the new development. This type of development typically occurs on a limited, site-specific basis and is thus unlikely to address area-wide infrastructure needs within large areas that are nonadjacent to the city limits. However, for small areas like DUC Area 1 or in areas like DUC Area 15b, where infrastructure is missing from only a small number of parcels, private development could be effective in completing the community's total infrastructure needs.

Service Districts

Another mechanism to provide infrastructure is to establish an assessment district to bond for infrastructure construction and pay for it over time. A district would fund the cost of the infrastructure within a designated area through the fairly proportioned financial contributions of each benefiting landowner. To form a district, property owners vote to affirm the establishment of the district and assessment through a special election. This method would be most effective in areas that are missing significant portions of infrastructure such as water and sewer mains along major corridors.

Grants and Loans

There are numerous state, federal, and regional grants and loans that can provide funding for infrastructure projects within DUCs. Some examples include:

STATE WATER RESOURCES CONTROL BOARD DRINKING WATER STATE REVOLVING FUND[10]

The DWRSF is a State-managed fund that can supply low-interest to no-interest loans to provide drinking water infrastructure to disadvantaged communities. Eligible applicants include cities, counties, districts, for-profit and non-profit community water systems, public school districts and other non-community water systems, and systems that are created by the project. The repayment terms are 20 years or longer and the principal balance may be forgiven for publicly owned water systems or non-profit mutual water companies that serve disadvantaged communities.

STATE WATER RESOURCES CONTROL BOARD CLEAN WATER STATE REVOLVING FUND[10]

The CWSRF provides low interest financing agreements (dependent on General Obligation Bond Rate) for wastewater and stormwater treatment projects. Eligible applicants include cities, counties, districts, state agencies, tribal governments/organizations, agencies approved under Section 208 of the Clean Water Act, 501(c)(3)s, and National Estuary Programs. The repayment terms are up to 30 years or the useful life of the project. A percentage of the total project cost up to the full amount may be waived for projects benefiting DACs.[11]

STATE WATER RESOURCES CONTROL BOARD DIVISION OF FINANCIAL ASSISTANCE

The Division of Financial Assistance is in charge of implementing the State Water Resources Control Board's financial assistance programs and contains a link to current funding sources on its website at www.waterboards.ca.gov/water_issues/programs/grants_loans

GROUNDWATER QUALITY FUNDING ASSISTANCE[12]

The Groundwater Grant Program holds approximately $744 million dollars for the prevention and cleanup of contamination of groundwater-sourced drinking water. Up to $160 million has been specifically set aside for project serving disadvantaged communities (DACs) and economically distressed areas (EDAs). Eligible applicants include public agencies, non-profits, tribal organizations, public utilities, and mutual water companies. Grants range from $100,000 - $1 million for planning and $500,000 - unrestricted for implementation. Funds are

---

[10] "Below-Market Financing for Wastewater & Water Quality." State of California Clean Water State Revolving Fund.

[11] "Proposition 1 - Small Community Wastewater." State Water Resources Control Board, 15 Sept. 2015.

[12] "Water Board Groundwater Funding Programs." California Water Boards.

available from 2018 to 2021. Minimum local matching is 50%, however this may be reduced or waived for projects that benefit a DAC or EDA.

INTEGRATED REGIONAL WATER MANAGEMENT (IRWM) GRANT PROGRAM[13]

The IRWM Grant is administered by the Department of Water Resources and contains approximately $474.3 million in funding to be applied to projects that will adapt water systems to climate change, improve collaboration in regional water management, and increase regional water self-reliance (reducing reliance on the Sacramento-San Joaquin Delta). Of this $102 million is set aside for assistance to disadvantaged communities (DACs). Eligible applicants include public agencies, non-profits, tribal organizations, public utilities, and mutual water companies. Minimum local matching is 50%, however this may be reduced or waived for projects that benefit a DAC or EDA.

INFRASTRUCTURE STATE REVOLVING FUND (ISRF) LOAN PROGRAM[14]

The California Infrastructure and Economic Development Bank manages the ISRF program to provide low-cost financing for infrastructure projects in amounts ranging from $50,000 to $25 million with terms of up to 30 years. Municipal agencies and non-profit entities with municipal sponsors are eligible for funding.

USDA RURAL DEVELOPMENT WATER & WASTE DISPOSAL LOAN & GRANT PROGRAM[15]

The United States Department of Agriculture manages a Water & Waste Disposal Loan & Grant Program that offers long-term (up to 40 years), low-interest loans (sometimes combined with grants) for the construction or improvement of drinking water, sewer, solid waste, and storm water facilities in rural communities. The program may be pursued by state and local government entities, non-profits, and federally recognized tribes.

---

[13] "Proposition 1 IRWM Grant Program." California Department of Water Resources. 22 Feb. 2016.

[14] California Infrastructure and Economic Development Bank. Criteria, Priorities and Guidelines for the Selection of Projects for Financing Under the Infrastructure State Revolving Fund (ISRF) Program. Adopted August 25, 2015.

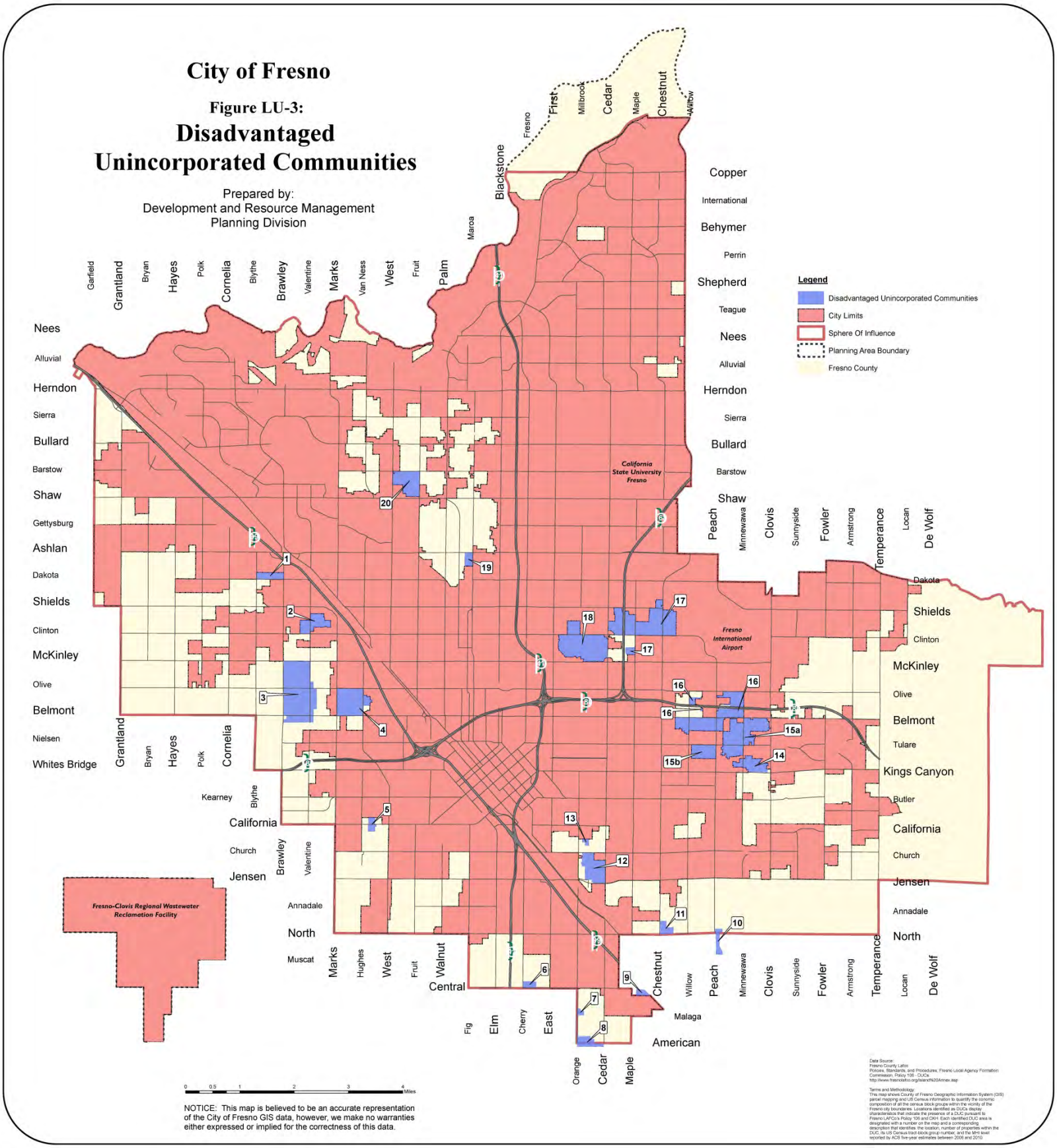
[15] "Water & Waste Disposal Loan & Grants Program.." United States Department of Agriculture, Rural Development.

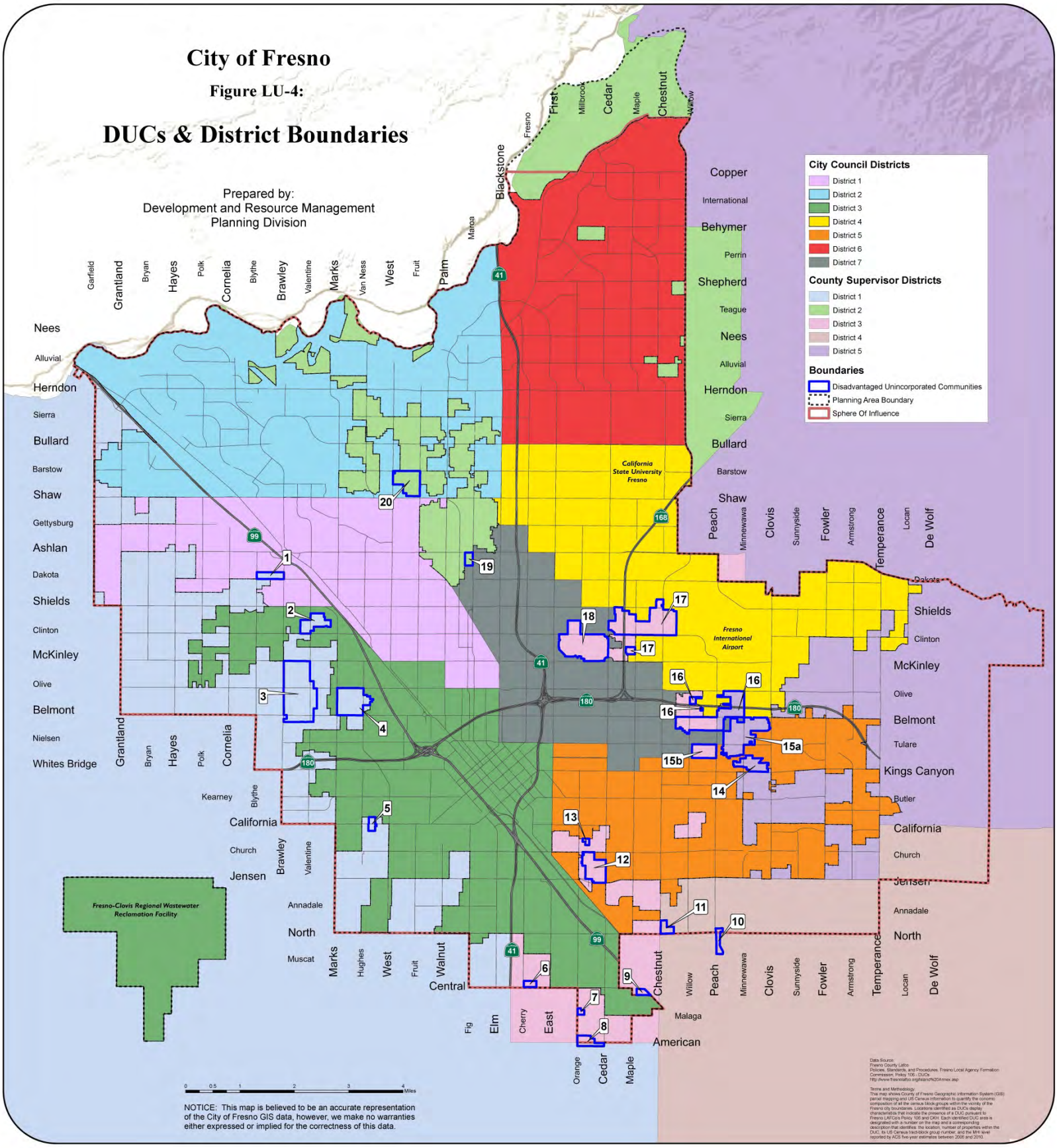
COMMUNITY DEVELOPMENT BLOCK GRANT FUND[16]

Administered by the United States Department of Housing and Urban Development, CDBG Funds are used to benefit low- and moderate-income communities, blighted communities, and communities that face issues of health and welfare. The fund may be used by the state and by cities and counties and can be applied toward infrastructure improvements.[17]

16 "CDBG Entitlement Program Eligibility Requirements." US Department of Housing & Urban Development, 2014.

17 "Expenditure Report: Use of CDBG Funds by Fresno County, CA." US Department of Housing & Urban Development, Office of Community Planning and Development. 12 Jan. 2015


City of Fresno
Figure LU-3:
Disadvantaged Unincorporated Communities
Prepared by:
Development and Resource Management
Planning Division
Legend
Disadvantaged Unincorporated Communities
City Limits
Sphere Of Influence
Planning Area Boundary
Fresno County
California State University Fresno
Fresno International Airport
Fresno-Clovis Regional Wastewater Reclamation Facility
NOTICE: This map is believed to be an accurate representation of the City of Fresno GIS data, however, we make no warranties either expressed or implied for the correctness of this data.


City of Fresno
Figure LU-4:
DUCs & District Boundaries
Prepared by:
Development and Resource Management
Planning Division
City Council Districts
District 1
District 2
District 3
District 4
District 5
District 6
District 7
County Supervisor Districts
District 1
District 2
District 3
District 4
District 5
Boundaries
Disadvantaged Unincorporated Communities
Planning Area Boundary
Sphere Of Influence
California State University Fresno
Fresno International Airport
Fresno-Clovis Regional Wastewater Reclamation Facility
NOTICE: This map is believed to be an accurate representation of the City of Fresno GIS data, however, we make no warranties either expressed or implied for the correctness of this data.

4 MOBILITY AND TRANSPORTATION

The purpose of the Mobility and Transportation Element is to provide an efficient, multi-modal transportation system that will meet the needs of all residents throughout the planning period. The Element is based on a fundamental philosophy that travel needs can be met through a comprehensive program of transportation planning, land use planning, growth management strategies, and a new Complete Streets concept. This Element includes objectives and policies for all modes and all users of streets and highways, transit, sidewalks and trails, and bicycle transportation modes, as well as parking, goods movement strategies, and the City's airports.

4.1 CONTEXT

This element has a strong connection to the Urban Form, Land Use, and Design Element, as the intensity, type, and location of land uses directly affects demand for transportation, and the idea of Complete Neighborhoods and pedestrian-oriented shopping districts must be supported by a well-connected system of Complete Streets, transit, and pedestrian and bicycle networks. A good transportation system also is critical to achieving the economic goals of this General Plan. Issues of transportation and connectivity also influence issues in other elements, such as supporting healthy communities; a resilient city; fiscal sustainability; improving air quality; access to police, fire, and medical services; and the ability to go for a walk. The appearance and function of public roadways is also one of the major components of a city's character and functionality, and one of the City government's main investments in the public realm and sense of place of its community.

Relationship to General Plan Goals

The Mobility and Transportation Element supports a number of General Plan goals, in particular the following:

1. Increase opportunity, economic development, business and job creation.[1]

   Use urban form, land use, and Development Code policies to streamline permit approval, promote local educational excellence and workforce relevance, significantly increase business development and expansion, attract and retain talented people, create jobs and sustained economic growth, strategically locate employment lands and facilities, and avoid over-saturation of a single type of housing, retail or employment.

3. Emphasize conservation, successful adaptation to climate and changing resource conditions, and performance effectiveness in the use of energy, water, land, buildings, natural resources, and fiscal resources required for the long-term sustainability of Fresno.

9. Promote a city of healthy communities and improve quality of life in established neighborhoods.

   Emphasize supporting established neighborhoods in Fresno with safe, well maintained, and accessible streets, public utilities, education and job training, proximity to jobs, retail services, and health care, affordable housing, youth development opportunities, open space and parks, transportation options, and opportunities for home grown businesses.

[1] The commentary in italics following certain goals is not part of the goal itself, but is instead advisory language intended to further discuss and clarify the goal to help guide the objectives of this General Plan

11. Emphasize and plan for all modes of travel on local and Major Streets in Fresno.

Facilitate travel by walking, biking, transit, and motor vehicle with interconnected and linked neighborhoods, districts, major campuses and public facilities, shopping centers and other service centers, and regional transportation such as air, rail, bus and highways.

13. Emphasize the City as a role model for good growth management planning, efficient processing and permit streamlining, effective urban development policies, environmental quality, and a strong economy. Work collaboratively with other jurisdictions and institutions to further these values throughout the region.

Positively influence the same attributes in other jurisdictions of the San Joaquin Valley –and thus the potential for regional sustainability - and improve the standing and credibility of the City to pursue appropriate State, LAFCO, and other regional policies that would curb sprawl and prevent new unincorporated community development which compete with and threaten the success of sustainable policies and development practices in Fresno.

14. Provide a network of well-maintained parks, open spaces, athletic facilities, and walking and biking trails connecting the city's districts and neighborhoods to attract and retain a broad range of individuals, benefit the health of residents, and provide the level of public amenities required to encourage and support development of higher density urban living and transit use.

16. Protect and improve public health and safety.

4.2 STRATEGIC INITIATIVES

Fresno has an effective and well-planned transportation system that is one of the strengths of the city. Looking ahead, however, the City has unmet transportation needs. A "re-think" is needed to consider how to meet them, given emerging concerns about urban form and economic development, performance measures for multi-modal planning, fiscal realities, and environmental considerations, as well as the State mandate that the concept of Complete Streets be integrated into the local general plan. How all of these ideas can be brought together is the focus of this section.

Complete Streets

The California Complete Streets Act (Act) requires general plans updated after January 30, 2011 to develop a plan for a multi-modal transportation system. The goal of the Act is to encourage cities to rethink policies that emphasize automobile circulation and prioritize motor vehicle improvements, and come up with creative solutions that

emphasize all modes of transportation. Complete Streets design has many advantages. When people have more transportation options, there are fewer traffic jams and the overall capacity of the transportation network increases. Additionally, increased transit ridership, walking, and biking can reduce air pollution, energy consumption, and greenhouse gas emissions, while improving the overall travel experience for road users. Providing more transportation options will allow the City to meet its future travel demands without solely relying on motorized vehicles.

Specifically, the legislation requires roadways to be designed to accommodate all users and provide a balance of multiple uses. Users could include motorists, pedestrians, bicyclists, children, older adults, persons with disabilities, and users of public transportation. Each street segment is not required to be Complete Street on its own; rather, all streets within the system as a whole must be considered. However, major thoroughfares such as Fresno's Arterials are among those roadways that should be Complete Streets along their entire length. The only exception would be if an immediately proximate roadway offered a faster, safer, and more convenient route, such as a bike boulevard running parallel to a heavy traffic corridor.

While there is no standard design template for a Complete Street, it generally includes one or more of the following features: bicycle lanes, wide shoulders, well-designed and well placed crosswalks, crossing islands in appropriate midblock locations, bus pullouts or special bus lanes, audible and accessible pedestrian signals, sidewalk bulb-outs, center medians, street trees, planter strips and ground cover. Complete Streets create a sense of place and improve public safety due to their emphasis on comprehensively encouraging pedestrian activity.

Using Performance Standards for Multi-Modal Systems

The City's current method of evaluating roadway performance needs to be updated to bring it in line with best practices for transportation planning and the Complete Streets legislation and align with General Plan goals for a multi-modal system. The current performance criteria dictate the number of street lanes constructed in order to prevent traffic congestion from exceeding a certain level, without consideration of other transportation modes that also should be accommodated. Issues with the City's traditional approach to roadway performance include:

- The current "one size fits all" approach that treats all areas of the city the same;
- The absence of other modes of travel—walking, bikes, transit—from the criteria; and
- The City's past practice of giving relatively high priority to vehicle travel level of service. This emphasizes keeping traffic congestion low but requires a roadway

system that is expensive to construct and maintain to serve the city's peak 15-minute travel time (rush hour). This also distorts the land development market and does not support the General Plan's urban form concepts.

System Capacity Design

Related to the City's high performance standards, Fresno's roadway system is built to handle a very short peak period of usage. The city does not have a full rush "hour," but rather a peak 15-minute period at most major intersections. Similar to a giant parking lot built to accommodate shoppers on the busiest day of the year only, but which is relatively empty most of the time, the street system is designed for a very small portion of overall demand.

This approach does create minimal traffic congestion at peak times, but results in an over-supply of capacity the majority of the time. It also requires a large amount of land to be devoted to streets, using up land that could be used for residential and commercial development, parks, schools and civic facilities. It creates environmental impacts and discourages travel by other modes—which paradoxically increases the amount of traffic on Fresno's streets. It is also expensive for the City to maintain this robust roadway system.

Making Use of Excess Capacity

Fresno's existing street system has excess capacity in several key areas due to the recent construction of the freeway system. The City can take advantage of this situation by promoting denser development on these streets, which will make the most efficient use of an existing public resource, increase opportunities for economic development and property values, and encourage a diversity of development types.

Comprehensive Connectivity

Fresno has transportation facilities that meet most modes of circulation, but the systems for pedestrians and bicycles are largely incomplete. In certain areas of Fresno, there is also difficulty in getting from one neighborhood to another, and to local stores, services, and public facilities such as schools and parks, by any means other than private automobile. Completing these citywide networks will encourage faster and simpler travel routes for work, errands, and recreation.

A well-connected street system offers a choice of routes and enables more direct connections. At the neighborhood scale a street grid facilitates walking, as convenience and direct routes are very important to pedestrians. What is good for walking is also good for transit: in a well-connected street system, buses can travel along routes easily reached on foot from the neighborhood interior. At a district or city scale, a grid

provides ideal conditions for a robust bicycle network. Cyclists prefer direct routes with moderate or low auto traffic; streets meeting both these descriptions can only be found in a system where streets connect across and not only within neighborhoods. Critically, a connective pattern is good for automobile traffic. With many routes to choose from, cars are able to distribute across the system rather than relying on a few major roads. This is also a valuable component of safe and efficient emergency vehicle response.

Air Transportation

Regional, national and global connectivity is provided by the City's two public airports, Fresno Yosemite International (FYI) and Fresno Chandler Executive Airport (FCH), and one private airport open to public use, Sierra Sky Park. FYI has excellent connectivity throughout the United States and world with ten airlines serving 12 non-stop destinations (five of which are major gateways). This also fosters healthy competition between the air carriers and stabilizes airfares. As of February 2014, FYI has connectivity to 242 domestic destinations and 74 international destinations across all seven continents - through just one connecting flight. FCH serves as a critical reliever airport to FYI and is the busiest general aviation airport in the Central Valley. It plays a significant role in accommodating business and corporate connectivity to the region and throughout California. The airport-related Objectives and Implementation Policies identified in this element address the continued viability of both FYI and FCH.

Parking and Goods Movement

Fresno does not have any particular issue with parking and goods movement, but faces similar concerns of many other cities, which is ensuring adequate infrastructure and logistics to keep the costs of economic development low, while simultaneously aiming to improve visual appearance, enhance the safety of walking and biking, and reduce the costs of road maintenance. The reliance of both inter-regional and local goods movement on State Route 99 is an important issue for both Fresno and the San Joaquin Valley, and plans for future development will need to avoid loading unnecessary personal traffic onto this crucial corridor when possible.

A well-connected, multi-modal transportation system serves all Fresnans.

4.3 ROADWAYS AND AUTOMOBILES

The City and County public roadway network, together with State highway routes, comprise the predominant transportation infrastructure in and around Fresno. Although this network primarily serves travel by private automobiles, it also accommodates persons travelling by most modes, as well as the distribution of goods and services. Streets and highways are also the most widespread element of the public realm, constitute a prominent urban form defining feature, and establish a common environment and image of the city.

Automobile travel has been the main emphasis of transportation planning and is the dominant mode in Fresno. According to Fresno Council of Governments' (FCOG) Travel Demand Model (2012), about 91.2 percent of the total average daily trips beginning or ending in the County are made by private vehicles. About 7.4 percent of the daily average trips are made by walking and bicycling, and less than one percent (0.86 percent) use transit, based on the most recent U.S Census journey to work data.

In Fresno, the roadway system configuration has been primarily based on a traditional grid pattern. The oldest part of the city (the traditional Downtown area) is an urban grid oriented to the Union Pacific (originally Southern Pacific) railroad alignment that traverses the San Joaquin Valley in a northwest to southeast direction. Outside of this area the grid shifts to a north-south orientation based on Township, Range and Section lines. Almost all of the Arterial and Collector Streets (roadways) within the

Metropolitan Area are regularly spaced at half-mile intervals. This roadway pattern has been modified in the past several decades to include several curvilinear and diagonal alignments, and neighborhood street patterns have sometimes deviated from the grid pattern.

Over time, Fresno's street circulation system and developed urban form have also been framed by limited access State highways that traverse the city. State Route 99 traverses the city from northwest to southeast, connecting Fresno to other communities throughout the central and southern San Joaquin Valley. State Routes 41 and 180 bisect the city north-south and east-west connecting Fresno to Yosemite and Kings Canyon National Parks, respectively. State Route 168 links Fresno to Clovis and Sierra Nevada recreational attractions at Shaver and Huntington Lakes to the northeast. The construction of the freeway system removed a substantial amount of the "through" traffic from the local roadway network (e.g.: Blackstone Avenue, Golden State Boulevard, Kings Canyon Road), freeing up capacity on the local streets except at intersections near freeway interchanges. This urban freeway system has shortened commute times from the northern areas of the city and Clovis, and to the east for bedroom communities and foothill communities, thus supporting the continued spread of urbanization onto productive agricultural land, increasing commute lengths, and vehicle miles travelled each day to and from work.

Roadway System

Figure MT-1: Circulation Diagram designates the planned roadway network of the General Plan. The planned roadway system focuses primarily upon roadways, which includes the Expressway, Superarterial, Arterial, and Collector Streets. For some roadways, especially in areas that are not yet developed with urban uses, the diagram indicates the future and not the present character of the road. The construction of planned roadways occurs during the course of a general plan's implementation through the execution of the City's capital improvements program utilizing funds from a variety of sources. In addition, portions of roadways are constructed by private property owners and developers in accordance with applicable property development standards.

Street Typologies

This General Plan establishes a refined street classification system to categorize roadways and other transportation facilities, as shown in Figure MT-1: Circulation Diagram. Each classification reflects the character of the facility as well as its function within the context of the entire transportation system. Each classification has standards considering a facility's relation to surrounding land uses, existing rights-of-way, accessibility via other roadways, and appropriate travel speeds. While roadway classification types were originally based upon a priority given to various types and lengths of motor vehicle tips, they now give substantial consideration to the

accommodation of multiple travel modes and trips (public transportation, bicycle, pedestrian). This classification system will be used for engineering design and traffic operation standards. Scenic Corridors apply the corresponding classification listed here.

Freeway: Multiple-lane divided (median island separation) roadways on adopted State route alignments servicing through and crosstown traffic, with no access to abutting property and no at-grade intersections. Freeways are under the jurisdiction of the State, outside the control of the City. They have been assessed for the purposes of this General Plan due to their location within the Planning Area for the General Plan.

Expressway: Four- to six-lane divided (median island separation) roadways primarily serving through and crosstown vehicle traffic, with at-grade major street intersections located at approximately one-half mile intervals and no driveways for direct motor vehicle access to abutting property.

Superarterial: Four- to six-lane divided (median island separation) roadways with a primary purpose of moving multiple modes of travel traffic to and from major traffic generators and among subregions. A select number of motor vehicle access points to adjacent properties or local streets between the major street intersections may be approved by the City. Access points will be limited to right-turn entrance and exit vehicular movements, as well as select left-turn partial openings in medians from the Superarterials to surrounding properties or neighborhoods, limited to one location per half-mile. No left turns are allowed out of local streets or properties.

Arterial: Four- to six-lane divided (median island separation) roadways, with somewhat limited motor vehicle access to abutting properties, and with the primary purpose of moving traffic within and between neighborhoods and to and from freeways and expressways. In addition to major street intersections, appropriately designed and spaced local street intersections may allow left-turn movements to and from the arterial streets.

Collector: Two- to four-lane undivided (opposing travel lanes generally not separated by a median island) roadways, with the primary function of connecting local streets and arterials and neighborhood traffic generators and providing access to abutting properties. Local street intersections and motor vehicle access points from abutting properties are allowed consistent with the City's engineering standards and accepted traffic engineering practices. Collectors typically have a center two-way left-turn lane.

Local: Two- to three-lane roadways designed to provide direct access to properties, while discouraging excessive speeds and volumes of motor vehicle travel incompatible with neighborhoods being served through the implementation of multiple, well

connected routes and traffic calming measures. The alignments of future local streets are typically not specified by the General Plan Circulation Diagram, but existing local streets may be depicted for informational purposes. In specific circumstances local streets are designated where necessary to assure adequate access and implementation of Complete Neighborhoods with well-connected routes for motor vehicle, bicycle and pedestrian travel.

Drive: A street that in addition to its transportation function provides opportunities for the enjoyment of natural and man-made scenic resources. The aesthetic values of scenic drives may be protected.

Figure MT-1:

Major Street Circulation Diagram

1. See Policies MT-3-a and MT-3-b for Scenic Corridors.

Note: The Fresno Air National Guard Base, a military airport, and the Fresno Yosemite International Airport are located in the area represented as Fresno Yosemite International Airport.

0 1/2 1 2 4
MILES

Source: City of Fresno, 2014.

Street Design Standards

Over the past 35 years, the planned roadway hierarchy has shifted from being singularly focused on moving automobiles to a more complete multi-modal network. However, the relationship of street function to land use characteristics has continued to focus upon ameliorating adverse impacts of traffic nuisances with landscaped setbacks, walls and parking areas separating buildings from the street and sidewalk public realm. This system does not adequately account for land uses along streets that may be more focused on pedestrians, cyclists, and transit riders, as seen in Downtown, Activity Centers, and BRT Corridors. A new approach to street classification must now be considered to account for the specific characteristics sought in these areas.

The General Plan expands the roadway classification descriptions to include specific characteristics, such as pedestrian realm, on-street parking, number of vehicle lanes, bike lanes, and landscaped median, as shown in Table 4-1.

TABLE 4 1: ROADWAY CHARACTERISTIC MATRIX

Roadway Type	Number of Vehicle Lanes	Bike Lanes	Pedestrian Facilities	On-Street Parking	Median
Expressway	4 to 6	No	Trail	No	Yes
Superarterial	4 to 6	Yes	Sidewalks[1]	No	Yes
Arterial	4 to 6	Yes	Sidewalks[1]	Possible	Yes
Collector	2 to 4	Yes	Sidewalks	Yes	Possible
Local	2 to 3	Possible (or Trail)	Sidewalks	Yes	Possible

Source: Fehr & Peers, 2011.
1. Where called for by the General Plan, a trail may be required instead of a sidewalk.

Standards for Multi-Modal Level of Service

This General Plan calls for the City to use a more flexible system of multi-modal measures or indicators of "Level of Service" (LOS) provided by public roadways to evaluate current and projected conditions for each mode of travel and identify congestion points or deficiencies which need to be addressed in planning for future improvements. Historically, LOS analysis has been auto-oriented and relied upon a conventional perspective of the primary use of public streets by motor vehicles rather than considering all modes of travel, including public transportation, bicycling and walking. This system provides a ranking of the efficiency of a street segment or intersection with six categories ranging from A (free traffic flow with individual vehicles virtually unaffected by the presence of other vehicles) to F (forced, stop-and-go travel with the volume of vehicles substantially exceeding the capacity of the street and often

referred to as "gridlock"). A multi-modal LOS system would address the frequency of bus service or the width of sidewalk clear zones for pedestrians and how many people are served by a facility, whatever their mode of travel, rather than just how many cars get through an intersection.

Level of service is typically evaluated using a peak hour travel condition rather than a 24-hour average daily travel condition - when is traffic at its worst. LOS A, therefore, would appear to be a good grade to achieve. But it is actually a result of overbuilding the system, resulting in wasted money, resources, land, and increased impacts from the facility, such as encroaching closer than necessary to existing houses or removing of houses unnecessarily. However, LOS F is not always good either, resulting in increased commute times, more idling cars resulting in increased emissions, and driver frustration.

In analyzing current and future projected conditions there needs to be exceptions to standards where it would not be reasonably feasible to provide the sufficient street width to make improvements necessary to accommodate projected peak hour traffic volumes to attain the set LOS for that roadway or intersection. Congestion, especially if only for short periods of time, can be more fiscally prudent compared to the costs and impacts of facility improvements and maintenance that at the same time may contribute to an overbuilt system. Additionally, congestion can incentivize the use of transit or other modes of transportation that more efficiently move people, save tax dollars, and are better for local air quality.

Context-Sensitive LOS

A more dense urban development pattern will focus traffic increases within the urban core of the city when compared to a less dense pattern where development is located on the urban fringe. However, a denser development pattern brings with it more travel mode choices and can result in shorter trips and more trips made by bus, by bicycle or on foot, compared to a more dispersed pattern. Thus, more compact infill development tends to have a smaller impact per dwelling unit on roadway level of service and the demand for street widening and extension as compared with more dispersed development at the urban edge. An example of this is the congestion that currently occurs on Friant Road during the AM and PM peak periods in northeast Fresno due to low-density development on the urban fringe, as compared to the low level of congestion that occurs in the area around the Tower District. The General Plan envisions that a context-sensitive LOS system can be developed which will be more responsive to the City's needs and support achieving the urban form concepts of the Plan.

All-Day vs. Peak Period Use

LOS is measured based on traffic conditions during the morning and evening peak periods. Good or satisfactory conditions ("free flow" at LOS A to "tolerable delays" at LOS D) are ascribed to roadways where congestion does not become acute even during rush hour. Meeting this standard requires the construction of roadways that provide far more capacity than is needed for most hours of the day. Accommodating a LOS of D or better for vehicular traffic may necessitate six- and eight-lane roadways with dual left turn lanes. These roadways then become extremely wide and unfriendly for pedestrian and bicycle use. Responding to this problem, the General Plan sets a direction for a Complete Streets system that will be more efficiently used. This may mean a greater emphasis on distributing traffic across a more connective network, and a greater tolerance for peak-hour congestion.

Multi-Modal LOS

As mentioned above, the General Plan proposes a balanced transportation system that serves public transit, bicyclists and pedestrians as well as motor vehicles. This multi-modal system will support more compact development patterns, which in turn will support other goals, including farmland preservation and neighborhood walkability. Less reliance on the automobile is critical for Fresno if the city is to improve air quality and reduce greenhouse gas emissions. A multi-modal system will ensure mobility for all community members. Ultimately, a truly multi-modal system is more resilient from a transportation perspective, giving Fresno attributes it needs to manage congestion over the long-term.

Fresno can create a transportation system that performs well for all modes, in part by measuring performance with qualitative indicators for each mode based on inputs covering facility design, facility controls, and volumes. This multi-modal LOS concept is illustrated in Table 4-2. Implementing a multi-modal LOS standard would require the consideration of all travel modes when evaluating traffic congestion such that widening roads at the expense of walking and bicycling—a result that ironically is much more expensive for private development to build, the public sector to maintain, and adds more traffic to streets since other travel modes are no longer possible - would not explicitly be considered reasonable. A multi-modal LOS system will also help support the development of more intense land uses where desired by permitting localized automobile congestion if walking, biking, and transit systems operate at high levels. A multi-modal LOS standard does not define an overall grade for a roadway section, but provides information for each travel mode to properly assess, for that facility, the best approach to improve its travel capacity with the financing available. Based on a project's location, the proposed improvements will be different. A more suburban intersection may add capacity with a double left turn lane where at a Downtown intersection it may be determined infeasible due to the lack of available right-of-way, or pedestrian islands are required to improve pedestrian flow and intersection wait times.

TABLE 4 2: MULTI MODAL LEVEL OF SERVICE INDICATORS

LOS	Transit	Bicycle	Pedestrian
A	(Good walk access to bus stops, frequent service, good bus stop amenities.)	(Few driveway and cross street conflicts, good pavement condition, ample width of outside lane, including parking and bike lanes.)	(Low traffic volumes, wide buffer separating sidewalk from traffic, numerous street trees, and high parking occupancy.)
B			
C			
D			
E			
F	(Poor walk access to bus stops, infrequent service, poor schedule adherence, no bus stop amenities.)	(Poor pavement condition, narrow width of outside lane, frequent driveways and cross streets.)	(High traffic volumes, limited buffer separating sidewalk from traffic, few street trees, low parking occupancy.)

Source: Dowling Associates, 2010.

Designing for Sustainable Transportation

Four approaches have guided policy development for transportation:

1. **Reduce Vehicle Miles Traveled (VMT).** Reducing VMT frequently involves providing more and better transportation options and improving land use so that frequent origins and destinations are closer. The main benefit of reducing VMTs is the benefit to Fresno's air quality since vehicle emissions are one of the main sources of air pollution in our air basin. Reducing VMT frees up discretionary income for Fresno families by reducing money spent on fuel and vehicle wear and tear. Reducing VMT supports economic development by shifting trips that don't need to drive, preserving scarce roadway capacity for goods movement and trips that do need to drive. Finally, reducing VMT helps people by (usually) increasing walking, bicycle and transit use, all of which increase physical activity and therefore health.

2. **Prioritize Funding for Improvements in Areas That Have Reported Fatalities and Injuries.** Reducing unanticipated congestion due to accidents adds benefits through trip reliability for freight and other high value trips. Reducing unanticipated congestion also reduces braking, acceleration and idling, all of which reduce fuel consumption and, therefore, greenhouse gas emissions.

3. **Improve Travel Time Reliability.** For high value trips (e.g., freight and commute), predictable/reliable travel times are often more valuable to users than

improvements to average travel time. Improving travel time reliability supports the economy by creating more reliable freight trips. Improving travel time reliability helps people by allowing them to avoid wasting time by leaving early in order to deal with unpredictable trip times. It also helps reliability and performance of emergency response vehicles.

4. **Improve Speed Consistency.** Improving speed consistency can help reduce fuel consumption. It is a measure based on speed, braking and acceleration. Pursuing traffic synchronization on major roadways will result in reduced travel time, smoother vehicle and transit flows, as well as reduced vehicle emissions and improved air quality.

4.4 BIKES AND PEDESTRIANS

Fresno has made a strong commitment to improving non-motorized travel. The City established a Bicycle-Pedestrian Advisory Committee in 2002 and subsequently completed the Bicycle, Pedestrian and Trails Master Plan (BMP), which was adopted by the City Council in 2010. In 2017, the City adopted the Active Transportation Plan (ATP) which is replaces the BMP. Although the ATP is a separate document and not part of this Plan, the General Plan supports the ATP's aspirations for a comprehensive bicycle and pedestrian facilities network consisting of sidewalks, lanes, paths and trails while recognizing that the ATP identifies more facilities and programs than discussed in the General Plan. The ATP also identifies more detailed implementation strategies with cost estimates and prospective funding sources, evaluates priorities of prospective improvements, and identifies a complete inventory of both short-and long-range bicycle improvements.

Pedestrian Facilities and the Pedestrian Realm

Sidewalks

The presence of sidewalks and the quality of the pedestrian realm is a critical factor in the ability to walk around the city. Certain areas of Fresno lack continuous sidewalks, leaving pedestrians to share road space with cars. The City began addressing this problem with the "No Neighborhood Left Behind" program in 2005, which added new gutters, curbs, sidewalks, and streetlights to inner city neighborhoods at a budget of $45 million over six years starting in FY 2005, and has since been completed.

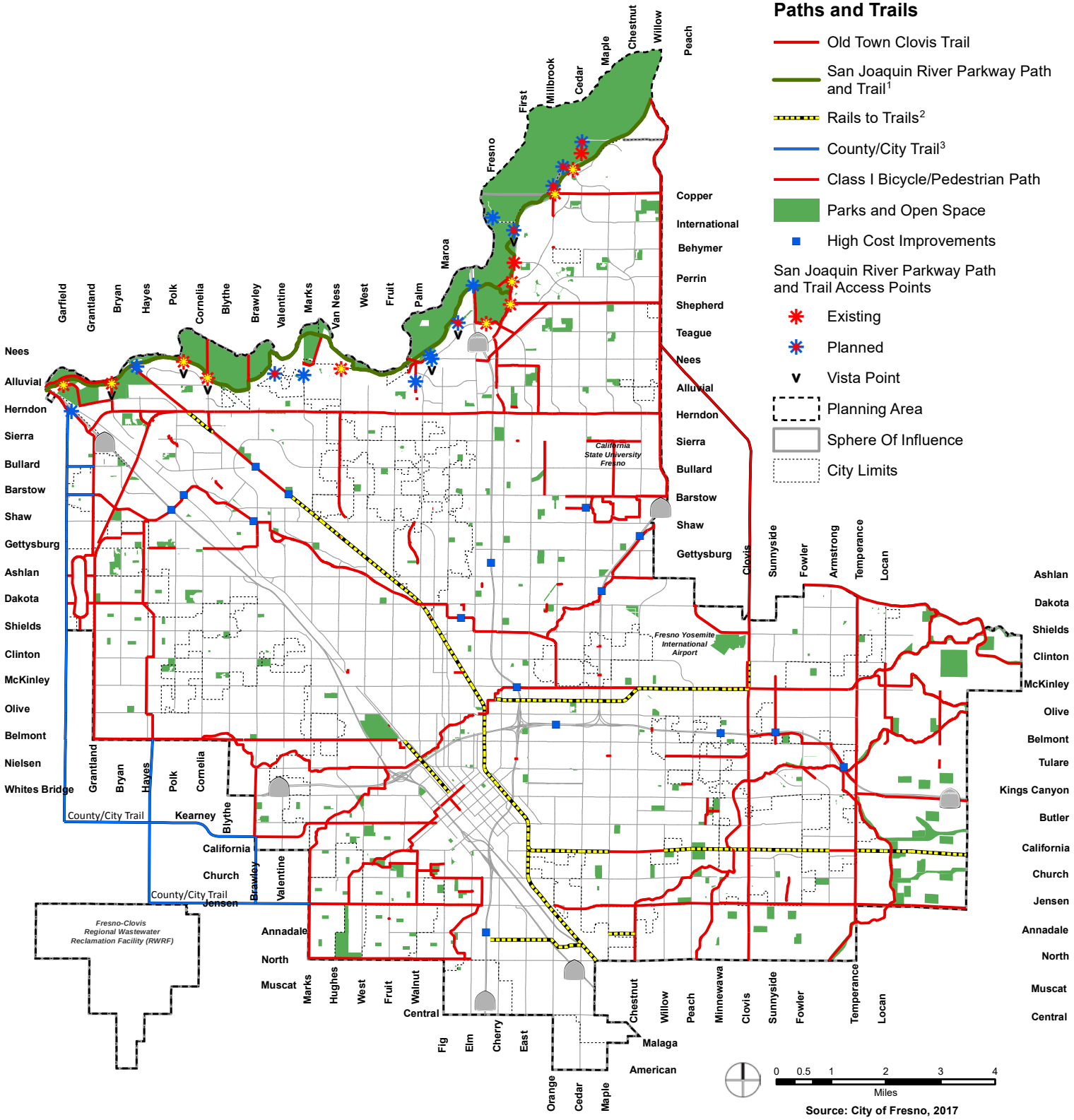
Accessible Design

Most of the city was built before the federal Americans with Disabilities Act (ADA) required streets to be accessible to persons in wheelchairs or with impaired mobility. The City made significant progress in rebuilding sidewalks to add curb cuts or

accessibility ramps and will continue striving to do so with a focus on areas with the highest pedestrian usage.

Sidewalks and trails throughout Fresno offer residents alternative methods of moving through the city, including walking and bicycling.

Figure MT-2:



Source: City of Fresno, 2017

1. Conceptual alignment of existing and proposed path and trail. All planned Parkway access and projects, their features, uses, and locations, are subject to the acquisition of lands and/ or easements from willing sellers, and project-specific, site-specific environmental review.

2. Required unless there is an existing railroad. Should existing railroad lines be vacated, they shall be converted to a greenbelt.

3. Conceptual alignment, subject to City/County cooperative planning adoption, and implementation. City preferred location depicted.

Note: Paths and Trails adjacent to neighboring jurisdictions may be developed jointly with that jurisdiction.

Note: Complete detail of the proposed bike network can be found in the Active Transportation Plan.

Note: Trails shall be developed on side of road represented in the Active Transportation Plan, to do otherwise would require Active Transportation Plan Amendment and minimum length of 2 miles.

Date: 4/7/2017

Comfort and Amenities

In a typical neighborhood, continuous sidewalks and ADA-compliant curb cuts may be satisfactory to provide for pedestrian movement. In areas where high pedestrian use exists or is desired, a successful pedestrian environment also requires street design that is comfortable and attractive to people on foot.

While sidewalk capacity is not generally an issue, sidewalks should be designed to comfortably accommodate people on foot, some of whom will walk in groups, use wheelchairs, or push strollers or delivery trolleys. The sidewalk should be ample enough to signal that walking is expected and encouraged. Trees should be provided at an adequate spacing, and placed to help provide a buffer between cars and pedestrians and shading in summer. On-street parking can be an important supporting component by providing an additional buffer between the sidewalk and vehicle travel lanes and an important vehicle calming mechanism encouraging lower vehicle operating speeds. Finally, benches, fountains, and other amenities help to make pedestrian use a reality and a pleasure.

Bicycle Facilities

Bicycle facilities consist of three types of classification, as follows:

- Class I: Bicycle or multi-use (bicycle-pedestrian) path which is completely separated from vehicle traffic and typically a 10- to 12-foot wide concrete/asphalt-concrete paved surface with two-foot wide shoulders;
- Class II: Designated on-street bicycle lane which is identified with painted pavement striping and signing and is typically at least five feet in width; and
- Class III: On-street bicycle route which is designated by signs and markings and utilizes the paved surface shared with a low volume of motorized vehicles.
- Class IV: Separated on-street bicycle lane, commonly known as "cycle track," which is physically separated from motor vehicle traffic by a minimum three foot buffer and vertical element, distinct from the sidewalk, designed exclusively for bicyclists, and seven feet in width.

As of 2017, Fresno has approximately 38 miles of Class I trails or paths, 426 miles of Class II bike lanes, and 21 miles of Class III bicycle routes, built over an approximately 40-year period generally beginning with adoption of the 1974 Fresno General Plan.

Class I paths have been built within abandoned rail spur lines and municipal parkland, and dedications have been made adjacent to canals or Expressways as a condition of property development, and on land along the San Joaquin River. The City is working to resolve issues identified by the Fresno Irrigation District to accomplish development of

path or trail improvements along canals. Currently within the urban area, the City has only been successful where new development has provided additional space adjacent to the canal. However, in the future the City will continue efforts to resolve impediments and implement paths along canal alignments.

Planned Improvements

Pedestrian

During the past 10 years, the City Council has made constructing improvements to meet ADA accessibility requirements for public street sidewalks a City priority. As resources have become available, the City has also pursued the construction of missing segments of partially completed bicycle-pedestrian paths. The objectives and policies in this element generally present the following ideas for improving the pedestrian environment:

- Continuous sidewalks will be required along public streets on both sides, within all new development. Sidewalks or alternative pedestrian routes will also be required within developments that utilize private street access;
- New or improved pedestrian crossings and additional industry standard safety features such as pedestrian refuges, raised or lighted crossing areas, and signals will be built, as funding is available, where there is high pedestrian traffic;
- Where freeways and railroads create major barriers to pedestrian travel, identify improvements for safe, grade separated pedestrian crossings to be built as funding is available;
- Lighting that provides comfort and visibility to pedestrians will be a priority on streets where pedestrian use is high and on streets transitioning from a more auto-oriented to more mixed-use character;
- Develop connectivity requirements and/or maximum block size or block length standards to apply to new development to ensure support for pedestrian travel;
- Certain areas where walking is or has the potential to be most common may be identified for the implementation of improvements to promote a high-quality pedestrian experience. These areas might include arboretum corridors, Main Street commercial; mixed-use centers or corridors; transit corridors; and areas around schools, following a safe routes to school model, which is addressed in the Healthy Communities Element; and
- Complete Streets and Multi-Modal roadway measures and performance characteristics, discussed elsewhere in this element, will also support greater walkability.

Bicycle

The City's planned bikeway network will support significant increases in bicycle use. It strives to ensure that major destinations are well-served by Class II bike lanes, well-marked Class III bike routes are extended into nearly all neighborhoods, an attractive system of Class I bike paths is provided in new growth areas and along key corridors where right-of-way exists, and Class IV separated bikeways are located along key streets to encourage the casual rider to bike to destinations outside their neighborhood. These four bicycle transportation components are described more below.

SEPARATE MULTI-USE PATHS (CLASS I)

Bike or multi-use (bicycle-pedestrian) paths are completely separated from vehicle traffic (Class I bikeways) and may be considered the most desirable type in terms of comfort, particularly by the casual bicyclist. New Class I bikeways will be investigated for all new growth areas, and will be developed in existing parts of the city where opportunities to obtain right-of-way may exist which would provide meaningful pathway connections.

IMPROVED BIKE LANES (CLASS II)

Providing Class I facilities may not be practical or cost effective in many parts of the developed urban area, and not necessarily preferable in terms of convenience and travel utility. Bike lanes (Class II facilities) are the heart of the bicycle network and will be accommodated along all roadways in new growth areas. They can often also be accommodated within already developed areas with the reconfiguration of travel lanes and on-street motor vehicle parking. Bike lanes will have a minimum width of at least five feet whenever possible. While this is adequate, bike lanes should be wider where space is available. They must be well striped and marked.

IMPROVED SHARED BIKE ROUTES (CLASS III)

Bike routes or bikeways (Class III facilities), which are identified with signage and lane markings indicating a shared roadway, have been identified as especially appropriate for bicycle use. As "the capillaries of the bikeway system," Class III segments allow the bike system to provide critical links even where roadways are constrained and to extend into all neighborhoods. Class III facilities (routes and bikeways) will be expanded citywide and included in new development.

IMPROVED SEPARATED BIKEWAYS/CYCLE TRACKS (CLASS IV)

Separated Bikeways or cycle tracks (Class IV facilities) are on-street bicycle facilities that include a vertical physical barrier between the bikeway and moving traffic. These facilities have been identified as appropriate in areas with high motor traffic volume where Class II or Class III facilities would cause many bicycles to feel high levels of

stress. Cycle tracks necessitate wider right-of-way than Class II and III facilities and are best placed in areas with fewer driveways.

Table 4-3 summarizes Fresno's existing bikeway system compared to the planned bikeway system in terms of mileage by facility type.

TABLE 4 3: BICYCLE NETWORK

Facility Type	Existing System - 2017 (miles)	Planned System (miles)	Change
Class I	38	165	203
Class II	426	703	1129
Class III	21	67	88
Class IV	0	2	2

Source: City of Fresno, 2017,

4.5 TRANSIT SERVICE

Transit is a term used to cover all forms of public transportation, such as buses and various forms of rail (light rail, subways, heavy rail).

Existing Transit Service

The City operates Fresno Area Express (FAX), the city's major provider of urban public transportation services. The FAX fixed route conventional bus transportation system integrates with the City of Clovis' fixed route system; together these systems potentially serve a population of 650,000. The FAX fixed route system is comprised of routes that typically follow many of the city's Arterial roadways, which are generally spaced with a one-mile separation. The system currently includes 15 standard fixed routes of bus service and one express bus connection between the Riverpark regional commercial center, located at North Blackstone and East Nees Avenues, and Children's Hospital of Central California, located on Avenue 9 in Madera County. Many routes converge on Downtown and meet at the main transit center located on "M" and Fresno Streets (County of Fresno's Courthouse Park). Most of the FAX routes operate at 30-minute frequencies, with four routes providing 20-minute frequencies during peak commute periods.

A demand-response service, Handy Ride, provides transportation for older adults and persons with disabilities. The Fresno County Rural Transit Agency provides transit services to communities located outside of the Fresno Clovis Metropolitan Area. In addition, the Fresno County Economic Opportunities Commission provides transportation for access to specific social services.

The FAX bus system provides connections to the Amtrak passenger rail station and the Greyhound bus station, both of which are located in Downtown. Amtrak's San Joaquin line provides seven trains daily traveling both northbound to the San Francisco Bay Area and southbound to Los Angeles. Greyhound has eleven daily buses to Los Angeles and five to San Francisco. Intercity bus service is also provided by Orange Belt Stages and Transportation Inter-Californias.

The FAX bus system has a fixed route system, primarily on major Arterial streets in the city, which offers residents another convenient method of moving around the city without their vehicles.

Access to Transit

Fresno's bus lines travel along many of the city's heavily traveled major Arterial roads that serve the most densely populated neighborhoods and most intense office and commercial employment centers. With the expansive urban growth that occurred during the past decade, there are notable exceptions to transit accessibility, primarily in the west, northwest, northeast, and southeastern edges of the urban area. The bus system has not been expanded commensurate with peripheral urban development over the past decade, leaving predominantly lower density developed areas on the city's outer edges without public transit services. This appears generally due to a combination of insufficient resources and decreasing performance (excessive cost per passenger and low farebox recovery) of routes serving lower density urban edge development.

Bus Rapid Transit (BRT)

A first phase Bus Rapid Transit (BRT) system is planned and funded to run along the Ventura Street/Kings Canyon Road and the Blackstone Avenue corridors, meeting in Downtown. This system is presently in the design stage with a planned implementation anticipated over the next few years.

The General Plan supports the proposed BRT system through its designation of complementary land uses along and near its routes, such as higher-density development and land uses that may gravitate toward use of BRT. The Fresno General Plan Land Use Diagram (Figure LU-1) designates mixed-use, multi-family residential uses, and Activity Centers along the BRT routes. In addition, Shaw Ave. will be served by enhanced bus service while BRT is envisioned on California Ave. as part of the second phase.

High Speed Train (HST)

In addition to airport, train, and bus travel mentioned above, the California High Speed Train (HST) will also serve as a regional transportation system (see MT-3: Regional Transportation) for Fresno and surrounding communities. The proposed HST line, if approved and funded, would ultimately extend through the San Joaquin Valley, linking San Francisco with Los Angeles. The Initial Construction Section is planned to start in Madera County to just north of Bakersfield, with a station located in Fresno's Downtown, aligned with Mariposa Street. The HST tracks through Fresno's Metropolitan Area would run generally parallel to the Union Pacific Railroad tracks and primarily at-grade, with some shorter sections being depressed (below surface grade) to clear existing structures, such as the interchange of State Routes 99 and 180. However, any road proposed to cross the HST alignment will be grade-separated from the HST (go over or under).

Implementation of a HST system would significantly increase the accessibility of Fresno to the major population and economic hubs of California. It also provides an opportunity for the redevelopment of the area around the station with a walkable district that includes offices, retail, and multi-family housing that takes advantage of the proximity of the HST station and captures value from disembarking passengers. Although this General Plan anticipates the building of the HST, it is not necessary to carry out the purposes or to implement the intent of the General Plan.

While detailed planning has not yet occurred for the HST station, the City is examining and proposing to accommodate the access and space requirements and the potential effects upon surrounding properties and land uses through community and Specific Plans in the Downtown Planning Area and a HST Station Area Master Plan. When HST is built, the City ultimately plans to link the FAX and BRT systems with the HST station.

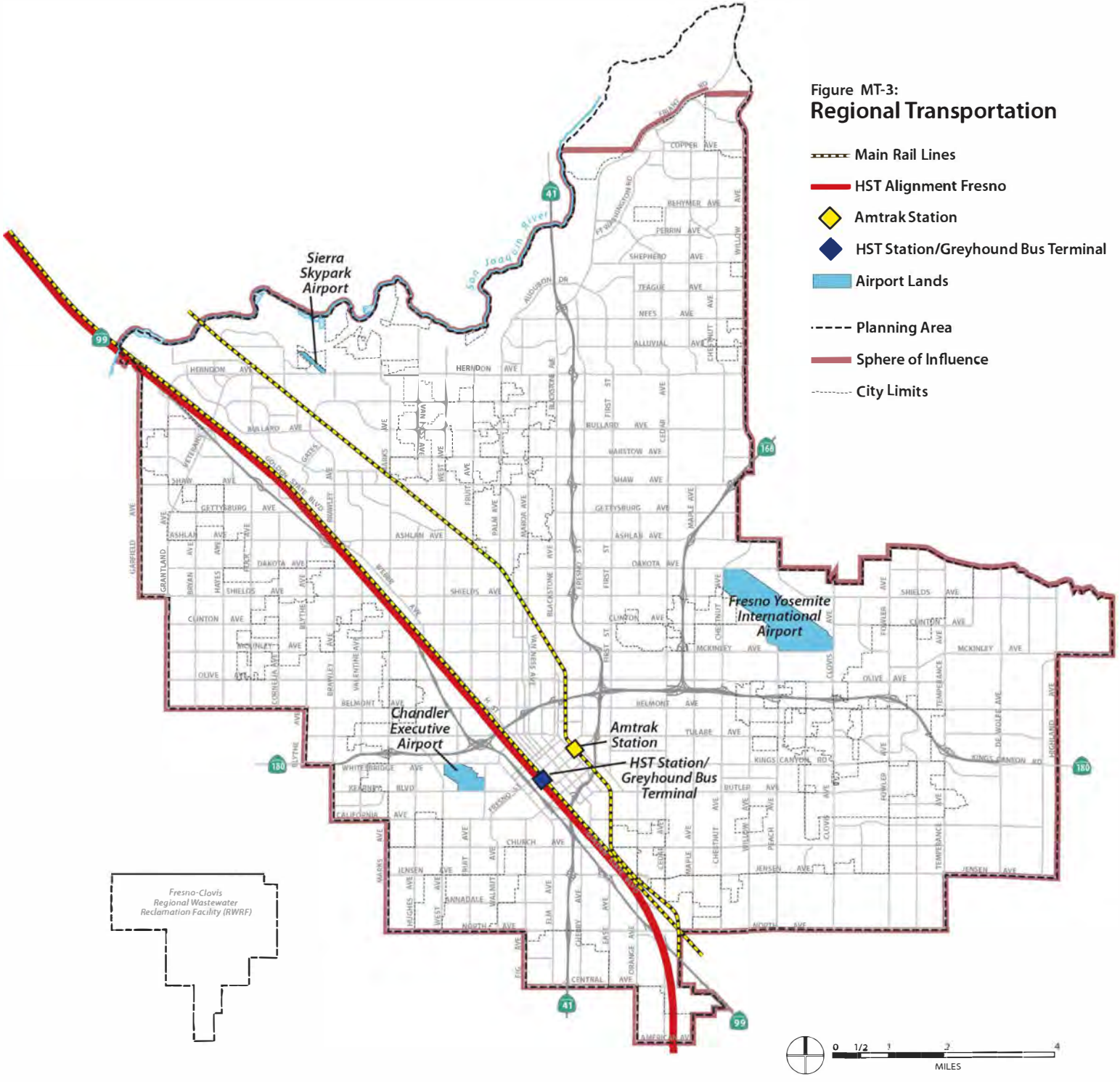


Figure MT-3:
Regional Transportation

- Main Rail Lines
- HST Alignment Fresno
- Amtrak Station
- HST Station/Greyhound Bus Terminal
- Airport Lands
- Planning Area
- Sphere of Influence
- City Limits

Source: City of Fresno DARM, 2014

4.6 OBJECTIVES AND POLICIES

OBJECTIVE

MT-1 Create and maintain a transportation system that is safe, efficient, provides access in an equitable manner, and optimizes travel by all modes.

IMPLEMENTING POLICIES

MT-1-a **Transportation Planning Consistent with the General Plan.** Continue to review local, regional and inter-regional transportation plans and capital improvement plans, and advocate for the approval and funding of State highway and rail projects, consistent with the General Plan and discourage projects inconsistent with the General Plan.

MT-1-b **Circulation Plan Diagram Implementation.** Design and construct planned streets and highways that complement and enhance the existing network, as well as future improvements to the network consistent with the goals, objectives and policies of the General Plan, as shown on the Circulation Diagram (Figure MT-1), to ensure that each new and existing roadway continues to function as intended.

MT-1-c **Plan Line Adoption.** Prepare and adopt Official Plan Lines, or other appropriate documentation such as Director Determinations, for transportation corridors, roadways, and bicycle/pedestrian paths/trails, as necessary to preserve and/or obtain right-of-way needed for planned circulation improvements.

MT-1-d **Integrate Land Use and Transportation Planning.** Plan for and maintain a coordinated and well integrated land use pattern, local circulation network and transportation system that accommodates planned growth, reduces impacts on adjacent land uses, and preserves the integrity of established neighborhoods.

MT-1-e **Ensure Interconnectivity Across Land Uses.** Update development standards and design guidelines applicable to public and private property to achieve Activity Centers, neighborhoods and communities which are well connected by pedestrian, bicycle, appropriate public transportation and automobile travel facilities.

MT-1-f **Match Travel Demand with Transportation Facilities.** Designate the types and intensities of land uses at locations such that related travel

demands can be accommodated by a variety of viable transportation modes and support Complete Neighborhoods while avoiding the routing of excessive or incompatible traffic through local residential streets.

MT-1-g **Complete Streets Concept Implementation.** Provide transportation facilities based upon a Complete Streets concept that facilitates the balanced use of all viable travel modes (pedestrians, bicyclists, motor vehicle and transit users), meeting the transportation needs of all ages, income groups, and abilities and providing mobility for a variety of trip purposes, while also supporting other City goals.

Implementation actions will include:

- Meeting the needs of all users within the street system as a whole; each individual street does not need to provide all modes of travel, but travel by all modes must be accommodated throughout the Planning Area;
- Continuing to adopt refined street cross-section standards as appropriate in response to needs identified;
- Encouraging conversion of one-way streets to two-way streets to improve location circulation, access, and safety;
- Considering the impact of streets on public health by addressing storm water runoff quality, air quality, and water conservation among other factors; and
- Adhering to the water efficient landscape standards adopted by the City for median and streetscape plantings and irrigation methods.

MT-1-h **Update Standards for Complete Streets.** Update the City's Engineering and Street Design Standards to ensure that roadway and streetscape design specifications reflect the Complete Streets concept, while also addressing the needs of through traffic, transit stops, bus turnouts, passenger loading needs, bike lanes, pedestrian accommodation, and short- and long-term parking.

Commentary: *For instance, transit stops and bus turnouts may have higher priority than through traffic on important transit corridors; through traffic may have higher priority than parking on Arterials; and pedestrian and bicycle movement may have high priority in areas with high pedestrian interest and activity such as the Downtown Planning Area.*

MT-1-i **Local Street Standards.** Establish and implement local roadway standards addressing characteristics such as alignment, width, continuity and traffic calming, to provide efficient neighborhood circulation; to allow convenient access by residents, visitors, and public service and safety providers; and to promote neighborhood integrity and desired quality of life by limiting intrusive pass-through traffic.

MT-1-j **Transportation Improvements Consistent with Community Character.** Prioritize transportation improvements that are consistent with the character of surrounding neighborhoods and supportive of safe, functional and Complete Neighborhoods; minimize negative impacts upon sensitive land uses such as residences, hospitals, schools, natural habitats, open space areas, and historic and cultural resources.

In implementing this policy, the City will design improvements to:

- Facilitate provision of multi-modal transportation opportunities;
- Provide added safety, including appropriate traffic calming measures;
- Promote achievement of air quality standards;
- Provide capacity in a cost effective manner; and
- Create improved and equitable access with increased efficiency and connectivity.

MT-1-k **Multi-Modal Level of Service Standards.** Develop and use a tiered system of flexible, multi-modal Level of Service standards for streets designated by the Circulation Diagram (Figure MT-1). Strive to accommodate a peak hour vehicle LOS of D or better on street segments and at intersections, except where Policies MT-1-m through MT-1-p provide greater specificity. Establish minimum acceptable service levels for other modes and use them in the development review process.

MT-1-l **Level of Service in the Downtown Area.** Within the Downtown Planning Area accept vehicle LOS F conditions during peak hours for street segments and intersections specified in community and Specific Plans as may be adopted by the City. Where there is an overlap in policies regarding LOS in the Downtown Planning Area, this policy shall supersede.

MT-1-m **Standards for Planned Bus Rapid Transit Corridors and Activity Centers.** Independent of the Traffic Impact Zones identified in MT-2-i

and Figure MT-4, strive to maintain the following vehicle LOS standards on major roadway segments and intersections along Bus Rapid Transit Corridors and in Activity Centers:

- LOS E or better at all times, including peak travel times, unless the City Traffic Engineer determines that maintaining this LOS would be infeasible and/or conflict with the achievement of other General Plan policies.
- Accept LOS F conditions in Activity Centers and Bus Rapid Transit Corridors only if provisions are made to improve the overall system and/or promote non-vehicular transportation and transit as part of a development project or a City-initiated project. In accepting LOS F conditions, the City Traffic Engineer may request limited analyses of operational issues at locations near Activity Centers and along Bus Rapid Transit Corridors, such as queuing or left-turn movements.
- Give priority to maintaining pedestrian service first, followed by transit service and then by vehicle LOS, where conflicts between objectives for service capacity between different transportation modes occur.
- Identify pedestrian-priority and transit-priority streets where these modes would have priority in order to apply a multi-modal priority system, as part of the General Plan implementation.

MT-1-n **Peak Hour Vehicle LOS.** For planning purposes and implementation of Capital Improvement Projects, maintain a peak-hour vehicle LOS standard of D or better for all roadway areas outside of identified Activity Center and Bus Rapid Transit Corridor districts, unless the City Traffic Engineer determines that maintaining this LOS would be infeasible and/or conflict with the achievement of other General Plan policies.

MT-1-o **LOS Deviations Outside of Activity Centers and Areas Designated for Mixed-Use.** Accept vehicle LOS E or F conditions outside of identified multi-modal districts only if provisions commensurate with the level of impact and approved by the City Traffic Engineer are made to sufficiently improve the overall transportation system and/or promote non-vehicular transportation as part of a development project or City-initiated project.

MT-1-p **Participate in Sustainable Communities Strategy/ Regional Transportation Plan.** Continue to work with the Fresno Council of Governments in developing and updating the Sustainable

Communities Strategy and Regional Transportation Plan, consistent with the goals, objectives and policies of the General Plan.

OBJECTIVE

MT-2 Make efficient use of the City's existing and proposed transportation system and strive to ensure the planning and provision of adequate resources to operate and maintain it.

IMPLEMENTING POLICIES

MT-2-a **Intensification of Bus Rapid Transit Corridors.** Where traffic has previously been diverted to freeways, encourage incentives for more intense development along transportation corridors, such as the Blackstone Corridor, where there is now additional capacity.

Commentary: *The General Plan Land Use Diagram (Figure LU-1) shows corridors where increases in allowable densities are permitted.*

MT-2-b **Reduce Vehicle Miles Traveled and Trips**. Partner with major employers and other responsible agencies, such the San Joaquin Valley Air Pollution Control District and the Fresno Council of Governments, to implement trip reduction strategies, such as eTRIP, to reduce total vehicle miles traveled and the total number of daily and peak hour vehicle trips, thereby making better use of the existing transportation system.

MT-2-c **Reduce VMT through Infill Development.** Provide incentives for infill development that would provide jobs and services closer to housing and multi-modal transportations corridors in order to reduce citywide vehicle miles travelled (VMT).

Commentary: *This policy is intended to reduce regional trips and citywide congestion. Even if local congestion increases due to an increase in population from infill, this will eventually improve air quality by reducing per capita vehicle emissions and VMT through shorter commutes and increase in transit and non-motorized modes of travel. This will also reduce the need for regional travel demand transportation improvements.*

MT-2-d **Street Redesign where Excess Capacity Exists.** Evaluate opportunities to reduce right of way and/or redesign streets to support non-automobile travel modes along streets with excess roadway capacity

where adjacent land use is not expected to change over the planning period.

Commentary: *Such strategies could include narrowing roads (road diets), adding landscape medians, adding street parking, and adding bike lanes.*

MT-2-e **Driveway and Access Consolidation.** Take advantage of opportunities to consolidate driveways, access points, and curb cuts along designated major roadways when a change in development or a change in intensity occurs or when traffic operation or safety warrants.

MT-2-f **Optimization of Roadway Operations.** Optimize roadway operations by continuing to expand the use of techniques such as the City's intelligent transportation system (ITS) to manage traffic signal timing coordination in order to improve traffic operations and increase traffic-carrying capacity, while reducing unnecessary congestion and decreasing air pollution emissions. In order to facilitate roadway optimization and as a potential revenue source for the optimization, the following strategies need to be implemented:

- **Dig Once Policy**. Install conduit for telecommunications use when trenching or construction occurs.
- **Telecommunications Strategy**. Develop a costing mechanism for allowing the use of excess conduit within the City for use by communication carriers. The Policy shall follow regulations of the California Public Utilities Commission.
- **Grant Funding**. Pursue grant funding to assist in construction and/or implementation of fiber-optic or other telecommunication infrastructure for additional public services such as education, economic development, reaching underserved populations, and public safety communications.

MT-2-g **Transportation Demand Management and Transportation System Management.** Pursue implementation of Transportation Demand Management and Transportation System Management strategies to reduce peak hour vehicle traffic and supplement the capacity of the transportation system.

Commentary: *The City anticipates these strategies will reduce demand on the regional transportation system, limiting the need for major capital investments in those systems.*

MT-2-h **Update TIS.** Update the City's Traffic Impact Study guidelines to address all modes of transportation and Complete Streets concepts consistent with the General Plan. The name should be expanded to encompass its assessment of various modes of transportation and connectivity in addition to traffic impacts. Once a regional fee plan or program is in place, the TIS may be used to carry out that plan or program.

MT-2-i **Transportation Impact Studies**. Require a Transportation Impact Study (currently named *Traffic Impact Study*) to assess the impacts of new development projects on existing and planned streets for projects meeting one or more of the following criteria, unless it is determined by the City Traffic Engineer that the project site and surrounding area already has appropriate multi-modal infrastructure improvements.

- When a project includes a General Plan amendment that changes the General Plan Land Use Designation.
- When the project will substantially change the off-site transportation system (auto, transit, bike or pedestrian) or connection to the system, as determined by the City Traffic Engineer.
- Transportation impact criteria are tiered based on a project's location within the City's Sphere of Influence. This is to assist with areas being incentivized for development. The four zones, as defined on Figure MT-4, are listed below. The following criteria apply:
    - Traffic Impact Zone I (TIZ-I): TIZ-I represents the Downtown Planning Area. Maintain a peak hour LOS standard of F or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 200 or more peak hour new vehicle trips.
    - Traffic Impact Zone II (TIZ-II): TIZ-II generally represents areas of the City currently built up and wanting to encourage infill development. Maintain a peak hour LOS standard of E or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 200 or more peak hour new vehicle trips.
    - Traffic Impact Zone III (TIZ-III): TIZ-III generally represents areas near or outside the City Limits but within the SOI as

of December 31, 2012. Maintain a peak hour LOS standard of D or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 100 or more peak hour new vehicle trips.

- Traffic Impact Zone IV (TIZ-IV): TIZ-IV represents the southern employment areas within and planned by the City. Maintain a peak hour LOS standard of E or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 200 or more peak hour new vehicle trips.

MT-2-j **Funding for Multi-Modal Transportation System.** Continue to seek and secure adequate financing to construct and maintain a complete multi-modal system through such measures as development impact fees, local sales tax measures, special tax measures, assessment/improvement districts, and regional, state and federal transportation funds and grants.

Commentary: *This policy will be coordinated with policies and objectives for fiscal sustainability in the Economic Development and Fiscal Sustainability Element.*

MT-2-k **Funding for Complete Streets Retrofits.** Continue to participate in a comprehensive analysis of transportation needs and the funding of transportation improvements, including State and federal grant funding to support Complete Street retrofit improvements, within the Fresno-Clovis Metropolitan Area.

Commentary: *This will be done cooperatively with the Fresno Council of Governments, other government agencies, and public interest groups.*

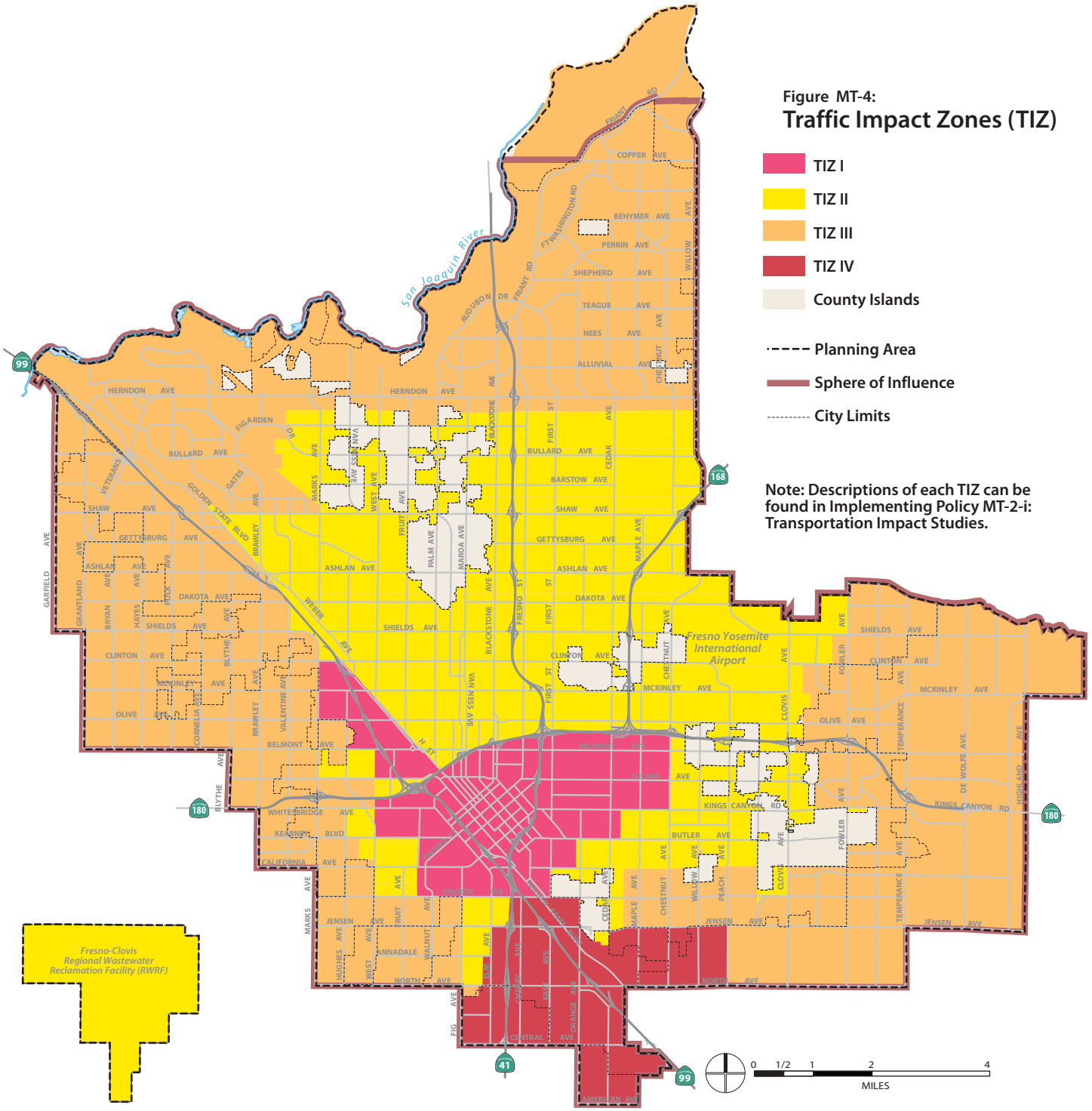


Figure MT-4:

Traffic Impact Zones (TIZ)

- TIZ I
- TIZ II
- TIZ III
- TIZ IV
- County Islands
- Planning Area
- Sphere of Influence
- City Limits

Note: Descriptions of each TIZ can be found in Implementing Policy MT-2-i: Transportation Impact Studies.

Source: City of Fresno DARM, 2014

MT-2-l **Region-Wide Transportation Impact Fees.** Continue to support the implementation of metropolitan-wide and region-wide transportation impact fees sufficient to cover the proportional share of a development's impacts and need for a comprehensive multi-modal transportation system that is not funded by other sources. Work with the Council of Fresno County Governments, transportation agencies (e.g. Caltrans, Federal Transportation Agency) and other jurisdictions in the region to develop a method for determining:

- Regional transportation impacts of new development;
- Regional highways, streets, rail, trails, public transportation, and goods movement system components, consistent with the General Plan, necessary to mitigate those impacts and serve projected demands;
- Projected full lifetime costs of the regional transportation system components, including construction, operation, and maintenance; and
- Costs covered by established funding sources.

Commentary: *This policy is consistent with and supports policies and objectives for fiscal sustainability in the Economic Development and Fiscal Sustainability Element.*

MT-2-m **Use VMT Analysis for CEQA.** Use Vehicle Miles Traveled (VMT) as the criteria for evaluating transportation impacts under the California Environmental Quality Act (CEQA), pursuant to Senate Bill 743. Level of Service (LOS) may still be used for planning purposes and implementation of Capital Improvement Projects, however VMT shall be used for determining mitigation under CEQA beginning in July of 2020.

Commentary: *In 2013, the State of California passed Senate Bill 743, which eliminated automobile Level of Service (LOS) from transportation analysis under CEQA and replaced it with VMT. This shift from LOS to VMT is intended to better align with other statewide transportation goals, including reduction of GHG emissions, the creation of multimodal networks, and the promotion of integrated land uses.*

OBJECTIVE

MT-3 Identify, promote and preserve scenic or aesthetically unique corridors by application of appropriate policies and regulations.

IMPLEMENTING POLICIES

MT-3-a **Scenic Corridors.** Implement measures to preserve and enhance scenic qualities along scenic corridors or boulevards, including:

- Van Ness Boulevard - Weldon to Shaw Avenues
- Van Ness Extension - Shaw Avenue to the San Joaquin River Bluff
- Kearney Boulevard - Fresno Street to Polk Avenue
- Van Ness/Fulton couplet - Weldon Avenue to Divisadero
- Butler Avenue - Peach to Fowler Avenues
- Minnewawa Avenue - Belmont Avenue to Central Canal
- Huntington Boulevard - First Street to Cedar Avenue
- Shepherd Avenue - Friant Road to Willow Avenue
- Audubon Drive - Blackstone to Herndon Avenues
- Friant Road - Audubon to Millerton Roads
- Tulare Avenue - Sunnyside to Armstrong Avenues
- Ashlan Avenue- Palm to Maroa Avenues

MT-3-b Preserve street trees lining designated scenic corridors or boulevards. Replace trees of the predominant type and in a comparable pattern to existing plantings if there is no detriment to public safety.

OBJECTIVE

MT-4 Establish and maintain a continuous, safe, and easily accessible bikeways system throughout the metropolitan area to reduce vehicle use, improve air quality and the quality of life, and provide public health benefits.

IMPLEMENTING POLICIES

MT-4-a **Active Transportation Plan.** To the extent consistent with this General Plan, continue to implement and periodically update the Active Transportation Plan to meet State standards and requirements for recommended improvements and funding proposals as determined appropriate and feasible.

MT-4-b **Bikeway Improvements.** Establish and implement property development standards to assure that projects adjacent to designated bikeways provide adequate right-of-way and that necessary

improvements are constructed to implement the planned bikeway system shown on Figure MT-2 to provide for bikeways, to the extent feasible, when existing roadways are reconstructed; and alternative bikeway alignments or routes where inadequate right-of-way is available.

MT-4-c **Bikeway Linkages.** Provide linkages between bikeways, trails and paths, and other regional networks such as the San Joaquin River Trail and adjacent jurisdiction bicycle systems wherever possible.

MT-4-d **Prioritization of Bikeway Improvements.** Prioritize bikeway components that link existing separated sections of the system, or that are likely to serve the highest concentration of existing or potential cyclists, particularly in those neighborhoods with low vehicle ownership rates, or that are likely to serve destination areas with the highest demand such as schools, shopping areas, recreational and park areas, and employment centers.

MT-4-e **Minimum Bike Lane Widths.** Provide not less than 10 feet of street width (five feet for each travel direction) to implement bike lanes for designated Class II bikeways along roadways. Strive for 14 feet of street width (seven feet for each travel direction) for curbside bike lanes where right-of-way is available.

MT-4-f **Bike Detection Devices.** Include bicycle detection devices when new intersection traffic control signals are installed and strive to retrofit existing traffic control signals to provide bicycle detection and retiming of signal phases to make them more bicycle friendly.

MT-4-g **Advocacy for Bike Accommodation.** Advocate for the accommodation of bike facilities in new or upgraded State Route interchanges and railroad construction projects, and construction of bicycle crossings of freeways and railroads.

MT-4-h **Bicycle Parking Facilities.** Promote the installation of bicycle locking racks and bicycle parking facilities at public buildings, transit facilities, public and private parking lots, and recreational facilities. Establish standards for bicycle parking in the Development Code.

MT-4-i **Bicycling and Public Transportation.** Promote the integration of bicycling with other forms of transportation, including public transit. Continue to provide bike racks or space for bicycles on FAX buses.

MT-4-j **Street Maintenance for Bicycle Safety.** Provide regular sweeping and other necessary maintenance to clear bikeways of dirt, glass, gravel, and other debris and maintain the integrity of the bicycling network.

MT-4-k **Bicycle Safety, Awareness, and Education.** Promote bicycle ridership by providing secure bicycle facilities, promoting traffic safety awareness for both bicyclists and motorists, promoting the air quality benefits, promoting non-renewable energy savings, and promoting the public health benefits of physical activity.

OBJECTIVE

MT-5 Establish a well-integrated network of pedestrian facilities to accommodate safe, convenient, practical, and inviting travel by walking, including for those with physical mobility and vision impairments.

IMPLEMENTING POLICIES

MT-5-a **Sidewalk Development**. Pursue funding and implement standards for development of sidewalks on public streets, with priority given to meeting the needs of persons with physical and vision limitations; providing safe routes to school; completing pedestrian improvements in established neighborhoods with lower vehicle ownership rates; or providing pedestrian access to public transportation routes.

MT-5-b **Sidewalk Requirements**. Assure adequate access for pedestrians and people with disabilities in new residential developments per adopted City policies, consistent with the California Building Code and the Americans with Disabilities Act.

MT-5-c **New Subdivision Design.** Do not approve new single-family residential subdivisions with lots that front and access onto a major roadway, unless the City Traffic Engineer determines that no other feasible alternative means of vehicle access can be provided and that sufficient design measures can be implemented, such as an on-site driveway turnaround, landscaped buffering, or an on-street parking lane to assure a desirable and enduring residential environment.

Commentary: *To make this determination, the City Traffic Engineer may require an evaluation of alternative means of access, including frontage roads, backup treatment, and substantial redesign of the subdivision proposal.*

MT-5-d **Pedestrian Safety.** Minimize vehicular and pedestrian conflicts on both major and non-roadways through implementation of traffic access design and control standards addressing street intersections, median island openings and access driveways to facilitate accessibility while reducing congestion and increasing safety. Increase safety and accessibility for pedestrians with vision disabilities through the installation of Accessible Pedestrian Signals at signalized intersections.

MT-5-e **Traffic Management in Established Neighborhoods.** Establish acceptable design and improvement standards and provide traffic planning assistance to established neighborhoods to identify practical traffic management and calming methods to enhance the pedestrian environment with costs equitably assigned to properties receiving the benefits or generating excessive vehicle traffic.

MT-5-f **Modifications to Street Standards.** Continue to evaluate and adopt modifications to City street standards to achieve overall objectives of providing good access and travel opportunities while calming traffic, promoting pedestrian and other transportation options, and reducing the amount of land devoted to streets.

OBJECTIVE

MT-6 Establish a network of multi-purpose pedestrian and bicycle paths, as well as limited access trails, to link residential areas to local and regional open spaces and recreation areas and urban Activity Centers in order to enhance Fresno's recreational amenities and alternative transportation options.

IMPLEMENTING POLICIES

MT-6-a **Link Residences to Destinations.** Design a pedestrian and bicycle path network that links residential areas with Activity Centers, such as parks and recreational facilities, educational institutions, employment centers, cultural sites, and other focal points of the city environment.

MT-6-b **Multi-Agency Planning for Paths and Trail System.** Continue to participate in multi-agency planning and implementation partnerships for the coordinated development of the Fresno-Clovis Metropolitan Area planned path and trail system and with Madera County for the San Joaquin River Parkway trail system.

MT-6-c **Link Paths and Trails and Recreational Facilities.** Strive to provide path or trail connections to recreational facilities, including parks and

community centers where appropriate, and give priority to pathway improvements within neighborhoods characterized by lower vehicle ownership rates and lower per capita rates of parks and public open space.

MT-6-d **Link Paths and Trails and Cultural Resources.** Strive to designate and implement paths and trails to pass by environmental amenities, historic sites, and other cultural resources, where appropriate, and provide informational signage or other interpretation of those resources to the public.

MT-6-e **Utilize Public Rights of Way**. Pursue the attainment of path and trail corridors within abandoned railroad rights-of-way, canal alignments, PG&E transmission tower easements, limited access streets (Expressways, freeways), riverbottom/bluff areas, or other such rights-of-ways. Offer existing easements and rights-of-way to local agencies before selling them to private parties.

MT-6-f **Path and Trail Designation Process.** Develop a network of multi-purpose path and trail corridors by using the Official Plan Line process or other processes as provided by the Development Code to obtain appropriate linear rights-of-way along riparian corridors, drainage and irrigation easements, utility easements, abandoned railroad rights-of-way, and major street corridors.

MT-6-g **Path and Trail Development.** Require all projects to incorporate planned multi-purpose path and trail development standards and corridor linkages consistent with the General Plan, applicable law and case-by-case determinations as a condition of project approval.

Commentary: *This should be done pursuant to Figure MT-2: Paths and Trails, and the adopted ATP, as may amended.*

MT-6-h **Preference for Public Ownership.** Avoid path and trail alignments that involve private ownership of sections of public path or trail right-of-way. Use the Director Determination process, if necessary, to adjust planned path or trail rights-of-way to avoid these situations by realigning along more visible, publicly owned routes.

MT-6-i **Path and Trail Design Standards.** Designate and design paths and trails in accordance with design standards established by the City that give consideration to all path and trail users (consistent with design, terrain and habitat limitations) and provide for appropriate widths,

surfacing, drainage, design speed, barriers, fences, signage, visibility, intersections, bridges, and street cleaning.

Commentary: *Trail improvements and characteristics (e.g. accessibility, continuity, width and location, and surface treatment) within the Fancher Creek water conveyance and riparian corridor, and other alignments immediately adjacent to existing or planned residential land, will be determined by the City Council after providing for appropriate public participation.*

MT-6-j **Variety in Path and Trail Design.** Provide for different levels and types of usable pedestrian and bicycle corridors, including broad, shaded sidewalks; jogging paths; paved and all terrain bicycle paths; through-block passageways; and hiking trails. Where a designated multi-purpose path route is adjacent to a public right-of-way which accommodates bike lane, allow for flexibility in path design, so that bike lanes may be substituted for the bicycle component of the multi-purpose path where it is safe and appropriate to do so.

Commentary: *This should be done pursuant to Figure MT-2: Paths and Trails, and the adopted ATP, as may amended.*

MT-6-k **Path and Trail Buffers.** Use landscaping with appropriate and adequate physical and visual barriers (e.g., masonry walls, wrought-iron, or square-tube fencing) to screen path and trail rights-of ways and separate paths and trails from mining operations, drainage facilities, and similar locations as warranted.

MT-6-l **Environmentally Sensitive Path and Trail Design.** Develop paths and trails with minimum environmental impact by taking the following actions:

- Surface paths and trails with materials that are conducive to maintenance and safe travel, choosing materials that blend in with the surrounding area;
- Design paths and trails to follow contour lines where the least amount of grading (fewest cuts and fills) and least disturbance of the surrounding habitat will occur;
- Beautify path and trail rights-of-way in a manner consistent with intended use, safety, and maintenance;
- Use landscaping to stabilize slopes, create physical or visual barriers, and provide shaded areas; and

- Preserve and incorporate native plant species into the landscaping.

MT-6-m **Path and Trail Crossings**. Limit vehicle access, to the extent feasible, where paths or trails are designated parallel and adjacent to roadways, with consideration given to other transportation, land use, and site design priorities and constraints.

MT-6-n **Emergency Vehicle Access along Paths and Trails.** Provide points of emergency vehicle access within the path and trail corridors, via parking areas, service roads, emergency access gates in fencing, and firebreaks.

Commentary: *Service roads will be interconnected, where possible, to permit through travel by emergency vehicles.*

OBJECTIVE

MT-7 Pursue a variety of funding sources to maximize implementation and development of the City's path and trail system.

IMPLEMENTING POLICIES

MT-7-a **Urban Path and Trail Development Funds.** Continue to seek grants and other funding sources for trail construction and maintenance, and support the enactment of State and federal legislation that will expand urban path and trail development funds.

MT-7-b **Supporting Nonprofit Organizations**. Support and assist nonprofit organizations whose purpose or charter is to promote and support public path and trail construction and maintenance. Establish an "Adopt a Path/Trail" program that allows private entities to maintain segments.

MT-7-c **Citywide Funding Program for Path and Trail Network.** Strive to establish an equitable citywide funding program for construction and maintenance of the path and trail network, in order to:

- Acquire right-of-way needed for paths and trails in already-developed neighborhoods and other areas, as identified in community plans, Specific Plans, and neighborhood plans;
- Reimburse developers for public path and trail development costs that they may incur in excess of the trail cost attributable to the impact of their development project (this may require a citywide nexus study); and

- Seek funding sources to add to and adequately maintain the citywide path and trail network.

Commentary: *This program could be folded into a comprehensive parks and trails funding program, supported by voter-approved sales tax revenues.*

OBJECTIVE

MT-8 Provide public transit options that serve existing and future concentrations of residences, employment, recreation and civic uses and are feasible, efficient, safe, and minimize environmental impacts.

Commentary: *Public transit services must meet accessibility standards for individuals with disabilities as required by applicable state and federal regulations.*

IMPLEMENTING POLICIES

MT-8-a **Street Design Coordinated with Transit.** Coordinate the planning, design, and construction of the major roadway network with transit operators to facilitate efficient direct transit routing throughout the Planning Area.

Commentary: *Neighborhoods with circuitous and discontinuous streets are more difficult for public transit to serve efficiently than those with consistently spaced linear or semi-grid patterns.*

MT-8-b **Transit Serving Residential and Employment Nodes.** Identify the location of current and future residential and employment concentrations and Activity Centers throughout the transit service area in order to facilitate planning and implementation of optimal transit services for these uses. Work with California State University, Fresno to determine locations within the campus core for bus stops.

MT-8-c **New Development Facilitating Transit.** Continue to review development proposals in transportation corridors to ensure they are designed to facilitate transit. Coordinate all projects that have residential or employment densities suitable for transit services, so they are located along existing or planned transit corridors or that otherwise have the potential for transit orientation to FAX, and consider FAX's comments in decision-making.

MT-8-d **Coordination of Transportation Modes.** Plan, design, and implement transportation system improvements promoting coordination and

continuity of transportation modes and facilities, such as shared parking or park and ride facilities at Activity Centers.

MT-8-e **Regional Coordination.** Continue to work with local and regional governmental institutions to promote efficient transportation policies and coordinated programs.

MT-8-f **Multi-modal Downtown Transportation Facility.** Support the development of a multi-modal transportation facility in Downtown.

***Commentary**: Additional details for the facility are anticipated to be addressed in a future community or Specific Plan, such as the proposed DNCP or FCSP.*

MT-8-g **High Speed Train.** If the State moves forward with HST, ensure it is constructed through Fresno in a manner that minimizes impacts to surrounding property owners and creates the most opportunity for redevelopment around the HST station.

MT-8-h **Move Forward with High Speed Train Station Area Planning.** Work with local residents, property and business owners, and other stakeholders to develop a station area plan to provide the most opportunity for growth and prosperity in concert with development of the Fresno HST station.

MT-8-i **Legislative Support.** Monitor State and federal legislation that creates incentives to reduce auto dependency and support the use of alternatives to the single occupant vehicle and support legislation that is consistent with the General Plan.

MT-8-j **Transit Services.** Emphasize expansion of transit service in low income neighborhoods that lack appropriate service levels.

OBJECTIVE

MT-9 Provide public transit opportunities to the maximum number and diversity of people practicable in balance with providing service that is high in quality, convenient, frequent, reliable, cost- effective, and financially feasible.

IMPLEMENTING POLICIES

MT-9-a **Equitable Transit Provision.** Provide transit that can serve all residents, including older residents and persons with disabilities.

MT-9-b **Transit Service Productivity Evaluation.** Continue to evaluate transit service productivity and cost efficiency indicators in the City's Short-Range Transit Plan, and make necessary and appropriate service adjustments when operationally and financially feasible.

Commentary: *Short-range transportation planning is a federal requirement for continued funding.*

MT-9-c **Addressing Unmet Transit Needs**. Continue to participate in the Council of Fresno County Governments' annual unmet transit needs evaluation process, particularly with respect to identifying need for access to medical and educational services; perform market analysis to identify potential transit choice riders; and pursue public education and information programs to identify changes in demand characteristics and opportunities to increase ridership.

MT-9-d **Long-Range Transit Options.** Advocate and participate in regional transportation analyses and identify appropriate long-range measures to support incorporation of light rail transit and other advanced transit service within major transportation corridors, freeway and railroad alignments.

MT-9-e **Area Specific Transit Improvements.** Continue to evaluate and pursue the planning and implementation of area specific transit improvements, such as street car facilities.

MT-9-f **Encourage Telecommuting.** Support measures that will facilitate expanded use of telecommunications technologies to reduce congestion, expansion of regional transportation facilities consistent with this General Plan, energy use, and air emissions (i.e., work at home, dispersed telecommute work centers, teleconferencing).

OBJECTIVE

MT-10 Establish parking standards that are strategically tuned to support neighborhoods, shopping districts and employment centers that have a complete range of transportation choices.

IMPLEMENTING POLICIES

MT-10-a **Updating Parking Standards.** Update off-street parking standards to reflect the context and location within activity areas of multiple uses and reductions appropriate for mixed residential and non-residential uses and proximity to existing or planned transit service.

MT-10-b **Shared Parking.** Establish a strategy to promote the sharing of excess parking between uses within Activity Centers and BRT corridors, including specific provisions for this in the Development Code.

MT-10-c **Transportation Demand Management Guidelines.** Establish transportation demand management guidelines to allow for reduced off-street parking requirements.

MT-10-d **Parking Maximums.** Explore maximum off-street parking limits within Activity Centers proximate to BRT corridors, if such an Activity Center is determined compatible with promotion of a healthy and vigorous business environment.

MT-10-e **Parking Cash-Out.** Educate employers of 50 or more persons on their obligation to provide a "parking cash-out program" under State law and enforce compliance.

Commentary: *Under such a program, an employer offers a cash allowance to an employee equivalent to the cost of parking the employer would otherwise provide, as an incentive to using alternative modes of transportation for commuting. These programs must be offered in any non-attainment area for air quality.*

A 2009 amendment to State law on parking cash-out provides authority for cities to enforce these requirements, including penalties to be imposed on employers who do not provide the "parking cash-out" allowance to employees.[2]

MT-10-f **Parking Benefit Districts.** Establish parking benefit districts to fund consolidated public parking where supported by local businesses.

Commentary: *Net revenues collected from on-street parking pricing and permit revenues can be dedicated to funding public improvements within designated Parking Benefit Districts, ensuring that revenue is used to benefit the blocks where the money is collected. State laws provide for public parking facility construction, operation and maintenance.*[3]

---

[2] California Health & Safety Code §43845.

[3] Vehicle Parking District of 1943, Parking District Law of 1951, and Parking and Business Improvement Area Law of 1989. Substantive requirements for assessment districts were changed with passage of Proposition 218 in 1996, and the law is evolving, so the City will determine the appropriate statutory authority to use for creation of parking benefit assessment districts and note statutory restrictions on the potential use of such funds.

OBJECTIVE

MT-11 Achieve necessary capacity increasing and inter-modal connectivity enhancing improvements to the goods movement transportation system to support the growth in critical farm product and value added industries.

Commentary: *Connectivity enhancing improvements and strategies will be used to address necessary capacity and inter-modal connectivity.*

IMPLEMENTING POLICIES

MT-11-a **Improve Goods Movement for Product Export.** Advocate for and pursue all appropriate and available local, regional, state and national planning and implementation opportunities to achieve necessary improvements to regional, interregional and international export opportunities beneficial to the Fresno area.

MT-11-b **Railroad Improvements.** Continue to participate in and advocate for collaborative efforts to improve railroad transportation facilities and reduce conflicts with the street system, including relocation and/or consolidation of the BNSF and UP mainline railroad track facilities.

MT-11-c **Truck Route Designations**. Continue to plan and designate truck routes within the Metropolitan Area to facilitate access to and from goods production and processing areas while minimizing conflicts with other transportation priorities.

MT-11-d **Appropriate Truck Route Roadway Design.** Incorporate provisions for trucks in design of routes designated for truck movement. Ensure that truck routes meet federal standards for intersections, pavement, and turning movements.

MT-11-e **Railroad Crossing Improvements.** Continue to improve and maintain the condition and safety of existing railroad crossings by upgrading surface conditions and installing signs and signals where warranted.

MT-11-f **State Route 99 / Goods Movement.** Partner with Caltrans to prioritize goods movements along State Route 99.

OBJECTIVE

MT-12 Operate the City's municipal airport facilities to meet present and anticipated demands in a manner that maintains compliance with federal regulations, enhances safety to the public, minimizes the adverse effects of aircraft operations on people, and promotes the economic health of the community.

IMPLEMENTING POLICIES

MT-12-a **Funding for Airport Capital Improvements.** Pursue appropriate funding sources and capital improvement budget enhancements that will:

- Provide a modern, safe, and efficient municipal airport terminal facility including the Federal Inspection Station and airfield;
- Maintain airfield compliance with FAA Part 139 operating requirements;
- Maintain financial self-sufficiency and long-term sustainability; and
- Continue to implement the master plans for FYI Airport and Fresno Chandler Executive Airport to meet projected air passenger travel, air cargo transportation and general aviation demands.

MT-12-b **Airport Ground Movement Improvements.** Obtain and install a FAA-approved Surface Movement Guidance and Control System to allow for ground movement on the airfield in lower visibility conditions.

MT-12-c **Airport Management and Viability.** Pursue management policies to keep Fresno Yosemite International Airport and Fresno Chandler Executive Airport self-sustaining and financially viable in compliance with FAA grant assurances.

- Implement aircraft rescue and firefighting transition plan;
- Implement the police transition plan;
- Seek alternate ways to improve the financial viability of the airports; and
- Seek non-reimbursable Port of Entry status with the U.S. Department of Homeland Security.

OBJECTIVE

MT-13 Improve the competitiveness of domestic and international air carrier service, and air cargo operations to and from Fresno Yosemite International Airport (FYI).

IMPLEMENTING POLICIES

MT-13-a **Increase Competitiveness.** Work with incumbent air carriers and new air carriers to increase the competitiveness of commercial air service to and from Fresno.

MT-13-b **Marketing Air Travel.** Create a marketing plan to attract the traveling public to the FYI and encourage tourists to use FYI Airport as a gateway to Yosemite and Sequoia/Kings Canyon National Parks.

MT-13-c **Expanding Service.** Continually solicit new airlines and seek expanded service from incumbent air carriers for both domestic and international flights. Provide incentives as market conditions dictate.

MT-13-d **Airport Property Development.** Develop airport properties as outlined in the applicable airport and environs master plans to support economic growth.

MT-13-e **Aviation Support Services.** Ensure necessary aviation support services are provided while promoting a business friendly, but competitive environment through appropriate land use policies.

MT-13-f **Environmental Remediation of Hammer Field.** Ensure that environmental remediation activities are conducted with the active participation of previous landowners and tenants.

Commentary: *This will be done in accordance with the Settlement Agreement reached among the City, the Boeing Corporation, and the United States government regarding Hammer Field (Portions now site of FYI Airport).*

This page intentionally left blank.

5 PARKS, OPEN SPACE, AND SCHOOLS

The Parks, Open Space, and Schools Element sets forth policy guidance for a broad spectrum of open spaces and community facilities in Fresno. These spaces will provide areas appropriate for agricultural or resource production and conservation; parks and open spaces for recreation; areas for protection of natural resources; and school sites which support neighborhood identity and cohesion. A key need addressed in the element is the shortage of parks and recreation space, particularly in established areas of the city, and a lack of access to these facilities for all Fresnans. This element aims to provide those special places that support a sense of community and are vital to creating a livable and sustainable Fresno.

5.1 CONTEXT

Open space is one of the seven general plan elements required by California's Planning and Zoning Law, Government Code section 65302(e). While a city is required to address the mandatory seven topics or elements, State law allows a general plan format that best fits the unique circumstances of the city. The City of Fresno has chosen to combine the required components of a local open space plan within the larger context of a Parks, Open Space, and Schools Element because of the close relation that these topics have to one another in Fresno.

Relationship to General Plan Goals

The objectives and policies in the Parks, Open Space, and Schools Element support the following General Plan goals:

6. Protect, preserve, and enhance natural, historic, and cultural resources.

   Emphasize the continued protection of important natural, historic and cultural resources in the future development of Fresno. This includes both designated historic structures and neighborhoods, but also "urban artifacts" and neighborhoods that create the character of Fresno.

7. Provide for a diversity of districts, neighborhoods, housing types (including affordable housing), residential densities, job opportunities, recreation, open space, and educational venues that appeal to a broad range of people throughout the city.

8. Develop Complete Neighborhoods and districts with an efficient and diverse mix of residential densities, building types, and affordability which are designed to be healthy, attractive, and centered by schools, parks, and public and commercial services to provide a sense of place and that provide as many services as possible within walking distance.

   Intentionally plan for Complete Neighborhoods as an outcome, and not a collection of subdivisions which do not result in Complete Neighborhoods.

9. Promote a city of healthy communities and improve quality of life in established neighborhoods.

   Emphasize supporting established neighborhoods in Fresno with safe, well maintained, and accessible streets, public utilities, education and job training, proximity to jobs, retail services, healthy food, health care, affordable housing, youth development opportunities, open space and parks, transportation options, and opportunities for home grown businesses.

12. Resolve existing public infrastructure and service deficiencies, make full use of existing infrastructure, and invest in improvements to increase competitiveness and promote economic growth.

    Emphasize the fair and necessary costs of maintaining sustainable water, sewer, streets, and other public infrastructure and service systems in rates, fees, financing and public investments to implement the General Plan. Adequately address accumulated deferred maintenance, aging infrastructure, risks to service continuity, desired standards of service to meet quality-of-life goals, and required infrastructure to support growth, economic competitiveness and business development.

13. Emphasize the City as a role model for good growth management planning, efficient processing and permit streamlining, effective urban development policies, environmental quality, and a strong economy. Work collaboratively with other jurisdictions and institutions to further these values throughout the region.

    Positively influence the same attributes in other jurisdictions of the San Joaquin Valley –and thus the potential for regional sustainability - and improve the standing and credibility of the City to pursue appropriate State, LAFCO, and other regional policies that would curb sprawl and prevent new unincorporated community development which compete with and threaten the success of sustainable policies and development practices in Fresno.

14. Provide a network of safe well-maintained parks, open spaces, athletic facilities, and walking and biking trails connecting the city's districts and neighborhoods to attract and retain a broad range of individuals, benefit the health of residents, and provide the level of public amenities required to encourage and support development of higher density urban living and transit use.

Sufficient parks and recreation spaces are also needed in support of the higher residential densities associated with the Bus Rapid Transit (BRT) corridors and Activity Centers and in the new Complete Neighborhoods planned for Fresno and addressed in the Urban Form, Land Use and Design Element. Parks, open spaces, and schools also critical to residents' physical activity levels are central to the public health strategy, as discussed in the Healthy Communities element.

Of Special Note, Parks Master Plan Update on December 14, 2017

On December 14, 2017, the City of Fresno adopted the Fresno Parks Master Plan (PMP) which was an update to the previously adopted 1989 Parks Master Plan. In comparison to this chapter of the General Plan, the Fresno Parks Master provides updated data and system overview, revised park classifications, additional goals, recommendations and

strategies, and new design guidelines that support and enhance the objectives and policies found in this chapter. As a result, policy POSS-1-a has been revised and the PMP park classifications are to take precedence over the park classifications in this chapter which means that the goal of 2 acres/1,000 residences is to be achieved through Regional Parks, Open Space/Natural Areas, and Special Use Parks/Facilities.

5.2 PARKS AND RECREATION

Parks, natural open spaces, and greenways are an important component to urban form, and they provide both recreational and aesthetic assets that contribute to the creation of a desirable visual character. The City has devoted substantial resources over the past several decades to provide parks and greenways, including the adoption of an Urban Growth Management (UGM) policy that helped establish a park impact development fee in 1976. In 2008, the City Council approved the UGM Impact Fee and Reimbursement policy. Additionally, other agencies and entities, such as school districts, the Fresno Metropolitan Flood Control District (FMFCD), the San Joaquin River and Parkway Conservation Trust, and the San Joaquin River Conservancy, have made significant contributions to the provision of recreational and natural areas. Despite these efforts, Fresno, in 2012 and 2013 was ranked last out of the 40 and then 50 largest U.S. cities, respectively, for ParkScore, a measure that takes into account public open space acreage, services, investment, and access.[1] City Staff, through diligent efforts, increased the City's ParkScore by 6.5 points from 2012 to 2013, and additional programs such as the City's Residential Guidelines for Open Space have increased the amount of recreational open space within the Planning Area without adding costs to the General Fund.

This General Plan affirms Fresno's commitment to creating and maintaining a park system that meets residents' recreational needs, maximizes landscapes endowed by the natural environment, contributes to Fresno's quality of life, and supports urban living. Adoption of this element will guide the subsequent planning and implementation of the City's parks and open space program.

[1] "ParkScore Index." Trust for Public Land. <http://parkscore.tpl.org/city.php?city=Fresno>.

Parks provide a variety of important social, environmental, and health benefits for the Fresno community, and the City has devoted substantial resources over the past several decades to provide and improve parks and greenways.

Park Classifications

The City provides Fresno residents with several types of parks and facilities.[2] Parks are defined as land owned, leased, or provided to the City and used for public recreational purposes. In addition, several FMFCD storm water detention basins also serve as passive and active parks (from April to November); and, there are joint use planning and operation of school district playgrounds and athletic facilities for public recreation. In addition to the public parks discussed here, there are many private parks and public lands that provide similar services such as along the San Joaquin River.[3] Park types in the General Plan are classified as follows and summarized in Table 5-1:

- **Pocket Park.** A park up to 0.5 to 2.0 acres in size, which is intended to serve the needs of a smaller, specific neighborhood located within a half-mile radius of the pocket park. Pocket Parks should include amenities to draw neighbors to the park such as a tot lot, picnic bench, or shade structure. New Pocket Parks developed

[2] General Plan park standards and types may differ from PARCS Department operational classifications for existing facilities with various passive and active recreational facilities and features.

[3] The banks of the San Joaquin River are under the jurisdiction of the State Lands Commission and open to the public for recreational use.

within new subdivisions are maintained as part of a Home Owners Association (HOA) or Community Facilities District (CFD). Fresno currently is served by 93 pocket parks.

- **Neighborhood Park.** A park of more than 2 and up to 10 acres in size, which provides basic recreational activities for neighborhoods located generally within a one-mile radius. There are two types of Neighborhood Parks, active and passive. These parks contribute to neighborhood identity and accommodate a range of facilities, such as play fields and courts, children's play structures, picnic tables, restrooms, and may include a small center with a multi-purpose room, but also passive recreational features such as walking trails, community gardens, or nature areas. Fresno has 62 neighborhood parks.
- **Community Park.** A park of more than 10 and up to 40 acres in size (typically at least 20 acres), which helps define a community or district and is intended to serve the more active recreational needs of persons who live or work up to a two to four-mile radius. These parks typically include facilities such as lighted sport fields and a community center building with a gym, meeting rooms, and restrooms. Other features may include swimming pools, tennis courts, concession stands, community defining public art, courtyard or plaza. Fresno has 13 community parks.
- **Regional Park.** A large park of more than 40 acres in size, which is meant to serve a large number of residents across a broad area of the city, or around 100,000 residents. Regional parks typically include community park features that allow for a variety of sports and active recreation. Some are large enough to enable Fresno to host local and regional tournaments or events that bring revenue to the City and local businesses in the form of additional patrons and tax revenue generated. Regional parks also provide unique public facilities, such as the Shinzen Japanese Garden, the Chaffee Zoological Gardens, or natural areas with hiking trails, fishing opportunities, and access to the San Joaquin River. Parks that provide unique opportunities, such as river access, have been categorized as a regional park, even though they are less than 40 acres in size. Fresno presently has three City owned regional parks: Woodward, Roeding, and the Regional Sports Complex; and two regional parks owned by other public entities, Camp Pashayan (San Joaquin River Conservancy), and Clovis North High School play fields and facilities (Clovis Unified School District).
- **Trail/Greenway/Parkway.** A network of linear open spaces of varying size, typically intended to accommodate walking and bicycling opportunities for leisure, exercise and commuting purposes. These parkways typically include paved surfaces for bicyclists and walkers, and in appropriate locations may include equestrian trails. Fresno has 19 paths and trails, which are planned to be expanded and eventually form a substantial portion of the Valley Arboretum. Fresno's trail network is described in the Transportation and Mobility Element.

TABLE 5-1: DESIRABLE PARK FACILITY STANDARDS		
Park Type	Typical Size	Service Area
Pocket	0.5 to 2 acres	Up to ½ mile
Neighborhood	2.01 to 10 acres	Up to 1 mile radius
Community	10.01 to 40 acres	Up to 4 mile radius
Regional	More than 40 acres[1]	100K residents
Trail/Greenway/Parkway	Varies	Entire city

[1] Some parks with less than 40 acres may be classified as Regional if they provide a unique opportunity such as river access.
Source: City of Fresno.

The function and desirability of smaller open spaces, such as pocket parks, has been an ongoing issue for the City. These smaller spaces are often popular with residential developers because of their appeal to homeowners, and they may be the most realistic option to correct deficiencies within already-developed areas. However, the smaller size and scattered location of these sites had tended to increase maintenance costs, pose potential supervision and attractive nuisance challenges, and limit the range of recreational amenities and services that can be offered. In the past, the City has even occasionally decommissioned a pocket park for these or similar reasons. Requiring new pocket parks to have secure maintenance funds through an HOA or CFD provides three benefits: set maintenance funding for each pocket park; local control of the park; and does not add additional burden to the City's PARCS Department maintenance program, allowing them to focus on the City's neighborhood, community, and regional parks. This change in how pocket parks are managed, and including amenities that attract local residents, has made them an attractive option to increase recreational space in the city with minimal to no impact on PARCS resources.

Existing Parks and Recreation Facilities

The City maintains approximately 1,617 acres of open space, nearly 230,000 square feet of building space dedicated to recreational/educational purposes distributed among 104 sites. Other facilities include 9 community pools, 4 splash parks, 518 picnic tables, 153 barbeque grills, 3 amphitheaters, 54 baseball/softball fields, 53 football/soccer fields, 40 basketball courts, 11 volleyball courts, 40 tennis courts, 7 skate parks, and 5 dog parks. The park system also provides and maintains 115 acres of paths and trails for pedestrians and bicyclists.

The FMFCD and the City partner in the use of portions of storm water detention basins as park and open space features. These include trees and turf for passive recreation and play equipment or sports fields where flood control design parameters allow. There are currently 16 basins, totaling over 143 acres, which are open to the public from April to November, when they are not in use for stormwater detention. These basins are often designed with two floor levels. The upper floor is available for recreational uses during the dry weather seasons, while the lower level may be used for ground water recharge purposes and to accommodate rainwater runoff from smaller

storm events. The adaptation of stormwater detention basins for park use must be carefully balanced with the critical need to use these facilities to perform groundwater recharge.

Park Demand and Proposed Park Land

The City's 2025 General Plan standard called for at least 3.0 acres of parkland to be provided per 1,000 residents (comprised of 0.75 acres neighborhood parks, 0.25 acres community parks, 2.0 acres regional parks). This standard is among the lowest in the Central Valley, where many cities have a standard of 4.0 or 5.0 acres per 1,000 residents. Under the Quimby Act, California State law sets a generally applicable standard of 3.0 acres of parkland per 1,000 residents as the maximum that can typically be required by a city or county as a condition of approval of a residential subdivision. However, a city or county can exceed this limitation and require dedication and improvement of parkland up to a ratio of 5.0 acres per 1,000 residents if it can be demonstrated that the developed portion of the community meets or exceeds the higher standard. The Quimby Act limits do not preclude a city from establishing a higher parkland standard, just the amount that can be charged to a new residential development.

The current citywide park fee is based upon a ratio of 3.0 acres per 1,000 residents; this was established under the City's previous Urban Growth Management Program and 1989 Master Plan for Parks and Recreation. This 3.0 acre parkland standard was maintained through the adoption of the 2025 Fresno General Plan, the subsequent Park Facilities Impact Fee & Parkland Dedication Study, and the adoption of the citywide Park Facilities Fee ordinance. In addition to public parks, the Park Facilities Impact Fee study also identified and examined additional open spaces that are publicly owned but have limited access, recreation, or leisure uses, such as golf courses, school playgrounds, or sports fields.

Citywide, Fresno has a current supply of 3.28 acres of City Park Space per 1,000 residents, which exceeds the City's minimum standard by 0.28 acre. Including All Park Space in the City's SOI increases that ratio to 4.65 acres per 1,000 residents.[4] The

[4] For this General Plan, Park categories include All Park Space within the City's SOI: parks owned and maintained by an HOA that are publicly accessible (no gate), public golf courses, SJRC parkland open to the public and directly accessible from the City; pocket parks maintained through Community Facility Districts (CFD); ponding basins with park improvements (excludes fenced-off flood areas); Clovis and Central Unified School District playgrounds, Fresno Unified's Burroughs Elementary and Yosemite Middle School (grass fields and courts, Kindergarten play areas, and parking areas only). City Park Space excludes golf courses and school lands because of their use limitations and where the City lacks jurisdiction over the park.

breakdown of these figures is shown in Table 5-2. The difference is due to the inclusion of the City's two golf courses and school playgrounds and play fields. Since school district policies are not within the City's control, those lands have been excluded from the City's inventory. Nevertheless, Clovis and Central Unified's policies for open playgrounds provide a very significant amount of recreational area for residents in those school districts. Including Fresno Unified's Burroughs Elementary and Yosemite Middle School open space, city schools provide over 450 acres of recreational land. This could be greatly increased with the inclusion of additional Fresno Unified School facilities located in the central areas of the city, areas severely lacking in available park space.

Although overall the City exceeds the minimum standard of 3.0 acres per 1,000 residents, the provision of parkland is uneven across the city. The inclusion of open campus schools as parkland increases the disparity of park space in the established neighborhoods north and south of Shaw Avenue. Newer neighborhoods with larger amounts of parkland increase the citywide average and obscure the parkland deficiencies of many Fresno neighborhoods. In particular, many of the central neighborhoods in Fresno lack convenient access to parkland and fall well below the 3.0 acre standard, as shown in Table 5-3 and Figure POSS-1. The discrepancy between developments north and south of Shaw Avenue also demonstrates the effectiveness of park and open space fees and other policies in providing park space to the residents of newer residential developments as compared to past policies, although the city as a whole still remains well below other similar-sized cities.

TABLE 5-2: CITY PARK SPACE AND RATIO PER 1,000 RESIDENTS BY PARK CATEGORY

Park Category	City Park Space[1]			All Park Space in SOI[2]		
	Acres	Number of Parks	Acres per 1,000 Residents[3]	Acres	Number of Parks	Acres per 1,000 Residents[3]
Community	198.32[4]	13	0.40	557.69	33	1.13
Neighborhood	372.45[5]	62	0.75	401.57	66	0.81
Pocket	61.57[4]	93	0.12	61.57	93	0.12
Trail-Greenway-Parkway	115.19[4]	19	0.23	115.19	19	0.23
Regional	877.05	5	1.77	940.11	6	1.90
Golf				223.62	2	0.45
Total	1,624.58	192	3.28	2,299.75	219	4.65

1. City Park Space includes parks owned and/or maintained by the City or parks where there is little likelihood that the use or access will change. City Park Space does not include lands controlled by other jurisdictions where policy changes could limit or eliminate those lands from use as parkland, such as school district properties. Parks under the jurisdiction of the San Joaquin River Conservancy currently open directly to city residents (Camp Pashayan, Jensen River Ranch) and Fresno Metropolitan Flood Control Basins improved for park use are included. Golf courses are not included because their use is limited to golf.
2. In addition, mutual-use agreements with schools provide 451.54 acres of Regional, Neighborhood, and Community Park space for Fresnans, which is not included in the total acres of City Park Space. Golf courses provide an additional 223.62 acres of open space.
3. Based on 2010 city population of 495,000.
4. Homeowners Associations account for 9.17 acres of the Pocket parks, 4.10 acres of Trail-Greenway-Parkway, and 7.74 acres of the Neighborhood parks under the City Park Space.
5. Ponding basins comprise 74.46 acres of the Neighborhood parks and 57.76 acres of the Community Parks under the City Park Space.

Source: City of Fresno.

TABLE 5-3: PARK ACREAGE IN DEVELOPMENT AREAS

Area	Population[2]	City Park Space[1]		Pocket/Neighborhood/ Community Parks	
		Total Acres	Acres per 1,000 Residents[2]	Total Acres	Acres per 1,000 Residents[2]
Downtown Planning Area	65,509	235.84	3.60	72.91	1.11
Established Neighborhoods South of Shaw	238,116	242.73	1.02	231.78	0.97
Established Neighborhoods North of Shaw	165,534	764.43	4.62	194.96	1.18
Combined Development Areas NW[3]	47,122	43.56	0.92	42.30	0.90
DA-1 South	15,056	296.55	19.70	48.92	3.25
Combined Development Areas East[4]	15,385	21.25	1.38	21.25	1.38
South Industrial Area	11,316	20.23	1.79	20.23	1.79
Total	558,038	1,625	2.91	632	1.13
Using 2010 City Population	495,000	1,625	3.28	632	1.28

1. City Park Space includes parks owned and/or maintained by the City or parks where there is little likelihood that the use or access will change. City Park Space does not include lands controlled by other jurisdictions where policy changes could limit or eliminate those lands from use as parkland, such as school district properties. Parks under the jurisdiction of the San Joaquin River Conservancy currently open directly to city residents (Camp Pashayan, Jensen River Ranch) and Fresno Metropolitan Flood Control Basins improved for park use are included. Golf courses are not included because their use is limited to golf.
2. Based on Census Tract population totals that include population outside the 2010 City SOI and Planning Area.
3. Includes West Development areas north of SR 180 (DA-1 North, DA-4 West).
4. Includes East Development areas (DA-2 North & South, DA-3, DA-4 East).

Source: City of Fresno.

In Fresno, the neighborhood and community, and pocket parks are the backbone of the urban park system. They are large enough for play fields and programmed activities and may include sport courts and community centers. They provide open and accessible active and passive open space to neighborhoods, typically within walking or biking distance of many residences. Given the important role these facilities play in Fresno's communities, it is appropriate for the City to achieve 3.0 acres of neighborhood, community, and pocket parks per 1,000 residents.

In Fresno, regional park facilities include trails, paths, and greenways that provide linear connections through and between communities. In addition, regional park facilities include an amphitheater, zoo, a regional sports park, and river access. These facilities provide walking and biking connectivity for the larger community, as well as spaces for leisurely enjoyment of the surrounding neighborhoods. Regional parks provide active and passive recreation and leisure activities at a larger scale, and it is appropriate for the City to continue to provide them at a ratio of 2 acres per 1,000 residents, the standard from the City's 2025 General Plan.

To meet the standard of 3.0 acres of neighborhood, community, and pocket parks per 1,000 residents, a total of 2,313 acres of new parks will be needed to serve the estimated 771,000 residents in the city at General Plan Horizon. To achieve parity with other Valley cities, the City would need to increase the parkland ratio standard to 5.0 acres per 1,000 residents, and the City would need an additional 3,855 acres of parks from all categories. The overall ratio for parkland under this General Plan is 5 acres per 1,000 residents of which 3 acres per 1,000 residents is for Community, Neighborhood, and Pocket Parks.

As shown in Table 5-4, the established neighborhoods south of Shaw and the south industrial area have a deficit of 984 acres in City park space. Using provisions in the Quimby Act, which apply to new residential subdivisions, the City could provide an additional 1,275 acres of parkland and accomplish the overall City goal of providing parkland at a similar rate as other Valley cities. However, State laws concerning parkland dedication and fee limitations require that the open space facilities be proximate to the developments generating these fee revenues. The existing deficit of pocket, neighborhood, and community parks within the established neighborhoods south of Shaw, including the South Industrial Area, may not be considered proximate to developing areas. Thus, additional funding is needed to provide parks in these areas with deficits to equitably distribute the City's parks and open space among all Fresnans. Recent revisions to the Quimby Act through AB 1359 (2013) allows fees, paid pursuant to the act, to be used in a neighborhood other than the neighborhood being developed if specific conditions can be met. This may allow some flexibility but will not resolve the ongoing issue of limited park space in established neighborhoods.

A number of approaches will be pursued to meet both future and existing needs for parks:

- Focus funding efforts on increasing the number of Neighborhood and Community Parks, especially within the areas south of Shaw Avenue;
- Increasing the City's standard to 3.0 acres of usable parkland per 1,000 residents for combined Pocket, Neighborhood, and Community parks while striving for 5.0 acres or more of usable parkland per 1,000 residents for total City Park Space for the SOI;
- Seek dedicated funding sources for parkland acquisition, improvement, and ongoing maintenance costs, in both growth areas and established neighborhoods;
- Strategically locate neighborhood and community parks along BRT corridors, in Activity Centers, and in established neighborhoods to support urban densities;
- Allow flexibility in siting and sizing neighborhood parks;
- Identify the sites of future regional parks, 40 to 100 acres in size, in the City's Development Areas;
- Continue to evaluate and update the City's Citywide Park Fee as applied to new residential development to assure priority park areas are acquired in existing and new residential neighborhoods;
- Identify underutilized and vacant land within the city that can be acquired and developed as parks to meet the needs of existing residents and cure deficiencies in established neighborhoods;
- Secure more joint use facilities, particularly with public schools;
- Pursue joint use facilities with Police and Fire when siting new parks or police/fire stations. These joint facilities will provide added security for the parks and provide greater opportunity for police and fire personnel to interact with the public and neighborhood children;
- Add security measures to parks to protect facilities and patrons;
- Identify opportunities to provide cultural parks consistent with the neighborhood;
- Develop parks that meet specialized needs, such as certain sports activities or recreational facilities not provided elsewhere in the city;
- Encourage development of recreation facilities that are open to the public and free of charge such as trails, greenways, and drainage basins developed with the intent of being predominantly used as a park; and
- Use low-impact design and landscaping strategies, including use of climatized and drought-resistant plants, for new and existing parks to minimize water demand

and increase capacity for passive water storage and conservation that also provides scenic and recreational opportunities for users.

The General Plan aims to provide more neighborhood, community, and pocket parks, such as the skate park pictured above, throughout the city to improve access to parks, open spaces, and recreational areas for all Fresnans.

Planned Parks, Trails and Open Space

The General Plan proposes over 1,100 acres of land for new City parks by the General Plan 2035 build-out stage for development in the Fresno SOI. All new development will include neighborhood, community, trails, and regional scale parks, where feasible, meeting a minimum combined standard of three acres per 1,000 new residents for Pocket, Neighborhood, and Community Parks.[5] Other funding sources will be sought for the additional two acres per 1,000 residents for Regional Parks, trails, and greenways. These parks are not all mapped on the Figure LU-1: Land Use Diagram, but will be identified through subsequent implementation planning after adoption of this General Plan. Implementation and ongoing maintenance of all park facilities will require new sources of dedicated ongoing revenue.

[5] See Figure MT-2: Paths and Trails in Chapter 4, Mobility and Transportation.

Park maintenance in Development Areas can be funded with CFDs or landscaping and lighting districts. A new funding source for citywide parks maintenance may be needed, as discussed in the Economic Development and Fiscal Sustainability Element. Figure POSS-1: Parks and Open Space, shows the location of the major new parks that are proposed. These include regional parks with some neighborhood and community parks sited in key locations such as in Activity Centers or infill locations. San Joaquin River Parkway paths and trail access points are shown in Figure POSS-2.

Inspiration Park. Set on eight acres near Polk and Gettysburg Avenues, Inspiration Park (formerly referred to as Universally Accessible Park) will provide a Miracle League special-needs baseball field with special-needs designed children play areas, along with a sensory garden and wall, wheelchair accessible dog park, and rubberized basketball court in addition to other features.

TABLE 5-4: EXISTING CITY PARK SPACE AND POCKET/NEIGHBORHOOD/COMMUNITY PARK SPACE NEEDS BASED ON 5 ACRES AND 3 ACRES PER 1,000 RESIDENTS RATIOS

Area	City Park Space			Pocket, Neighborhood, and Community Park		
	Existing Park Acres	Target Park Acres to Reach Ratio of 5 acres per 1,000 Residents	Acres Needed to Reach 5 Acres per 1,000 Residents Ratio	Existing Park Acres	Target Park Acres to Reach Ratio of 3 acres per 1,000 Residents	Acres Needed to Reach Ratio of 3 acres per 1,000 Residents
Downtown (DNCP)	235.84	327.55	91.70	72.91	196.53	123.62
Established Neighborhoods South of Shaw	242.73	1190.58	947.85	231.78	714.35	482.57
Established Neighborhoods North of Shaw	764.43	827.67	63.24	194.96	496.60	301.65
Combined DA Northwest	43.56	235.61	192.05	42.30	141.37	99.06
Combined DA Southwest	296.55	75.28	-221.27	48.92	45.17	-3.76
Combined DA East	21.25	76.93	55.68	21.25	46.16	24.91
South Industrial Area	20.23	56.58	36.35	20.23	33.95	13.72
Total	**1,625**	**2,725**	**1,100**	**632**	**1,635**	**1,003**

1. Total based on 2010 SOI population of 545,000, Area ratios based on Census Tract populations within each area. City Park Space includes Regional, Trails, Neighborhood, Pocket, and Community Parks not including school properties.

Source: City of Fresno.

As summarized in Table 5-5, the amount of new parkland expected under the General Plan Horizon (2035) is around 1,100 acres of new parkland. It is both mapped and assumed to be provided by new development and added on infill sites in established neighborhoods.

TABLE 5-5: TOTAL EXISTING AND FUTURE PARK NEEDS SCENARIOS

Park Space Categories	Based on 2010 Population[1]	Based on Additional Future Population at General Plan Horizon	Total
All City Park Spaces at Ratio of 5 Acres per 1,000 Residents	2,725	1,130	3,855
Pocket, Neighborhood, and Community Parks at Ratio of 3 Acres per 1,000 Residents	1,635	678	2,313

1. Based on Table 5-4 SOI Population and Acreage Need at 3 and 5 acres per 1,000 residents.

Source: City of Fresno.

Subsequent implementation planning for parks following the General Plan adoption will be designed as a guiding blueprint for the City Council, City administration, and the public. It will strive to ensure the cohesive development of a parks and open space system that upholds the standards and goals set forth in the General Plan, and include a range of programs for all ages, interests, and neighborhoods. It will also help determine which parks and recreation facilities will be shared with school programs.

5.3 OPEN SPACE ACTION PLAN

Fresno's Open Space Action Plan consists of the objectives, and policies presented in this element. These include policy direction for specific actions and programs which the City Council intends to pursue to implement the ideas for open space systems contained in this element. Additional detail on how the action plan will be implemented is in the Implementation Element, in the Table 12-1, "Summary of Implementation Actions for Plan Policies". Taken together, these initiatives specifically respond to and are consistent with the Government Code's requirements for an Open Space Action Plan that is to include "specific programs which the legislative body intends to pursue in implementing its open space plan" (Government Code Section 65564).

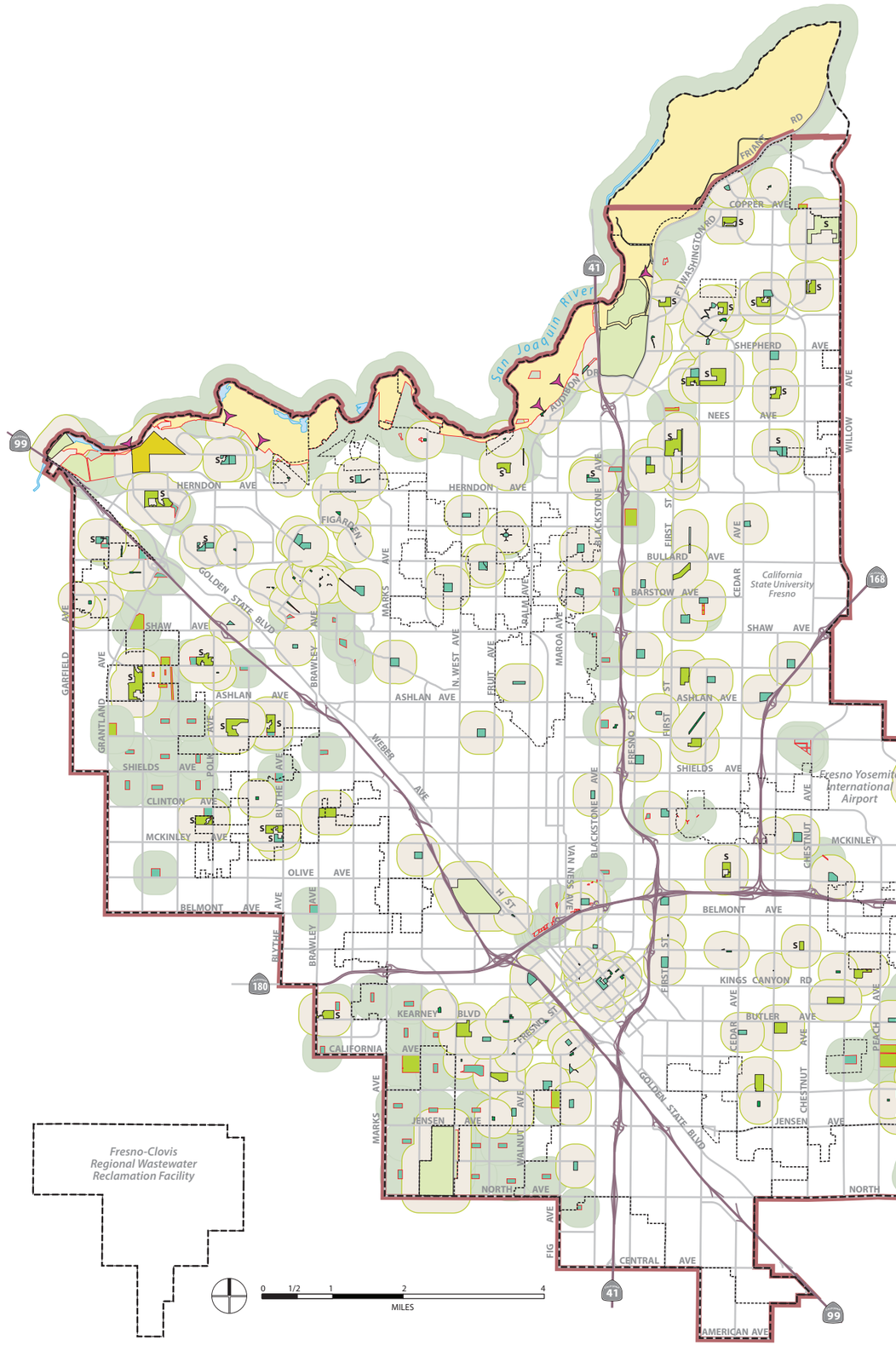


Figure POSS-1:

Parks and Open Space

Existing Parks
- Pocket Park
- Neighborhood Park
- Community Park
- Regional Park
- Golf Course

Future Parks
- Neighborhood Park
- Community Park
- Regional Park
- Open Space
- SEDA School/Park
- Open Space Multi-Use

- S School
- Vista Point
- 1/4 Mile radius from existing park
- 1/4 Mile radius from future park
- Planning Area Boundary
- Sphere of Influence
- City Limits

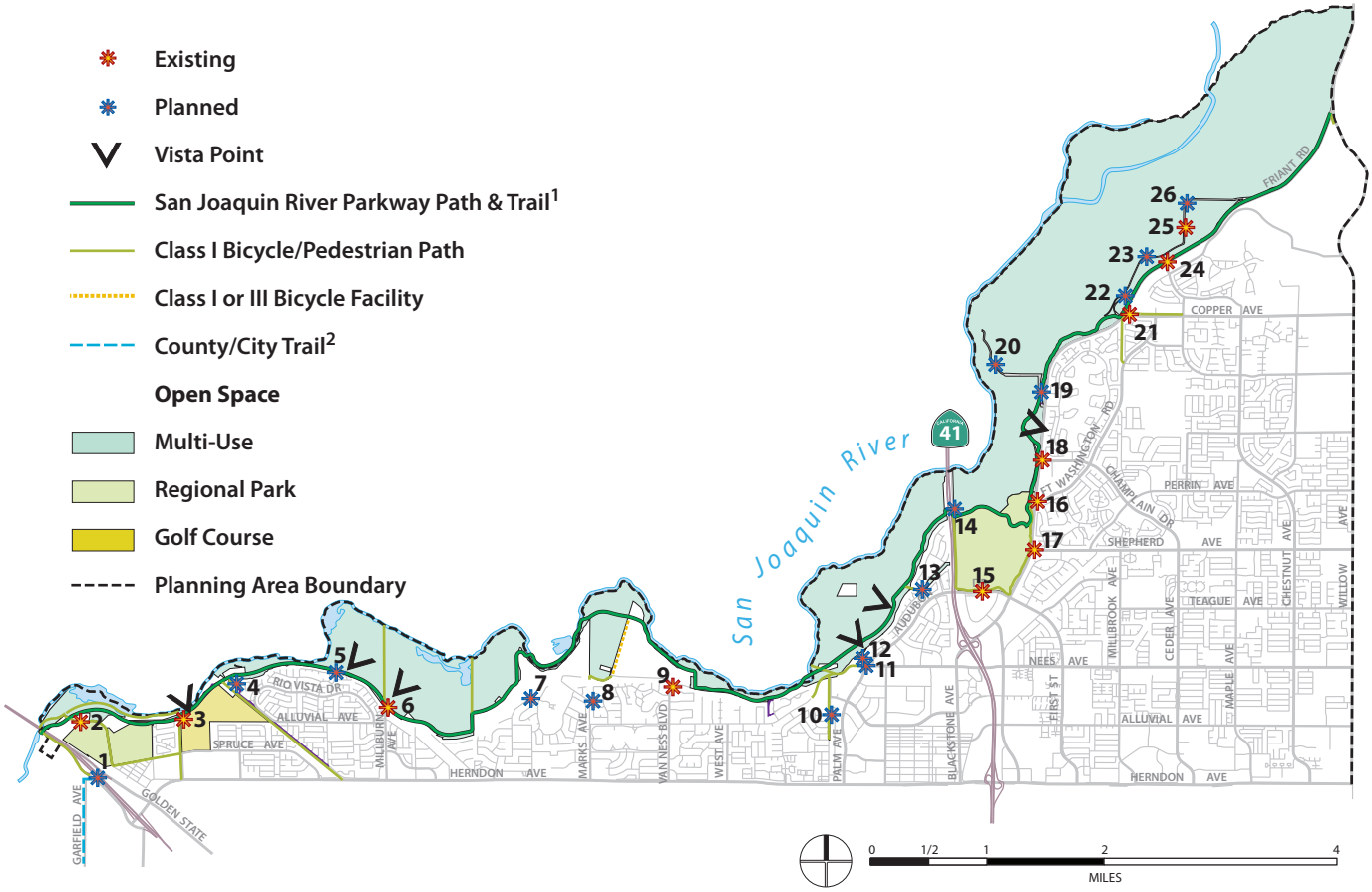
Notes: This figure does not include all Homeowner Association parks, only those that provide public access.
This figure includes County of Fresno Parks located within the City of Fresno Planning Area Boundary.
See Figure MT-2 for path and trail locations.

Source: City of Fresno, DARM Dept. 2014.

This page intentionally left blank.

Figure POSS-2:

San Joaquin River Parkway Path & Trail Access Points



1. Pedestrian Access
2. Multi-Modal Access with Parking
3. Multi-Modal Access with Parking
4. Multi-Modal Access with Parking
5. Pedestrian, Bicycle, Managment, and Emergency Access
6. Existing Golf Course Access, Future Multi-Modal Access with Parking
7. Pedestrian and Bicycle Access
8. Pedestrian and Bicycle Access
9. Existing Scout Island Access, Future Pedestrian and Bicycle Access
10. Pedestrian and Bicycle Access
11. Existing Parking, Planned Pedestrian Access
12. Multi-Modal Access with Parking
13. Pedestrian, Bicycle, Managment, and Emergency Access
14. Multi-Modal Access with Parking
15. Multi-Modal Access with Parking
16. Multi-Modal Access with Parking
17. Pedestrian and Bicycle Access
18. Pedestrian and Bicycle Access
19. Multi-Modal Access with Parking
20. Multi-Modal Access with Parking
21. Multi-Modal Access with Parking
22. Multi-Modal Access with Parking
23. Multi-Modal Access with Parking
24. Pedestrian and Bicycle Access
25. Multi-Modal Access with Parking
26. Multi-Modal Access with Parking

1. Conceptual alignment of proposed path and trail. All planned Parkway access and projects, their features, uses, and locations, are subject to the acquisition of lands and/or easements from willing sellers, and project-specific, site-specific environmental review.

2. Conceptual alignment, subject to City/County cooperative planning adoption, and implementation. City preferred location depicted.

Source: City of Fresno, DARM Dept 2013 Base Map
San Joaquin River Conservancy, 2013 Access Points.

OBJECTIVE

POSS-1 Provide an expanded, high quality and diversified park system, allowing for varied recreational opportunities for the entire Fresno community.

Commentary: *The park system will be comprehensive; include greenways, trails and open space; allow for athletic, leisure and mobility opportunities; support planned land use intensities and patterns and buffers along transportation corridors; and accommodate groundwater and other resource management objectives.*

IMPLEMENTING POLICIES

POSS-1-a **Parkland standard.** Implement a standard of at least three acres of public parkland per 1,000 residents for Pocket, Neighborhood, and Community parks throughout the city, while striving for five acres per 1,000 residents for all parks throughout the city, subject to identifying additional funding for Regional Parks, Open Space/Natural Areas, and Special Use Parks/Facilities.

POSS-1-b **Parks Implementation Planning.** Conduct ongoing planning to implement park policies established in this General Plan and continue to strive for well-maintained and fully accessible playgrounds, with accessible amenities, throughout the city.

- Keep an up-to-date inventory of existing and planned parks, including locations mapped on the Parks and Open Space Diagram;
- Plan for acquiring new parkland designated in the General Plan, as shown in Figure POSS-1;
- Establish a standard protocol for working with new development to arrange for parkland acquisition and dedication;
- Establish a protocol for working with established neighborhoods to provide needed parks, including the fostering of neighborhood and district associations to help plan, acquire, improve and care for public parks, and coordinating new City service facilities to provide new open space;
- Establish detailed design, construction, and maintenance standards;
- Prepare an assessment of the recreation needs of existing and future residents;

- Create an action plan defining priorities, timeframes, and responsibilities;
- Adopt and implement a comprehensive financing strategy for land acquisition, park development, operations, and maintenance;
- Identify opportunities for using existing or planned park space as passive stormwater storage, treatment, and conservation areas that also provide scenic and/or recreational opportunities;
- Identify opportunities for siting and using existing or planned park space as passive "purple pipe" waste water storage, treatment, and conservation areas that also provide scenic and/or recreational opportunities; and
- Update the Parks Master Plan.

POSS-1-c **Public Input in Park Planning.** Continue to provide opportunities for public participation in the planning and development of park facilities and in creation of social, cultural, and recreational activities in the community.

POSS-1-d **Additional parkland in certain areas.** Strive to obtain additional parkland of sufficient size to adequately serve underserved neighborhood areas and along BRT corridors in support of new and intense residential and mixed use infill development.

- Identify, where appropriate, joint use opportunities in siting parks with other City service facility needs.

POSS-1-e **Criteria for Parks in Development Areas.** Continue to use park size and service area criteria for siting new parks and planning for parks in Development Areas:

Park Type	Size Range (Acreage)	Population Served	Service Area Radius
Neighborhood	2.01 to 10	10,000 - 15,000	Up to 1 mile
Community	10.01 to 40	50,000 - 80,000	Up to 4 miles
Regional	More than 40[1]	100,000	100,000 residents

[1] Or when amenities provide regional service.

POSS-1-f **Parks and Open Space Diagram.** Require parks to be sited and sized as shown on the Parks and Open Space Diagram (Figure POSS-1) of the General Plan, subject to the following:

- All new park designations carry dual land use designations, so that if a park is not needed, private development consistent with

zoning and development standards may be approved. (See Figure LU-2: Dual Designation Diagram in the Urban Form, Land Use, and Design Element);

- Revised and/or additional park sites will be identified through subsequent implementation and planning in established neighborhoods and Development Areas;
- Locations for future park sites as shown on Figure POSS-1 are schematic to the extent that park sites may be relocated as necessity and opportunity dictate, and a General Plan amendment is not required if the park continues to serve the target areas as determined by the Planning Director; and
- A park may be located on any suitable land in the general vicinity of the sites depicted. However, the zoning of potential park sites must be made consistent with the General Plan.

POSS-1-g **Regional Urban Forest.** Maintain and implement incrementally, through new development projects, additions to Fresno's urban forest to delineate corridors and the boundaries of urban areas, and to provide tree canopy for bike lanes, sidewalks, parking lots, and trails.

OBJECTIVE

POSS-2 Ensure that adequate land, in appropriate locations, is designated and acquired for park and recreation uses in infill and growth areas.

IMPLEMENTING POLICIES

POSS-2-a Identify opportunities to site, develop and co-locate Fire and Police stations with needed parks and open space as joint-use facilities.

- Capital Improvement Plans should be updated to reflect this policy.

Commentary: *Co-location of public safety with parks provides added security for the park and creates an opportunity for public safety personnel to interact with the neighborhood.*

POSS-2-b **Park and Recreation Priorities.** Use the following priorities and guidelines in acquiring and developing parks and recreation facilities:

- Acquire and develop neighborhood park space in existing developed neighborhoods that are deficient of such space and in

areas along BRT corridors that are designated as priorities for encouraging new mixed-use transit-oriented development;

- Provide accessible recreation facilities in established neighborhoods with emphasis on those neighborhoods currently underserved by recreation facilities;

  ***Commentary**: As funding permits, the City will strive to make all recreation facilities universally accessible for all residents. Guidelines should also consider the provision for universally accessible facilities in established neighborhoods.*

- Improve established neighborhood parks with emphasis on those neighborhoods with the greatest need;
- Acquire and develop neighborhood and community parks in new Development Areas;
- Recognize community parks as a special need in areas that lack these facilities or are planned for transit supportive urban densities, and explore all potential sources of revenue to secure and develop appropriate sites including joint use facilities;
- Develop new special purpose parks, such as outdoor gym equipment, natural resource based trail parks, equestrian centers, dog parks, and amphitheaters, as well as alternative recreation facilities, such as community recreation centers, passive wildlife observation park, cultural heritage and diversity park, military veterans memorial park, and universal access open space park; and
- Acquire and develop park and open space in established neighborhoods and Development Areas, prioritizing existing neighborhoods with the greatest deficiencies, so that all residents have access to park or open space within one-half mile of their residence. Develop these facilities to be fully accessible to individuals with disabilities as required by law.

POSS-2-c **Review of Development Applications.** Coordinate review of all development applications (i.e., site plans, conditional use permits, and subdivision maps) in order to implement the parks and open space standards of this Plan.

- Assure the provision of adequate active and passive open spaces and facilities as appropriate within residential subdivisions through Development Code requirements for mandatory dedication and improvement of land and/or development fees.

Commentary: *Revisions to the Quimby Act by AB 1359, allows fees paid pursuant to the act to be used in a neighborhood other than the neighborhood being developed if specific conditions can be met.*

- Require the provision of appropriate outdoor living areas or private open space in multi-family residential developments not subject to the Subdivision Map Act.
- Request open space easements where feasible and warranted to secure appropriate public use of sensitive areas with scenic or recreation values, and for buffering space for sensitive areas.
- Require provision of appropriate open space areas in private projects, in the form of trails, enhanced landscaped setbacks, parks, and water features.
- Evaluate the merits of establishing a development bonus entitlement program in which development incentives (i.e., bonus densities, bonus floor area square footage) are provided for contributions to public recreational facilities on-site or in the vicinity of the development project.

POSS-2-d **Recreation Opportunities near Freeway Corridors.** Negotiate with Caltrans, other public agencies, and private property owners to develop remnant parcels along freeway corridors for appropriate recreational uses.

POSS-2-e **Open Space Dedication for Residential Development.** Ensure new residential developments provide adequate land for parks, open space, landscaping, and trails through the dedication of land or otherwise providing for Pocket Parks, planned trails, and other recreational space, maintained by an HOA, CFD, or other such entity.

Commentary: *Thresholds for this requirement will be established when the Development Code is adopted.*

POSS-2-f **Freeway Landscaping.** Support the expansion of the State Route 99 Beautification Association to the Fresno County Highway Beautification Association with related updates and implementation of the master landscape plans for each freeway.

OBJECTIVE

POSS-3 Ensure that park and recreational facilities make the most efficient use of land; that they are designed and managed to provide for the entire Fresno community; and that they represent positive examples of design and energy conservation.

IMPLEMENTING POLICIES

POSS-3-a **Centralized Park Locations.** Site parks central and accessible to the population served, while preserving the integrity of the surrounding neighborhood.

POSS-3-b **Park Location and Walking Distance.** Site Pocket and Neighborhood Parks within a half-mile walking distance of new residential development.

POSS-3-c **Link Parks with Walkways.** Link public open space to adjacent, schools, and residential uses and Activity Centers through a series of landscaped linear walkways and bikeways that enhance and encourage pedestrian use.

POSS-3-d **Sidewalks to Connect Neighborhoods.** Sidewalks should be designed for internal neighborhood circulation, and to connect neighborhoods to other residential areas, parks, community trails, shopping, and major streets.

POSS-3-e **Minimum Park Size for Active Recreation.** Minimize City acquisition or acceptance of dedication of park sites less than two acres in size for active recreational uses, except where maintenance costs are secured through a CFD, HOA, or other such mechanism.

POSS-3-f **Park Design Guidelines.** Create, maintain, and apply park design guidelines, with provisions for appropriate amenities for each park type, which may include:

- Minimum and maximum shade.
- Protections from shading by adjacent buildings.
- Accessibility to persons with disabilities.
- Street trees and landscaped median strips in adjacent arterial roads.
- Art and points of attraction.

- Landscape and hardscape features.
- Street furniture, signage, and lighting.
- Food sales and entertainment.
- Restroom facilities, play structures, and picnic shelters.
- Landscape design synthesis with input from civil engineers and hydrologists, educators and daycare providers, fitness trainers and coaches, police officers and experts in crime prevention through environmental design, as appropriate.
- Solar panels, new LED lighting, and water efficiency improvements. Sports field areas designed to allow periodic changes in field locations to minimize wear areas and provide sufficient fields to host regional, state, or national tournaments.
- Using topography to create interesting and visually appealing spaces and forms.
- Use of waterways as a key design influence, a focus of restoration, and an opportunity to provide for public enjoyment of views.
- Reflecting the agricultural and horticultural heritage of the site or area.
- Connecting with surrounding areas in a way that encourages expanded pedestrian activity.
- Creating individual places within a park that respond to the needs of a broad range of park users, from youth to the elderly.
- Creating places of delight that engage the senses.
- Creating places that engage the mind, by treating park features as opportunities for interpretation and questioning.
- Using sustainable design practices, and highlighting these as opportunities for learning.

POSS-3-g **Park Security and Design.** Promote safety, attractiveness, and compatibility between parks and adjacent residential areas through design, maintenance, and enforcement of park regulations

- Require the installation of security lighting for parking, points of access, and building areas at all public recreation and park sites.
- Keep neighborhood eyes on parks to increase security.

POSS-3-h **Coordination with School Districts.** Continue to coordinate with school districts to explore opportunities for joint use of both outdoor

and indoor recreation facilities, such as playgrounds, play fields, and gymnasiums, for City recreation programs.

POSS-3-i **Joint Use with Drainage Facilities.** Continue to seek joint use agreements for use of FMFCD stormwater drainage facilities.

Commentary: *Proposals to use ponding basins (or parts of ponding basins) for recreation will need to be approved by the Department of Public Utilities to ensure minimal loss of capacity for groundwater recharge.*

OBJECTIVE

POSS-4 Pursue sufficient and dedicated funding for parks acquisition, operations, and maintenance.

IMPLEMENTING POLICIES

POSS-4-a **Supplemental Revenue.** Seek revenue sources to supplement General Fund support for basic park maintenance and basic recreational services.

POSS-4-b **Operation and Maintenance Financing.** Continue to require new residential development to form lighting and landscaping maintenance districts or community facility districts or ensure other means of financing to pay for park operations and maintenance.

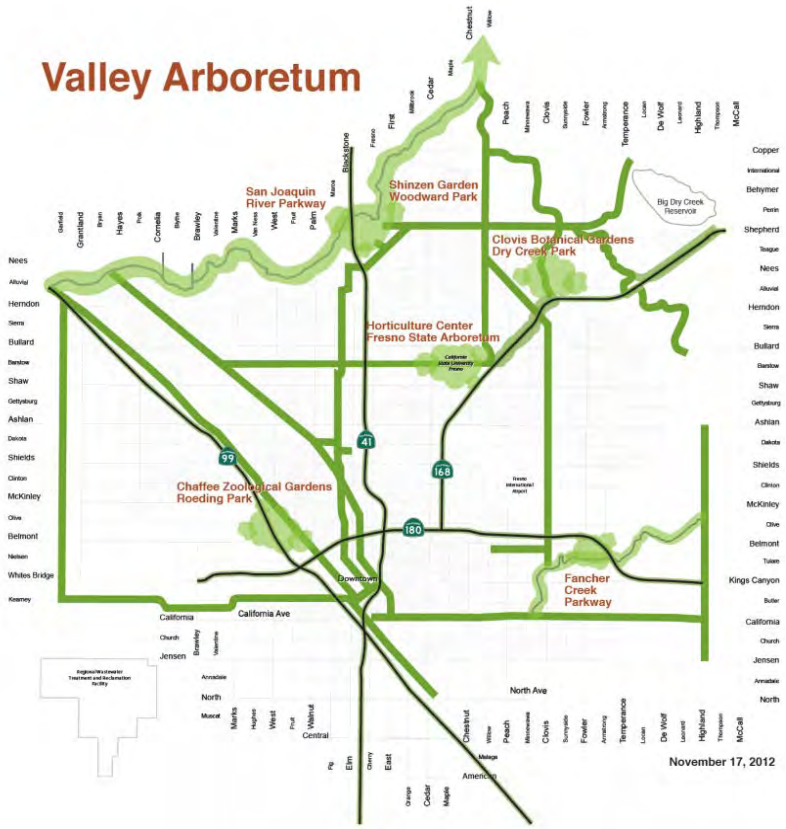
POSS-4-c **Improvements in Established Neighborhoods.** Seek agreements with formal neighborhood associations and institutions for improvements and ongoing maintenance of parks in established neighborhoods.

POSS-4-d **Maintain *Adopt-A-Park* Program.** Continue promoting the City's *Adopt-A-Park* program that utilizes partnerships with local organizations to preserve, beautify and maintain Fresno's neighborhood parks.

5.4 VALLEY ARBORETUM

The concept of a Valley Arboretum was introduced by the Tree Fresno organization in 2012. An arboretum is defined as a place where trees, shrubs, and plants are grown in order to be observed scientifically and/or seen by the public for educational and ornamental purposes. The Tree Fresno organization presented the City with a description of 14 arboretum segments and a preliminary diagram, shown below, connecting these segments through Fresno and into adjoining parts of Fresno County

and Clovis. Their vision is to establish a signature amenity for the region: a system of linear parks, like the Sugar Pine Trail, with different development standards, to improve Fresno's quality-of-life and ParkScore and help make the region more investment-worthy to families and businesses.



The vision of the Valley Arboretum[6] is to establish a link between the "botanical brothers" in the region: the Fresno State campus arboretum and horticulture center, the Clovis Botanical Gardens at Dry Creek Park, the Shinzen Garden at Woodward Park, and the Chaffee Zoological Gardens at Roeding Park with a potential expansion to include Kearney Park, Avocado Park, Lost Lake Park, and other trails in the four county region.

In concept, a Valley Arboretum complements and enhances a number of goals, objectives and policies in this General Plan: expanding Fresno's urban forest; reducing

[6] Diagram as presented to the City by Tree Fresno.

heat island effect; establishing green streets, Complete Streets, and Complete Neighborhoods; beautifying trails; connecting a network of paths with parks, greenways and parkways as well as neighborhoods and Activity Centers for recreation and transportation purposes; and increasing the attractiveness of the city to existing and potential residents, visitors, employers and employees.

Some of the items that need analysis prior to City consideration include the following:

- Segment locations and possible alternatives may be reviewed by City Departments, neighboring jurisdictions, local agencies and organizations, universities, school districts, and the public.
- The proposed Greenbelt Trails located along the periphery of Fresno's SOI may not be as functional as alternative routes located in closer proximity to more populated areas of the city. The Valley Arboretum could provide much needed open space to communities that are underserved by parks and open space.
- Additional routes may be needed in the older parts of the city that have a fair amount of pedestrian activity and would benefit from an improved street experience. Some of the Valley Arboretum could be located in such a way as to provide a sense of place in smaller segments to enhance potential main streets in Fresno.
- Some segments of the concept Arboretum may need to be adjusted to accommodate other community needs.
- Substituting some or all major street segments for local street segments may be advantageous. Relocating segments of the Valley Arboretum along local streets could provide a more enjoyable experience for recreational walkers and cyclists, while reserving major streets for transportation and commuter oriented cyclists.
- The Valley Arboretum design needs to be further clarified to guarantee that there are neither conflicts with nor opportunities taken away from cyclists that have been represented in the General Plan.
- Representation of the Valley Arboretum design diversity and street cross sections for the various conditions found throughout the many segments identified and for those that may be proposed through a vetting process need to be shown. Street crossing design, safety features and the interface with abutting residential and commercial properties will also vary. The range in overall widths; the type and location of trees and other landscaping; landscaping buffer widths; trail width, location and type; and educational amenities and gateway locations need to be determined.

5.5 OPEN SPACE AND BIOLOGICAL RESOURCES

Overall, there are more than 4,000 acres of existing open space in the Planning Area. Open space is distinguished here from parkland as discussed above. More than half of the existing open space, including private golf courses and parks in gated communities, is not accessible to the general public. Ponding/recharge basins, owned by the FMFCD, account for 1,273 acres; all serve as ponding basins for storm drainage while some also act as year-round groundwater recharge basins.

Six types of open space land are defined by the Government Code for General Plan purposes:

- **Open space for public health and safety**, including but not limited to, areas which require special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, flood plains, watersheds, areas presenting high fire risks, areas required for the protection of water quality and water reservoirs and areas required for the protection and enhancement of air quality.
- **Open space for the preservation of natural resources,** including but not limited to, areas required for the preservation of plant and animal life, including habitat for fish and wildlife species; areas required for ecologic and other scientific study purposes; rivers, streams, bays and estuaries; and coastal beaches, lakeshores, banks of rivers and streams, and watershed lands.
- **Open space used for the managed production of resources**, including but not limited to, forest lands, rangeland, agricultural lands and areas of economic importance for the production of food or fiber; areas required for recharge of groundwater basins; bays, estuaries, marshes, rivers and streams which are important for the management of commercial fisheries; and areas containing major mineral deposits, including those in short supply.
- **Open space for outdoor recreation**, including but not limited to, areas of outstanding scenic, historic and cultural value; areas particularly suited for park and recreation purposes, including access to lakeshores, beaches, and rivers and streams; and areas which serve as links between major recreation and open space reservations, including utility easements, banks of rivers and streams, trails, and scenic highway corridors.
- **Open space in support of the mission of military installations** that comprises of areas adjacent to military installations, military training routes, and underlying restricted airspace that can provide additional buffer zones to military activities and complement the resource values of the military lands.
- **Open space for the protection of places, features, and objects** for the preservation of Native American artifacts, sites and remains.

Central California is a unique biological enclave, with a rich diversity of flora and fauna. This region's climate, soils, hydrology, and geographic isolation fostered resident species found nowhere else on earth. Through agriculture, rural residential and urban development, these species and their habitats are being diminished and marginalized. In collaboration with federal, State, and local flood control and natural resource agencies, the City is striving to protect native plants by providing greater setbacks near sensitive environments; however, continued urbanization may reduce these species' opportunities.

Special Status Species

The Planning Area includes a variety of rare plants and wildlife species, particularly along the San Joaquin River, which provides a concentrated riparian plant and animal sanctuary. This area of natural habitat is recognized as unique and scenic given its topographic variation in the characteristically flat San Joaquin Valley. It is a sensitive environment hosting a diversity of wildlife, fish, and plant species, and it contains the last remnants of a true riparian environment, due to the year–round presence of flowing water, which supports aquatic life. This riparian community provides nesting and roosting sites for raptors, herons, egrets, and other bird species (resident and migratory). It also contains special status species, such as the Valley Elderberry Long Horn Beetle (potential to be de-listed), as well as non-special status vegetation, such as cottonwood and willow trees. In short, this segment of the river provides habitat diversity of great value to wildlife.

Aside from the San Joaquin River, there are several canals that traverse the Planning Area that provide opportunities for both vegetation and wildlife; however, such opportunities are limited.

OBJECTIVE

POSS-5 Provide for long-term preservation, enhancement, and enjoyment of plant, wildlife, and aquatic habitat.

IMPLEMENTING POLICIES

POSS-5-a **Habitat Area Acquisition.** Support federal, State, and local programs to acquire significant habitat areas for permanent protection and/or conjunctive educational and recreational use.

POSS-5-b **Habitat Conservation Plans.** Participate in cooperative, multi-jurisdictional approaches for area-wide habitat conservation plans to preserve and protect rare, threatened, and endangered species.

POSS-5-c **Buffers for Natural Areas.** Require development projects, where appropriate and warranted, to incorporate natural features (such as ponds, hedgerows, and wooded strips) to serve as buffers for adjacent natural areas with high ecological value.

POSS-5-d **Guidelines for Habitat Conservation.** Establish guidelines for habitat conservation and mitigation programs, including:

- Protocols for the evaluation of a site's environmental setting and proposed design and operating parameters of proposed mitigation measures.
- Methodology for the analysis depiction of land to be acquired or set aside for mitigation activities.
- Parameters for specification of the types and sources of plant material used for any re-vegetation, irrigation requirements, and post-planting maintenance and other operational measures to ensure successful mitigation.
- Monitoring at an appropriate frequency by qualified personnel and reporting of data collected to permitting agencies.

POSS-5-e Pursue development of conjunctive habitat and recreational trail uses in flood control and drainage projects.

Commentary: *Establishment of wildlife and aquatic habitat is unsuitable along primary conveyance systems to existing and future water treatment facilities. Certain waterways may be excluded from habitat development for this reason.*

POSS-5-f **Regional Mitigation and Habitat Restoration.** Coordinate habitat restoration programs with responsible agencies to take advantage of opportunities for a coordinated regional mitigation program.

POSS-5-g **Assistance in Valley Arboretum Master Planning.** Assist community organizations that have raised grant funds to pursue the preparation of a Valley Arboretum Master Plan and Implementation Program, including funding, to be coordinated with community groups, as well as related plans and policies for established neighborhoods and other areas with park deficiencies.

Commentary: *It is anticipated that when completed, the Valley Arboretum Master Plan will be presented to the City Council for consideration as an amendment to the General Plan. See discussion at the end of this Element, Section 5.4 Valley Arboretum.*

OBJECTIVE

POSS-6 Maintain and restore, where feasible, the ecological values of the San Joaquin River corridor.

IMPLEMENTING POLICIES

POSS-6-a **San Joaquin River Parkway Master Plan.** Support the San Joaquin River Conservancy in its efforts to update the San Joaquin River Parkway Master Plan by working with the other jurisdictions and the River Conservancy to create a comprehensive and feasible plan for preservation, conservation, and Parkway development.

POSS-6-b **Effects of Stormwater Discharge.** Support efforts to identify and mitigate cumulative adverse effects on aquatic life from stormwater discharge to the San Joaquin River.

- Avoid discharge of runoff from urban uses to the San Joaquin River or other riparian corridors.
- Approve development on sites having drainage (directly or indirectly) to the San Joaquin River or other riparian areas only upon a finding that adequate measures for preventing pollution of natural bodies of water from their runoff will be implemented.
- Periodically monitor water quality and sediments near drainage outfalls to riparian areas. Institute remedial measures promptly if unacceptable levels of contaminant(s) occur.

OBJECTIVE

POSS-7 Support the San Joaquin River Conservancy in its collaborative, multiagency efforts to develop the San Joaquin River Parkway.

IMPLEMENTING POLICIES

POSS-7-a **Preserve Wildlife Corridors.** Acquire and expand natural reserves and wildlife corridors through purchase, easements, mitigation for proposed activities, or other mutually satisfactory transactions.

POSS-7-b **Wildlife Corridor along San Joaquin River.** Create a wildlife corridor to provide continuous open space land and water areas parallel to the San Joaquin River within the jurisdiction of the City.

- Preserve a minimum width of 200 feet of riparian vegetation on both sides of the river.

- Require the corridor to be wider when possible and/or necessary to protect additional areas of native plants and critical habitat (such as wildlife breeding areas). Re-establishment of a 200-foot or wider band of native plants is recommended in areas where 200 feet of riparian vegetation no longer exists along the river bank, to the maximum extent feasible from topologic and hydrologic standpoints.
- Allow exceptions where the minimum-width corridor is infeasible due to topography, hydrology, or other constraints. An offsetting expansion may be approved in those instances on the opposite side of the river. Incorporate the bluff face into the wildlife corridor where steep bluffs drop directly into or close to the river.

POSS-7-c **Monitoring River Corridor Conditions.** Undertake periodic monitoring to determine the status of conditions and mitigation measures required for projects within, and in the vicinity of, the river corridor.

- Pursue a Memorandum of Understanding (MOU) or other agreement so that the San Joaquin River Conservancy can perform, or participate in, this monitoring program in order to furnish additional expertise, provide for cost efficiency, and to ensure consistency throughout the river corridor.
- Based on information obtained from monitoring, modifications in special permits, reclamation plans, and other documents, operating parameters for uses may be necessary to insure human health and safety and the well-being of riparian plants and wildlife.

POSS-7-d **Buffer Zones near Intensive Uses.** Protect natural reserve areas and wildlife corridor areas in the San Joaquin River corridor whenever more intensive human uses exist or are proposed on adjacent lands. Use buffer zones to allow multiple uses on parts of the parkway while still protecting wildlife and native plants.

- Require studies of appropriate buffer widths to be approved by State and federal wildlife agencies before variances from standard buffer zone widths are granted.
- Maintain natural riparian buffer zones with appropriate native plants (seed material and cuttings locally derived).
- Incorporate open space uses such as pasture, low-intensity agricultural activities, and the "rough" or marginal areas of golf

courses, into buffer zones when they constitute an improvement in habitat over a previous use or degraded area. Evaluate and address the potential impacts of construction, cultural, and operational practices (such as grading, number of livestock per acre, lighting, and use of pesticides, herbicides, and fertilizers) before these uses are be approved for buffering.

- For nearby areas of the San Joaquin River corridor outside of the exclusive jurisdiction of the City, support efforts to work with other jurisdictions to achieve this policy.

POSS-7-e **Natural Habitats and Historic Resources.** Continue to protect and enhance the San Joaquin River Parkway environs' unique and irreplaceable natural habitats and historic resources (including archaeological sites). Continue to maintain standards to protect public health, and provide for development of substantial recreational opportunities for all segments of the community by preserving open space on the bluffs and riverbottom while allowing appropriate recreational development respectful of private property rights.

- In conjunction with other land use jurisdictions along the river corridor, determine whether to create a new or modified open space zone district applicable to the San Joaquin riverbottom environs, with provisions that would allow and support the multiple open space uses consistent with the multi-use open space plan designation in this area, and to minimize or prohibit new residential construction.
- Require existing undeveloped areas of the riverbottom to remain non-urbanized and establish controls to preserve and enhance the remaining riparian areas and minimize or prohibit new residential uses.

POSS-7-f **River Bluffs.** Preserve the river bluffs as a unique geological feature in the San Joaquin Valley by maintaining and enforcing the requirements of the "BP" Bluff Preservation Overlay Zone District, maintaining the bluff area setback for buildings, structures, decks, pools and spas (which may be above or below grade), fencing, and steps, and maintaining designated vista points.

- Strive to assure that development of the parkway and other uses within the San Joaquin riverbottom environs are consistent with the mineral resources conservation zones; honor flood, environmental, recreational and aesthetic issues; protect natural

habitats and historic resources; and consider adjacent property owners.

- Take an active role in establishing park entrances. Provide all gates, trails and roads adequate access by emergency vehicles such as fire trucks, police cars, and ambulances.
- For safety reasons, access may be limited to points that have controlled access gates. Cooperation of private parties having legal control of riverbottom access shall be sought in this effort.
- Continue to work toward the adoption of official plan lines for new segments of the San Joaquin River Trails and actively pursue completion of these segments to ensure that adequate and appropriate public access to the San Joaquin River and the Parkway is provided.
- Refer to Policy NS-2-d (Chapter 9, Noise and Safety) for additional information for sites within the BP Overlay District.

POSS-7-g **San Joaquin River Parkway - River West Fresno Project Area.** Support the extension of the Lewis Eaton Trail into the River West Fresno Project Area consistent with the San Joaquin River Parkway Master Plan and the following criteria:

- Public access into the River View Drive Area/Neighborhoods should be limited to cyclists and pedestrians with the exception of public safety, circulation, and/or other governmental/support service provider vehicles.

  Commentary: *Limitations on vehicular access through the River View Drive Area/Neighborhoods are not intended to restrict vehicular access to the neighborhoods themselves. Public right-of-way held by the City for public street purposes will remain accessible to the public consistent with the requirements of the California Vehicle Code.*
- Proposed public parking facilities should be designed in order to accommodate as many vehicles as possible.
- Additional public parking should be located under and/or adjacent to the old San Joaquin Bridge and State Route 41 corridor.
- The feasibility of additional public parking and equestrian trailer parking near Spano Park should be considered and fully evaluated.

- The location of public parking should not conflict with other recommendations in this policy.
- The trail alignment should, at the greatest extent possible, be located along and/or near the river for maximum public enjoyment, view and access to the river by all users, and to allow for the best possible fire and public safety buffer for adjacent property owners while also taking into consideration environmental impacts, design and maintenance costs, historical and required water flows and flooding, and/or other events that result in increases to water levels.
- Full development or public access should be avoided until adequate and sustainable funding needed to support annual operations and maintenance has been identified.
- The San Joaquin River Bluff and Protection Ordinance should be implemented prior to the completion of the project.

POSS-7-h **Interlink City and San Joaquin River Parkway Trail Networks.** Strive to connect the parkway trail network to other trails in the vicinity, in order to create a community and regional trail system that offers a variety of different route combinations and enhances public access to the parkway.

POSS-7-i **Public Access to San Joaquin River Parkway Trail Networks.** Strive to provide public access to the parkway from public streets, roads, and rights-of-way immediately adjacent to parkway properties, facilities, and trails such as those proposed in Figure POSS-2: San Joaquin River Parkway Path and Trail Access Points, Figure MT-2: Paths and Trails, as well as several public right-of-way alignments identified in Figure MT-1: Major Street Circulation Diagram, which could serve as public access points for vehicles, bicycles, equestrians and/or pedestrians:

1. Herndon and Parkway Avenues: pedestrian access
2. Weber Avenue: multi-modal access with parking
3. Riverside Avenue: multi-modal access with parking
4. Santa Fe and Bluff Avenues: multi-modal access with parking
5. Polk Avenue: pedestrian, bicycle, management, and emergency access
6. Milburn Avenue: existing golf course access and future multi-modal access with parking
7. Valentine Avenue: pedestrian and bicycle access

8. Marks Avenue: pedestrian and bicycle access
9. Van Ness Boulevard: existing Scout Island access, future pedestrian and bicycle access
10. Harrison Avenue: pedestrian and bicycle access
11. Palm and Nees Avenues: multi-modal access with parking
12. Palm Avenue: existing parking and planned pedestrian access
13. Riverview and Bluff Avenue: pedestrian, bicycle, management, and emergency access
14. Perrin Alignment at State Route 41: multi-modal access with parking
15. Woodward Park Audubon Avenue Entrance: multi-modal access with parking
16. Woodward Park Friant Road Entrance: multi-modal access with parking
17. Shepherd Avenue and Friant Road: pedestrian and bicycle access
18. Champlain Avenue and Friant Road: pedestrian and bicycle access
19. Rice Road: multi-modal access with parking
20. Lanes Road: multi-modal access with parking
21. Copper Avenue and Friant Road: multi-modal access with parking
22. Old Friant Road: multi-modal access with parking
23. Old Friant Road: multi-modal access with parking
24. Old Friant Road and Copper River Drive: pedestrian and bicycle access
25. Old Friant Road at River Center: multi-modal access with parking
26. Old Friant Road: multi-modal access with parking

5.6 SCHOOLS

Schools often act as focal points for neighborhoods and can serve as gathering places and provide open space and recreation opportunities. The City does not operate any of the public schools in Fresno, but it does maintain a collaborative relationship with the school districts, reviewing and approving sites through the subdivision process to ensure that they are consistent with and supportive of the General Plan. The City can also make land use and urban form choices that enhance the role of school facilities in the community.

Existing Public Schools

Fresno is served by several school districts, and the school boundaries do not mirror the city limits. The City coordinates land use plans and subdivision approvals with local districts and cooperates with them to ensure that school fees are collected prior to the issuance of building permits. However, substantial population growth, changing demographic characteristics, and funding constraints have made it difficult for school districts to meet growing student capacity demands.

Most of the city is served by the Fresno Unified School District (FUSD), the fourth largest school district in the state, operating 95 schools with an enrollment of 70,704 students. FUSD adopted a District Facilities Master Plan in 2009 to revise and improve feeder patterns, adjust school boundaries to balance enrollment, improve building and site conditions, reduce the use of portable classrooms, and build new classrooms and facilities where needed. In accordance with the Master Plan, the District constructed a new middle school in southwest Fresno (Rutherford B. Gaston Sr.), which opened in 2014. The District Facilities Master Plan also calls for a new high school in the southeast area of the District, which would help accommodate new growth and help lessen overcrowding at existing high schools.

While the City does not operate any of the schools in Fresno, it works closely with the local school districts to coordinate land use plans and subdivision approvals.
Photo Courtesy of Karana Hattersley-Drayton.

Clovis Unified School District (CUSD) currently serves areas in Fresno north of Herndon Avenue and east of FYI Airport, and it will serve areas in the Southeast Development Area generally north of the Tulare Avenue alignment. It is the second largest school district in the city serving 40,677 students in 43 schools with

approximately 40 percent of students in CUSD being Fresno residents. CUSD has one educational complex in Fresno that houses a middle and a high school. CUSD is in the early planning stages of its newest educational complex in the northern portion of SEDA.

Central Unified School District (Central USD) serves the northwestern and west portions of the city serving 14,547 students in 19 schools, and it will serve most of the new development in the Development Areas west of State Route 99. Fueled by residential construction in these areas since 2000, Central USD has experienced an influx of students and as a consequence they have constructed new schools. Fortunately, the Central area contains large parcels of undeveloped land that provide the district flexibility when identifying new school sites.

Sanger Unified School District (Sanger USD) serves the southeast portion of the city serving 10,917 students in 20 schools, and at a 7.8 percent increase in enrollment over 5 years has experienced comparable growth to Central USD and slightly lower than Clovis USD at 8.4 percent. As Fresno experiences new development in the eastern fringe, student populations will undoubtedly increase. High school students living in Fresno and within the Sanger USD currently attend Sanger High School located several miles to the east of Fresno. A new Sanger Unified High School and Middle School are planned in the vicinity of a new Sanger Elementary School north of Jensen and west of Temperance Avenue.

The southwest portion of the city was served by the West Fresno School District, which contains an elementary school and a middle school. In July 2011, West Fresno USD merged into and became a part of the Washington Unified School District that serves 2,560 students in 4 schools. A large portion of the area south of Church Avenue in southwest Fresno is now within the Washington Unified School District.

Combined, the public school districts have the capacity to serve 144,000 school aged children between the grades of K-12, and private schools can serve another 4,200 students. With 136,000 students currently in the public school districts, there remains space for up to 8,000 additional students. Clovis, Fresno, Central and Sanger USDs are planning new schools to increase student capacities as they plan for future growth in the Fresno Planning Area.

Future Schools

Development under the General Plan by 2035 is expected to result in around 35,000 new school-aged students who would require another 28 elementary schools, 6 middle schools, and 4 high schools. The actual school need will depend on the location and phasing of new development, the capacity of existing schools, other growth within

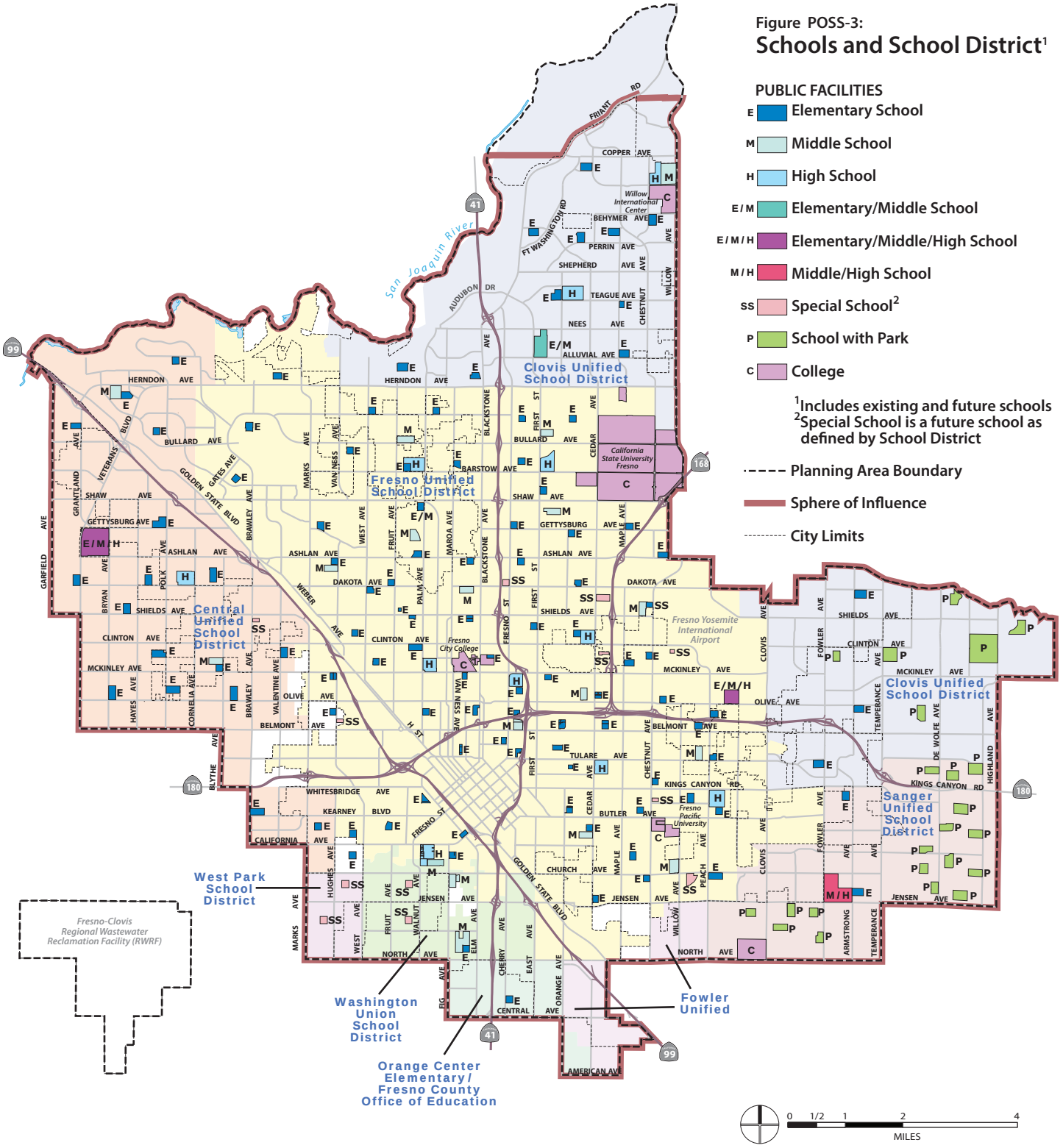
school districts outside of Fresno, and demographic shifts within existing residential neighborhoods.

The City is aware of several planned or proposed school sites and has designated these on Figure LU-1: Land Use Diagram, and Figure POSS-3: Schools and School Districts Diagram. Otherwise, future school facilities are permitted in a variety of land use and zoning districts. The State's school facility size and service area characteristics will aid preparing master plans for Development Areas, supporting districts' needs.

Higher Education

Fresno is home to a major four-year public university, California State University, Fresno, commonly known as Fresno State. It is located in the northeastern area of the city. Fresno State is one of the largest and best known of the 23 CSU campuses. It has one of the five public agricultural colleges in the state and maintains research farms within the city limits. Fresno State is largely a commuter campus, with relatively few students living on campus. The university is surrounded by urbanized land, generally low density residential neighborhoods; there are concentrations of apartment complexes west and south of the campus, as well as in the new Campus Pointe development on campus. The residential uses surrounding the university limit its potential for expansion and for the adjacent development of complementary uses, such as research and development, retail, and student housing.

Fresno is also home to Fresno Pacific University (FPU), the Central Valley's only accredited Christian university; San Joaquin Valley College; Heald College; UCSF Fresno Center for Medical Education and Research; UEI College; and other professional and technical training centers. Another key institution for higher education and training is the State Center Community College District (SCCCD), which operates Fresno City College in the center of the city and offers associates degrees and vocational training, as well as the Willow International College Center, a satellite campus on the northeastern edge of the city. The District is planning to add a satellite campus focused on vocational training in the southeastern corner of the city in SEDA.



Source: City of Fresno, 2014

OBJECTIVE

POSS-8 Work cooperatively with school districts to find appropriate locations for schools to meet the needs of students and neighborhoods.

IMPLEMENTING POLICIES

POSS-8-a **Support School Districts' Programs.** Support strategies and programs of school districts and the Fresno County Office of Education to provide access to and use of the highest quality educational programs and support services.

POSS-8-b **Appropriate School Locations.** Support school locations that facilitate safe and convenient access by pedestrian and bicycle routes, are compatible with surrounding land uses, and contribute to a positive neighborhood identity and Complete Neighborhoods. Commit to the following:

- Work with representatives of public and private schools during the preparation and amendment of plans and the processing of development proposals to ensure that General Plan policies are implemented.
- Require school districts to provide necessary street improvements, pedestrian facilities, public facilities, and public services at each new school site as authorized by law.
- Continue to designate known school sites on the Land Use Diagram (Figure LU-1), and in community plans, Specific Plans, and other plans compatible with the locational criteria of each school district, and to facilitate safe and convenient walking and biking to schools in neighborhoods.
- Meet regularly with school district staff and trustees to provide ongoing communication and coordination of plans, projects, and priorities.
- Collaborate with school districts to plan and implement new school sites in a manner that supports and reinforces objectives to develop walkable Complete Neighborhoods.

POSS-8-c **Park and School Site Coordination.** Pursue the cooperative development and use of school sites with adjacent neighborhood parks for both school activities and non-school related recreational activities.

OBJECTIVE

POSS-9 Work with California State University, Fresno, and other institutions of higher learning in Fresno, to enhance the City's workforce, job creation, and economic development, as well as its image and desirability as a place to live.

IMPLEMENTING POLICIES

POSS-9-a **Economic Potential of Institutions of Higher Education in Fresno.** Seek to leverage the human capital, research pursuits, and economic potential of California State University, Fresno (Fresno State), and all of Fresno's institutions of higher education, whenever possible in economic development and land use decisions.

POSS-9-b **Regular Coordination with Institutions of Higher Education in Fresno.** Encourage regular meetings with Fresno State, FPU and SCCCD leadership, including the Facilities Planning and Housing divisions.

POSS-9-c **University Neighborhood Planning.** Partner with Fresno State, FPU and SCCCD leadership to find funding for, develop, and implement a Specific Plan for the neighborhoods around the primary campuses of these and other higher education institutions in Fresno.

Commentary: *Using Fresno State as an example, the Specific Plans will focus on updating land use designations, zoning, and infrastructure investments along Cedar Avenue, Shaw Avenue, and other city/school interface zones. The plan also will provide a framework for coordinating jointly beneficial actions, such as development of a research park near the campus and enhanced bus service connections.*

6 PUBLIC UTILITIES AND SERVICES

The purpose of the Public Utilities and Services Element is to provide a policy framework for the City to manage infrastructure and services, identify areas for improvement, and ensure that public utilities and services meet the needs of the community as the city grows. More specifically, the Public Utilities and Services Element addresses the planning, provision, and maintenance of water, wastewater, solid waste systems, and other facilities operated by the City, as well as police and fire services. Details on fiscal management policies and strategies, which also have a bearing on public utilities and services, are in the Economic Development and Fiscal Sustainability Element.

One of the fundamental responsibilities of the City is to provide adequate public facilities and services that will support existing development as well as projected growth. As part of this mandate, the City provides police, fire protection, potable water, sewage collection and treatment, and solid waste pickup, while the Fresno Metropolitan Flood Control District (FMFCD) provides storm drainage and flood control. Continued urban development under the General Plan, within the city limits and the City's Sphere of Influence (SOI) may require new or expanded facilities and increased service capacities. The capital costs of these facilities and services will be borne by the development community, consistent with the policies of the Economic Development and Fiscal Sustainability Element.

This Public Utilities and Services Element focuses on substantive issues related to public facilities and services, including service standards, design, and operational measures. Related issues are covered in other elements. Water conservation, for example, is addressed in the Resource Conservation and Resilience Element. Emergency response, flood hazards, and fire hazards are addressed in the Noise and Safety Element. Policies regarding the extension of utilities outside the city limits are in the Urban Form, Land Use, and Design Element.

Relationship to General Plan Goals

This Element provides objectives and policies that support a wide range of General Plan goals, in particular the following:

9. Promote a city of healthy communities and improve quality of life in established neighborhoods.

   Emphasize supporting established neighborhoods in Fresno with safe, well maintained, and accessible streets, public utilities, education and job training, proximity to jobs, retail services, health care, affordable housing, youth development opportunities, open space and parks, transportation options, and opportunities for home grown businesses.

12. Resolve existing public infrastructure and service deficiencies, make full use of existing infrastructure, and invest in improvements to increase competitiveness and promote economic growth.

    Emphasize the fair and necessary costs of maintaining sustainable water, sewer, streets, and other public infrastructure and service systems in rates, fees, financing and public investments to implement the General Plan. Adequately address accumulated deferred maintenance, aging infrastructure, risks to service continuity, desired standards of service to meet quality-of-life goals, and required infrastructure to support growth, economic competitiveness and business development.

16. Protect and improve public health and safety.

6.1 POLICE

The Fresno Police Department (Police Department) Patrol Division provides a full range of police services, including uniformed patrol response to both emergency and non-emergency calls for service, crime prevention, pro-active tactical crime enforcement (including gang and violent crime suppression through the use of Impact Teams), and investigation of crimes utilizing District Detectives.

The Police Department currently operates out of four policing district stations in the Southwest, Southeast, Northwest, and Northeast geographic areas within the city. In 2011, the Central Policing District located at Broadway and Elizabeth Streets was closed due to budget reductions. From the four remaining policing districts, the Police Department responds to approximately 1,100 law enforcement calls per day utilizing a priority system to immediately respond to life threatening calls for service and crimes in progress. Other calls for service have a lesser priority and are handled as patrol officers become available.

These services are supplemented by the Police Department - Investigative Services Division, which is responsible for follow-up investigation on cases involving crimes against persons and property crimes, evaluation of crime and public safety intelligence information utilizing the Intelligence Unit, and pro-active investigation of vice/narcotics related crimes.

The Police Department - Support Division encompasses Traffic Enforcement and Accident Prevention, Communications, and Records Bureaus, as well as a Volunteer Services and Reserve Officers Unit. In addition to enforcement-related services, the Police Department provides extensive crime prevention assistance through residence and business security inspections; neighborhood and business watch group formation programs; and public presentations.

The Police Department - Professional Standards Division oversees the Commission of Accreditation for Law Enforcement Act (CALEA) compliance, as well as the Internal Affairs, Fiscal Affairs, Grant, and Policy and Procedure Units and the Accountability and Compliance, Training, and Personnel Bureaus.

Key Issues

Safety is a fundamental concern for the citizens of Fresno and of upmost importance to the City of Fresno. Fresno experiences violent crime at a rate similar to and at times better than other large populace cities in California and on par with cities in the San Joaquin Valley. In comparison, Fresno's violent crime rate in 2012 was 5.4 per 1,000 persons while San Jose was 3.6, Anaheim 3.7, Sacramento 7.4, and Oakland 19.9, while

in the San Joaquin Valley, Clovis was 2.2, Bakersfield 5.4, Stockton 15.5, Visalia 4.3, Hanford 5.6, Tulare 6.2, Madera 7.4, Merced 10, and Sanger 10.8. The city's property crime rate of 50.9 per 1,000 persons in 2012 was higher than San Jose 29.2, Anaheim 29.2, Sacramento 41.9, and less than Oakland 65.9. In the San Joaquin Valley, it was more than Merced 50.8, Madera 25.8, Hanford 32.2, Clovis 41.1, Visalia 43.4, Tulare 39.4, Sanger 41.9, Bakersfield 49.9, and less than Stockton 51.

With much ingenuity, hard work and dedication the Police Department has had much success in countering crime in Fresno. For the third straight year, violent crime has decreased in Fresno with a seven percent reduction for 2013. This includes a 22 percent decline in homicides. Property crimes also fell in 2013 by 12 percent. For the first time in over a decade, every single crime category decreased in our city. This occurred despite the loss of experienced personnel and the strained criminal justice system in Fresno County.

From 2010 to 2013, the Police Department has concentrated resources and efforts to address the violent crime that is a hallmark of the Bulldog gang. This includes the focused efforts of the Multi-Agency Gang Enforcement Consortium (MAGEC), Street Violence Unit, and patrol resources and tactical teams. Continuing efforts have resulted in 135 search warrants authored, 261 Bulldog probation and compliance checks conducted, 112 shootings solved, and 98 illegal firearms taken off the streets.

The Police Department also formed the Gun Crimes Unit in 2011 as part of their overall violent crime reduction strategy. Since inception, the Gun Crimes Unit has reviewed 853 cases involving weapons in Fresno, authored 107 search warrants, recovered 54 illegal guns as a result of the investigations and sought Federal Prosecution of 6 cases by the United States Attorney's Office.

SKYWATCH helicopter on patrol over Fresno

Fresno Police Department Honor Guard at Fresno County Peace Officer's Memorial

Fresno Police Department Chief of Police Jerry Dyer at community event

Police K-9 training

In addition to enforcement efforts, the Police Department in collaboration with the Office of the Mayor set out in 2006 to create an environment where gang members and their associates can obtain educational services, job skills, and social skills to obtain success. The Mayor's Gang Prevention Initiative (MGPI) provides a number of efforts designed to provide alternatives to the gang lifestyle through public/private collaborations such as Night Walks (community outreach in specified parts of the city with high concentration of gang incidents), Ceasefire (prevention, intervention and community-mobilization strategies to reduce violence), Street Outreach (former gang members trained as street outreach workers), and a tattoo removal program (removal of visible gang related tattoos which may inhibit their ability to seek employment).

In 2013, the Police Department formed the Homeless Task Force (HTF) to assist both the community and people experiencing homelessness by providing a safer environment, free from illegal and dangerous encampments. In that year, the HTF completed four major encampment cleanups and removed over 168 smaller settlements. In addition, they made 73 felony arrests, 147 misdemeanor arrests, issued 180 citations and removed over 770 shopping carts from the street. The HTF is the first unit in the Department to wear personal video cameras that are used to record all property storage and release, as well as citizen contacts.

The Police Department Regional Training Center (RTC) opened in September of 2010 and is a unique training center among California's law enforcement agencies. Since opening, personnel representing over 150 different agencies have trained at the RTC. The RTC has become the host for an annual regional SWAT training day that is overseen by the FBI which draws about 300 participants. The RTC also provides facilities for the California Department of Corrections and Rehabilitation as they conduct monthly physical fitness testing of its entry level applicants for their position of correctional officer. In addition, the RTC hosts a portion of the annual fire symposium that is held in Fresno and the City allows fire agencies to use the RTC throughout the year. Many agencies now use the RTC as a venue where they provide their own training to their employees including the FBI, DEA, U.S. Probation, Veterans Affairs Police, California Department of Consumer Affairs to name a few.

The Police Department maintains national accreditation through the Commission on Accreditation for Law Enforcement Agencies (CALEA) which requires the agency to prove that the City meet national best practice standards for law enforcement. Having received initial accreditation in 2003, CALEA ensures continual compliance to their standards through rigorous on-site inspections, audits, public hearings and extensive reporting mechanisms every three years. By continually adhering to these strict standards, the agency will be seeking a "Gold" certification standard for excellence in law enforcement through the 2014 CALEA accreditation process.

For the purposes of planning for the future it is important to point out some of the needs the Police Department have which affect their ability to provide optimum service. Over the past five years, staff reductions were necessary to meet budget constraints. These reductions resulted in reduced service delivery for services such as handling lower priority field calls and prisoner processing, and increased call-delay time in the agency's 9-1-1 Dispatch Center. The Police Department is diligently working toward restoring these services.

Other resource issues facing the Police Department include ongoing equipment needs such as patrol vehicles, radios, and computers. As an example, patrol vehicles have historically had a useful service life of five years and 100,000 miles. Due to budget constraints, these same vehicles now remain in the patrol fleet for more than seven years with many having over 170,000 miles. Extending the service time for other law enforcement equipment has also occurred including expanded years of service life for traffic enforcement motorcycles, plain cars, and other safety equipment used by police officers. Policies in the Economic Development and Fiscal Sustainability Element address these long-term resource needs.

A strained criminal justice system also creates critical issues for the Police Department. The realignment of convicted prisoners from State incarceration to County of Fresno

supervision under AB109 has increased the workload of patrol officers and investigators. As inmates, released from State prison, continue their criminal enterprises out of custody, calls for police services, as well as additional investigative follow up are imposing significant impacts on the Police Departments already strained resources.

Liquor Stores

The location and prevalence of liquor stores can have a negative effect on neighborhood health. In recent public meetings, three interrelated concerns have arisen:

- **Market saturation.** Some neighborhoods feel they have an overabundance of establishments with off-sale or on-sale licenses to sell liquor. The Downtown and the area immediately east have a larger number of venues for the sale and consumption of alcoholic beverages within a small area than other areas of the city. Blackstone and Shaw Avenues also feature a high concentration of these stores.
- **Fear of crime.** Community members often see a strong relationship between establishments with off-sale or on-sale licenses to sell liquor and rates of nuisances and crime.
- **Danger to schools.** Related to the above point, residents are concerned when alcohol sales are allowed too close to schools because of the impact on teenage drinking.

The State Department of Alcoholic Beverage Control (ABC) manages the issuance of licenses for the sale of alcoholic beverages. ABC is allowed to deny licenses located in the immediate vicinity of churches and hospitals, within 600 feet of schools and public playgrounds, or within 100 feet of a residence. ABC can also restrict hours of sales. State law limits the number of off-sale beer and wine licenses to no more than one per 2,500 city residents, although there is no restriction on the concentration of licensed establishments within the city.

Currently, the ability to use land within the city for alcoholic beverage sales is subject to Conditional Use Permit approval. While this requirement applies citywide, some neighborhoods feel saturated with liquor stores. The City has not developed an independent mechanism for assessing appropriate concentrations of alcohol sales establishments, however, and relies on information from the Police Department and the ABC in their consideration of permit applications. The Development Code update provides an opportunity for a more nuanced approach to controlling and abating nuisances associated with liquor stores and restaurants through Conditional Use Permit and other land use approvals that consider neighborhood needs and potential impacts.

OBJECTIVE

PU-1 Provide the level of law enforcement and crime prevention services necessary to maintain a safe, secure, and stable urban living environment through a Police Department that is dedicated to providing professional, ethical, efficient and innovative service with integrity, consistency and pride.

IMPLEMENTING POLICIES

PU-1-a **Integration of Crime Data.** Develop a mechanism to share pertinent crime data from multiple sources with other law enforcement agencies as a means of improving service delivery, officer safety, and providing a safer community for the citizens of Fresno.

- Strive to develop and implement data sharing agreements externally throughout County of Fresno Law Enforcement Agencies with the intent of participating in region-wide data sharing agreements throughout the State of California.
- Utilize developing technologies internally to ensure that crime specific data is made available for first responders and criminal investigators.
- Develop advanced predictive policing capabilities to ensure that limited law enforcement resources are properly placed to reduce criminal activity in locations of the city that are identified as having a high probability of criminal activity.
- Fully implement a Real Time Crime Center which provides responding officers integrated computer data, video data from the Video Policing Unit, and up-to-date emergency dispatch information as a means of improving officer safety to critical incidents and service delivery to the community.

PU-1-b **Involvement in General Plan.** Facilitate Police Department participation in the implementation of General Plan policies, including citizen participation efforts and the application of crime prevention design measures to reduce the exposure of neighborhoods to crime and to promote community security.

- Facilitate Police Department communication with citizen advisory committees.
- Refer appropriate development entitlements to the Police Department for review and comment.

PU-1-c **Safety Considerations in Development Approval.** Continue to identify and apply appropriate safety, design and operational measures as conditions of development approval, including, but not limited to, street access control measures, lighting and visibility of access points and common areas, functional and secure on-site recreational and open space improvements within residential developments, and use of State licensed, uniformed security.

PU-1-d **New Police Station Locations.** Consideration will be given to co-locating new police station facilities with other public property including, but not limited to, schools, parks, playgrounds, and community centers to create a synergy of participation in the neighborhood with the potential result of less vandalism and promotion of a better sense of security for the citizens using these facilities.

PU-1-e **Communication with Public.** Maximize communication and cooperative efforts with residents and businesses in order to identify crime problems and optimize the effectiveness of crime prevention measures and law enforcement programs.

PU-1-f **Law Enforcement Collaboration.** Collaborate with community-based public, non-profit and private agencies to:

- Develop comprehensive narcotics and violence prevention programs designed to discourage delinquent behavior and narcotics abuse and to encourage viable alternative behaviors.
- Develop a more concentrated understanding of how to assist and support citizens with a variety of disabilities, especially those with cognitive and developmental auditory disabilities.
- Maintain active involvement in youth development and delinquency prevention activities.

PU-1-g **Plan for Optimum Service.** Create and adopt a program to provide targeted police services and establish long-term steps for attaining and maintaining the optimum levels of service - 1.5 unrestricted officers per 1,000 residents.

Commentary: *The City's fiscal management strategies will affect planning for optimum service. The Economic Development and Fiscal Sustainability Element provides additional details.*

PU-1-h **Retail Conversion.** Assist community groups seeking information on conversion of establishments with off-site or on-site liquor sales licenses to other retail products that better meet community needs.

PU-1-i **Crime and Nuisances.** Assist community and neighborhood groups seeking to reduce crime and nuisances they associate with high concentrations of establishments with off-sale or on-sale liquor licenses through Police Department consultations, other available services, and programs such as Neighborhood Watch.

PU-1-j **Lighting and Safety.** Ensure adequate lighting at off-sale liquor stores to help deter crime and to promote a more inviting and safe atmosphere around them.

6.2 FIRE

The City of Fresno Fire Department (Fire Department) offers a full range of services including fire prevention, suppression, emergency medical care, hazardous materials, urban search and rescue response, as well as emergency preparedness planning and public education coordination. This plan addresses the on-going need for the effectiveness and efficiency of the Fire Department's fire suppression operations, emergency medical service, and special operations delivery in protecting the citizens of the jurisdiction and the occupational safety and health of its employees. The Fire Department in 2005, 2006, and 2007 contracted for services with the Airports Department and two adjacent fire protection districts and now operates 24 fires stations that serve a 336-square mile area. The contracting of services has provided an enhanced level of service through consolidation of communication center, and boundaryless fire station response districts. The City also has an automatic aid agreement with the City of Clovis whereby the nearest fire station responds to an emergency regardless of the jurisdiction within which it is located. The Fire Department also participates in a statewide mutual aid system, providing resources throughout the State of California upon request.

Historically, 60 to 65 percent of all calls for Fire Department services have been for medical emergencies, while seven percent have been for structure fires. Other fire-related calls include vegetation fires, vehicle fires, and debris fires. Fresno averages two working multiple alarm fires every day, which must be addressed despite the challenge of substantially reduced staffing levels. In addition to responding to calls, the Fire Department is involved in reviewing all building permits and subdivision maps to ensure access and fire suppression equipment (i.e., fire hydrants) are properly located. Staff also conducts new construction inspections of fire protection systems and routine fire and life safety inspections of existing buildings.

The Fire Department provides comprehensive fire prevention services to all commercial, industrial, and residential establishments by routine fire and life safety inspections and public education. Fire risk factors have been substantially reduced through more restrictive statewide residential housing unit fire sprinkler mandates and adoption of a local fire sprinkler ordinance, in effect since 1979, requiring fire sprinklers in most buildings over 5,000 square feet; as a result, the frequency and severity of extended fire attacks has been reduced. In order to combat the threat of structure fires in new growth areas, the City developed urban growth management standards requiring new development to be within a four minute response service area of a fire station. While this standard may be increased by applying additional conditions of approval (i.e., building separation distances, traffic preemption, enhanced onsite fire protection systems), it is uncommon for residential development to be located outside of a fire station's four minute response area.

1877 Fresno Fire Fighters

Recent photo of Fresno Fire Engines

Rescue at car roll over with pin in

Ladder Truck in action at a working fire

Key Issues

Ability to Meet Response Time Standards

The City of Fresno Fire Departments target response time for its service area is 5 minutes and 20 seconds for 90 percent of emergency incident response. This time standard measures unit response from the time the unit was alerted to the emergency

incident to the time the first unit arrived at the emergency incident. This response time standard is critical to saving lives before flashover occurs at fire incidents and arriving in time to provide basic life support in situations such as sudden cardiac arrest, trauma, impaired breathing and other severe medical emergencies. In 2013, the Fire Department response time was 6 minutes 26 seconds to 90 percent of fire and medical emergencies.

The Fire Department has been unable to meet target response times due to cuts in the number of units available to respond. In 2009, the Fire Department had 25 operational units available to respond to, however, due to the economic downturn in 2010, the Fire Department had to reduce the number of responding units to 19 (a 24 percent reduction in available work force) though the service level demands remained the same or higher. Industry standard defines an effective firefighting force as having 15 firefighters on a residential fire ground within 8 minutes 90 percent of the time. Today the department continues to provide service with 19 responding units providing an effective firefighting force on-scene only 64 percent of the time in 8 minutes. Note the FY2015 budget anticipates one additional engine company added to the service level.

Although there are currently 19 fire stations in the Metropolitan Area, staffing levels are a key issue that must be addressed. The national standard for firefighter staffing is 1 to 1.5 per 1,000 residents and the state average is 0.81 firefighters per 1,000 residents. The National Fire Protection Association Standard (NFPA) 1710 provides recommendations of minimum workforce standards to accomplish provisions of fire suppression and emergency medical services. Fresno Fire Department uses NFPA 1710 as a guidance document to establish its own minimum staffing standards to ensure sufficient workforce is present in the event of emergency situations.

In 2009, the Fire Department had 89 firefighters on duty each day (a minimum daily staffing) or 0.52 firefighters per 1,000 residents. In 2011, the daily minimum staffing dropped to 66 firefighters on duty each day or 0.39 firefighters per 1,000 residents, which is equivalent to the staffing levels held in 1958. Today, the current daily minimum staffing level is a total of 70 firefighters on duty each day which equates to 0.41 firefighters per 1,000 residents. This increase was realized through funding by the Staffing for Adequate Fire and Emergency Response Grants (SAFER).

This significant reduction in resources caused the Fire Department to change its operating model in an effort to keep apparatus available to respond within the desired response criteria for emergencies. More specifically, the Fire Department:

- Stopped responding to approximately 10,000 annual serious medical emergency calls;

- Moved all fire and life safety inspections to the Fire Department - Prevention Division; and
- Reduced availability for all public education outreach.

The Fire Department's long-term planning target is to match daily staffing levels to service level demands.

The City is currently rated by the Insurance Services Office (ISO) as a Public Protection Class 3 (scale 1 to 10, with 1 being the best). An updated City of Fresno Fire Department Strategic Plan should include objectives that will identify strategies to improve and/or enhance emergency operations, community risk reduction (to include education, engineering and enforcement), training requirements, and support service functions that improve service delivery and potentially move the Fire Department into a Class 2 rating.

Ability to Provide Annual Fire Inspections and Fire Safety Education

Fire prevention is not simply preventing fire. It is the systematic application of codes, standard, engineering principles, and an understanding of human behavior to achieve the objective of limiting the loss of life and property. The Fire Department is responsible for providing annual fire and life safety inspections of all commercial, industrial, institutional, and multi-family buildings and proactive fire safety public education programs. Due to current budget constraints, many low and moderate fire and life safety hazard buildings are not being inspected, and public education outreach has ceased. The eventual effect of these reductions in fire prevention services has yet to be determined, but it is anticipated that frequency of preventable fires will increase and the reliability of building fire protection systems will decrease, due to lack of inspection and maintenance of those systems. Furthermore in the Fire Department's recent ISO review, full points were not received in the area of fire inspections due to deferral of consistent inspections by a reduced staff. Policies are currently being evaluated to address options for implementing a long-term plan to restore the Fire Department's ability to conduct fire and life safety inspections on all appropriate occupancies, and when possible provide a self-certification option and appropriate fire and life safety education outreach programs to the community.

Facilities to Serve New Development

Existing facilities may not be adequate to maintain a sufficient level of services for future growth in Fresno. Increased population densities in the Downtown and mixed-use corridors and centers, at the locations shown on the Land Use Diagram (Figure LU-1), may require commensurate increases in firefighter staffing, facilities, and equipment to maintain current levels of service. The location of fire stations may become more dependent on density and availability than running distances between fire stations.

Infill development may require reopening of the former Broadway/Elizabeth fire station, construction of a new station in the Downtown Planning Area, and/or restoring the number of fire apparatus and firefighters at the existing stations. Where infill development substantially increases density or building height, the existing public water main infrastructure may require upgrading due to increased domestic water demand reducing available water volume and pressure for firefighting and potential damage to aging water pipes when fire apparatus must pump large volumes of water for fire suppression purposes.

New development in Development Areas identified in Figure 1-3 will need new and relocated fire stations. In DA-1 North, the City owns land near Shaw and Bryan Avenues and is currently in the process of finalizing details for the construction of permanent Fire Station 18. One site for a future fire station is needed to serve the southeast corner of Established Neighborhoods south of Shaw Avenue and the South Industrial Area. Five future sites have been identified to build three future fire stations in Established Neighborhoods north of Shaw Avenue, one in DA-2 South, and one in DA-2 North. Also needed over the planning period are a new Training & Learning Center, Repair and Maintenance Facility, Joint Police/Fire Public Safety Complexes and Communications Center, possibly located in the Downtown.

In planning for new facility locations, consideration will be given to co-locating such facilities with other public property such as schools, parks, playgrounds, community centers, etc. to create a synergy of participation in the neighborhood with the potential result of less vandalism and promotion of a better sense of security for the citizens using these facilities.

OBJECTIVE

PU-2 Ensure that the Fire Department's staffing and equipment resources are sufficient to meet all fire and emergency service level objectives and are provided in an efficient and cost effective manner.

IMPLEMENTING POLICIES

PU-2-a **Unify Fire Protection.** Pursue long-range transfer of fire protection service agreements with adjacent fire districts that, in concert with existing automatic aid agreements, will lead to the eventual unification of fire protection services in the greater Fresno area.

PU-2-b **Maintain Ability.** Strive to continually maintain the Fire Department's ability to provide staffing and equipment resources to effectively prevent and mitigate emergencies in existing and new high-rise

buildings and in other high-density residential and commercial development throughout the city.

PU-2-c **Rescue Standards.** Develop appropriate standards, as necessary, for rescue operations, including, but not limited to, confined space, high angle, swift water rescues, and the unique challenges of a high speed train corridor.

PU-2-d **Station Siting.** Use the General Plan, community plans, Specific Plans, neighborhood plans, and Concept Plans, the City's Geographic Information Systems (GIS) database, and a fire station location program to achieve optimum siting of future fire stations.

PU-2-e **Service Standards.** Strive to achieve a community wide risk management plan that include the following service level objectives 90 percent of the time:

- *First Unit on Scene* – First fire unit arriving with minimum of three firefighters within 5 minutes and 20 seconds from the time the unit was alerted to the emergency incident.
- *Effective Response Force* – Provide sufficient number of firefighters on the scene of an emergency within 9 minutes and 20 seconds from the time of unit alert to arrival. The effective response force is measured as 15 firefighters for low risk fire incidents and 21 firefighters for high risk fire incidents and is the number of personnel necessary to complete specific tasks required to contain and control fire minimizing loss of life and property.

PU-2-f **Plan for Optimum Service.** Create and adopt a program to provide appropriate number of employees to effectively respond to call volume and type; and establish a long-term plan to attain a level of service of 0.81 firefighters per 1,000 residents.

Commentary: *The City's fiscal management strategies will affect planning for optimum service. The Economic Development and Fiscal Sustainability Element has additional details.*

PU-2-g **Community Facilities District for Emergency Services.** Develop strategies on the formation of Community Facilities Districts in new Development Areas to fund emergency services.

OBJECTIVE

PU-3 Enhance the level of fire protection to meet the increasing demand for services from an increasing population.

Commentary: *In addressing enhanced fire protection provide a community wide risk management model.*

IMPLEMENTING POLICIES

PU-3-a **Fire Prevention Inspections.** Develop strategies to enable the performance of annual fire and life safety inspection of all industrial, commercial, institutional, and multi-family residential buildings, in accordance with nationally recognized standards for the level of service necessary for a large Metropolitan Area, including a self-certification program.

PU-3-b **Reduction Strategies.** Develop community risk reduction strategies that target high service demand areas, vulnerable populations (e.g. young children, older adults, non-English speaking residents, persons with disabilities, etc.), and high life hazard occupancies.

PU-3-c **Public Education Strategies.** Develop strategies to re-establish and enhance routine public education outreach to all sectors of the community.

PU-3-d **Review Development Applications.** Continue Fire Department review of development applications, provide comments and recommend conditions of approval that will ensure adequate on-site and off-site fire protection systems and features are provided.

PU-3-e **Building Codes.** Adopt and enforce amendments to construction and fire codes, as determined appropriate, to systematically reduce the level of risk to life and property from fire, commensurate with the City's fire suppression capabilities.

PU-3-f **Adequate Infrastructure.** Continue to pursue the provision of adequate water supplies, hydrants, and appropriate property access to allow for adequate fire suppression throughout the City.

PU-3-g **Cost Recovery.** Continue to evaluate appropriate codes, policies, and methods to generate fees or other sources of revenue to offset the ongoing personnel and maintenance costs of providing fire prevention and response services.

PU-3-h **Annexations.** Develop annexation strategies to include the appropriate rights-of-way and easements necessary to provide cost effective emergency services.

PU-3-i **New Fire Station Locations.** Consideration will be given to co-locating new Fire Station facilities with other public property including, but not limited to, police substations, schools, parks, playgrounds, and community centers to create a synergy of participation in the neighborhood with the potential result of less vandalism and promotion of a better sense of security for the citizens using these facilities.

6.3 WASTEWATER COLLECTION AND TREATMENT

The City is the Regional Sewer Agency for the Fresno-Clovis Metropolitan Area. The City owns and maintains the wastewater collection system that serves the City and the other participating agencies: County of Fresno, City of Clovis (Clovis), Pinedale Public Utility District, and Pinedale County Water District. The City also owns and operates the Fresno-Clovis Regional Wastewater Reclamation Facility (RWRF), located southwest of the city, and the North Fresno Water Reclamation Facility, located in northeast Fresno. The wastewater treatment and reclamation system includes: (1) collection and conveyance of wastewater; (2) treatment of raw wastewater; and (3) management of reclaimed water and bio solids. Aging infrastructure (collection and treatment), together with the need to pursue more advanced levels of reclamation and reuse are a concern over the long term, not only in the new growth areas but also in established neighborhoods and Downtown where increased density is planned.

The City's existing wastewater system, shown in Figure PU-1: Wastewater System is comprised of an extensive system of main lines, connection points, manholes, and lift stations. The collections pipelines consist of smaller diameter pipes (4 to 12 inches) serving individual properties, larger collection pipelines (13 to 33 inches) typically referred to as "oversized sewers," and sewer trunk interceptors (34 inches and larger) that convey sewage to the RWRF. The age and condition of the collection system varies considerably over the service area, with some pipelines dating back to the 1890s.

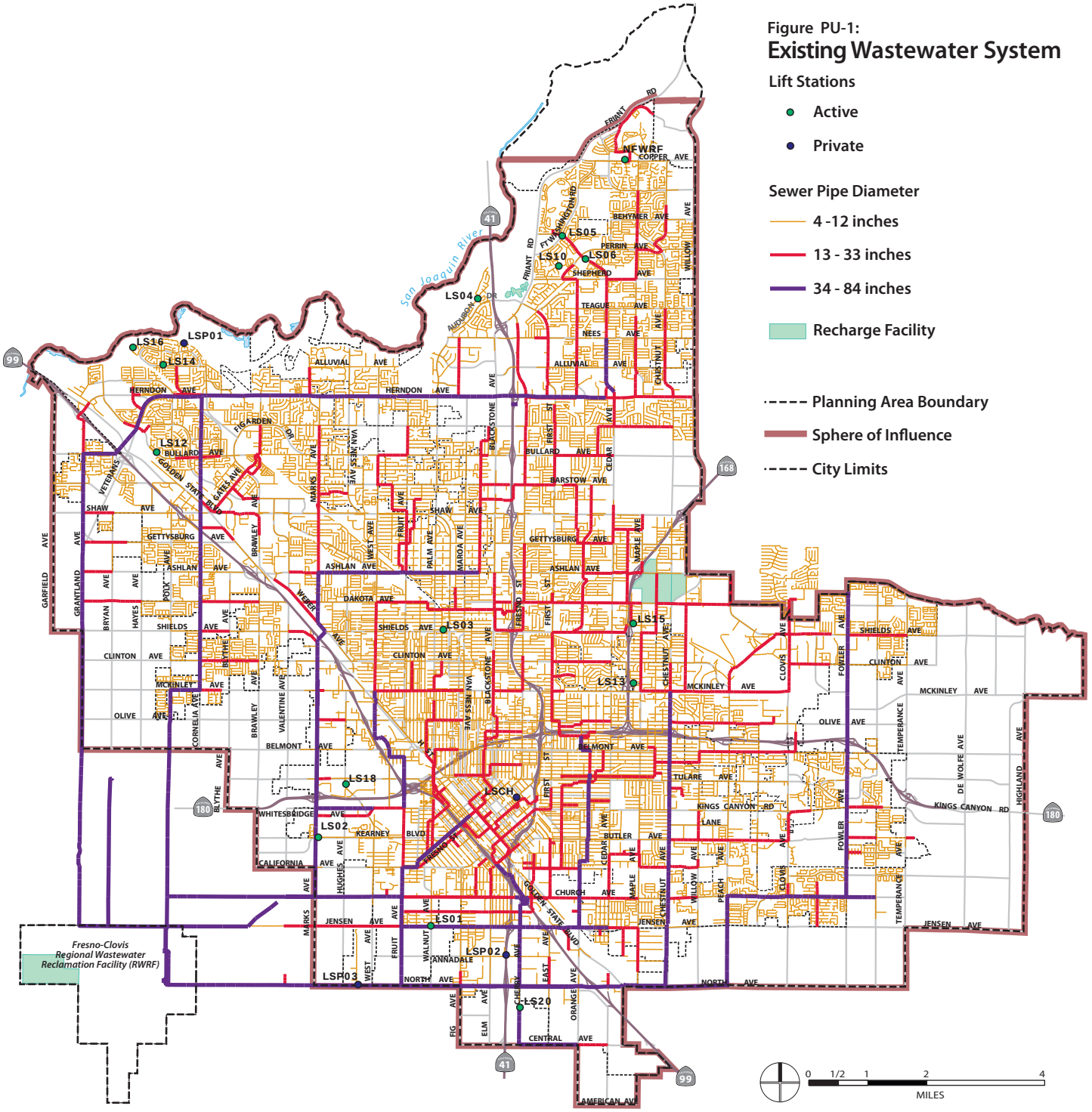
The City of Fresno Department of Public Utilities (DPU) manages a comprehensive sewer maintenance program in accordance with its Sewer System Management Plan. The DPU is also responsible for preparing the Fresno Wastewater Collection System Master Plan, last updated in 2006. The 2006 Fresno Wastewater Collection System Master Plan (2006 Master Plan) concluded that the collection system receives "no appreciable groundwater infiltration" and relatively small amounts of rainfall-dependent infiltration or inflow, except for older areas of the Downtown. The 2006 Master Plan

identified over 130 projects as necessary to accommodate the projected development anticipated by the 2025 Fresno General Plan; a greater number will be needed to serve development under this Plan.

The 2006 Master Plan anticipated that the RWRF would be operating at its full capacity, treating 80 million gallons of wastewater per day by 2010; however, the volume of wastewater has declined in recent years. Consequently, it is possible that the plant has sufficient capacity to accommodate growth for several years beyond what was previously anticipated. Nonetheless, the City is required by State statutes to begin planning for increased capacity when flows reach 75 percent of the current design capacity.

Wastewater presently receives primary (removal of materials that will float or settle) and secondary treatment (biological process to remove suspended and dissolved solids). Upon treatment, the wastewater is distributed to a series of infiltration ponds where it is allowed to percolate through the soil (which serves as another level of treatment). The City also conducts programs, such as a federally mandated Industrial Pretreatment Program, to prevent the introduction of pollutants into a publicly owned treatment works (collection system and treatment facilities) that could impact its infrastructure and pass through into receiving waters. Under the Industrial Pretreatment Program, industrial users are regulated through a Wastewater Discharge Permit that specifies discharge prohibitions and limitations. Failure to comply could result in penalties.

In addition, industries are billed for sewer depending on the amount of water used or effluent discharged and the strength of their wastewater measured as pounds of biochemical oxygen demand and pounds of total suspended solids. Reducing the strength of their wastewater to reduce sewer utility costs becomes an incentive for industrial users to improve their water quality and the amount of water used and/or discharged.



Source: City of Fresno, 2014

OBJECTIVE

PU-4 Ensure provision of adequate trunk sewer and collector main capacities to serve existing and planned urban development, consistent with the Wastewater Master Plan.

IMPLEMENTING POLICIES

PU-4-a **Plan for Regional Needs.** Coordinate and consult with the City of Clovis, pursuant to the Fresno-Clovis Sewerage System Joint Powers Agreement, so that planning and construction of sewer collection facilities will continue to meet the regional needs of the Metropolitan Area.

PU-4-b **New Trunk Facilities.** Pursue construction of new or replacement sewer trunk facilities or other alternatives consistent with the Wastewater Master Plan to accommodate the uses as envisioned in this General Plan.

PU-4-c **System Extension and Cost Recovery.** Pursue enlargement or extension of the sewage collection system where necessary to serve planned urban development, with the capital costs and benefits allocated equitably and fairly between the existing users and new users.

Commentary: *Consistent with fiscal management policies and strategies in the Economic Development and Fiscal Sustainability Element, new users will be obligated to pay for the cost of being attached to the collection system through connection fees, including the cost of any incremental burden that they may place on the entire system, and pay for their share of operational and maintenance costs in addition to any costs for extraordinary facilities, such as lift stations or capacity enhancement measures, as authorized by law.*

PU-4-d **Capacity Modeling.** Continue development and utilization of citywide sewer flow monitoring and computerized flow modeling to determine availability of sewer collection system capacity to serve planned urban development.

Commentary: *Information about the availability of sewer collection system capacity will be a factor in evaluating proposed General Plan amendments, community plans, Specific Plans, neighborhood plans, and Concept Plans.*

PU-4-e **Evaluate and Maintain Infrastructure.** Promote the health and safety of the community, and preserve the longevity and sound condition of the sewer collection system through evaluation and maintenance of the sewer infrastructure.

- Continue assessments of existing infrastructure and facilitate necessary repair to damaged and worn-out pipelines.
- Continue routine sewer line maintenance and cleaning programs to prevent line blockages caused by root intrusion, grease buildup, and pipe failure.
- Continue a sewer line replacement program and funding to repair or replace sewer lines damaged or worn beyond useful life.

OBJECTIVE

PU-5 Preserve groundwater quality and ensure that the health and safety of the entire Fresno community is not impaired by use of private, on-site disposal systems.

IMPLEMENTING POLICIES

PU-5-a **Mandatory Septic Conversion.** Continue to evaluate and pursue where determined appropriate the mandatory abatement of existing private wastewater disposal (septic) systems and mandatory connection to the public sewage collection and disposal system.

PU-5-b **Non-Regional Treatment.** Discourage, and when determined appropriate, oppose the use of private wastewater (septic) disposal systems, community wastewater disposal systems, or other non-regional sewage treatment and disposal systems within or adjacent to the Metropolitan Area if these types of wastewater treatment facilities would cause discharges that could result in groundwater degradation.

PU-5-c **Satellite Facilities.** Work with the Regional Water Quality Control Board to ensure that approval of any satellite treatment and reclamation facility proposal is consistent with governing statutes and regulations.

OBJECTIVE

PU-6 Ensure the provision of adequate sewage treatment and disposal by utilizing the Fresno-Clovis Regional Wastewater Reclamation Facility as the primary facility, when economically feasible, for all existing and new development within the Metropolitan Area.

Commentary: *Supplemental subregional facilities, such as the North Fresno Water Reclamation Facility, may also provide sewage treatment and disposal for new and existing development in the Metropolitan Area.*

IMPLEMENTING POLICIES

PU-6-a **Treatment Capacity and Cost Recovery.** Prepare for and consider the implementation of increased wastewater treatment and reclamation facility capacity in a timely manner to facilitate planned urban development within the Metropolitan Area consistent with this General Plan. Accommodate increase in flows and loadings from the existing community with the capital costs and benefits allocated equitably and fairly between existing users and new users, as authorized by law.

Commentary: *Consistent with the fiscal management policies and strategies in the Economic Development and Fiscal Sustainability Element, new users will be obligated to pay for the cost of being attached to the treatment facility through connection fees, including the cost of any incremental burden that they may place on the entire system, and pay for their share of operational costs of extraordinary facilities such as satellite or "package" treatment plants, as authorized by law.*

PU-6-b **Consider Capacity in Plan Amendments.** Monitor wastewater treatment plant flows and loadings to the extent feasible. Consider the effects on wastewater treatment capacity and availability of potable water when evaluating proposed General Plan amendment proposals, community plans, Specific Plans, neighborhood plans, and Concept Plans.

OBJECTIVE

PU-7 Promote reduction in wastewater flows and develop facilities for beneficial reuse of reclaimed water and biosolids for management and distribution of treated wastewater.

IMPLEMENTING POLICIES

PU-7-a **Reduce Wastewater.** Identify and consider implementing water conservation standards and other programs and policies, as determined appropriate, to reduce wastewater flows.

PU-7-b **Reduce Stormwater Leakage.** Reduce storm water infiltration into the sewer collection system, where feasible, through a program of replacing old and deteriorated sewer collection pipeline; eliminating existing stormwater sewer cut-ins to the sanitary sewer system; and avoiding any new sewer cut-ins except when required to protect health and safety.

PU-7-c **Biosolid Disposal.** Investigate and consider implementing economically effective and environmentally beneficial methods of biosolids handling and disposal.

PU-7-d **Wastewater Recycling.** Pursue the development of a recycled water system and the expansion of beneficial wastewater recycling opportunities, including a timely technical, practicable, and institutional evaluation of treatment, facility siting, and water exchange elements.

Commentary: *This policy corresponds with Policy RC-6-d in the Resource Conservation and Resilience Element.*

PU-7-e **Infiltration Basins.** Continue to rehabilitate existing infiltration basins, and if determined appropriate, pursue acquiring additional sites for infiltration basins, as needed.

PU-7-f **Food and Drink Industry.** Ensure adequate provision of facilities for the appropriate management of wastewater from wineries and food processing and beverage facilities, including conformance with Waste Discharge Requirements issued by the Regional Water Quality Control Board.

6.4 WATER

The quality, treatment, and conveyance of potable water in Fresno are a critical responsibility of the DPU – Water Division, and objectives and policies in this section support this obligation. The Resource Conservation and Resilience Element addresses the long-term supply of water resources, and the Urban Form, Land Use, and Design Element includes policies restricting the extension of water supply only to planned development in Development Areas that are consistent with this Plan.

The Water Division provides potable water to the majority of the city and some users within the City's SOI with the exception of the Bakman Water Company, Pinedale County Water District, Park Van Ness Mutual Water Company, and California State University, Fresno. Fresno's primary source of potable water is groundwater stored in

an aquifer. However, in 2004 the City's first Surface Water Treatment Facility (SWTF) came on line and began delivering on average 27,000 acre feet/year to residents in northeast Fresno.

The City's existing water distribution system is quite old and is shown in Figure PU-2: Water Distribution System. Nearly 35 percent of the 1,780-mile distribution system is over 50 years old, with another 34 percent ranging between 25 and 50 years old. There is a marginal pipeline replacement plan and a limited budget to replace this aged infrastructure. Most of the aged infrastructure is in the older parts of the community, including the Downtown. When the pipes fail, there is usually extensive damage to adjacent roadway and wet and dry utilities. This can cause disruption of service and costly cleanup. Based on historic City cost data, catastrophic failure costs 3 to 5 times more than planned replacement.

Groundwater within the Kings Subbasin generally meets primary and secondary drinking water standards for municipal water use. However, the groundwater basin is threatened by chemical contaminants that affect the City's ability to fully use the groundwater basin resources without some type of wellhead treatment in certain areas. Many different types of chemical pollutants have contaminated portions of the Upper Kings Subbasin underlying the city's water service area, as shown in Figure PU-3: Existing Regional Groundwater Contamination. Some of the major contaminant plumes include 1,2-Dibromo-3-Chloropropane (DBCP); ethylene dibromide (EDB); 1-2-3 trichloropropane (TCP); and other volatile organic compounds (VOCs) including trichlorethylene (TCE), tetrachloroethylene (PCE), nitrate, manganese, radon, chloride, and iron.

There are also several major contaminate point sources. In fact, about half of the city's water service area has some form of groundwater contamination; only areas in the northwest appear to be relatively unaffected by regional groundwater contamination. Of the City's 272 currently active wells, 96 wells are impacted by a single contaminant plume, 33 wells are impacted by a pair of contaminant plumes, and 5 wells are impacted by 3 contaminant plumes. Currently, 34 of the City's wells have wellhead treatment systems. With this in mind, the General Plan includes specific policies to address groundwater contamination.

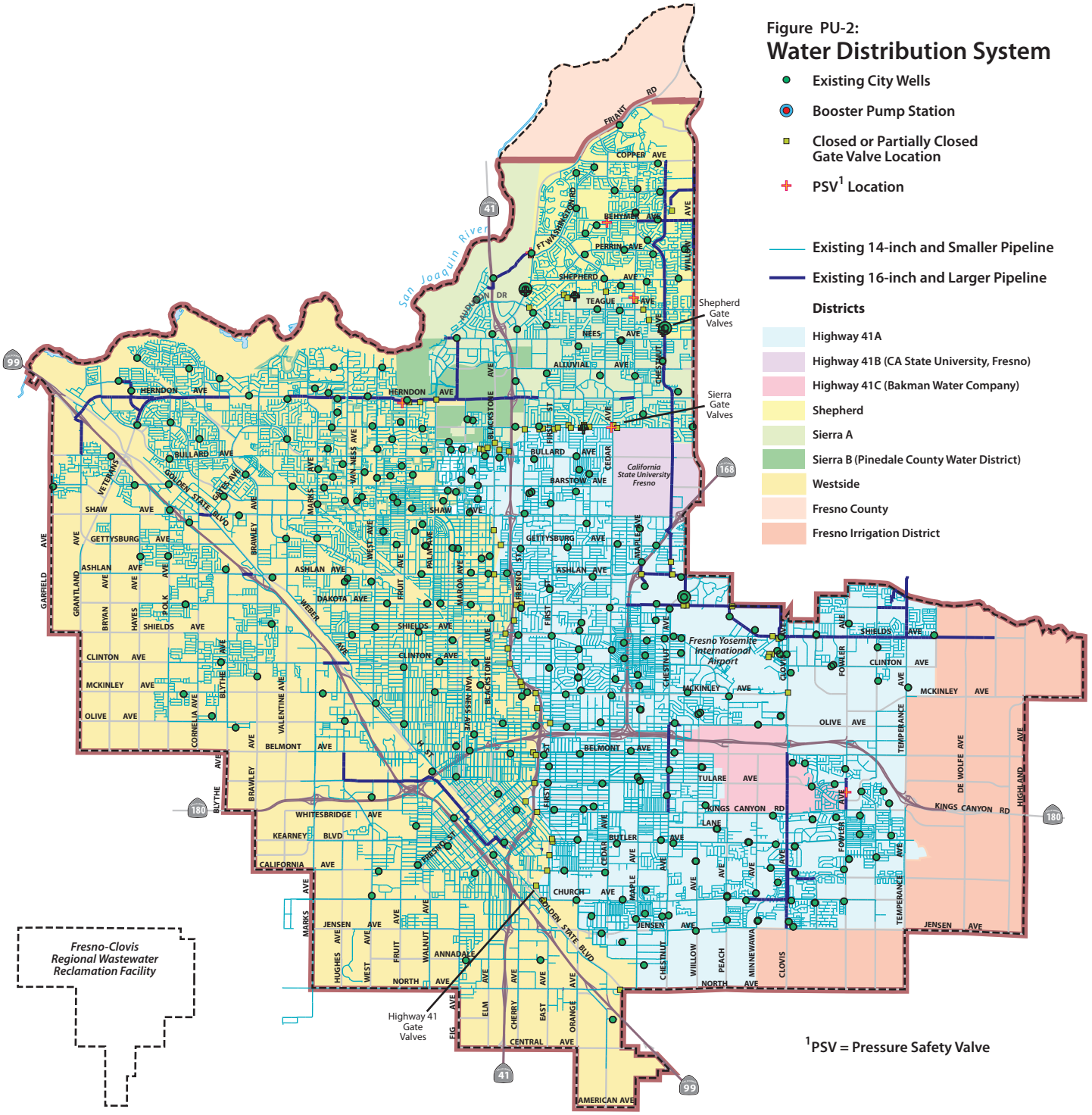


Figure PU-2:
Water Distribution System
Existing City Wells
Booster Pump Station
Closed or Partially Closed Gate Valve Location
PSV[1] Location
Existing 14-inch and Smaller Pipeline
Existing 16-inch and Larger Pipeline
Districts
Highway 41A
Highway 41B (CA State University, Fresno)
Highway 41C (Bakman Water Company)
Shepherd
Sierra A
Sierra B (Pinedale County Water District)
Westside
Fresno County
Fresno Irrigation District
Shepherd Gate Valves
Sierra Gate Valves
Highway 41 Gate Valves
Fresno-Clovis Regional Wastewater Reclamation Facility
California State University Fresno
Fresno Yosemite International Airport
San Joaquin River
[1]PSV = Pressure Safety Valve
Planning Area Boundary
Sphere of Influence
0 1/2 1 2 4
MILES
Source: City of Fresno, DPU Dept., 2014

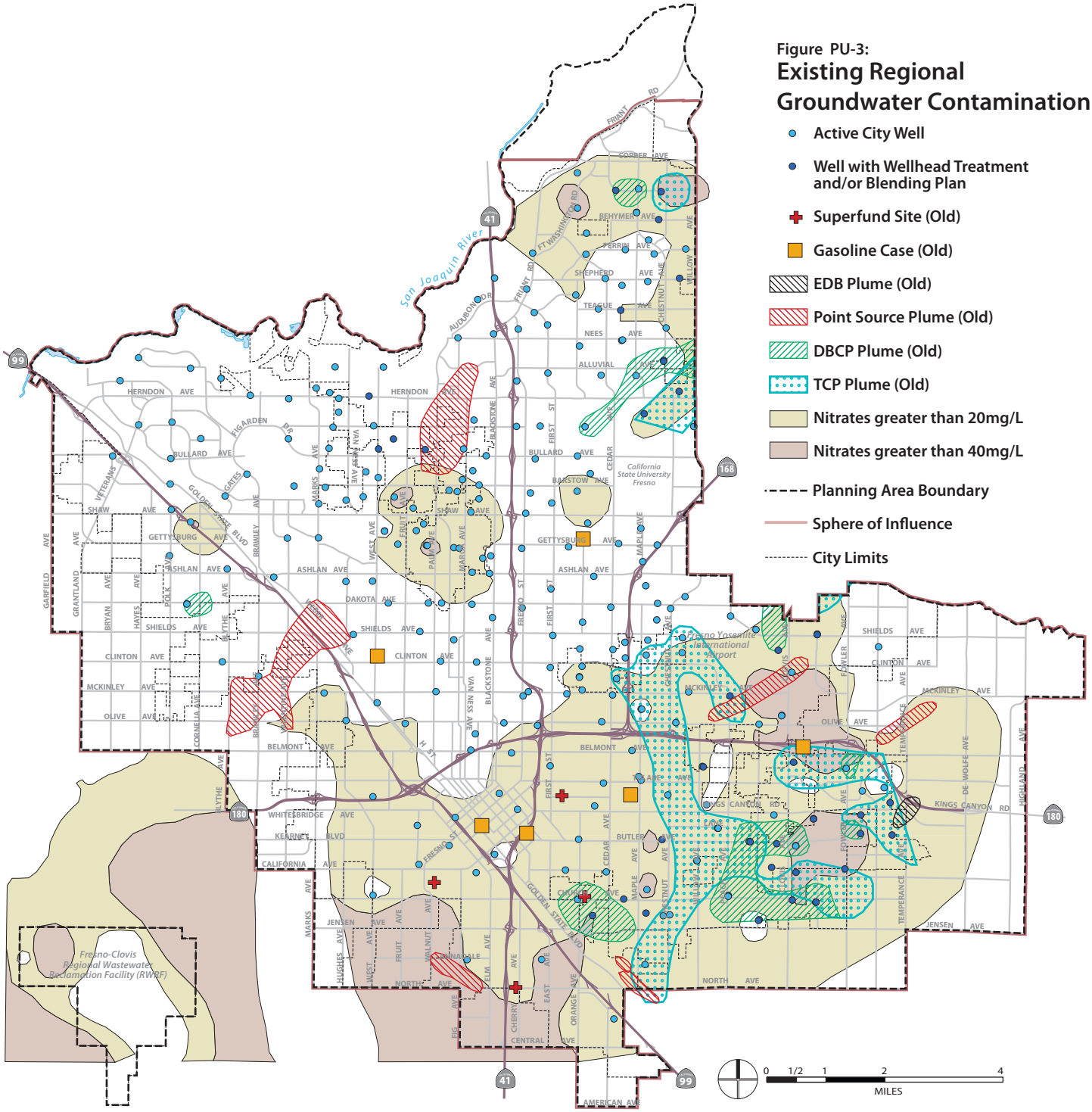


Figure PU-3:

Existing Regional Groundwater Contamination

- Active City Well
- Well with Wellhead Treatment and/or Blending Plan
- Superfund Site (Old)
- Gasoline Case (Old)
- EDB Plume (Old)
- Point Source Plume (Old)
- DBCP Plume (Old)
- TCP Plume (Old)
- Nitrates greater than 20mg/L
- Nitrates greater than 40mg/L
- Planning Area Boundary
- Sphere of Influence
- City Limits

Source: City of Fresno, DPU Dept., 2006, Metropolitan Water Resources Management Plan - Phase 1 Baseline System Characterization, December, 2007, West Yost

Note: This map does not include all of the known plumes in the Planning Area Boundary, but represents the City of Fresno's efforts during 2006 to document the location of most of the known plumes as part of an update to the City's Water Resource Management Plan.

OBJECTIVE

PU-8 Manage and develop the City's water facilities on a strategic timeline basis that recognizes the long life cycle of the assets and the duration of the resources, to ensure a safe, economical, and reliable water supply for existing customers and planned urban development and economic diversification.

IMPLEMENTING POLICIES

PU-8-a **Forecast Need.** Use available and innovative tools, such as computerized flow modeling to determine system capacity, as necessary to forecast demand on water production and distribution systems by urban development, and to determine appropriate facility needs.

PU-8-b **Potable Water Supply and Cost Recovery.** Prepare for provision of increased potable water capacity (including surface water treatment capacity) in a timely manner to facilitate planned urban development consistent with the General Plan. Accommodate increase in water demand from the existing community with the capital costs and benefits allocated equitably and fairly between existing users and new users, as authorized by law, and recognizing the differences in terms of quantity, quality and reliability of the various types of water in the City's portfolio.

Commentary: *Consistent with fiscal management policies and strategies in the Economic Development and Fiscal Sustainability Element, new users will be obligated to pay for the cost of being attached to the potable water supply and distribution system and surface water treatment through connection fees, including the cost of any incremental burden that they may place on the entire system in terms of both infrastructure and water resources, and pay for the full operational costs of extraordinary facilities, as authorized by law.*

PU-8-c **Conditions of Approval.** Set appropriate conditions of approval for each new development proposal to ensure that the necessary potable water production and supply facilities and water resources are in place prior to occupancy.

PU-8-d **CIP Update.** Continue to evaluate Capital Improvement Programs and update them, as appropriate, to meet the demands of both existing and planned development consistent with the General Plan.

PU-8-e **Repairs.** Continue to evaluate existing water production and distribution systems and plan for necessary repair or enhancement of damaged or antiquated facilities.

PU-8-f **Water Quality.** Continue to evaluate and implement measures determined to be appropriate and consistent with water system policies, including prioritizing the use of groundwater, installing wellhead treatment facilities, constructing above-ground storage and surface water treatment facilities, and enhancing transmission grid mains to promote adequate water quality and quantity.

PU-8-g **Review Project Impact on Supply.** Mitigate the effects of development and capital improvement projects on the long-range water budget to ensure an adequate water supply for current and future uses.

6.5 SOLID WASTE

This section addresses land use compatibility, public sanitation, and aesthetic impacts associated with the City's solid waste management and community sanitation practices. The following objectives and policies will ensure a consistent, citywide level of service for refuse collection, neighborhood cleanup, sanitation enforcement, and recycling programs.

Existing waste disposal facilities are adequate to maintain a sufficient level of service for future population growth in the city over the planning period for this Plan. The DPU - Solid Waste & Recycling Division develops performance measures yearly to determine the pounds of waste, recycling and composting generated by each household, business, and multi-family unit and updates estimates of future waste generation with the latest growth projections.

The City is currently excelling at solid waste diversion, which is the system of moving solid waste away from landfills and into recycling and composting programs. Diversion conserves limited landfill space, keeps toxic chemicals and materials from contaminating landfills, and enhances the re-use of materials. In 2009, Fresno was ranked highest in the State among larger cities by the California Integrated Waste Management Board for diverting 71 percent of its solid waste. A Fresno City Council resolution committed the City to the goal of a 75 percent Waste Diversion Rate by 2012 and a Zero Waste goal by 2025. The City is still on track for the 2025 Zero Waste goal while the Waste Diversion Rate by 2012 has been delayed. The City was on track to meet the 75 percent goal by 2012, but budget constraints in 2011 prevented the goal from being met in that year.

Annual Neighborhood Cleanup

Cleaning of the Fulton Mall

Department of Public Utilities Waste Hauling Equipment

The "Claw" is used in property cleanup and maintenance

In 2005, the City adopted a Construction and Demolition Diversion ordinance to encourage and provide for the diversion of commercial materials and construction and demolition material from landfill disposal. Recycling of construction and demolition is required for any City-issued building, relocation or demolition permitted project that generates at least eight cubic yards of material by volume. All waste must be hauled to a City-approved facility.

The DPU - Solid Waste & Recycling Division provides residential waste collection service to the city of Fresno. In December 2011, exclusive franchises for commercial solid waste were approved (the system was privatized) and this service is no longer provided by the DPU - Solid Waste & Recycling Division.

OBJECTIVE

PU-9 Provide adequate solid waste facilities and services for the collection, transfer, recycling, and disposal of refuse.

IMPLEMENTING POLICIES

PU-9-a **New Techniques.** Continue to collaborate with affected stakeholders and partners to identify and support programs and new techniques of

solid waste disposal, such as recycling, composting, waste to energy technology, and waste separation, to reduce the volume and toxicity of solid wastes that must be sent to landfill facilities.

PU-9-b **Compliance with State Law.** Continue to pursue programs to maintain conformance with the Solid Waste Management Act of 1989 or as otherwise required by law and mandated diversion goals.

PU-9-c **Cleanup and Nuisance Abatement.** Continue and enhance, where feasible, community sanitation programs that provide services to neighborhoods for cleanup, illegal dumping, and nuisance abatement services.

PU-9-d **Facility Siting.** Locate private or public waste facilities and recycling facilities in conformance with City zoning and State and federal regulations, so that the transportation, processing, and disposal of these materials are not detrimental to the public health, safety, welfare, and aesthetic well-being of the surrounding community.

Commentary: *Following Council direction, facility siting provisions in Development Code will take into account proximity to residential development, access to transportation, density and separation requirements.*

PU-9-e **Tire Dumping**. Adopt and implement, as determined appropriate, measures to eliminate illegal tire dumping.

PU-9-f **Household-Generated Hazardous Waste and Hazardous Waste Facilities.** Allow for household-generated hazardous waste and hazardous waste facilities, which are planned and zoned for Heavy Industrial uses, only after CEQA review, environmental assessments, and approval of a Conditional Use Permit.

6.6 DISADVANTAGED UNINCORPORATED COMMUNITIES

California State law requires that local municipalities identify any Disadvantaged Unincorporated Communities (DUCs) within their SOI, analyze the infrastructure needs (including water, wastewater, stormwater drainage, and structural fire protection) of the DUC, and evaluate potential funding mechanisms to make service extension feasible. Disadvantaged Unincorporated Communities are defined as settled places not within

city limits where the median household income is 80 percent or less than the statewide median household income.[1, 2]

In compliance with State law, the City will identify all DUCs within the SOI and perform the required infrastructure analysis to coincide with its next Housing Element Update.

[1] State of California Office of Planning and Research. *Technical Advisory to SB 244.*

[2] Flegal, C., Rice, S., Mann, J., & Tran, J. *California Unincorporated: Mapping Disadvantaged Communities.* PolicyLink, 2013

This page intentionally left blank.

7 RESOURCE CONSERVATION AND RESILIENCE

The Resource Conservation and Resilience Element establishes objectives and policies for the conservation of natural resources in Fresno. The Element addresses air resources, including air quality and greenhouse gas emissions; water resources, including groundwater and waterways; energy resources; and land resources, including farmland and mineral resources. The overarching theme is "resiliency," meaning the ability to withstand temporary and permanent disruptions in resources that will affect everyday ways of life.

7.1 CONTEXT

A conservation element for the conservation, development, and utilization of natural resources including water, forests, soils, rivers, wildlife, minerals, and other natural resources is required to be included in a general plan by State law (California Government Code Section 65302). The conservation element must consider the effect of development within the jurisdiction, as described in the land use element, on natural resources located on public lands.

Assembly Bill (AB) 32—the Global Warming Solutions Act of 2006 requires California to reduce statewide greenhouse gas emissions to 1990 levels by the year 2020 and Executive Order S-03-05 calls for a reduction of 80 percent below 1990 levels by 2050. In support of these State goals the City has committed through the General Plan and Greenhouse Gas (GHG) Reduction Plan to reduce community-related and City operations-related greenhouse gas emissions to a degree that would not hinder or delay implementation of AB 32 and would lay the framework to help meet future goals.

The primary benefit to the City, and to the development community, of having a citywide GHG Reduction Plan is that it will assist development by streamlining the approval process. The CEQA streamlining provisions of the CEQA Guidelines (SB 97 updates) require local governments to define the extent of GHG production and identify ways to substantially reduce GHGs in the future in order to minimize a potentially significant environmental impact. If a GHG Reduction Plan reduces community-wide emissions to a level that is less than significant, then a later project that complies with the requirements in such a GHG Reduction Plan may be found to have a less than significant impact. This will allow the applicant to complete a GHG Reduction Plan consistency analysis for their project instead of a project specific analysis for greenhouse gases.

Potential improvements in air quality and water supply security are additional benefits to pursuing GHG reductions for Fresno. The factors that contribute to GHG increases also impact air quality and water supply in the San Joaquin Valley. As discussed in later sections of this element, the accelerating climate change could have adverse impacts in the Fresno region such as: increased temperature and extreme weather events, increased risk of large wildfires, exacerbation of air quality problems, reduction in the quality and supply of water from the Sierra snowpack, decreased electricity supply, reductions in the quality and quantity of certain agricultural products, decreased health and productivity of California's forests, and increased flood risk.

Resiliency in City Planning

Resiliency, in terms of city planning, refers to creating infrastructure and implementing policies and programs to ensure that the residents, businesses, and government of a city can withstand temporary and permanent disruptions in resources that affect daily activities. A resilient city is not dependent on certain sources of energy, is able to adapt to shifts in weather patterns, has a plan to respond to emergencies such as earthquakes and floods, and has secured a long-term source of food and water. These ideas are presented in this element in relation to resource conservation concepts; details on infrastructure planning are in the Public Utilities and Services Element and the Transportation and Mobility Element, while emergency preparedness is addressed in the Noise and Safety Element. Protection of biological resources such as native plant communities and wildlife habitats is addressed in the Parks, Open Space, and Schools Element.

Relationship to General Plan Goals

This Element provides objectives and policies that support a wide range of General Plan goals, in particular the following:

3. Emphasize conservation, successful adaptation to climate and changing resource conditions, and performance effectiveness in the use of energy, water, land, buildings, natural resources, and fiscal resources required for the long-term sustainability of Fresno.

4. Emphasize achieving healthy air quality and reduced greenhouse gas emissions.

5. Support agriculture and food production as an integral industry.

   Emphasize the economic and cultural role of Fresno as a center of agriculture and food production systems by conserving farmland through a focus on developing vacant and underutilized land within the established Sphere of Influence of the City, limiting any further urban boundary expansion, and developing urban agriculture within the city and designated growth areas.

12. Resolve existing public infrastructure and service deficiencies, make full use of existing infrastructure, and invest in improvements to increase competitiveness and promote economic growth.

    Emphasize the fair and necessary costs of maintaining sustainable water, sewer, streets, and other public infrastructure and service systems in rates, fees, financing and public investments to implement the General Plan. Adequately address accumulated deferred maintenance, aging infrastructure, risks to service continuity, desired standards of service to meet quality-of-life

goals, and required infrastructure to support growth, economic competitiveness and business development.

13. Emphasize the City as a role model for good growth management planning, efficient processing and permit streamlining, effective urban development policies, environmental quality, and a strong economy. Work collaboratively with other jurisdictions and institutions to further these values throughout the region.

    Positively influence the same attributes in other jurisdictions of the San Joaquin Valley –and thus the potential for regional sustainability - and improve the standing and credibility of the City to pursue appropriate State, LAFCo, and other regional policies that would curb sprawl and prevent new unincorporated community development which compete with and threaten the success of sustainable policies and development practices in Fresno.

16. Protect and improve public health and safety.

17. Recognize, respect, and plan for Fresno's cultural, social, and ethnic diversity, and foster an informed and engaged citizenry.

    Emphasize shared community values and genuine engagement with and across different neighborhoods, communities, institutions, businesses and sectors to solve difficult problems and achieve shared goals for the success of Fresno and all its residents.

Fresno Green – The City's Strategy for Achieving Sustainability

In 2008, the Fresno Green Strategies were presented to a previous mayor and City Council. They were accepted as the City's first attempt to articulate a direction for achieving a sustainable future through green conservation efforts, including those that could be made by the City. These strategies addressed a wide range of issues organized around five "visions" for Fresno and its future growth areas: New City Beautiful, Sierra View 2025, Solar Valley, Green Enterprise and Economic Development, and City as Good Steward. The City won an award from the U.S. Environmental Protection Agency (EPA) for these strategies.

Most of the objectives and programs that support these strategies and ideas have been or are in the process of being implemented. The majority are incorporated into policies in this General Plan. Those that are not should not be considered objectives or policies of this Plan. Key ideas from the Fresno Green Strategies are described below.

New City Beautiful

The New City Beautiful vision showcases good urban design, with priority given to public health, open spaces, public art, historic preservation, urban forests, and the protection of natural habitats. The main initiatives are:

- Develop and implement compact, transit- and pedestrian-oriented development principles and green building standards.
- Build municipal buildings to a green building rating system and adopt green technology for the retrofit of existing City buildings.
- Plan new residential areas and retrofit established neighborhoods to be within one half mile of public parks, school playgrounds and/or recreational open space.
- Plant and maintain trees in order to achieve shading of at least 50 percent of all hardscaped parking and pedestrian surfaces.
- Protect critical habitat corridors and key habitat characteristics from unsuitable development.
- Reduce the use of disposable toxic or non-renewable products through environmentally preferred purchasing policies.

Sierra View 2025

The Sierra View 2025 initiatives focus on making the Sierra Nevada mountain range clearly visible to all Valley residents by 2025. The aim of the initiatives is to improve public health with cleaner air, enhance public transportation, and increase opportunities for walking and cycling:

- Implement enhanced public transit and traffic light synchronization programs to reduce commute time.
- Reduce City fleets' air pollutant emissions and City greenhouse gas emissions.
- Reduce the number of commute trips by single occupancy vehicles.
- Meet federal clean air standards.

Solar Valley

This initiative envisions Fresno as becoming a leader in renewable energy use by maximizing new renewable sources. With its abundant sunshine, the opportunity exists to improve air quality, reduce dependence on foreign energy, and provide attractive new jobs by harnessing solar power. Three initiatives work toward this vision:

- Increase use of renewable energy to meet 50 percent of annual electrical consumption for City operations.

- Reduce the city's peak electrical load by 10 percent through energy efficiency and conservation measures and shifting the timing of energy demands.
- Reduce citywide greenhouse gas emissions to meet requirements of State AB 32.

Green Enterprises and Economic Development

These initatives set the stage for Fresno to become the Valley center for innovative business enterprises with a focus on the "triple bottom line" of providing environmental, economic and social benefits:

- Position Fresno as a regional center for green enterprises.
- Create environmentally beneficial jobs in low-income neighborhoods.
- Promote and support locally grown and organic foods.

City as Good Steward

The City as Good Steward vision puts forth Fresno as a city that leads by example in greening up its facilities and practices, embracing a zero waste initiative, providing appropriate staff resources, and collaborating with other municipalities and agencies to develop regionally-based green programs. Seven initiatives comprise the program for this vision:

- Achieve 75 percent diversion of solid waste that otherwise would go to landfills by 2012 and zero waste to landfills by 2025.
- Develop and implement an Integrated Pest Management program.
- Protect integrity of Fresno's primary drinking water sources through an update of the General Plan.
- Develop and implement environmentally responsible policies and practices.
- Market the Fresno Green Strategies (New City Beautiful, Sierra View 2025, Solar Valley, Green Enterprises and Economic Development, and City as a Good Steward) throughout the community.
- Incorporate sustainable policies into the General Plan.
- Measure successes of Fresno Green Strategies and present a periodic report to the Council, which could be integrated into the General Plan annual report.

Relation between Urban Form and Resource Conservation

Making efficient use of public infrastructure and reducing the financial resources devoted to energy use will save money for residents, businesses, and the City government. By strategically regulating urban form elements through this Plan, such as

development types, intensity, building massing and orientation, landscaping size and type, and the mix of land uses, the city can produce significant energy and water savings.

The Plan also seeks to prevent an overextension of its developable area and manage land use impacts on municipal revenues more effectively. Low-density residential developments on the urban fringe in county areas that require annexation are expensive for the City to serve with both physical infrastructure (roads, water, and sewer) and public services (fire and police). In addition, because of tax sharing arrangements with the County of Fresno, these annexed areas contribute significantly less revenue to the City's general fund than land developed within the city limits. Meanwhile, Fresno has vacant and undervalued parcels located in its urban core, particularly along key transit corridors. In established neighborhoods, infrastructure and services are already provided, and tax benefits are much greater for the City than those generated by newly annexed land. Ultimately, the amount of land available to the City for future growth is finite, as further expansion of the City's SOI is blocked in certain directions by the Madera/Fresno county line and the city of Clovis, is contingent on County of Fresno plans, and may consume valuable farmland. Infill development is also important to other aims of the Plan, including ensuring that the cost of doing business goes down, revenues are maximized, and scarce financial resources are used efficiently.

7.2 USE OF INFRASTRUCTURE AND RESOURCES

Continued growth outwards creates transportation and air quality issues, as well. The continued siting of major retail and commercial uses, as well as jobs, at Fresno's urban fringe is lengthening travel times and increasing traffic levels (and air pollution) disproportionately faster than the rate of population growth, due to inefficient location selection. Given the restrictions on and impacts of increasing Fresno's land area, the Plan promotes the highest and best use of land within Fresno's current city limits, phases growth into unincorporated areas of the SOI, and avoids de-investment in Downtown and established neighborhoods. Furthermore, certain patterns of land development can increase costs to the City in excess of related revenues and essentially reduce fiscal resources. The Plan seeks to discourage this type of development and, at the least, ensure that all development covers its fair share of public costs.

Communication and Broadband

Making efficient use of public infrastructure and reducing the financial resources devoted to energy use will save money for residents, businesses, and the City. This section addresses broadband and telecommunications infrastructure opportunities as they relate to the progression, redevelopment of the inner city and development of additional services to constituents. Broadband has become an important part of the lives of every citizen as it is used for social interaction, education, business, and

healthcare, and has been a key factor in economic development for many cities. As technology evolves and content becomes more readily available, the need for higher communication speeds and access to the technology has also increased.

The City of Fresno Information Services Department (ISD) has used excess fiber of the Intelligent Transportation System, as well as its own implemented fiber, for data transport and connectivity. The City's Intelligent Traffic System is designed and implemented by the Public Works Department with ISD as a partner from a technology aspect. Most of the fiber implemented was funded through grants in order to install conduit and fiber to synchronize traffic signals. To date, most of the construction has been in major thoroughfares where there is a need to control traffic for ease of congestion and improve air quality.

Utilizing the excess fiber, the City has been able to realize a cooperative effort between the region's biggest agencies – the City of Fresno, the County of Fresno and the City of Clovis, as they share data services. In 2003, these three agencies entered into the Fresno Regional E-Government System agreement. Since the initiation of this agreement, ISD has been able to connect multiple agencies (including educational institutions) together to provide shared services such as GIS sharing, public safety data sharing, educational services, data services, as well as video broadcast services. Through this process, the City has been a good steward of taxpayer funds in that they have been able to connect other agencies via this same fiber allowing higher connection speeds without monthly communication fees while realizing additional savings in construction costs. The fiber is also used for other regional services such as video policing and radio services for public safety. In essence, the concept of using excess and additional fiber is a cost savings to the City and its constituents because fiber was installed in trenches while streets were open, thereby only digging once.

Construction costs for installing a fiber network to allow high speed broadband for City operations, as well as to reach the City's constituents is costly. While there are costs in purchasing and installing fiber, the most costly portion of installing a fiber optic network is the trenching and installation of conduit. For this reason, many agencies have considered or have adopted a "dig once" policy. While a trench is open for any reason, one or more conduits are placed in the trench either with fiber installed or it is left empty for future fiber installation. The fiber is then used for a multitude of purposes including connecting locations, video surveillance (video policing), wireless services, or it is opened up to the communication carriers who may lease the conduit space for their build outs, thereby offsetting construction costs. Not only will this cut costs of fiber implementation, it will pave the way to ensure that there is a pathway for higher speed broadband as the needs increase.

In areas of development, where there is a need, fiber can be installed to connect facilities and agencies. This can include many City Fire Department and Police Department stations as many of these have been built near neighborhoods or in locations where City fiber does not exist. Additionally, as the Video Policing program evolves and the need arises for high-tech strategies for the City Fire and Police Departments, the foundation will be in place for a cost effective means of providing connections. If the City ever decides to provide Internet or other services to the public or expand services at City parks, the connectivity can either be installed while construction is commencing or the means will be there for a cost effective implementation at a later date.

In the case where the City will allow private communication companies to lease the conduit, the conduit will remain a City asset with the potential to receive lease revenues consistent with the requirements of the California Public Utilities Commission's regulations and State laws. If other agencies or institutions would like to connect, they may do so under the current Fresno Regional E-Government System Agreement, which covers data sharing and not Internet transport where the City provides Internet connectivity in competition with other carriers.

OBJECTIVE

RC-1 Make efficient use of existing and future public infrastructure.

IMPLEMENTING POLICIES

RC-1-a **Setting Service Standards.** Set service delivery standards at existing levels or formulate and commit the City to an investment program that will meet an improved standard of service.

Commentary: *Implementation of this policy will be coordinated with the policies and strategies for fiscal sustainability presented in the Economic Development and Fiscal Sustainability Element.*

RC-1-b **Capital Improvement Program.** Prepare and adopt a long-term Capital Improvement Program (CIP) that describes City-sponsored capital projects related to General Plan implementation.

Commentary: *The CIP will define what areas or projects it would enable and include funding sources covering the complete cost of the projects, as well as intended phasing. It will be updated annually and comprehensively reviewed every five years so that it accurately reflects the City's priorities, community needs, fiscal realities, and State mandates. It also will include an analysis of how improvements*

implement the General Plan and how they reflect the City's commitment to environmental justice and fair share issues relative to individual neighborhood needs. Implementation of this policy will be coordinated with the policies and strategies for fiscal sustainability presented in the Economic Development and Fiscal Sustainability Element and with technical work on service standards and infrastructure improvements mandated by policies in the Public Utilities and Services Element.

RC-1-c **Prioritize Revenues.** Prioritize revenues by supporting, streamlining, and providing incentives to projects that create the largest positive impacts on property values, the city's retail base, and, to the extent feasible, Downtown and established neighborhoods.

Commentary: *These incentives could include giving priority to supporting redevelopment of vacant and underutilized land, particularly in mixed use and higher density corridors and Downtown, over the conversion of active farmland to urban uses.*

RC-1-d **Coordinate Public Construction.** Coordinate public construction with other public and private agencies, particularly with respect to streets, sewerage, water, gas, electric, irrigation improvements, flood control facilities, and communication to seek the greatest public benefit and efficiencies at the least public cost.

RC-1-e **Dig Once.** Whenever a suitable trench is dug, one or more telecommunication conduits shall be placed in the trench, either with fiber installed or with space available for future fiber installation, to expand or upgrade the fiber optic network as appropriate.

Commentary: *Implementation of this policy will require identification of funding sources.*

RC-1-f **Telecommunications Strategy**. Develop a process for communication carriers to use excess fiber optic conduit with the City in a manner that will allow for appropriate cost recovery and that is consistent with State and federal law.

RC-1-g **Grant Funding**. Seek grant funds for the construction or implementation of the fiber optic system to provide expanded public services (such as services for educational, economic, public safety, or underserved communities).

RC-1-h **Public-Private Partnerships.** Foster opportunities for public-private partnerships that leverage infrastructure, encourage pooling of resources, and promote shared-use activities.

OBJECTIVE

RC-2 Promote land uses that conserve resources.

IMPLEMENTING POLICIES

RC-2-a **Link Land Use to Transportation.** Promote mixed-use, higher density infill development in multi-modal corridors. Support land use patterns that make more efficient use of the transportation system and plan future transportation investments in areas of higher-intensity development. Discourage investment in infrastructure that would not meet these criteria.

RC-2-b **Provide Infrastructure for Mixed-Use and Infill.** Promote investment in the public infrastructure needed to allow mixed-use and denser infill development to occur in targeted locations, such as expanded water and wastewater conveyance systems, complete streetscapes, parks and open space amenities, and trails. Discourage investment in infrastructure that would not meet these criteria.

OBJECTIVE

RC-3 Actively engage, listen to, educate, and enlist the support of the Fresno community on the need and strategies for resource conservation.

IMPLEMENTING POLICIES

RC-3-a **Track Trends in Resource Consumption.** Provide and periodically update written materials and information on the City's website that tracks public and private rates of resource consumption in Fresno and related fiscal and environmental costs.

Commentary: *The City of Fresno Department of Public Utilities will work with the San Joaquin Valley Air Pollution Control District and other resource agencies to determine and publish such information, with the frequency of updates dependent on budgetary resources.*

RC-3-b **Community Outreach and Joint Solution Making.** Host an ongoing education and listening session series with the public to inform them of public and private rates of resource consumption, costs, impacts, and projected future constraints.

RC-3-c **Multi-Jurisdictional Efforts.** Work actively with the public to develop and champion realistic, effective solutions to conserve resources at the local, regional, and state levels.

Commentary: *The City will forge partnerships with other resource agencies, time and resources permitting, to provide information, answer questions, and suggest solutions.*

7.3 AIR QUALITY AND GREENHOUSE GAS EMISSIONS

Fresno is located in the center of the San Joaquin Valley Air (SJVA) Basin. The air quality in the SJVA Basin is among the worst in the nation, and routinely exceeds federal and State air quality health standards for ozone and particulates. The poor air quality contributes to high levels of asthma, sinus infections, and cardiovascular disease. The SJVA Basin's poor air quality is caused by natural geographic and climatic conditions, as well as local and regional development, transportation, and land use practices.

The federal Clean Air Act required the U.S. EPA to set standards, which state that certain pollutants should not exceed specified levels. California has adopted its own set of stricter standards under the California Clean Air Act. Transportation conformity is required under the federal Clean Air Act to ensure that federally supported highway and transportation project activities are consistent with State implementation programs. Conformity means that transportation activities should not cause new air quality violations, worsen existing violations, or delay timely attainment of federal air quality standards. Conformity requires demonstration that State and regional transportation control measures in ozone nonattainment areas are implemented in a timely fashion. These measures are expected to be given funding priority and to be implemented on schedule.

The California Clean Air Act requires nonattainment areas to achieve and maintain the State ambient air quality standards by the earliest practicable date and local air districts to develop plans for attaining the State ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide standards. In 2003, the Legislature enacted a bill to reduce public exposure to particulates and established a process for achieving near-term reductions in particulates throughout California ahead of federally required deadlines.

Under the California Health and Safety Code, the Air Resources Board is authorized to adopt regulations to protect public health and the environment through the mobile and stationary source airborne toxic control measures. These measures focus on reducing public exposure to diesel particulates and other toxic air contaminants, particularly for children riding in and playing near school buses and other commercial motor vehicles, who are disproportionately exposed to pollutants from these sources.

Emissions from cars and trucks are being reduced by State and federal standards, which are based not only on air quality considerations but also on energy use. In California, the Pavley Clean Car Standard and the Low Carbon Fuel standard will have dramatic impacts on vehicle emissions in coming years, as will implementation of the newest national fuel standards for current and future model years.

Fresno's air quality management programs are administered by the San Joaquin Valley Air Pollution Control District (SJVAPCD), which covers eight counties, from the San Joaquin County in the north to Kern County in the south. Within this region, the SJVAPCD is responsible for ensuring compliance with federal air quality standards, but it cannot regulate all the pollution sources. The SJVAPCD only has authority to regulate stationary sources for air pollution; its incentive programs to help reduce mobile source emissions are purely voluntary. This lack of authority to regulate mobile source emissions has restricted the SJVAPCD's ability to reduce emissions in the Valley and to achieve compliance timelines for federal air quality standards. Its regulations include dust reduction during construction and stationary source requirements. Incentives, which are paid for by collected fees, include programs to replace or retrofit certain vehicle and engine types (trucks, lawn mowers, and school buses) and the Burn Cleaner Program (wood stove change out).

The City's Role in Improving Air Quality

Given the SJVAPCD's limited authority, any local efforts to directly and indirectly reduce mobile source emissions and thereby improve air quality fall to the City and its transportation and land use policies. Over 81 percent of the region's summer ozone pollution comes from mobile vehicle sources. Reducing ozone pollution is therefore highly contingent on reducing the number of vehicles miles traveled in the city. Fresno residents, like the residents of other neighboring cities, are highly dependent on automobiles and trucks for day-to-day operations due to low-density development patterns. The City can reduce the vehicle miles traveled by planning for and providing feasible and convenient alternative travel facilities and modes that emit fewer pollutants per person. The City can also reduce vehicle miles traveled by striving to ensure that trip generators (such as homes) and destinations (shops and businesses) are located near one another to allow for shorter trips. The reduction in vehicle miles traveled can be realized through transit-oriented development (TOD) and higher density, mixed-use development.

The land use objectives and policies of this Plan are designed to decrease the generation of air pollution and greenhouse gases through the reduction of vehicle miles traveled by supporting infill development, encouraging Complete Neighborhoods, requiring more compact development in infill areas and growth areas, and tying mixed-land uses and high-density development to existing and probable high-capacity urban corridor transit routes. This pattern of development will allow for a more resilient and sustainable community, preserving valued agricultural land.

Infill development relies on the pre-existing public road and utility infrastructure, but may require site cleanup and may burden the existing utility infrastructure to the point that it may need to be upgraded. Mixed-use development allows for a diversity of land uses and activities to be located on the same site or in the same building, including residential uses, retail, professional offices, and commercial uses. Ultimately, higher-density infill and mixed-use development encourages people to drive less because destinations are closer together and easier to reach.

Another type of development that can improve the air quality is TOD, which locates residential and commercial districts around a public transit station or transit corridor. It attempts to encourage walking through a compact pattern of development, mixed land uses, and a location near good transit options such as train lines or bus rapid transit (BRT) corridors. TOD is often characterized by frequent and high-quality transit service, good walkability, parking management, and other design features that facilitate transit use and maximize overall accessibility. It can reduce vehicle miles traveled by offering reliable access to other forms of transportation and mobility.

The availability and reliability of transit service to users is another critical method by which local infrastructure can affect regional air quality. Public transit can play an important role in reducing air pollution by offering an alternative mode of transportation around the city beyond the private vehicle. When individuals opt to use public transportation instead of private vehicles, fewer cars are on the road, which decreases congestion, results in less pollution, and improves air quality.

Street networks can also affect air quality based on the length of trips that they require, as more distance travelled and more time on the road is likely to coincide with more air pollution. With shorter trips needed around the city, the vehicle miles traveled are reduced and fewer pollutants are released into the air, thus improving the air quality.

The term Complete Streets means that streets are designed so all users—pedestrians, bicyclists, motorists and transit riders—of all ages and abilities may safely move along and across them. Since 2011, the Complete Streets Act has required California cities to

account for the needs of all roadway users when updating their General Plans. There is no single design for a Complete Street, but components include sidewalks, curb extensions, accessible pedestrian signals, roundabouts, bike lanes, accessible public transportation stops, and pedestrian-scaled lighting. Complete Street policies often have the effect of encouraging walking and use of public transit, thereby reducing automobile traffic congestion and improving air quality. The Mobility and Transportation Element further discusses street patterns and Complete Street systems.

The Plan also supports modes of travel beyond the private automobile through its circulation policies designed to expand and connect the city's existing sidewalk and bike route network, consider multiple modes of transportation to reduce reliance on single-driver automobile transportation and level of service measurement, and consider context in roadway design. Other transportation measures that are part of the City's effort, and that have been determined to reduce air pollution include:

- Investing in BRT, express bus, limited stop bus and high frequency bus routes on principal transit corridors, transit corridors, and transit routes as determined feasible by appropriate transportation infrastructure studies.
- Support and promote employer implementation of staggered work hours and employee incentives to use carpools, public transit, and other measures to reduce vehicular use and traffic congestion.

Lastly, the use of hybrid, electric and alternative fuel vehicles can improve the air quality, as these vehicles emit fewer pollutants into the air. The Plan supports low emission vehicles through policies and infrastructure, such as providing electric and CNG (compressed natural gas) fueling stations, preferential parking spots for these vehicles, and using these vehicles for the City fleet.

Greenhouse Gas Emissions

Gases that trap heat in the earth's atmosphere are called greenhouse gases (GHGs). These gases play a critical role in determining the earth's surface temperature. Part of the solar radiation that enters earth's atmosphere from space is absorbed by the earth's surface. The other part of it is reflected off the earth and radiated back toward space, but GHGs absorb some of this radiation. As a result, radiation that otherwise would have escaped back into space is retained, resulting in a warming of the atmosphere. Without natural GHGs, the earth's surface would be about 61°F cooler. This phenomenon is known as the greenhouse effect. However, many scientists have determined that emissions from human activities—such as electricity generation, vehicle emissions, and even farming and forestry practices—have elevated the concentration of GHGs in the atmosphere beyond naturally-occurring concentrations, contributing to the larger process of global climate change.

Global Climate Change

Global climate change (GCC) refers to a change in the average weather of the earth that may be measured by wind patterns, storms, precipitation, and temperature. Historically, the rate of temperature change has typically been incremental, with warming and cooling occurring over the course of thousands of years. In the past 10,000 years the earth has experienced incremental warming as glaciers retreated across the globe. However, scientists have observed an unprecedented increase in the rate of warming over the past 150 years, roughly coinciding with the global industrial revolution.

Although GCC is now widely accepted as a concept, the extent and speed of change to be expected, and the exact contribution from human sources, remains in debate. In its 2013 report, the Intergovernmental Panel on Climate Change (IPCC) predicted that the increase in global mean temperature in 2100 relative to 1850 to 1900 is likely to exceed 2.7 degrees Fahrenheit. The same report projects a sea level rise of 10.3 to 21.7 inches by 2100, relative to 1986-2005, with greater rise possible depending on the rate of polar ice sheet melting. A 2012 report done by the National Research Council (NRC) assessed historic and projected sea level rise for specific locations along the open Pacific coasts of California, Oregon, and Washington. Along the California coast south of Cape Mendocino, the committee projected that sea level will rise 1.57 to 11.8 inches by 2030, 4.72 to 24 inches by 2050, and 16.5 to 65.7 inches by 2100.

Accelerating GCC has the potential to cause a number of adverse impacts in California, including but not limited to:

- **A reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the twenty-first century because more winter rain will stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.

- **Decreased electricity supply.** Decreased water availability for hydropower generation (due to less Sierra snowpack and consequently lower reservoir levels) and decreased transmission efficiencies will increase the risk of brown-outs and black-outs and will affect agricultural and industrial productivity.
- **Increased flood risk.** Climate change is anticipated to cause a 20 to 30 percent increase in precipitation in the spring and fall in California. More frequent and heavier precipitation events cause flooding and mudslides, which would incur considerable costs in damages to property, agricultural productivity, infrastructure and even human life.
- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- **An increase in temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California's forests.** Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

By identifying and addressing underlying vulnerabilities due to climate change in this Plan, the City of Fresno will increase the resilience of the community and the resources it depends on.

Responding to Climate Change Legislation

The City will continue to comply with applicable State climate change legislation. It will also take into consideration settlements by the Governor's Office of Planning and Research (OPR) Technical Advisories and Attorney General with other jurisdictions related to the California Environmental Quality Act (CEQA), GHG emissions, and General Plan updates. By proactively addressing climate change issues and requirements through the Plan, the City has the opportunity to create streamlined application processes for conforming local development.

The issue of climate change is closely related to other resource issues and opportunities, particularly air quality and water supply. The State's GHG legislation (AB 32 – California Global Warming Solutions Act of 2006 and SB 375 – Sustainable Communities and Climate Protection Act of 2008) and the amended CEQA and CEQA

Guidelines require local governments to define the extent of GHG production and identify ways to substantially reduce GHGs in the future in order to minimize a potentially significant environmental impact.

Of particular importance to the Plan is SB 375's requirement that all regional transportation planning organizations (locally, the Fresno Council of Governments) develop a Sustainable Community Strategy (SCS) designed to coordinate regional transportation plans with land use intensities and densities in order to reduce future GHG emissions. Local adherence to SB 375 and the regional SCS is not mandatory; however, the aim is to motivate local governments to align their land use planning with the adopted SCS to capitalize on the new CEQA streamlining opportunities discussed below. For instance, the County of Fresno has a State-mandated target of reducing its GHG emissions from automobile and light trucks (primarily NO_x – nitrogen oxides) by 5 percent by 2020 and 10 percent by 2035. SB 375 provides financial and regulatory incentives to achieve the target GHG reductions, including streamlined environmental review for projects that conform to an adopted SCS.

The Plan includes policies to reduce vehicle miles traveled by increasing land development densities so that more trips (such as to jobs, schools, and personal services) can be accommodated by shorter drives, transit, walking, or biking, and it is likely that such policies would be consistent with an adopted SCS. The Fresno Council of Governments adopted its SCS in 2014. This General Plan complies with the adopted SCS.

Senate Bill 97 (Chapter 185, Statutes of 2007) amended the California Environmental Quality Act statute to establish how GHG emissions and the effects of GHG emissions are appropriately analyzed under CEQA. The amendments stipulate that environmental documents for certain residential and mixed-use projects that are consistent with a General Plan designation, density, SCS, or alternative planning strategy need not analyze global warming impacts resulting from cars and light duty trucks. SB 97 also allows streamlined environmental review for projects in transit corridors that are consistent with an SCS and a City or County's General Plan.

CEQA Tiering and Streamlining Analysis of Greenhouse Gas Emissions

A Climate Action Plan (CAP) to reduce GHG emissions is being prepared concurrently with this Plan. The CAP will allow the City to streamline environmental review for later projects. This is because CEQA and CEQA Guidelines will allow the City to determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously adopted CAP or mitigation program under specified circumstances. An environmental document that

relies on a GHG reduction plan for a cumulative impacts analysis must identify those requirements specified in the CAP that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project. If there is substantial evidence that the effects of a particular project may be cumulatively considerable notwithstanding the project's compliance with the specified requirements in the CAP for the reduction of GHG emissions, an EIR must be prepared for the project.

OBJECTIVE

RC-4 In cooperation with other jurisdictions and agencies in the San Joaquin Valley Air Basin, take necessary actions to achieve and maintain compliance with State and federal air quality standards for criteria pollutants.

Commentary: *This includes compliance with California Government Code Section 65302.1 for the San Joaquin Valley.*

IMPLEMENTING POLICIES

RC-4-a **Support Regional Efforts.** Support and lead, where appropriate, regional, State and federal programs and actions for the improvement of air quality, especially the SJVAPCD's efforts to monitor and control air pollutants from both stationary and mobile sources and implement Reasonably Available Control Measures in the Ozone Attainment Plan.

Commentary: *A list of Reasonably Available Control Measures was submitted by the SJVAPCD to the U.S. Environmental Protection Agency as part of the Ozone Attainment Plan designed to reduce ozone-forming emissions. The City is responsible for implementing measures related to operations and/or services that the City controls.*

RC-4-b **Conditions of Approval.** Develop and incorporate air quality maintenance requirements, compatible with Air Quality Attainment and Maintenance Plans, as conditions of approval for General Plan amendments, community plans, Specific Plans, neighborhood plans, Concept Plans, and development proposals.

RC-4-c **Evaluate Impacts with Models.** Continue to require the use of computer models used by SJVAPCD to evaluate the air quality impacts of plans and projects that require such environmental review by the City.

RC-4-d **Forward Information.** Forward information regarding proposed General Plan amendments, community plans, Specific Plans, neighborhood plans, Concept Plans, and development proposals that require air quality evaluation, and amendments to development regulations to the SJVAPCD for their review of potential air quality and health impacts.

RC-4-e **Support Employer-Based Efforts.** Support and promote employer implementation of staggered work hours and employee incentives to use carpools, public transit, and other measures to reduce vehicular use and traffic congestion.

RC-4-f **Municipal Operations and Fleet Actions.** Continue to control and reduce air pollution emissions from vehicles owned by the City and municipal operations and facilities by undertaking the following:

- Expand the use of alternative fuel, electric, and hybrid vehicles in City fleets.
- Create preventive maintenance schedules that will ensure efficient engine operation.
- Include air conditioning recycling and charging stations in the City vehicle maintenance facilities, to reduce Freon gases being released into the atmosphere and electrostatic filtering systems in City maintenance shops, when feasible or when required by health regulations.
- Use satellite corporation yards for decentralized storage and vehicle maintenance.
- Convert City-owned emergency backup generators to natural gas fuels whenever possible, and create an advanced energy storage system.

RC-4-g **FAX Actions.** Continue to improve Fresno Area Express (FAX) bus transit system technical performance, reduce emission levels, streamline system operations, and implement BRT where supportive land uses are proposed by Figure LU-1: Land Use Diagram.

RC-4-h **Airport Actions.** Support Airport efforts to develop and maintain programs and policies to support City, State and federal efforts to achieve and maintain air quality standards.

RC-4-i **Methane Capture.** Continue to pursue opportunities to reduce air pollution by using methane gas from the old City landfill and the City's wastewater treatment process.

RC-4-j **All Departments.** Continue to develop and implement in all City departments, operational policies to reduce air pollution.

RC-4-k **Electric Vehicle Charging.** Develop standards to facilitate electric vehicle charging infrastructure in both new and existing public and private buildings, in order to accommodate these vehicles as the technology becomes more widespread.

OBJECTIVE

RC-5 In cooperation with other jurisdictions and agencies in the San Joaquin Valley Air Basin, take timely, necessary, and the most cost-effective actions to achieve and maintain reductions in greenhouse gas emissions and all strategies that reduce the causes of climate change in order to limit and prevent the related potential detrimental effects upon public health and welfare of present and future residents of the Fresno community.

IMPLEMENTING POLICIES

RC-5-a **Support State Goal to Reduce Statewide GHG Emissions.** As is consistent with State law, strive to meet AB 32 goal to reduce greenhouse gas emissions to 1990 levels by 2020 and strive to meet a reduction of 80 percent below 1990 levels by 2050 as stated in Executive Order S-03-05. As new statewide GHG reduction targets and dates are set by the State update the City's Greenhouse Gas Reduction Plan to include a comprehensive strategy to achieve consistency with those targets by the dates established.

RC-5-b **Greenhouse Gas Reduction Plan.** As is consistent with State law, prepare and adopt a Greenhouse Gas Reduction Plan as part of the Master Environmental Impact Report to be concurrently approved with the Fresno General Plan in order to achieve compliance with State mandates, assist development by streamlining the approval process, and focus on feasible actions the City can take to minimize the adverse impacts of growth and development on global climate change. The Greenhouse Gas Reduction Plan shall include, but not be limited to:

- A baseline inventory of all known or reasonably discoverable sources of GHGs that currently exist in the city and sources that existed in 1990.
- A projected inventory of the GHGs that can reasonably be expected to be emitted from those sources in the year 2035 with

implementation of this General Plan and foreseeable communitywide and municipal operations.

- A target for the reduction of emissions from those identified sources.
- A list of feasible GHG reduction measures to meet the reduction target, including energy conservation and "green building" requirements in municipal buildings and private development.
- Periodically update municipal and community-wide GHG emissions inventories to determine the efficacy of adopted measures and to guide future policy formulation needed to achieve and maintain GHG emissions reduction targets.

RC-5-c **GHG Reduction through Design and Operations.** Increase efforts to incorporate requirements for GHG emission reductions in land use entitlement decisions, facility design, and operational measures subject to City regulation through the following measures and strategies:

- Promote the expansion of incentive-based programs that involve certification of projects for energy and water efficiency and resiliency. These certification programs and scoring systems may include public agency "Green" and conservation criteria, Energy Star™ certification, CALGreen Tier 1 or Tier 2, Leadership in Energy Efficient Design (LEED™) certification, etc.
- Promote appropriate energy and water conservation standards and facilitate mixed-use projects, new incentives for infill development, and the incorporation of mass transit, bicycle and pedestrian amenities into public and private projects.
- Require energy and water audits and upgrades for water conservation, energy efficiency, and mass transit, pedestrian, and bicycle amenities at the time of renovation, change in use, change in occupancy, and change in ownership for major projects meeting review thresholds specified in an implementing ordinance.
- Incorporate the City's "Guidelines for Ponding Basin/Pond Construction and Management to Control Mosquito Breeding" as conditions of approval for any project using an on-site stormwater basin to prevent possible increases in vector-borne illnesses associated with global climate change.
- Periodically evaluate the City's facility maintenance practices to determine whether there are additional opportunities to reduce

GHGs through facility cleaning and painting, parks maintenance, road maintenance, and utility system maintenance.

- Periodically evaluate standards and mitigation strategies for highly vehicle-dependent land uses and facilities, such as drive-through facilities and auto-oriented development.

RC-5-d **SCS and CAP Conformity Analysis.** Ensure that the City includes analysis of a project's conformity to an adopted regional Sustainable Community Strategy or Alternative Planning Strategy (APS), an adopted Climate Action Plan (CAP), and any other applicable City and regional greenhouse gas reduction strategies in affect at the time of project review.

RC-5-e **Ensure Compliance.** Ensure ongoing compliance with GHG emissions reduction plans and programs by requiring that air quality measures are incorporated into projects' design, conditions of approval, and mitigation measures.

RC-5-f **Toolkit.** Provide residents and project applicants with a "toolkit" of generally feasible measures that can be used to reduce GHG emissions, including educational materials on energy-efficient and "climate-friendly" products.

RC-5-g **Evaluate Impacts with Models.** Continue to use computer models such as those used by SJVAPCD to evaluate greenhouse gas impacts of plans and projects that require such review.

7.4 WATER RESOURCES

Population and economic growth of Fresno will be determined, in part, by the availability of water. Fresno's water supply faces challenges and requires strategic decisions to secure its long-term availability and affordability, in light of several pressures:

- Fresno's water supply currently depends on hundreds of deep wells, which draw on a declining aquifer (See the Public Utilities and Services Element for more information).
- The City has the opportunity to use substantial surface water resources, but these require funding and construction of costly new treatment and distribution infrastructure.
- Fresno has one of the highest per capita water consumption rates in California, more than twice that of Los Angeles. More than 50 percent of water consumption in Fresno is used for landscaping, rising to 70 percent in summer months.

- The costs of wastewater treatment, both for the City and industrial users, are relatively high.
- Running groundwater pumps and conveyance systems uses a tremendous amount of energy. Both the amount and cost of energy are rising in spite of technological innovation and efforts to reduce energy demands related to the City's water supply.

Water Sources

Fresno relies on two sources for its water: groundwater and surface water. With its dry climate and low annual rainfall (11 inches), Fresno is dependent on the Sierra snowpack, two rivers, and a groundwater basin for its water needs.

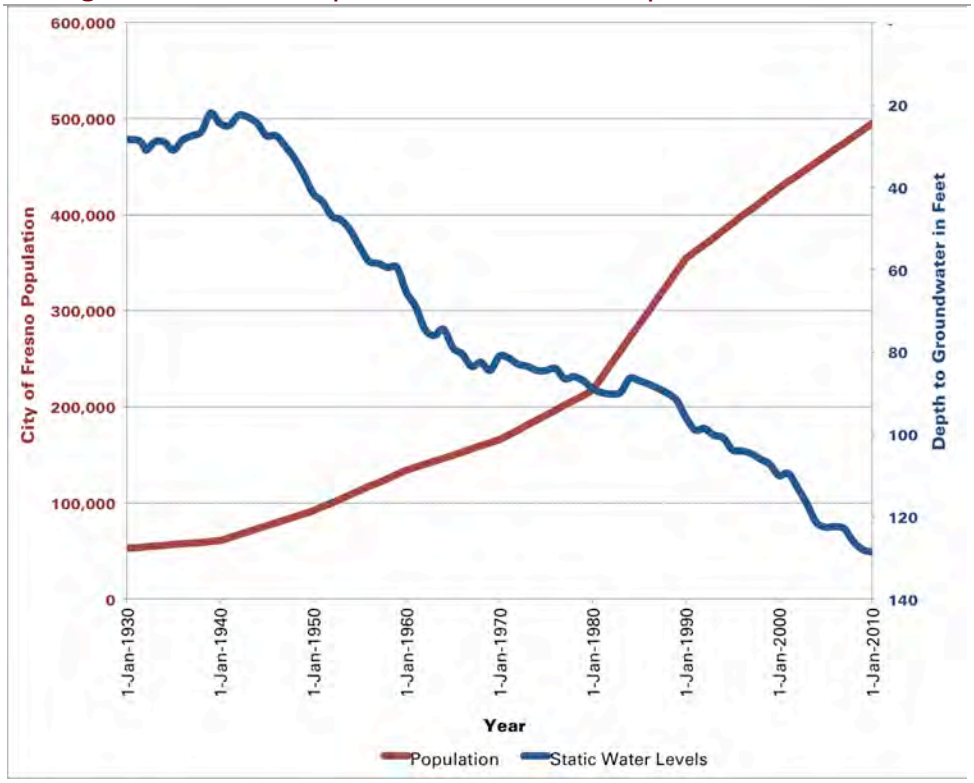
Fresno's primary source of water is groundwater that is located within the existing Kings Sub-basin groundwater aquifer and watershed area, as shown in Figure RC-2. The DPU Water Division currently uses 270 wells to pump about 146 million gallons of water per day (mgd). Since the 1940s, Fresno has taken out more water from the aquifer than has naturally and intentionally seeped back in. This has created an overdraft on the system, resulting in a declining water table (approximately 100 feet in the past 80 years). This increase in the depth to the water table has contributed to water quality problems, deeper well construction, and additional energy costs (due to additional pumping required) and treatment costs. The City currently spends about $20 million on electricity annually, of which 56 percent, or $11.2 million, is for water and wastewater services. The vast majority of that expenditure, $9 million, is for electricity to run groundwater pumps and conveyance.

As the groundwater level decreases, the City will be forced to continue drilling deeper wells, which will result in increased power costs to lift the deeper water from the aquifer. The groundwater level will continue to decline, possibly increasing in its rate of decline as the population drawing water from the basin increases, as shown in Figure RC-1. Other jurisdictions access the Kings Sub-basin groundwater aquifer, and so the rate of drawdown is not solely under the control of the City. Fresno is the biggest user of the aquifer, however, and thus has a large degree of influence on its condition. As it is in a position to lead, the Plan supports efforts to improve regional standards of groundwater usage and recharge.

Fresno does have other sources of water available from the San Joaquin River to the north and the Kings River to the southeast, as shown in Figure RC-2. Snow melt from the Sierras makes its way to Millerton Lake, where it is stored behind Friant Dam and released to the San Joaquin River, and to Pine Flat Reservoir, where it is stored behind Pine Flat Dam and released to the Kings River. Fresno's access to this natural surface water has been established through contracts with the United States Bureau of Reclamation (USBR) for the San Joaquin River and the Fresno Irrigation District (FID)

for the Kings River. The FID contract is renewed annually and the USBR contract is permanent.

Figure RC-1: Population Growth vs Depth to Groundwater



As the City's population has grown, the demand on the City's groundwater supplies has increased. In the 1930s, groundwater was accessible at a depth of 30 feet, while in the 2000s, groundwater was accessible at depths of more than 120 feet in the ground.

Between both sources, 156,100 acre feet[1] (af) of surface water was available to Fresno in 2010. The City diverted 79,000 af for use within the city and allowed the remaining 77,100 af to be used by California State University, Fresno and local farmers for irrigation purposes. This practice is termed in-lieu recharge, whereby groundwater pumping is offset by the use of surplus surface water, thereby leaving groundwater in storage for later use. Another advantage to this practice is that the irrigated surface water seeps through the soil to replenish the aquifer.

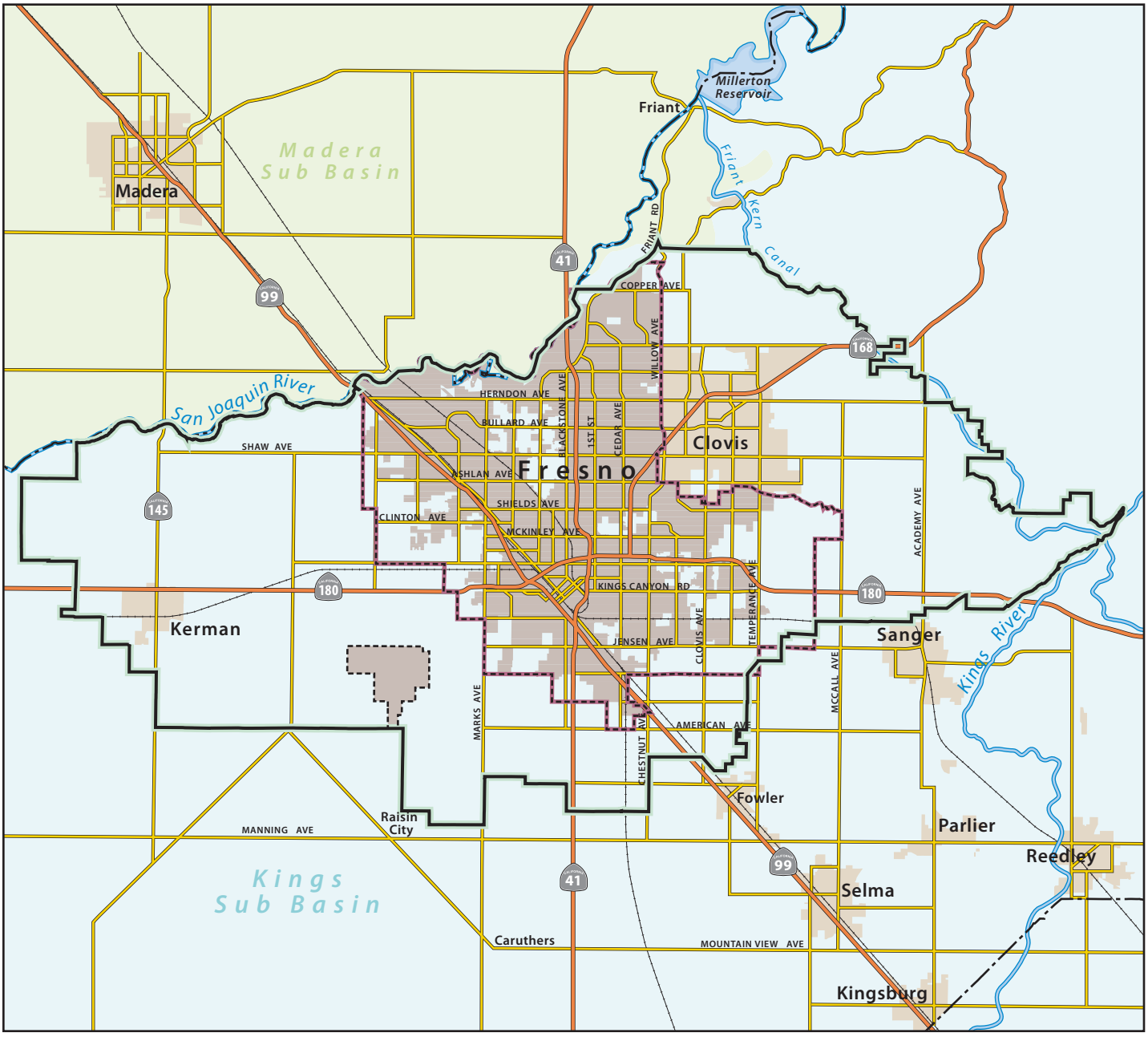
[1] An acre-foot is enough water to cover an acre of land with one foot of water. It equates to about 326,000 gallons of water.

The City's Northeast Surface Water Treatment Facility (NESWTF) opened in 2004. By 2009, it helped to offset demand for groundwater by 12 percent. Because of the depth of the groundwater table in Fresno, it costs less to treat water at a surface water treatment facility than it does to pump water from the aquifer. The City of Fresno Urban Water Management Plan (UWMP) and the City of Fresno Metropolitan Water Resources Management Plan provide recommendations to increase surface water treatment capacity with phased infrastructure improvements that could shift the burden away from groundwater and allow water levels in the aquifer to balance and potentially recover over time. This will also allow the City to make use of available surface water that is not being used within the city.

If the city continues to use primarily groundwater and does not increase surface water treatment and recycled water supply capacity, the groundwater table will decrease at an increasingly higher rate as Fresno grows and the population increases. According to modeling done for Phase 2 of the City of Fresno Metro Plan, continuing to operate "status quo" will cause the groundwater table to decline an additional 85 feet below 2005 conditions by 2025. Under these conditions, 26 percent of the City's wells (69 wells) would have groundwater levels below the current pump bowl intake elevations and would not be operational, and another 13 percent of the wells (36 wells) would have groundwater levels of 15 feet or less above the pump bowl elevations, which may result in inadequate water coverage over the top of the pump bowl.

As part of the Kings Sub-basin groundwater aquifer, the Kings River, pictured here, is an important natural resource for the City of Fresno. Photo: Fresno/Clovis Convention & Visitors Bureau.

Figure RC-2: Kings Subasin Groundwater Aquifer and Watershed Area



Source: City of Fresno, 2014;
Provost & Pritchard Consulting Group;
California Department of Water Resources

Existing Plans and Initiatives

As noted previously, Fresno's future relies on being able to provide a dependable supply of potable water to the community. The City has adopted long-range capital and strategic programs through its City of Fresno Metro Plan, City of Fresno Recycled Water Master Plan, and City of Fresno Wastewater Master Plan. The City has also adopted the State's 2013 CalGreen Building Code, Model Water Efficient Landscape Ordinance, and Graywater Standards, which combine for a 10 to 20 percent reduction in water use in most new construction.

2010 City of Fresno Urban Water Management Plan (UWMP)

The City of Fresno UWMP sets water management goals and strategies to supply water to Fresno's population through 2030. These goals and strategies include reducing the consumption of gallons per capita per day from 300 to 243 by 2020 as mandated by the State and balancing the City's groundwater operations by 2025. To accomplish these targets will require ongoing and new conservation measures; the maximization of available surface water supplies for direct treatment and use, and intentional groundwater recharge; and the incorporation of tertiary-treated recycled water into the future water supply portfolio to meet non-potable demands in new growth areas and existing parts of the city. Implementation of the City's future water supply plan will result in a significant shift and increase in diversity in the City's water supply mix, which will enhance overall water supply reliability.

Water Conservation Efforts

The city depends on reduced consumption due to conservation as a part of its future water supply. Educating the public to reduce usage also directly affects water delivery costs. Power and treatment costs increase as the City pumps more water, so higher water use would mean higher water and sewer rates. Many of the City's water conservation measures respond to requirements in the City's United States Bureau of Reclamation (USBR) contract for 60,000 acre feet of surface water. In fact, one of the contract conditions is that the city follows USBR Best Management Practices, which were used to create the City's Water Conservation Program.

This Program includes watering restrictions in the form of a required winter and summer watering schedule; customer education on the need to conserve water and how to do so; free residential plumbing retrofits such as low flow shower heads and aerators; free system water audits, leak detection and repair; metering for all new connections and retrofits of existing connections; rebate programs for high efficiency clothes washing machines, ultra-low flush or high efficiency toilets, and urinal replacement; public information outreach programs; and water waste prohibition through watering regulations and enforcement. Demonstration gardens and drip

irrigation demonstration plots have been installed as resources to provide examples to customers.

Groundwater Recharge

An important process in a viable groundwater management plan is groundwater recharge. One source is the natural subsurface inflow recharge, which occurs when water flows from areas where the water table is higher to areas where it is lower. The Water Division has estimated that the average rate of subsurface inflow to the aquifer is 22,500 acre feet/year (af/yr). The aquifer is also recharged naturally by rainfall, unlined canals and rivers, as well as irrigation water seeping through the soil at an average estimated rate of 24,400 af/yr. Natural recharge can be impeded somewhat by human activities including pavement and buildings, which can result in enhanced surface runoff and reduction in recharge.

The Kings Sub-basin groundwater aquifer is recharged naturally by rainfall, unlined canals and rivers, and irrigation water, but human activities can impede this natural process with pavement and buildings. Photo credit: Karana Hattersley-Drayton.

To capture surface water runoff, also known as stormwater, the Fresno Metropolitan Flood Control District (FMFCD) has developed an urban drainage design concept that collects, detains and retains surface water runoff for intentional groundwater recharge in ponding basins dispersed throughout the city. FMFCD estimates they collect more than 95 percent of Fresno's urban runoff, though the percentage that actually gets

recharged and the part that is discharged to FID canals and the San Joaquin River is unknown. The FMFCD also partners with the FID and the City in a cooperative groundwater recharge program. This program provides for dry season (generally March through October) delivery of City contract imported surface water from the San Joaquin and Kings Rivers into many of the FMFCD's local ponding basins and the City-owned Leaky Acres recharge basin. Intentional recharge can vary due to a number of factors, which could include pond availability, water delivery season, pond maintenance, or length of wet season.

Intentional recharge in Fresno has averaged 48,900 af/yr from 1990 to 2011. In 2010, intentional recharge was 53,100 af for a total groundwater recharge of 100,000 af. Groundwater pumpage in 2010 was 128,578 af which created a 28,578 af overdraft on the aquifer that year alone. This overdraft is not maintainable.

The City also recharges treated wastewater into the ground at the Fresno-Clovis Regional Water Reclamation Facility (RWRF). Around 55,000 af is percolated for recharge into the aquifer, with 30,000 af subsequently pumped out by the FID in exchange for 13,800 af of fresh surface water from the Kings River.

Stormwater Best Management Practices

The FMFCD captures approximately 100 percent of the stormwater runoff from new development and approximately 95 percent of the stormwater runoff from existing development. Capturing the runoff allows for groundwater recharge and also protects surface water quality by not allowing urban runoff, which often contains contaminants from roadways and lawns, to flow into natural creeks, rivers, and irrigation ditches. The runoff is collected in retention basins (also known as ponding basins), allowing for filtration through the soil. On average, retention basins remove 50 to 80 percent of stormwater pollutants. Additional sediment and ground water studies show that the majority of stormwater pollutant are absorbed to the top 4cm of soil and do not exceed background levels beyond 16cm. The same studies did not detect any stormwater pollutants in ground water tested beneath a retention basin serving an industrial catchment.

The FMFCD's stormwater quality management program includes specific pollution prevention and control practices for urban drainage system planning, design, construction, and maintenance. The program also includes public education to prevent stormwater pollution; commercial, industrial, and new development stormwater quality control practices; monitoring to assess stormwater impacts on receiving water and to evaluate the effectiveness of best management practices; and development and implementation of ordinances to effect and enforce stormwater quality controls.

Water Conservation

Fresno's average total per capita water consumption was 295 gallons per capita per day (gpcd) from 1991 to 2011, making Fresno one of the highest water consuming cities in California. The total per capita water production has varied between 1991 to 2011, from a low of 246 gpcd in 2011 to a high of 329 gpcd in 2001. By comparison, Clovis averages 247 gpcd, Los Angeles is 150, Phoenix is 184, and Tucson is 110.

The California Water Conservation Act of 2009 requires a statewide 20 percent reduction in urban water usage by 2020. The methodology chosen by a jurisdiction must be documented in their Urban Water Management Plan (UWMP). The City's adopted target of 250 gpcd to meet State law is a 20 percent reduction from the 313 gpcd average annual gpcd water use for the 10-year period from 1996 to 2005. The City of Fresno Metro Plan recommends a further reduction to 243 gpcd to help balance the groundwater table by 2020. This General Plan incorporates a comprehensive conservation program that has a reduction target of per capita water usage in the city's water service area of 243 gpcd by 2020 and 190 by 2035.

To meet a consumption reduction target of 243 gpcd by 2020 and 190 by 2035 will require a combination of conservation measures, including among other possible actions: incentives, appliance rebates, outreach programs and education, fixture swap, prioritized leak detection program, retrofit upon resale ordinance, as well as partnering with commercial, industrial, and institutional customers to reduce their water demand through operational improvements. The recent installation of residential water meters is anticipated to reduce water consumption, however additional water conservation measured should be explored. In the future, the City may develop a tiered water rate structure to further encourage water conservation. The biggest opportunities for water conservation are related to the reduction of outdoor water uses, particularly landscape and turf irrigation, by all customers. Measures related to outdoor water use reduction include rebates for xeriscape (drought-tolerant) landscaping for new homes, programmable irrigation, weather-based irrigation control, and turf replacement, and landscape water audit and budget program.

Recycled Water Use

Water recycling is using treated wastewater for beneficial purposes such as agricultural and landscape irrigation, industrial processes, toilet flushing, and replenishing a ground water basin (referred to as ground water recharge). Water recycling offers resource and financial savings, as potable water does not need to be used for non-drinking purposes. Wastewater treatment can be tailored to meet the water quality requirements of a planned reuse. Recycled water for landscape irrigation requires less treatment than recycled water for drinking water.

Wastewater generated from homes, businesses, and industry in the city is conveyed to the Fresno-Clovis Regional Wastewater Reclamation Facility (RWRF). The RWRF is operated by the City of Fresno and has the capacity to treat 80 million gallons a day (mgd) of wastewater. On an average day, the RWRF receives 68 million gallons of wastewater. The RWRF recycles nearly every component of influent wastewater (water, solids, and natural gas). The City releases up to 65,100 af of recycled water per year.

- 10,000 af/yr is sent directly to irrigate non-food agricultural land downstream.
- 55,100 af/yr is directed to 1,660 acres of ponds for percolation into the aquifer.
- 30,000 af/yr is then pumped from the aquifer into FID canals for reuse downstream from Fresno to nearby farmers for unrestricted irrigation use. In exchange for this recycled water, FID provides Fresno with 13,800 af of Kings River surface water.

The City does not presently have the infrastructure to route recycled water from the RWRF to existing or new development. The retrofit of existing residential uses is considered economically infeasible and impractical to implement. The use of recycled water should focus on new and existing large green spaces, industrial uses, and new development. However, the development of a gray water policy for the residential reuse of wastewater for household gardening and landscape irrigation on site may be feasible.

The City also operates a satellite facility in North Fresno called the Wastewater Reclamation Facilities (WRF) Satellite Plant. It was built to serve the Copper River development and golf course. In 2010, the plant was capable of irrigating the golf course at about 750 af/yr and future total capacity will ultimately reach about 1,000 af/yr when the surrounding development builds out.

Key Opportunities

With strategic planning and investments, Fresno will have a dependable water supply system that, in turn, will create a competitive economic advantage. Below are some considerations that are noted with regards to the City's efforts to create a viable water supply system, and many are supported by General Plan policies.

- The geologic structure of the aquifer underneath Fresno is capable of recharging to levels sufficient to support the city during drought periods if the proper infrastructure were in place.
- Conversion to conjunctive use of surface and ground water could reduce energy usage for water delivery purposes by 18 to 20 percent. The reduction in power demand for pumping water would be a reduction in both the total demand and, more significantly, during peak usage periods (a reduction in both production and

grid capacity demand). This reduction could also reduce the city's carbon footprint, potentially eliminating the equivalent of 670,000 gallons of gasoline or one year of electricity for 745 homes.

- Fresno has developed a Property Assessed Clean Energy (PACE) district that can finance water efficiency and energy efficiency upgrades.
- Fresno has the water resources available to balance the groundwater aquifer and create storage for dry years. This can be accomplished by implementing the UWMP and the City of Fresno Metro Plan. These plans call for increased surface water treatment facility capacity, increased intentional recharge, a local groundwater banking program, use of recycle water for non-potable water demands and aggressive water conservation measures.
- Available recycled water and untreated surface water can be used by industrial facilities for cooling systems and other uses without having to meet the drinking water standards for the rest of the city. This water supply could be distributed directly to future industrial facilities or parks to encourage new businesses to relocate to Fresno.
- Changing the practice of lining canals with concrete, or piping them through residential neighborhood developments, will allow for additional natural recharge.
- Outdoor water demand can be significantly reduced through climate-appropriate landscape design and more efficient irrigation technology, while indoor water demand can be reduced by efficient fixtures and appliances.
- Citywide, infrastructure costs and water demand can be minimized through efficient land use. Compact and infill development generally requires significantly less pipe and lower water per capita demand equating to significant per capita cost savings as compared to low density developments.
- Where infill development substantially increases density, or increases the building height, due to both the age and size of the distribution system, the distribution system may require upgrading to avoid negative impacts from suction created by booster pumps, or to provide adequate flows and pressures for increased demands.

In addition to those discussed below, the Public Utilities and Services Element contains additional objectives and policies on water supply, water quality, and reclaimed water.

OBJECTIVE

RC-6 Ensure that Fresno has a reliable, long-range source of drinkable water.

IMPLEMENTING POLICIES

RC-6-a **Regional Efforts.** Support cooperative, multi-agency regional water resource planning efforts and activities on developing and implementing the Upper Kings Basin Integrated Regional Water Management Plan.

RC-6-b **Water Plans.** Adopt and implement ordinances, standards, and policies to achieve the intent of the City of Fresno Urban Water Management Plan, Fresno-Area Regional Groundwater Management Plan, and City of Fresno Metropolitan Water Resources Management Plan to ensure a dependable supply of water.

RC-6-c **Land Use and Development Compliance.** Ensure that land use and development projects adhere to the objective of the Fresno Metropolitan Water Resources Management Plan to provide sustainable and reliable water supplies to meet the demand of existing and future customers through 2025.

RC-6-d **Recycled Water.** Prepare, Adopt, and implement a City of Fresno Recycled Water Master Plan.

Commentary: *This plan will expand the City's wastewater recycling program by developing treatment, delivery, and users.*

RC-6-e **Protect Aquifer.** Oppose urban development in unincorporated areas that are not served by a wastewater treatment/management system capable of preventing the buildup of compounds that would degrade the aquifer.

RC-6-f **Regulate Sewage Disposal Facilities.** Oppose development of new sewage disposal facilities either within the Planning Area or upgradient (north and east) of the Planning Area, unless the treatment facilities produce effluent that:

- Will not degrade the aquifer in the long term;
- Will not introduce contaminants into surface water that would negatively affect its potential economic use for drinking water;
- Will not deleteriously affect downstream agricultural and urban uses; and
- Will not degrade sensitive riparian habitat.

RC-6-g **Protect Recharge Areas.** Continue to protect areas of beneficial natural groundwater recharge by preventing uses that can contaminate soil or groundwater.

RC-6-h **Conditions of Approval.** Include in the Development Code standards for imposing conditions of approval for development projects to ensure long-term maintenance of adequate clean water resources. Require findings that adequate water supply must exist prior to any discretionary project approval for residential and commercial development requiring annexation, as required by law.

RC-6-i **Natural Recharge.** Support removal of concrete from existing canals and change the practice of lining new and existing canals with concrete to allow for natural recharge.

OBJECTIVE

RC-7 Promote water conservation through standards, incentives and capital investments.

IMPLEMENTING POLICIES

RC-7-a **Water Conservation Program Target.** Maintain a comprehensive conservation program to help reduce per capita water usage in the city's water service area to 243 gallons per capita per day (gpcd) by 2020 and 190 gpcd by 2035, by adopting conservation standards and implementing a program of incentives, design and operation standards, and user fees.

- Support programs that result in decreased water demand, such as landscaping standards that require drought-tolerant plants, rebates for water conserving devices and systems, turf replacement, xeriscape landscape for new homes, irrigation controllers, commercial/industrial/institutional water conserving programs, prioritized leak detection program, complete water system audit, landscape water audit and budget program, and retrofit upon resale ordinance.
- Implement the U.S. Bureau of Reclamation Best Management Practices for water conservation as necessary to maintain the City's surface water entitlements.
- Adopt and implement policies in the event that an artificial lake is proposed for development.

- Work cooperatively toward effective uniform water conservation measures that would apply throughout the Planning Area.
- Expand efforts to educate the public about water supply issues and water conservation techniques.

RC-7-b **Water Pricing and Metering.** Develop a tiered water cost structure for both residential and commercial users that will properly price water based on its true cost; require all new development to be metered for water use; and charge all customers the true, full cost of their water supply, including costs of acquisition, initial treatment, conveyance, wastewater treatment, operations, maintenance, and remediation.

RC-7-c **Best Practices for Conservation.** Require all City facilities and all new private development to follow U.S. Bureau of Reclamation Best Management Practices for water conservation, as warranted and appropriate.

RC-7-d **Update Standards for New Development.** Continue to refine water saving and conservation standards for new development.

RC-7-e **Retrofit City Facilities, and Consider Incentives Programs to Encourage Retrofitting of Other Existing Public and Private Residential and Non-Residential Facilities and Sites.** Reduce water use in municipal buildings and City operations by developing a schedule and budget for the retrofit of existing municipal buildings with water conservation features, such as auto shut-off faucets and water saving irrigation systems. Prepare a comprehensive incentive program for other existing public and private residential and non-residential buildings and irrigation systems.

RC-7-f **Implementation and Update Conservation Program.** Continue to implement the City of Fresno Water Conservation Program, as may be updated, and periodically update restrictions on water uses, such as lawn and landscape watering and the filling of fountains and swimming pools, and penalties for violations. Evaluate the feasibility of a 2035 conservation target of 190 gpcd in the next comprehensive update of the City of Fresno Water Conservation Program.

RC-7-g **Educate on State Requirements.** Educate the residents and businesses of Fresno on the requirements of the California Water Conservation Act of 2009.

RC-7-h **Landscape Water Conservation Standards.** Refine landscape water conservation standards that will apply to new development installed landscapes, building on the State Model Water Efficient Landscape Ordinance and other State regulations.

- Evaluate and apply, as appropriate, augmented xeriscape, "water-wise," and "green gardening" practices to be implemented in public and private landscaping design and maintenance.
- Facilitate implementation of the State's Water Efficient Landscape Ordinance by developing alternative compliance measures that are easy to understand and observe.

RC-7-i **PACE Financing.** Develop a residential Property Assessed Clean Energy (PACE) program, if it is determined to be a feasible option, to help finance water efficiency and energy efficiency upgrades for property owners.

Commentary: *The program would be administered by private parties.*

7.5 ENERGY RESOURCES

Pacific Gas and Electric (PG&E) provides almost all the energy for the city of Fresno. The cost of energy services provided by PG&E is among the highest in the State. Meanwhile, the city has abundant solar resources that could be expanded to reduce dependence on costly purchased electricity, but this will take time and financial resources to implement. Green building practices can be one of the main energy savings strategies encouraged, or required, as Fresno continues to develop. How the City can develop an energy-efficient infrastructure and reduce dependence on the energy grid is a prominent issue for the Plan.

The PG&E electrical grid was established decades ago. It's been at least 30 years since a large transmission line has been built in the Central Valley. Demand for electricity in Fresno has increased 5.4 percent since 2005, placing an increased load on a finite capacity grid system. In April of 2014, PG&E disclosed plans to build a 70-mile transmission line meant to meet the Valley's growing demand for electricity. The route for this power line is proposed to the west of Fresno SOI and is expected to go into operation by 2020.

The PG&E natural gas pipeline system was established decades ago and has had limited upgrade. In 1993, a massive expansion of the natural gas pipeline that runs from Idaho's border with British Columbia to the county of Fresno was completed. Natural gas usage in Fresno has increased 9.2 percent since 2005, adding increased load on the system.

Newer development in Fresno uses energy at higher rates than older land uses, despite having newer, more efficient technology available. Also, the average single-family home consumes 40 percent more electricity than a multi-family home. According to PG&E, the highest amount of residential energy usage in Fresno appears to be in the newer, more affluent areas on the north, west, and southeast edges of Fresno.

Cost data from the recent retrofits done in Fresno shows the average investment necessary to achieve a 28 to 30 percent reduction in energy usage on a typical Fresno home is about $25,000. Taking the 76,000 homeowners that have a need and multiplying that by the average cost per retrofit, equates to $1.9 billion in economic activity potential in Fresno, if fully developed. When combined with the estimated $103 million in annual energy savings through a fully deployed and subscribed existing-home retrofit program, the economic potential of comprehensively reducing energy consumption in Fresno is staggering.

The City has been active since the mid-1990s in taking steps to invest and deploy renewable energy technology and improve the energy efficiency of City-owned facilities and the community at large. Notable actions include:

- Adopting the 2013 California Energy Code;
- Developing a comprehensive free residential energy efficiency survey program (by April 2014, the City has conducted a little over 2,500 residential energy efficiency surveys to Fresno homes);
- Implementing the Fresno Energy Watch Program as part of the Fresno Small Business Energy Makeover;
- Using renewable biogas to produce electric power at the Fresno-Clovis Regional Wastewater Reclamation Facility;
- Installing solar panels at City-owned facilities (As of April 2014, the City had deployed over 4.85 megawatts of solar power on City-owned facilities, including the largest single solar farm at any airport in the nation while a 2 megawatt solar array is planned for the Fresno-Clovis Regional Wastewater Reclamation Facility); and
- Requiring installation of solar energy systems in construction of any new City-owned buildings containing at least 7,500 square feet, and a mandate to use a green building rating system standard for all new municipal buildings over 10,000 square feet.

PG&E also has energy efficiency programs operating in the Fresno area. Many of these programs are geared towards on low-income families, such as the Energy Partners

program and Middle Income Direct Install (MIDI) program. Other programs are focused on local businesses, such as the Direct Install program of the Fresno Energy Watch, the Air-Care Plus program, and numerous others.

The Fresno County Equal Opportunities Commission (FCEOC) administers the federally-funded weatherization programs focused on low-income homeowners in Fresno. These programs are designed to work in collaboration with utility funded programs operated by PG&E. There are several areas of overlap with these programs.

Private organizations, businesses, and individuals are also taking important steps locally. Fresno has the third highest deployment level for solar power among cities in California with 1,056 sites that total 12 MW of power generation capacity. The level of investment in solar power in Fresno has seen a rapid increase since 2006 with over 532 systems installed in 2010 compared with only two systems installed in 2006. In July 2009, Environment California ranked Fresno third in the State for number of kilowatts its solar projects produce and fifth for projects on roofs, with Clovis close behind at seventh.

California State University, Fresno, developed sheltered parking canopies on campus, protecting nearly 700 vehicles from the elements and supporting 3,872 photovoltaic cell panels, which generate 20 percent of the campuses electricity demand. The $11.9 million project—the largest of its kind on a university campus—was completed in fall 2007.

Key Opportunities

Under this Plan, the City will promote household conservation of electricity, and strive to change current trends of higher energy use in newer development in order to conserve resources for future growth. Fresno also has enormous potential for solar power and will continue investing in solar energy for public facilities. Some of the key opportunities include:

ALTERNATIVE ENERGY

Current viable alternative energy sources for buildings and transportation in Fresno include solar photovoltaic electricity, solar thermal electricity, solar thermal heating, low-speed wind generated electricity, hydroelectricity, natural gas for vehicles, electricity for vehicles, and bio-methane generated electricity.

ENERGY STAR

To earn the ENERGY STAR, a home must meet strict guidelines for energy efficiency set by the U.S. Environmental Protection Agency (EPA), making them 20 to 30 percent

more efficient than standard homes. Homes achieve this level of performance through a combination of energy-efficient improvements including insulation systems, high–performance windows, efficient heating and cooling equipment, and qualified lighting and appliances. In Fresno, 4,441 Energy Star qualified homes have been built, which is equivalent to eliminating 124 vehicles from the roadway, planting 205 acres of trees, or saving the environment from 1.5 million pounds of CO_2.

OBJECTIVE

RC-8 Reduce the consumption of non-renewable energy resources by requiring and encouraging conservation measures and the use of alternative energy sources.

IMPLEMENTING POLICIES

RC-8-a **Existing Standards and Programs.** Continue existing beneficial energy conservation programs, including adhering to the California Energy Code in new construction and major renovations.

RC-8-b **Energy Reduction Targets.** Strive to reduce per capita residential electricity use to 1,800 kWh per year and non-residential electricity use to 2,700 kWh per year per capita by developing and implementing incentives, design and operation standards, promoting alternative energy sources, and cost-effective savings.

Commentary: *These targets represent 28 and 30 percent reductions respectively, from the 2010 rate of consumption.*

RC-8-c **Energy Conservation in New Development.** Consider providing an incentive program for new buildings that exceed California Energy Code requirements by fifteen percent.

RC-8-d **Incentives.** Establish an incentive program for residential developers who commit to building all of their homes to ENERGY STAR performance guidelines.

Commentary: *See also Policy RC-7-j on PACE financing for energy efficient retrofits.*

RC-8-e **Energy Use Disclosure.** Promote compliance with State law mandating disclosure of a building's energy data and rating of the previous year to prospective buyers and lessees of the entire building or lenders financing the entire building.

RC-8-f **City Heating and Cooling.** Reduce energy use at City facilities by updating heating and cooling equipment and installing "smart lighting" where feasible and economically viable.

RC-8-g **Revolving Energy Fund.** Create a City Energy Fund which uses first year savings and rebates from completed City-owned energy efficiency projects to provide resources for additional energy projects. Dedicate this revolving fund to the sole use of energy efficiency projects that will pay back into the fund.

RC-8-h **Solar Assistance.** Identify and publicize information about financial mechanisms for private solar installations and provide over-the-counter permitting for solar installations meeting specified standards, which may include maximum size (in kV) of units that can be so approved.

RC-8-i **Renewable Target.** Adopt and implement a program to increase the use of renewable energy to meet a given percentage of the city's peak electrical load within a given time frame.

RC-8-j **Alternative Fuel Network.** Support the development of a network of integrated charging and alternate fuel station for both public and private vehicles, and if feasible, open up municipal stations to the public as part of network development.

RC-8-k **Energy Efficiency Education.** Provide long-term and on-going education of homeowners and businesses as to the value of energy efficiency and the need to upgrade existing structures on the regular basis as technology improves and structures age.

7.6 FARMLAND

Central California is one of the world's premier growing regions, with Fresno at its heart. The San Joaquin Valley is a mature agricultural area, with a well-defined pattern of farming activities. Much of the arable land is devoted to relatively stable crops, such as orchards, vineyards, and other commercial crops.

The conversion of farmland to urban uses is not the only threat to agriculture. When "leapfrog" development (development that is not contiguous to the existing urbanized area) occurs in the midst of agriculture uses, optimal crop production is precluded due to urban/agriculture conflicts. It is common for farmland to suffer disruptions and economic losses, while urban uses also suffer negative effects, such as farm-generated dust, noise and odors. Another problem exists with premature disinvestment of

farmland where future growth is anticipated but development may not occur for several years. Farmland may be purchased or held for its possible urban development value, rather than continue in agriculture production.

Policies in the Plan will help preserve farmland by incentivizing new development within and adjacent to already-urbanized land, only extending public utilities to new development that adheres to the Plan, and not expanding the City's SOI. Additional objectives and policies in this element address the broader planning issues of farmland preservation. The Healthy Communities Element also has more information on urban agriculture and expanding access to fresh, healthy foods.

Fresno is at the heart of one the premier agricultural areas in the world, and the General Plan policies will help preserve farmland.

OBJECTIVE

RC-9 Preserve agricultural land outside of the area planned for urbanization under this General Plan.

IMPLEMENTING POLICIES

RC-9-a **Regional Cooperation.** Work to establish a cooperative research and planning program with the Counties of Fresno and Madera, City of Clovis, and other public agencies to conserve agricultural land resources.

RC-9-b **Unincorporated Land in the Planning Area.** Express opposition to residential and commercial development proposals in unincorporated areas within or adjacent to the Planning Area when these proposals would do any of the following:

- Make it difficult or infeasible to implement the General Plan;
- Contribute to the premature conversion of agricultural, open space, or grazing lands; or
- Constitute a detriment to the management of resources and/or facilities important to the region (such as air quality, water quantity and quality, traffic circulation, and riparian habitat).

RC-9-c **Farmland Preservation Program.** In coordination with regional partners or independently, establish a Farmland Preservation Program. When Prime Farmland, Unique Farmland, or Farmland of Statewide Importance is converted to urban uses outside City limits, this program would require that the developer of such a project mitigate the loss of such farmland consistent with the requirements of CEQA. The Farmland Preservation Program shall provide several mitigation options that may include, but are not limited to the following: Restrictive Covenants or Deeds, In Lieu Fees, Mitigation Banks, Fee Title Acquisition, Conservation Easements, Land Use Regulations, or any other mitigation method that is in compliance with the requirements of CEQA. The Farmland Preservation Program may be modeled after some of all of the programs described by the California Council of Land Trusts.

7.7 MINERAL RESOURCES

This section of the Resource Conservation and Resilience Element is intended to assure that cost-effective locally available mineral resources (such as rock, gravel, and sand for concrete aggregate) are protected for future use by the construction industry, and that extraction of these resources is done in a responsible manner that provides for beneficial end uses of surface mining sites, as required by the California's Surface Mining and Reclamation Act.

Aggregate mineral resources are critical to supporting urban development, as all public and private projects utilize this material for roadway paving, structural elements (foundations), and hardscape (sidewalks, curbing, gutters). Because of the demands that will be made on these mineral resources due to Fresno's projected growth, and because the City has land use authority over designated mineral resource areas, the Plan contains policies relating to mineral resource land and direction for managing mining and post-mining rehabilitation of the land.

Naturally occurring deposits of aggregate minerals must be of sufficient quality to meet engineering material specifications and must be sufficiently concentrated to justify the investment in an extraction and processing site. High-quality aggregate minerals are required for proper formulation of concrete to attain sufficient strength through the curing process. Existing and ancient riverbeds and streambeds are prime areas to look for such high-quality concrete aggregate materials, which consist of sand, gravel, and certain types of rock.

Lower-quality aggregate materials, used for base rock and asphaltic mixtures, also can be recovered from riparian corridors, but may be available in other areas as well. For instance, surface mining for base rock is common on the alluvial fans of the Coast Range along the western edge of the San Joaquin Valley.

Recycling (re-crushing) of concrete extends the available supply of mineral resources but cannot replace mining as a source of these materials. The primary reason for this is that virgin minerals are needed for formulation of concrete. Once minerals undergo the curing reaction once, they are only suited for lower-quality uses such as base rock or asphalt mixtures. Another reason that recycling cannot replace mining is that in a growing area such as Fresno, more new durable structures are created each year than are demolished.

Surface mining operations need to locate in areas where these minerals are sufficiently concentrated–where most of the material excavated consists of the desired materials, and where the mineral deposits can be easily accessed (i.e., there is relatively little "overburden" covering the deposits).

The California Surface Mining and Reclamation Act of 1975 mandates that a "classification/designation" analysis be done to provide information on the availability of mineral resource for construction and growth. The objective is to ensure that raw material will be available when needed—that this raw material will not become inaccessible for mining as the result of inappropriate land use decisions involving mineral resource areas.

The California Department of Conservation Division of Mines and Geology periodically maps high-quality concrete aggregate deposits and compiles statistics on the amount of aggregate minerals available, and consumed, within designated Production-Consumption (P-C) Regions of the State. The Department uses an "MRZ-2" designation for regionally significant deposits of high-grade sand and gravel aggregate (i.e., material suitable for making Portland Cement Concrete). Potential, but presently unproven, mineral resource areas are mapped as MRZ-3. Most of the area outside of the San Joaquin and Kings River Resource Areas has an MRZ-3 designation, and may contain economically recoverable mineral resources. However, those resources may not be of the high quality needed to formulate concrete. The City keeps these maps on file for use in development review and decision-making.

OBJECTIVE

RC-10 Conserve aggregate mineral resources within the Planning Area, as identified by the Division of Mines and Geology, and allow for responsible extraction to meet Fresno's needs.

IMPLEMENTING POLICIES

RC-10-a **Meet Future Needs.** Adopt land use and resource protection regulations that support mining of the high-quality, close-to-market aggregate resources to meet the needs of the Fresno Production-Consumption Region.

RC-10-b **Zoning in San Joaquin Riverbottom.** Maintain zoning consistent with on-going mineral extraction in the San Joaquin Riverbottom that also allows multiple open space uses in conformance with State law and the City's Surface Mining Ordinance.

RC-10-c **Processing-Mining Link.** Accommodate only those mineral processing activities in the San Joaquin Riverbottom that are associated and co-located with mining operations when such industrial activities will sunset with the mining operation and do not stimulate unplanned growth or conversion of multi-use open space to urban uses.

RC-10-d **Manage MRZ-2 Areas.** Prohibit land uses and development projects that preclude mineral extraction in potential high-quality mineral resource areas designated MRZ-2 by the California Department of Conservation Division of Mines and Geology.

RC-10-e **Existing Permits.** Honor surface mining permits approved by the County of Fresno upon annexation, provided that the mining operation is in compliance with the terms of its current permit(s) and State law. Require new permit applications in the event of noncompliance, permit expiration, or permit revocation, and ensure compliance with law or regulations.

RC-10-f **Cooperate on Uniform Criteria.** Work with the County of Fresno, the County of Madera, and the City of Clovis to develop uniform criteria applicable to existing, new, and altered mineral extraction sites in the San Joaquin Riverbottom.

7.8 WASTE REDUCTION

The Public Utilities and Services Element has background information on solid waste collection and disposal and policies related to these systems. This section of the Resource Conservation and Resilience Element contains policies addressing waste reduction.

OBJECTIVE

RC-11 Strive to reduce the solid waste going to landfills to zero by 2035.

IMPLEMENTING POLICIES

RC-11-a **Waste Reduction Strategies.** Maintain current targets for recycling and re-use of all types of waste material in the city and enhance waste and wastewater management practices to reduce natural resource consumption, including the following measures:

- Continue to require recyclable material collection and storage areas in all residential development.
- Establish recycling collection and storage area standards for commercial and industrial facilities to size the recycling areas according to the anticipated types and amounts of recyclable material generated.
- Provide educational materials to residents on how and what to recycle and how to dispose of hazardous waste.
- Provide recycling canisters and collection in public areas where trash cans are also provided.
- Institute a program to evaluate major waste generators and identify recycling opportunities for their facilities and operations.

- Continue to partner with the California Integrated Waste Management Board on waste diversion and recycling programs and the CalMax (California Materials Exchange) program.
- Evaluate the feasibility of a residential, restaurant, and institutional food waste segregation and recycling program, to reduce the amount of organic material sent to landfill and minimize the emissions generated by decomposing organic material.
- Evaluate the feasibility of "carbon footprinting" for the City's wastewater treatment facilities, biomass and composting operations, solid waste collection and recycling programs.
- Expand yard waste collection to divert compostable waste from landfills.
- Study the feasibility and cost-benefit analysis of a municipal composting program to collect and compost food and yard waste, including institutional food and yard waste, using the resulting compost matter for City park and median maintenance.

RC-11-b **Zero Waste Strategy.** Create a strategic and operations plan for fulfilling the City Council resolution committing the City to a Zero Waste goal.

RC-11-c **Industry Efforts.** Support industry efforts to collect and recycle electronics, mattresses, carpets and any other recyclable products to help the region meet goals consistent with the statewide goal of at least 75 percent of all solid waste recycled by January 2020.

This page intentionally left blank.

8 HISTORIC AND CULTURAL RESOURCES ELEMENT

The Historic and Cultural Resources Element of the General Plan recognizes that an aesthetic environment and connections to culture and history are essential characteristics of a community that values its quality of life. The purpose of the Historic and Cultural Resources Element is to provide policy guidance to protect, preserve, and enhance the city's cultural and historic resources.

8.1 CONTEXT

Cultural resources are defined as the collective evidence of the past activities and accomplishments of people. Buildings, objects, features, sites, and structures with scientific, historic, and cultural value are all examples of cultural resources. Cultural resources are finite and non-renewable resources that once destroyed cannot be returned to their original state.

Archaeological resources are places where human activity has measurably altered the earth or left deposits of physical remains. Archaeological resources may be either prehistoric (before the introduction of writing in a particular area) or historic (after the introduction of writing). The majority of such places in this region are associated with either Native American or Euroamerican occupation of the area.

Historic resources are those buildings, structures, objects or sites that are generally 50 years of age and which have significance due to their association with key events, individuals or ethnic groups, or which possess high artistic values. A nineteenth century railroad station, a mid-century modern office building, an early vernacular farmhouse or an ethnic neighborhood, all have the potential to be historic resources.

Contemporary Native American resources, also called ethnographic resources, can include archaeological resources, rock art, and the prominent topographical areas, features, habitats, plants, animals, and minerals that contemporary Native Americans value and consider essential for the preservation of their traditional values.

Relationship to General Plan Goals

Historic preservation is important in economic revitalization and heritage tourism. The adaptive reuse of older buildings is also "green" and contributes to the City's commitment to become fully sustainable. The Historic and Cultural Resources Element's historic resource objectives and policies provide a philosophical context and road map for the City's historic preservation program and are implemented through the City's Historic Preservation Ordinance.

Santa Fe Depot (1899) HP#11 (National Register)
Photo: Karana Hattersley-Drayton

Bing Kong Tong Association Building (1900) HP #066
Photo: Karana Hattersley-Drayton

Del Webb Building (1964)
Photo: Karana Hattersley-Drayton

This Element provides objectives and policies that support the following General Plan goals:

6. Protect, preserve, and enhance natural, historic, and cultural resources.

   Emphasize the continued protection of important natural, historic and cultural resources in the future development of Fresno. This includes both designated historic structures and neighborhoods, but also "urban artifacts" and neighborhoods that create the character of Fresno.

15. Improve Fresno's visual image and enhance its form and function through urban design strategies and effective maintenance.

17. Recognize, respect, and plan for Fresno's cultural, social, and ethnic diversity, and foster an informed and engaged citizenry.

    Emphasize shared community values and genuine engagement with and across different neighborhoods, communities, institutions, businesses and sectors to solve difficult problems and achieve shared goals for the success of Fresno and all its residents.

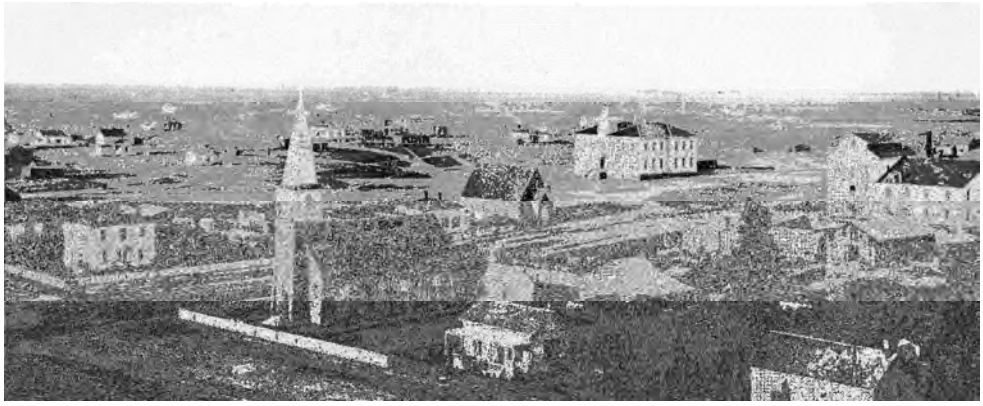
Historic Context

The Yokuts were the first residents of the Fresno area, with small tribes occupying the floodplains of the Big Dry Creek and the Little Dry Creek. There were no missions in the San Joaquin Valley but there were small Mexican era settlements such as Pueblo de las Junta, located at the confluence of the San Joaquin River and the Fresno Slough. The Spanish and Mexican influence is indicated through place names such as "Fresno," which means "ash tree" and which was first applied to the Fresno River. Following the Gold Rush of 1849, miners were drawn to the southern gold fields, and cattle ranchers and dryland farmers moved into the area.

In 1870, the Central Pacific Railroad began its diagonal push down the San Joaquin Valley. The railroad reached what is now Fresno in late April 1872. The location was uninviting at best, with barren sand plains in all directions. The nearest substantial supply of water was the San Joaquin River, 10 miles to the north. In 1872, the Contract and Finance Company, a subsidiary of the railroad, laid out the town in a rigid "gridiron" plan. The town grew slowly but in 1874 wrestled the county seat away from the former mining town of Millerton.

In 1875, the first of many agricultural colonies was developed in Fresno, drawing farming families from around the United States and from Europe. These colonies were constructed with miles of tree-lined boulevards and with water delivered to the individual farms through a lacework of canals, laterals and irrigation ditches.

Fresno was incorporated as a city in 1885, and with incorporation came improvements to the infrastructure. The 1887 boom in agriculture and land values brought prosperity to the community. In 1889 alone, buildings with an estimated value of one million dollars were erected along Mariposa Street in the heart of Downtown. By 1890, the population of Fresno was over 10,000, and land outside the original town site was subdivided into streets and lots. The depression of 1893 had little effect on the city, probably due to its agricultural base.



Fresno Panoramic (c1886)
Photo: Courtesy of Fresno Historical Society Archives

The first horse drawn streetcars were introduced in 1892, and this greater mobility allowed for the construction of a variety of streetcar suburbs. Although the original "parent grid" of Fresno was parallel to the diagonal rail corridor these new subdivisions were surveyed to line up with the agricultural sections. As a consequence odd-shaped triangular lots still exist where the new grids meet the old.

By 1900, Fresno was the market center of what is now the richest farming region in the United States. Emigrants from Scandinavia, China, Japan, Armenia, Russia (Volga Germans), Mexico, and most recently Southeast Asia have contributed to the character and cultural heritage of the area.

Beginning in the early twentieth century, the Downtown was completely transformed, as elegant Victorian-style blocks and hotels were demolished and smaller buildings were eventually refaced with a modern storefront. What emerged was a more rational Classic Revival city, influenced by the latest trends in architectural design emanating from American cities such as New York, Chicago, and San Francisco, as well as international cities such as Paris.

Fresno continued to grow following World War 1, and in 1930, the city had a population of 52,513. While the Great Depression brought hardship to the city, it also resulted in the construction of a series of major civic buildings in the city through Franklin Roosevelt's "alphabet soup" of agencies. For example, the complex of buildings at Fresno's Chandler Airfield/Fresno Municipal Airport was constructed in 1936-7 with funding from the Works Progress Administration.

During and after World War 11, there was a severe housing shortage as thousands of homeless transients arrived in the city, looking for agricultural work. In addition, returning servicemen and their families also needed housing. The first major post-war

subdivision completed was Mayfair, which included the first suburban shopping center. Manchester Center followed in 1955, with Fig Garden Village in 1956. Six blocks of the Downtown were converted to a pedestrian mall in 1964, with a design by landscape architect Garrett Eckbo. However, the suburban flight of the 1960s and the construction of the Fashion Fair shopping complex in 1969 helped lead to the decline of the Fulton Mall and the Downtown area.

Hmong Strawberry Farmer
Courtesy of Joel Pickford

Detail, Pacific Southwest Bank Building (1923) HP #52 Photo: Karana Hattersley-Drayton

Today, Fresno is home to a diverse population, which includes descendants from the city's earliest pioneers and recently arrived immigrants. For many residents, the city still functions as a small town, despite its large size. Residents value the agricultural green belt that surrounds the city, with its geometric fields of grapevines and row crops; the Classic Revival high rise buildings along the Fulton Mall; the city's ethnic diversity; and the opportunities available for improving one's quality of life.

Fresno's Historic and Cultural Resources

HISTORIC AND ARCHITECTURALLY SIGNIFICANT BUILDINGS

As with many California towns of the nineteenth century, Fresno has a wealth of residential architectural styles. Due to fires and redevelopment in Downtown, the earliest building stock is gone, with a few notable exceptions. Examples of the late Queen Anne style survive, while the "Victorian" city has largely disappeared. Other residential building styles that are well represented in Fresno include Craftsman bungalows, Neoclassical cottages, American Foursquare, and Period Revival buildings, such as Tudors and Spanish Eclectic.

Listed on the National Register of Historic Places, the Fresno Memorial Auditorium (HP# 058) was built in 1935 in Downtown Fresno with partial funding from the PWA. For many years during the twentieth century, it was Fresno's most significant cultural facility.
Photo: Karana Hattersley-Drayton

In addition, Fresno has a vernacular tradition of building in adobe and hardpan, including mid-century modern garden office complexes constructed of stabilized adobe brick. Additional important local property types are the extant summer kitchens (*backhaus*) constructed by the Volga Germans, the "bungalow courts" scattered through the city's older neighborhoods and tankhouses tucked behind or adjacent to a farmhouse. The city's rail, agricultural, and ethnic history is imprinted on the landscape and in the resources, both above and below ground, which link residents to their past and provide a design aesthetic for new construction.

HISTORIC PRESERVATION PROGRAMS

In 1979, the City adopted a Historic Preservation Ordinance, which was amended and updated in 1999, 2009, and 2012. The Ordinance established both a citizens' Historic Preservation Commission and a Local Register of Historic Resources, modeled on the U.S. Secretary of the Interior's National Register of Historic Places. The Local Register includes three separate landmark programs: individual designation on the Local Register of Historic Resources, inclusion within a Local Register District, and inclusion in the Heritage Property program. In 2004, Fresno was the first city in California to be designated a "Preserve America Community" by former First Lady Laura Bush. This program recognizes communities that protect and celebrate their heritage, use their

historic assets for economic development and revitalization, and encourage people to experience and appreciate local historic resources through education and heritage tourism programs.

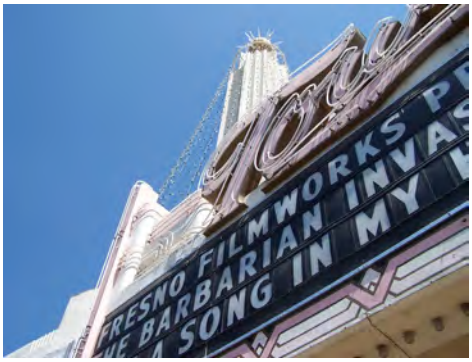
Garden office, 5151 N. Palm Ave. (Stevens and Zellmer)
Photo: Karana Hattersley-Drayton

The City maintains a Local Register of Historic Resources that includes buildings, structures, objects, sites and districts that have sufficient integrity and are significant in Fresno's history. As of January 2014, there were 271 individual properties on the Local Register (over the years several resources have been removed from listing). Local Register properties include the Fresno Buddhist Temple (1920), the Fresno Memorial Auditorium (1935) and the Helm Building (1914).

Twenty-eight buildings and sites on the Local Register are also listed on the National Register of Historic Places. These "crown jewels" of the community include local landmarks such as the Old Fresno Water Tower (1894), the Thomas R. Meux Home (1889) and the streamline modern Tower Theatre (1939). Fourteen properties are also listed as Heritage Properties, such as the 1962 Calwa Rocket.

In addition to individual listings, Fresno has three designated historic districts: the Porter Tract (near Fresno City College), Wilson Island (near the Tower District), and

the Chandler Airfield/Fresno Municipal Airport. At least twelve other districts have been recommended through surveys, community or Specific Plans.



Detail, Tower Theater (1939) HP#190/National Register
Photo: Karana Hattersley-Drayton

Old Fresno Water Tower (1894) HP#001/National Register
Photo: Khaled Alkotob

NATIVE AMERICAN HERITAGE SITES

There have been sixteen Native American archeological sites recorded within the Planning Area by the Southern San Joaquin Valley Information Center (SSJVIC), a depository for information on cultural resources. According to the SSJVIC the probability of finding subsurface cultural resources is considered low to moderate in most areas, with the exception of the waterways. Current and past waterways and their surrounding regions are considered especially sensitive for cultural resources, as indigenous people utilized these areas as permanent villages, temporary camps, and task specific sites.

As part of the General Plan update process, the Native American Heritage Commission (NAHC) conducted a record search of the sacred lands file. The NAHC response listed 11 local Native American tribes that may have historic ties to the Planning Area, and letters of inquiry were sent, along with follow up phone calls, to the 11 tribal representatives; however, no responses were received. Nonetheless, the NAHC has characterized the City of Fresno as being "very sensitive" for potential impacts to Native American sacred sites and prehistoric deposits.

8.2 CITYWIDE HISTORIC AND CULTURAL PRESERVATION

The following policies are intended to maintain and enhance a citywide program for historic and cultural preservation, consistent with the State and Federal Certified Local Government program and State laws and regulations related to historic and cultural resources.

Nothing in the General Plan is intended to identify or designate any significant resources, potential significant resources, significant districts or potential significant districts. Identification and designation of resources and districts shall be done consistent with the City's Historic Preservation Ordinance and State and federal law.

Citywide Program

OBJECTIVE

HCR-1 Maintain a comprehensive, citywide preservation program to identify, protect and assist in the preservation of Fresno's historic and cultural resources.

IMPLEMENTING POLICIES

HCR-1-a **Certified Local Government.** Maintain the City's status as a Certified Local Government (CLG), and use CLG practices as the key components of the City's preservation program.

HCR-1-b **Preservation Office, Commission and Program.** Maintain the Preservation Office, Historic Preservation Commission, and preservation program to administer the City's preservation functions and programs.

HCR-1-c **Historic Preservation Ordinance.** Maintain the provisions of the City's Historic Preservation Ordinance, as may be amended, and enforce the provisions as appropriate.

Identification and Preservation

OBJECTIVE

HCR-2 Identify and preserve Fresno's historic and cultural resources that reflect important cultural, social, economic, and architectural features so that residents will have a foundation upon which to measure and direct physical change.

IMPLEMENTING POLICIES

HCR-2-a **Identification and Designation of Historic Properties.** Work to identify and evaluate potential historic resources and districts and prepare nomination forms for Fresno's Local Register of Historic Resources and California and National registries, as appropriate.

Commentary: *Historic resources include buildings, structures, objects, and sites, as well as cultural and historic landscapes and traditional cultural properties (as defined by State and federal law). Examples of the latter categories include farm complexes, canal systems, signage, gardens, landscaped boulevards, and infrastructure, such as lighting and street furniture. As appropriate, nominations may be forwarded to the State Historic Resources Commission for consideration for the California Register of Historical Resources and/or the National Register of Historic Places. The Historic Preservation Commission is anticipated to play a key role in this process, including the evaluation of historic resources and districts.*

HCR-2-b **Historic Surveys.** Prepare historic surveys according to California Office of Historic Preservation protocols and City priorities as funding is available.

Commentary: *Early actions would be to survey historic resources located within the Bus Rapid Transit corridors slated for development and intensification and within the South Industrial District just south of Downtown. The results of these surveys would be posted on the City's website for use by the public and others interested in the City's historic resources.*

HCR-2-c **Project Development.** Prior to project approval, continue to require a project site and its Area of Potential Effects (APE), without benefit of a prior historic survey, to be evaluated and reviewed for the potential for historic and/or cultural resources by a professional who meets the Secretary of Interior's Qualifications. Survey costs shall be the responsibility of the project developer. Council may, but is not required, to adopt an ordinance to implement this policy.

HCR-2-d **Native American Sites.** Work with local Native American tribes to protect recorded and unrecorded cultural and sacred sites, as required by State law, and educate developers and the community-at-large about the connections between Native American history and the environmental features that characterize the local landscape.

Commentary: *Development on archaeologically sensitive sites requires on-site monitoring by appropriate Native American consultant(s) and a qualified archaeologist for all grading, excavation, and site preparation activities that involve earth-moving operations.*

HCR-2-e **Alternate Public Improvement Standards**. Develop and adopt Alternate Public Improvement Standards for historic landscapes to

ensure that new infrastructure is compatible with the landscape; meets the needs of diverse users, including motorists, cyclists, and pedestrians; and provides for proper traffic safety and drainage.

Commentary: *City of Fresno Historic Preservation Commissioners and staff will work collaboratively to develop Alternate Public Improvement Standards for historic landscapes, such as Kearney Boulevard.*

HCR-2-f **Archaeological Resources.** Consider State Office of Historic Preservation guidelines when establishing CEQA mitigation measures for archaeological resources.

HCR-2-g **Demolition Review.** Review all demolition permits to determine if the resource scheduled for demolition is potentially eligible for listing on the Local Register of Historic Resources. Consistent with the Historic Preservation Ordinance, refer potentially eligible resources to the Historic Preservation Commission and as appropriate to the City Council.

HCR-2-h **Minimum Maintenance Standards.** Continue to support enforcement of the minimum maintenance provisions of the Historic Preservation Ordinance, as may be amended, and enforce the provisions as appropriate.

Commentary: *The City of Fresno's Preservation staff and Commission will coordinate with the Code Enforcement division on enforcement.*

HCR-2-i **Preservation Mitigation Fund.** Consider creating a preservation mitigation fund to help support efforts to preserve and maintain historic and cultural resources.

Commentary: *Preservation mitigation funds are intended to be used for the restoration of historic properties or cultural heritage programming, and may be generated through a plan or program or other qualifying mechanism to allow for payment of fees to reduce impacts from loss of historic resources.*

HCR-2-j **Window Replacement.** City staff will evaluate potential opportunities for identification of window replacements to ensure historic integrity is maintained while encouraging sustainability. In addition, city staff will evaluate window replacements in federally funded housing projects on a project-by-project basis with consideration for health, safety, historic values, sustainability, and financial feasibility.

HCR-2-k **City-Owned Resources.** Maintain all City-owned historic and cultural resources in a manner that is consistent with the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties, as appropriate.

HCR-2-l **City Historic Preservation Team.** Establish an inter-departmental Historic Preservation team to coordinate on matters of importance to history and preservation.

HCR-2-m **Local Register Listing.** Recommend that property owners, who receive funds from the City of Fresno for rehabilitation of a property, consent to listing it on the Local Register of Historic Resources if the property meets the criteria for age, significance, and integrity. Publicly funded rehabilitation properties which may meet Local Register criteria will be presented to the City's Historic Preservation Commission for review.

HCR-2-n **Property Database and Informational System.** Identify all historic resources within the city designated on the Local, State, or National register, and potential significant resources (building, structure, object or site) in existence for at least 45 years, and provide this information on the City's website.

Commentary: *This information will help notify City staff, applicants and the public regarding historic resources and potential historic resources, allowing it to be incorporated into development and other projects at an early stage. Due to the passage of time and the increasing number of sites involved, it is anticipated a significant number of additional potential historic resources may be continually added to the website, and the City will strive to keep the website up to date. Inclusion of potential historic resources on the website does not make them historic resources until formally designated as required by law, and the fact that a potential historic resource is listed or not identified on the website does not preclude the City from subsequently determining it may or may not be a historical resource for the purposes of CEQA.*

8.3 THE NEW CITY BEAUTIFUL

A great city is a mix of older buildings and new buildings, where the past is respected, but change is also considered vital for a healthy community. Historic preservation can play an important role in economic revitalization and heritage tourism. The adaptive reuse of older buildings is prudent and contributes to the City's commitment to

resiliency. In the Fresno Green program, described in the Context section 7.1 of Chapter 7, "New City Beautiful" policies recognize the importance of these philosophical connections by referencing the urban planning principles of the late nineteenth and early twentieth centuries, which linked art, architecture, urban planning, and health.

Fresno's history is rooted in agriculture, which still forms the basis for much of its heritage, industry, and wealth. The preservation of cultural and historic landscapes in general—and the conservation of agricultural lands in particular—is a critical component of protecting and promoting Fresno's identity. A major component of this General Plan is the preservation of nearby agricultural landscapes through the promotion of infill and compact development and the decision not to pursue expansion of the City's Sphere of Influence. The Urban Form, Land Use, and Design Element contains objectives and policies regarding the preservation of agriculture; objectives and policies presented below expand on the specific idea of supporting a New City Beautiful concept.

OBJECTIVE

HCR-3 Promote a "New City Beautiful" ethos by linking historic preservation, public art, and planning principles for Complete Neighborhoods with green building and technology.

IMPLEMENTING POLICIES

HCR-3-a **Adaptive Reuse.** Promote the adaptive reuse and integration of older buildings into new projects as part of the City's commitment to nurturing a sustainable Fresno.

HCR-3-b **Public Art.** Collaborate with the arts community to promote the integration of public art into historic buildings and established neighborhoods. Link arts activities (such as Art Hop) with preservation activities.

HCR-3-c **Context Sensitive Design.** Work with architects, developers, business owners, local residents and the historic preservation community to ensure that infill development is context-sensitive in its design, massing, setbacks, color, and architectural detailing.

Outreach and Education

OBJECTIVE

HCR-4 Foster an appreciation of Fresno's history and cultural resources.

IMPLEMENTING POLICIES

HCR-4-a **Inter-Agency Collaboration.** Foster cooperation with public agencies and non-profit groups to provide activities and educational opportunities that celebrate and promote Fresno's history and heritage.

HCR-4-b **Heritage Tourism and Public Education.** Promote heritage tourism and the public's involvement in preservation through conferences, walking tours, publications, special events, and involvement with the local media.

HCR-4-c **Training and Consultation.** Provide training, consultation, and support in collaboration with Historic Preservation Commissioners to community members regarding Fresno's history, use of the U.S. Secretary of the Interior's Standards, and the California Historical Building Code, as time and resources allow.

HCR-4-d **Public Archives.** Maintain public archives that include information on all designated historic properties, as well as historic surveys, preservation bulletins, and general local history reference materials. Post survey reports, Historic Preservation Commission minutes and agendas, and other information of public interest on the historic preservation page of the City's website.

HCR-4-e **Preservation Awards.** Continue to recognize the best work in preservation and neighborhood revitalization as may be appropriate through programs such as the biennial Mayoral Preservation Awards program.

HCR-4-f **Economic Incentives.** Investigate the potential for developing a Mills Act program and possible sources of funding for the Historic Rehabilitation Financing Program.

The H.H. Brix Mansion (1919) HP #089
Photo: Karana Hattersley-Drayton

9 NOISE AND SAFETY

The purpose of the Noise and Safety Element is to identify the natural and man-made public health and safety hazards that exist within the Planning Area, and to establish preventative and responsive objectives and policies and programs to mitigate their potential impacts. Specifically included are strategies to mitigate noise impacts from new development and direction for noise mitigation. Hazards that are addressed include geologic and seismic hazards, flooding, wildland fires, hazardous materials, and airport safety.

9.1 CONTEXT

The noise section of this element identifies existing noise sources within the Planning Area and establishes policies, standards and programs to mitigate potential impacts through design and performance measures. This element contains policies that guide the location of industrial land uses and transportation facilities, since they are common sources of excessive noise levels, as well as the location of noise sensitive uses, such as residences, schools, churches, and hospitals.

This element also addresses safety issues, including seismic and geologic hazards, flood hazards, wildfire hazards, hazardous materials, airport safety, emergency response, and safety services. It includes policies on natural hazards mitigation planning, which respond to the Federal Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency's implementing regulations and support the County's Multi-Jurisdictional Local Hazard Mitigation Plan, which the City has adopted.

Relationship to General Plan Goals

The objectives and policies of this element support the following General Plan goals:

9. Promote a city of healthy communities and improve quality of life in established neighborhoods.

   Emphasize supporting established neighborhoods in Fresno with safe, well maintained, and accessible streets, public utilities, education and job training, proximity to jobs, retail services, health care, affordable housing, youth development opportunities, open space and parks, transportation options, and opportunities for home grown businesses.

16. Protect and improve public health and safety.

9.2 NOISE

California Government Code Section 65302(f) requires that general plans contain a Noise Element to identify and quantify potential noise problems and to provide effective policies for noise control and mitigation.

Noise Characteristics and Measurement

Noise is commonly defined as undesirable or unwanted sound. Noises vary widely in their scope, source, and volume, ranging from individual occurrences such as leaf blowers, to the intermittent disturbances of overhead aircraft, to the fairly constant noise generated by traffic on freeways. Three aspects of community noise are used in assessing the noise environment:

- *Level* (e.g., magnitude or loudness). Sound levels are measured and expressed in decibels (dB) with 10 dB roughly equal to the threshold of hearing. Figure NS-1 shows the decibel levels associated with different common sounds. Transient noise events may be described by their maximum A-weighted noise level (dBA).
- *Frequency* composition or spectrum. Frequency is a measure of the pressure fluctuations per second, measured in units of hertz (Hz). The characterization of sound level magnitude with respect to frequency is the sound spectrum, often described in octave bands, which divide the audible human frequency range (e.g., from 20 to 20,000 Hz) into ten segments.
- *Variation* in sound level with time, measured as noise exposure. Most community noise is produced by many noise sources that change gradually throughout the day and produce a relatively steady background noise having no identifiable source. People may become habituated to moderate continuous transportation-generated noise, such as that generated by roadways. Identifiable events of brief duration, such as aircraft flyovers and the passage of freight trains, are more noticeable because they cause the community noise level to vary episodically instead of gradually. A single number called the equivalent sound level or "L_{eq}" describes the average noise exposure level over a period of time. Analysis of noise for planning purposes uses descriptors which emphasize the effect of night time noise, because during that time noise is perceived as more disruptive because background noise levels are generally lower than in the daytime, making outside noise intrusions more noticeable.

These weighted noise descriptors include:

- Community Noise Equivalent Level (CNEL) which reflects a 24-hour average of ambient sound but adds a five percent weighting factor for both evening (7 to 10 p.m.) and night-time (10 p.m. to 7 a.m.) sound; and

- Day-Night Average Level (L_{dn}) which reflects a 24-hour average of ambient sound but adds a 10 percent weighting factor for sound occurring during night-time hours (10 p.m. to 7 a.m.).

Both CNEL and L_{dn} reflect noise exposure over an average day with weighting to reflect the increased sensitivity to noise during the evening and night. The two descriptors are roughly equivalent. The CNEL descriptor is used in relation to major continuous noise sources, such as aircraft or traffic, and is the reference level for the Noise Element under State planning law. The general practice is to identify noise contours around transportation facilities such as airports, rail lines, highways, and major streets, and to identify noise levels at property lines from stationary sources such as industrial equipment.

Knowledge of the following relationships is helpful in understanding how changes in noise and noise exposure are perceived:

- Except under special conditions, a change in sound level of 1 dB cannot be perceived;
- A 3 dB change is considered a just-noticeable difference;
- A 5 dB change is required before any noticeable change in community response would be expected. A 5 dB increase is often considered a significant impact; and
- A 10 dB increase is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

Forty-five dBA is usually set as the limit on indoor noise detectable from outdoor sound sources. Sixty dBA is considered to be the sound level of normal conversation and levels within this range are often used as a limit on outdoor ambient noise levels for suburban residential areas. Outdoor ambient noise levels are permitted to be higher for urban areas and commercial sites, and higher still for industrial areas.

Noise Generation in Fresno

In the urban environment, noise generators, such as transportation corridors and industrial uses, occur in close proximity to sensitive noise receivers, such as residential uses. Some land uses potentially constitute both a noise generator and a simultaneous noise receiver, e.g., recreational sites. Fresno has special noise considerations because it has grown up around two major rail corridors, and many freight trains run through the heart of the city daily. Fresno contains three airports and has four State highways that traverse it, as well as major streets at half-mile and one-mile grid intervals, carrying large volumes of passenger vehicle

and truck traffic. Industrial and public facilities in and around the city also generate noise from processing materials and from the operation of equipment such as large pumps and backup generators. Residential and commercial uses also contribute noise from smaller equipment, such as swimming pool pumps, air conditioning units, and compressors for refrigeration.

Industrial and public facilities in and around Fresno can generate noise, and the City requires enclosure, muffling, and/or extra setbacks for stationary noise sources so that nearby properties are not exposed to excessive noise levels.

Longstanding City policy for stationary sources has been to require enclosure, muffling, and/or greater setbacks so that adjacent properties are not exposed to excessive noise levels. Nuisance noise abatement has been accomplished through the City's Noise Ordinance. Noise from transportation facilities has been controlled primarily by State and federal standards but also by distancing sensitive uses from these facilities, and by use of sound-proofing construction measures, such as masonry walls and sealed buildings.

Title 24 of the California Building Code sets out energy conservation requirements, which have also greatly helped mitigate indoor noise levels by requiring dual-pane windows and additional insulation in buildings. Federal Aviation Administration regulations for airports have supported planning and zoning designations, which have kept sensitive uses away from the noise attendant upon flight paths. Each of the three airports in

Fresno has its own noise policies and land use compatibility criteria, all of which are incorporated into this Plan.

Figure NS-1: Typical Sound Levels

Outdoor Sound Levels

Threshold of Pain
Military Jet Takeoff with Afterburner at 50 feet

Ambulance Siren at 10 feet

Pile Driver at 50 feet
Gas Lawnmower at 3 feet
Sports Boat at 100 feet
Diesel Truck at 50 feet
Concrete Mixer at 50 feet
Leaf Blower at 50 feet

Commercial / Urban Area, Daytime
Urban Expressway at 300 feet
Suburban Area, Daytime

Quiet Urban Area, Nighttime
Quiet Suburban Area, Nighttime
Quiet Rural Area, Nighttime

Leaves Rustling
Quiet Wilderness Area, No Wind

Threshold of Human Hearing

Decibels (dBA)

140
130
120
110
100
90
80
70
60
50
40
30
20
10
0

Indoor Sound Levels

Threshold of Pain

Rock Band Concert
Night Club with Live Music

Food Blender at 3 feet
Noisy Restaurant

Garbage Disposal at 3 feet
Vaccuum Cleaner at 10 feet
Normal Conversation at 3 feet
Active Office Environment

Quiet Office Environment
Dishwasher, Next Room

Library
Quiet Bedroom, Nighttime
Concert Hall, Background

Recording Studio
Threshold of Human Hearing

Source: URS, 2010.

Existing Noise Levels

The existing noise conditions in the City were measured at nine locations from May 30 to June 1, 2012. Noise monitoring sites were selected to be representative of typical residential, commercial, and industrial sites within the Planning Area, as well as arterial roadways, elevated and below-grade freeways, and railroad crossings with and without train horn soundings. At each of the nine long-term 24-hour noise monitoring sites, day-night statistical noise level trends were recorded to develop L_{dn} values. Descriptions of each location and the measured noise levels are listed in Table 9-1.

TABLE 9-1: MEASURED EXISTING NOISE LEVELS[1]

	Noise Level (dBA L_{dn})
Railroad crossing at Shields Ave.	84
Along Railroad near W. Barstow Ave.	74
SR 41 between W. Barstow & W. Shaw Ave.	76
SR 180 near N. Peach Ave.	76
E. Shaw Ave. near N. Cedar Ave.	72
N. Blackstone Ave. near E. Ashlan Ave.	70
S. Elm Ave. near E. Jensen Ave.	68
N. Valentine Ave. between W. Ashlan & W. Holland Ave.	67
S .Fruit Ave. north of Church Ave.	65

1. Values provided have been normalized to the reference distance of 100 feet.

Existing noise levels in the city are principally generated by transportation noise sources (refer to Figure NS-2: Existing Noise Contours). Vehicular traffic noise is the dominant source in most areas, but aircraft and rail activity are also significant sources of environmental noise in the local areas surrounding these operations. In several locations, industrial noise was clearly audible. However, overall average daily noise levels at existing nearby noise-sensitive receptors (e.g., residential areas) typically consist of traffic noise primarily and industrial noise secondarily. New noise-sensitive developments in close proximity to industrial land uses could be exposed to greater industrial noise levels.

Traffic Noise

The level of highway traffic noise depends on three factors: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic. Vehicle noise is a combination of the noises produced by the engine, exhaust, tires, and wind generated by taller vehicles. Other factors that affect the perception of traffic noise include: distance from the highway, terrain, vegetation, pavement type and condition, and natural and structural

obstacles. While tire noise from autos is generally located at ground level, truck noise sources can be located as high as 10 to 15 feet above the roadbed due to tall exhaust stacks and higher engines.

Future noise exposure contours for Fresno's major roadways were modeled by applying the Federal Highway Administration's noise modeling procedure, using roadway, speed, and traffic mix data from the City and projected traffic volumes based on anticipated development under the General Plan.

In establishing noise contours for land use planning, it is customary to ignore noise attenuation afforded by buildings, roadway elevations, and depressions, and the barrier effect of natural terrain features. The result is a worst-case estimate of the existing and future (projected) noise environment. The assumption is that it is more desirable to overestimate the potential noise at a future noise-sensitive development site than to underestimate the noise environment and allow for potentially incompatible land-use development. The developed noise contours for the City are conservative, meaning that the contours are modeled with minimal noise attenuation by natural barriers, buildings, with the exception of significantly depressed sections of highways.

Future development within the Planning Area will result in increased traffic volumes, thus increasing noise levels in some areas (refer to Figure NS-3: Future Noise Contours). For example, future noise levels along highways are projected to increase by two to five decibels, while noise levels along most existing roadways are projected to increase by one to five decibels. New roadways, significantly expanded roadways, or sparsely populated areas where significant new development may also experience an increase in noise levels by more than five decibels. While there will be increases in some noise levels, efforts can be taken to help minimize such instances. For example, siting noise sensitive uses away from high-noise areas (e.g., major transportation routes) and buffering noise through design will help minimize future noise-related land use conflicts.

Railroad Operations Noise

Railroad activity in Fresno primarily occurs along two rail corridors, however there are also several spur lines. Warning horns generally are signaled within one-quarter mile of a grade crossing, although the area around the Community Regional Medical Center in downtown is designated as a quiet zone. Where grade crossings exist, and warning horns and crossing alarms are signaled, individual single event noise levels associated with a train generally reach 105 dBA to 110 dBA at a distance of 100 feet from the track centerline. Away from grade crossings, train pass-by noise levels are lower, typically 85 dBA to 90 dBA at a distance of 100 feet.

Airport Noise

There are two public airports in the Planning Area, Fresno-Yosemite International Airport and Fresno Chandler Executive Airport, and one private airport open to public use, Sierra Sky Park. In conjunction with Fresno-Yosemite International Airport, the Air National Guard maintains an airbase for military flight and training operations.

Each airport has its own City of Fresno airport land use plan designed to provide for public safety. In addition, the Fresno County Airport Land Use Commission (ALUC) must prepare an Airport Land Use Compatibility Plan (ALUCP) as required by the Caltrans Division of Aeronautics for each airport. ALUC and the Federal Aviation Administration (FAA) provide guidance to local jurisdictions on determining appropriate and compatible adjacent land uses through the detailed findings and policies of ALUCPs. Among other objectives, these airport plans strive to minimize the effects of aircraft noise on communities adjacent to airports and prevent uses incompatible with airport operations from locating near the airport. This General Plan and all other City land use plans must either be compatible with the adopted ALUCP or make a statement of overriding consideration justifying its incompatibility.

Figures NS-4 through 6 depict each airport's noise and safety zones that have been established to identify the compatibility criteria to apply to any given project proposed within the airport's compatibility zones. The noise contours shown on the maps are developed following Federal Aviation Regulation (FAR) Part 150 *Airport Noise Compatibility Planning*. The Part 150 program is designed to lessen the effect of airport noise on the surrounding community as development is proposed around an airport or

the airport is modified or expanded. The specific criteria applied for each contour can be found in each airport's ALUCP, both the City's and the one prepared by the ALUC.

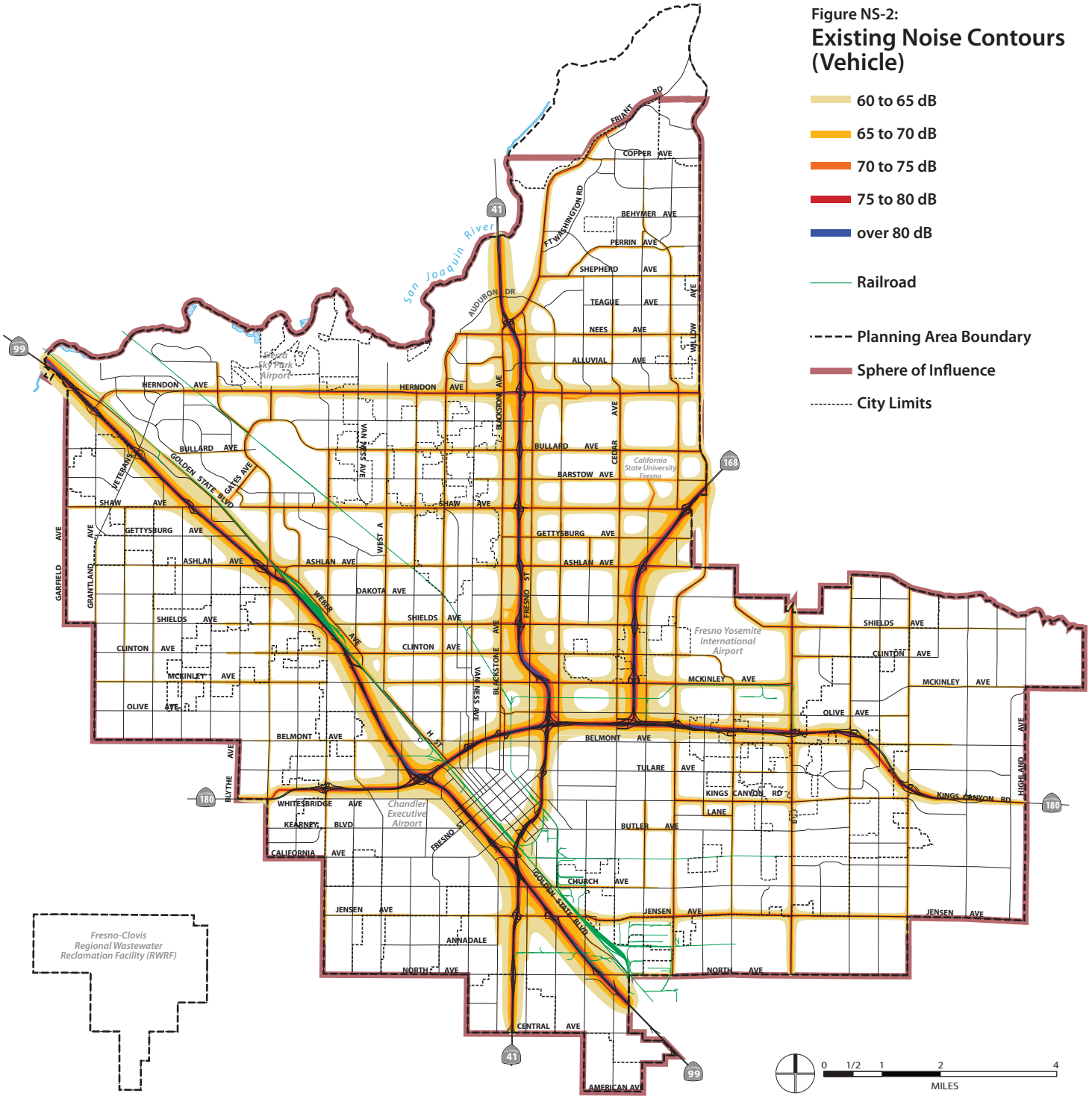
Major Stationary Noise Sources

Noise can result from many industrial processes, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by federal and State employee health and safety regulations set by the Occupational Safety and Health Administration (OSHA) and Cal-OSHA, but exterior noise levels may exceed locally acceptable standards. Commercial, recreational, and public service facility activities can also produce noise that affects adjacent sensitive land uses. These noise sources can be continuous and may contain tonal components that may be annoying to individuals who live nearby. In addition, noise generation from fixed noise sources may vary based upon climatic conditions, time of day and existing ambient noise levels.

Industrial uses in Fresno are typically located in industrial districts near freeways and commercial uses, away from residences and other sensitive noise receptors. Noise sources associated with service commercial uses such as automotive repair facilities, wrecking yards, tire installation centers, car washes, loading docks, etc., are found at various locations within the city. The noise emissions of these types of uses are dependent on many factors and are therefore difficult to quantify precisely. Nonetheless, noise generated by the these uses contributes to the ambient noise environment in immediate vicinity of these uses and should be considered where either new noise-sensitive uses are proposed nearby or where similar uses are proposed in existing residential areas.

Figure NS-2:

Existing Noise Contours (Vehicle)

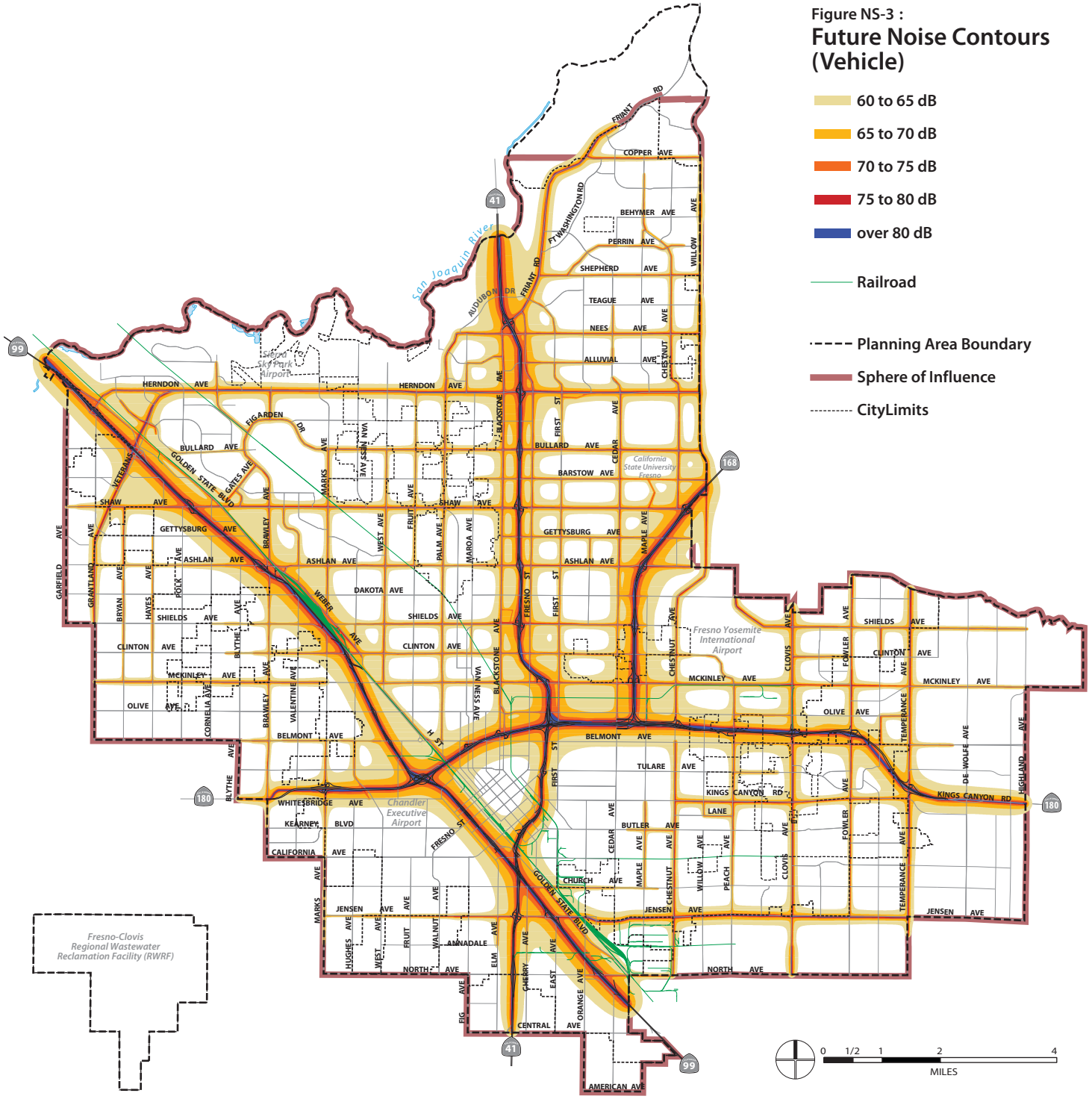


Note: The Fresno Air National Guard Base, a military airport, and the Fresno Yosemite International Airport are located in the area represented as Fresno Yosemite International Airport.

Source: City of Fresno, 2011; Salter Associates, 2012
Dyett & Bhatia, 2012.

Figure NS-3 :

Future Noise Contours (Vehicle)

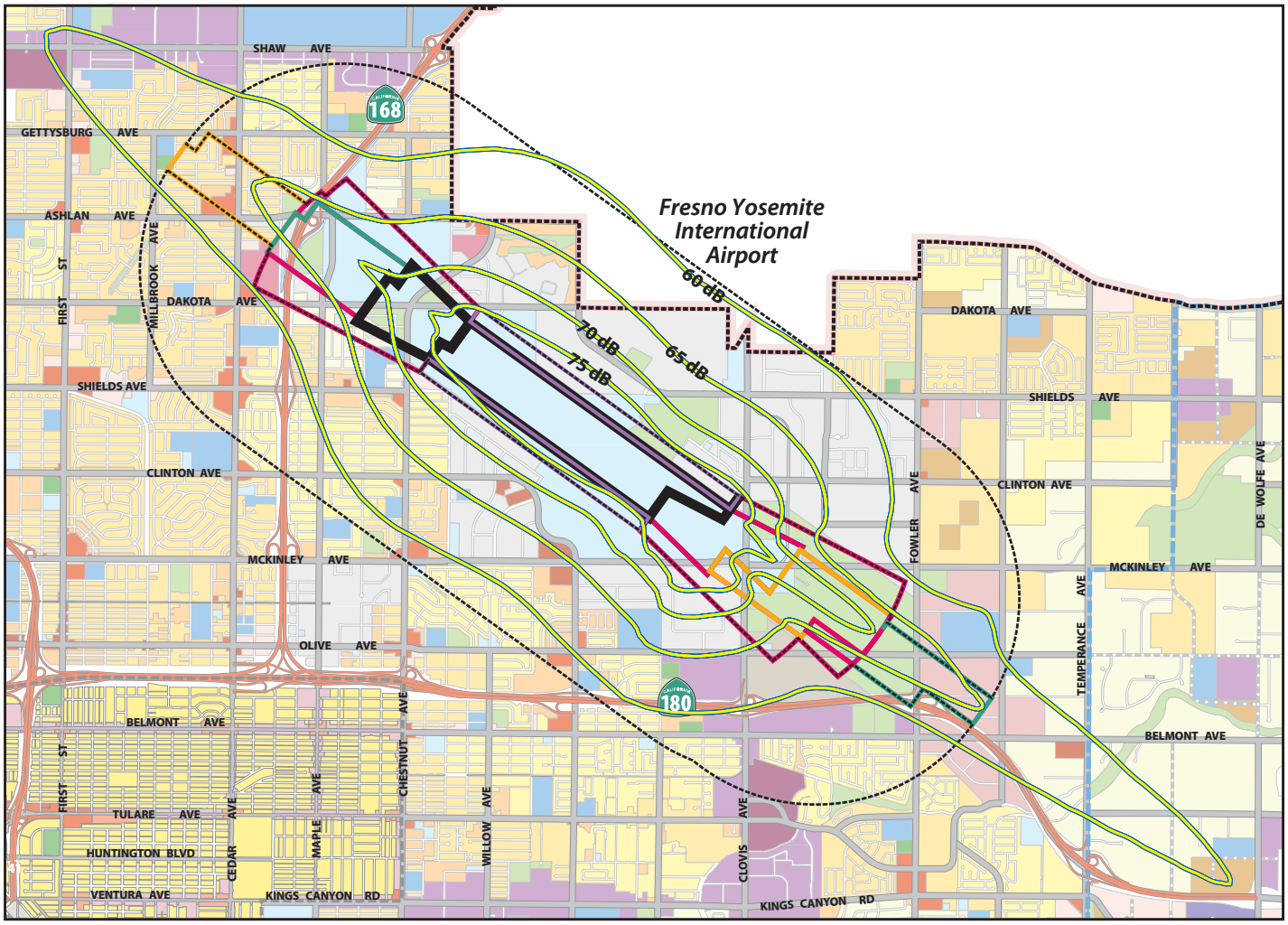


Note: The Fresno Air National Guard Base, a military airport, and the Fresno Yosemite International Airport are located in the area represented as Fresno Yosemite International Airport.

Source: City of Fresno, 2011; Salter Associates, 2012 Dyett & Bhatia, 2012.

Figure NS-4:

Existing Fresno Yosemite International Airport Noise and Safety Zones



0 1/2 1 2
MILES

Safety Zones

- Zone 1 RPZ
- Zone 2 Inner Approach/Departure
- Zone 3 Inner Turning
- Zone 4 Outer Approach/Departure
- Zone 5 Sideline
- Zone 6 Traffic Pattern

Noise Contours

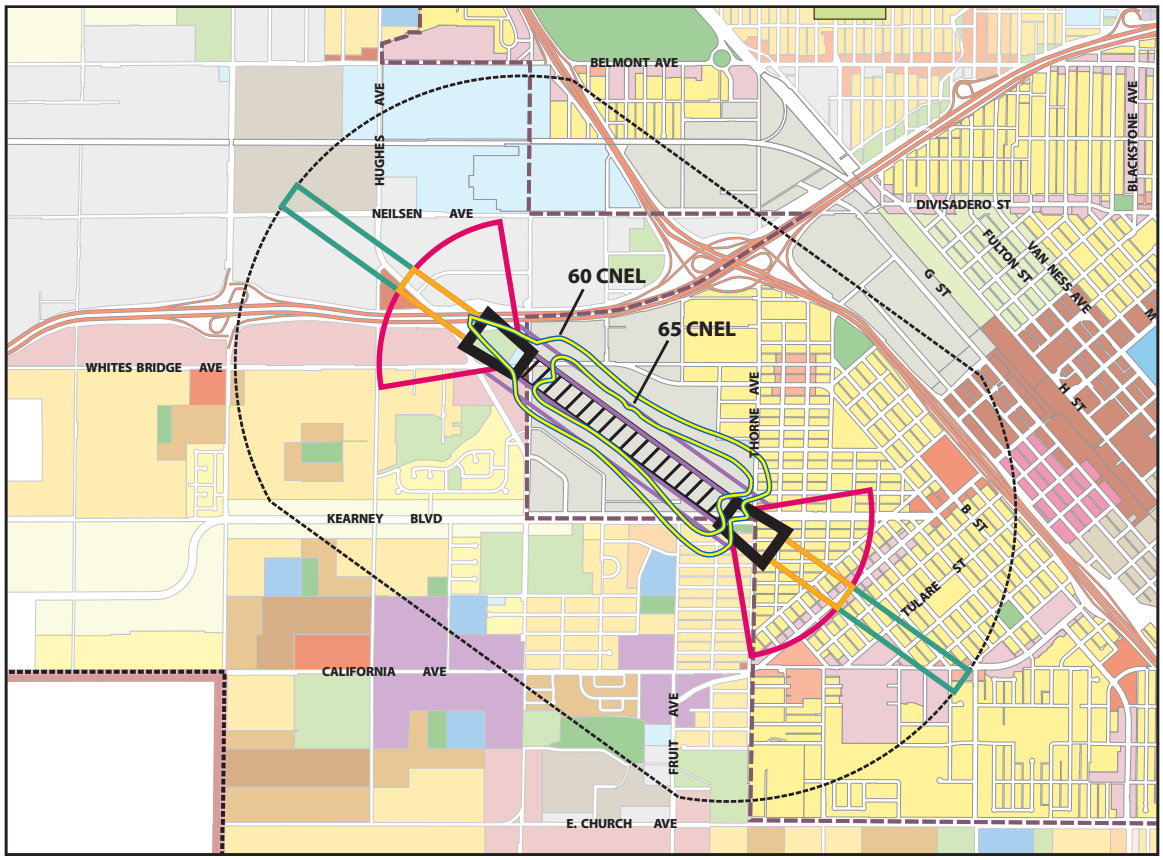
- 75 dB

- Planning Area
- Sphere of Influence
- City Limits

Source: City of Fresno, 2014.

Figure NS-5:

Existing Fresno Chandler Executive Airport Noise And Safety Zones



Safety Zones

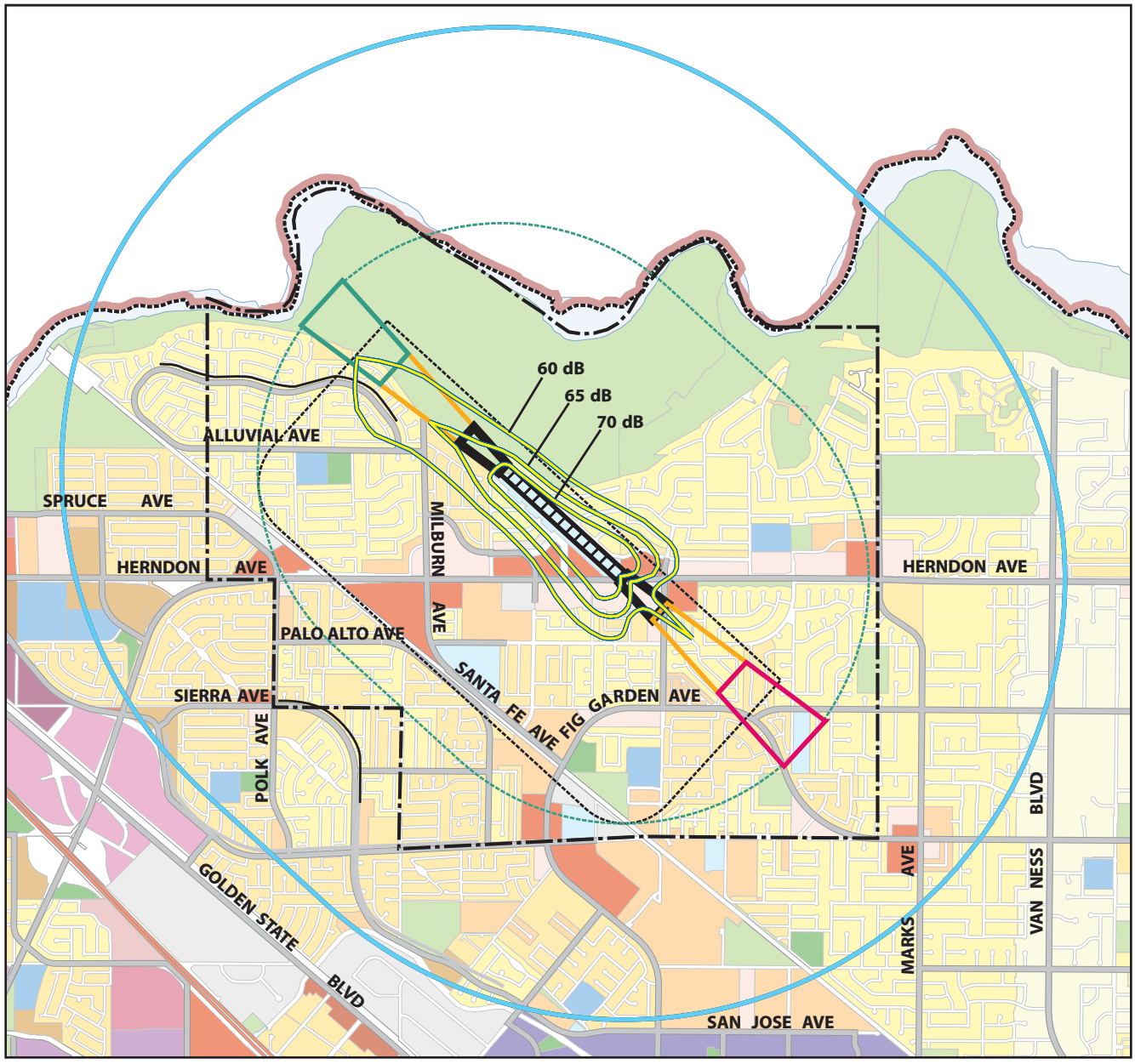
- Primary Surface
- Runway Proction Zone
- Inner Approach Zone
- Inner Turning Zone
- Outer Approach Zone
- Sideline Zone
- Traffic Pattern Zone

- **Noise Contours**
- Planning Area
- Sphere of Influence
- City Limits
- Downtown Planning Area

Source: City of Fresno, 2014.

Figure NS-6:

Existing Sierra Skypark Airport Noise and Safety Zones



Source: City of Fresno, 2014.

There are numerous park and school uses within the city. Noise generated by these uses depends on the age and number of people utilizing the respective facility at a given time and the types of activities they are engaged in. School playing field activities tend to generate more noise than those of neighborhood parks, as the intensity of school playground usage tends to be higher. At a distance of 100 feet from an elementary school playground being used by 100 students, average and maximum noise levels of 60 and 75 dB, respectively, can be expected. At organized events such as high-school football games with large crowds and public address systems, the noise generation is often significantly higher. As with service commercial uses, the noise generation of parks and school playing fields is variable.

Noise Control – Maximum Noise Level Standards

With the proposed intensification of land uses in the city, noise control will be an increasing consideration for infrastructure and new development, particularly for infill residential projects. Major cities in California commonly consider maximum noise levels of 65 dB to be considered “normally acceptable” for unshielded residential development including outdoor space in an urban environment. Suburban and rural jurisdictions tend to prefer a 60 dB or lower threshold for residential areas. Noise levels from 65 dB to 70 dB fall within the “conditionally unacceptable” range, and those in the 70 to 75 dB range are considered “normally unacceptable.”

The General Plan is consistent with noise control practice in urban areas, employing 60 dB as being a desirable level, but accepting 65 dB as being in the “normally acceptable” range for noise due to the number of transportation sources located in proximity to urban residential areas. This policy supports the development of infill residential projects, as well as non-residential infill projects by setting a realistic, achievable threshold of impact for new development.

Section 10-101 of the City’s Municipal Code contains the City’s Noise Ordinance, which establishes excessive noise guidelines and exemptions. Standards are set for ambient noise based on district type (residential, commercial, and industrial) and time of day. Upon adoption of the new noise limits and policies proposed in this General Plan Update, the City will commence an update of its Noise Ordinance to provide regulatory consistency with adopted policies.

Acceptable ranges for exterior noise levels in the Noise Ordinance will be updated to be consistent with this General Plan. This update will need to increase the threshold in residential districts to 65 decibels and adjust noise limits for other planned uses. The updated Noise Ordinance will also specify maximum hourly noise levels for outdoor activity areas and indoor spaces measurement standards; uniform guidelines for acoustical studies based on current professional standards; required noise mitigation standards and enforcement procedures for stationary noise sources which cause the allowable noise limits to be exceeded. Finally, the Noise Ordinance will establish performance standards for noise reduction for new developed property that may be exposed to community noise levels exceeding target acceptable noise levels for outdoor activity levels and interior spaces.

TABLE 9-2: TRANSPORTATION (NON-AIRCRAFT) NOISE SOURCES

Noise-Sensitive Land Use[1]	Outdoor Activity Areas[2]	Interior Spaces	
	L_{dn}/CNEL, dB	L_{dn}/CNEL, dB	L_{eq} dB[2]
Residential	65	45	-
Transient Lodging	65	45	-
Hospitals, Nursing Homes	65	45	-
Theaters, Auditoriums, Music Halls	-	-	35
Churches, Meeting Halls	65	-	45
Office Buildings	-	-	45
Schools, Libraries, Museums	-	-	45

1. Where the location of outdoor activity areas is unknown or is not applicable, the exterior noise level standard shall be applied to the property line of the receiving land use.
2. As determined for a typical worst-case hour during periods of use.

TABLE 9-3: STATIONARY NOISE SOURCES[1]

	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
Hourly Equivalent Sound Level (Leq), dBA	50	45
Maximum Sound Level (Lmax), dBA	70	60

1. The Department of Development and Resource Management Director, on a case-by-case basis, may designate land uses other than those shown in this table to be noise-sensitive, and may require appropriate noise mitigation measures.
2. As determined at outdoor activity areas. Where the location of outdoor activity areas is unknown or not applicable, the noise exposure standard shall be applied at the property line of the receiving land use. When ambient noise levels exceed or equal the levels in this table, mitigation shall only be required to limit noise to the ambient plus five dB.

OBJECTIVE

NS-1 Protect the citizens of the City from the harmful and annoying effects of exposure to excessive noise.

IMPLEMENTING POLICIES

NS-1-a **Desirable and Generally Acceptable Exterior Noise Environment.** Establish 65 dB_A L_{dn} or CNEL as the standard for the desirable maximum average exterior noise levels for defined usable exterior areas of residential and noise-sensitive uses for noise, but designate 60 dB_A L_{dn} or CNEL (measured at the property line) for noise generated by stationary sources impinging upon residential and noise-sensitive uses. Maintain 65 dB_A L_{dn} or CNEL as the maximum average exterior noise levels for non-sensitive commercial land uses, and maintain 70 dB_A L_{dn} or CNEL as maximum average exterior noise level for industrial land uses, both to be measured at the property line of parcels where noise is generated which may impinge on neighboring properties.

Commentary: *The Noise Ordinance will define usable exterior areas for single family and multiple family residential and noise sensitive uses to include rear yards and other outdoor areas intended to accommodate leisure or active use, excluding front or side yard areas, and front or side porches. Balconies or roof decks facing front and side yards shall be included in designated areas to be protected from noise where these spaces are used to calculate compliance with required outdoor living area as required by adopted development standards.*

NS-1-b **Conditionally Acceptable Exterior Noise Exposure Range.** Establish the conditionally acceptable noise exposure level range for residential and other noise sensitive uses to be 65 dB L_{dn} or require appropriate noise reducing mitigation measures as determined by a site specific acoustical analysis to comply with the desirable and conditionally acceptable exterior noise level and the required interior noise level standards set in Table 9-2.

NS-1-c **Generally Unacceptable Exterior Noise Exposure Range.** Establish the exterior noise exposure of greater

than 65 dB L_{dn} or CNEL to be generally unacceptable for residential and other noise sensitive uses for noise generated by sources in Policy NS-1-a, and study alternative less noise-sensitive uses for these areas if otherwise appropriate. Require appropriate noise reducing mitigation measures as determined by a site specific acoustical analysis to comply with the generally desirable or generally acceptable exterior noise level and the required 45 dB interior noise level standards set in Table 9-2 as conditions of permit approval.

NS-1-d **Allowable Exterior Noise Environment for BRT and Activity Centers.** Exclude residential and noise sensitive uses located along Bus Rapid Transit corridors or within Activity Centers identified by this General Plan, from exterior noise standards in Policies NS-1-a through NS-1-c where it is determined application of noise mitigation measures will be detrimental to the realization of the General Plan's mixed use policies.

***Commentary**: Interior noise level standards of Table 9-2 will still apply.*

NS-1-e **Update Noise Ordinance.** Update the Noise Ordinance to ensure that noise exposure information and specific standards for both exterior and interior noise and measurement criteria are consistent with this General Plan and changing conditions within the city and with noise control regulations or policies enacted after the adoption of this element.

NS-1-f **Performance Standards.** Implement performance standards for noise reduction for new residential and noise sensitive uses exposed to exterior community noise levels from transportation sources above 65 dB L_{dn} or CNEL, as shown on Figure NS-3: Future Noise Contours, or as identified by a project-specific acoustical analysis based on the target acceptable noise levels set in Tables 9-2 and Policies NS-1-a through NS-1-c.

NS-1-g Noise mitigation measures which help achieve the noise level targets of this plan include, but are not limited to, the following:

- Façades with substantial weight and insulation;
- Installation of sound-rated windows for primary sleeping and activity areas;
- Installation of sound-rated doors for all exterior entries at primary sleeping and activity areas;
- Greater building setbacks and exterior barriers;
- Acoustic baffling of vents for chimneys, attic and gable ends;
- Installation of mechanical ventilation systems that provide fresh air under closed window conditions.

The aforementioned measures are not exhaustive and alternative designs may be approved by the City, provided that a qualified Acoustical Consultant submits information demonstrating that the alternative design(s) will achieve and maintain the specific targets for outdoor activity areas and interior spaces.

NS-1-h **Interior Noise Level Requirement.** Comply with the State Code requirement that any new multifamily residential, hotel, or dorm buildings must be designed to incorporate noise reduction measures to meet the 45 dB L_{dn} interior noise criterion, and apply this standard as well to all new single-family residential and noise sensitive uses.

NS-1-i **Mitigation by New Development.** Require an acoustical analysis where new development of industrial, commercial or other noise generating land uses (including transportation facilities such as roadways, railroads, and airports) may result in noise levels that exceed the noise level exposure criteria established by Tables 9-2 and 9-3 to determine impacts, and require developers to mitigate these impacts in conformance with Tables 9-2 and 9-3 as a condition of permit approval through appropriate means.

Noise mitigation measures may include:

- The screening of noise sources such as parking and loading facilities, outdoor activities, and mechanical equipment;

- Providing increased setbacks for noise sources from adjacent dwellings;
- Installation of walls and landscaping that serve as noise buffers;
- Installation of soundproofing materials and double-glazed windows; and
- Regulating operations, such as hours of operation, including deliveries and trash pickup.

Alternative acoustical designs that achieve the prescribed noise level reduction may be approved by the City, provided a qualified Acoustical Consultant submits information demonstrating that the alternative designs will achieve and maintain the specific targets for outdoor activity areas and interior spaces. As a last resort, developers may propose to construct noise walls along roadways when compatible with aesthetic concerns and neighborhood character. This would be a developer responsibility, with no City funding.

NS-1-j **Significance Threshold.** Establish, as a threshold of significance for the City's environmental review process, that a significant increase in ambient noise levels is assumed if the project would increase noise levels in the immediate vicinity by 3 dB L_{dn} or CNEL or more above the ambient noise limits established in this General Plan Update.

Commentary*: When an increase in noise would result in a "significant" impact (increase of three dBA or more) to residents or businesses, then noise mitigation would be required to reduce noise exposure. If the increase in noise is less than three dBA, then the noise impact is considered insignificant and no noise mitigation is needed.*

By setting a specific threshold of significance in the General Plan, this policy facilitates making a determination of environmental impact, as required by the California Environmental Quality Act. It helps the City determine whether (1) the potential impact of a development project on the noise environment warrants mitigation, or (2) a statement of overriding considerations will be required.

NS-1-k **Proposal Review.** Review all new public and private development proposals that may potentially be affected by or cause a significant increase in noise levels, per Policy NS-1-i, to determine conformance with the policies of this Noise Element. Require developers to reduce the noise impacts of new development on adjacent properties through appropriate means.

NS-1-l **Enforcement.** Continue to enforce applicable State Noise Insulation Standards and Uniform Building Code noise requirements, as adopted by the City.

NS-1-m **Transportation Related Noise Impacts.** For projects subject to City approval, require that the project sponsor mitigate noise created by new transportation and transportation-related stationary noise sources, including roadway improvement projects, so that resulting noise levels do not exceed the City's adopted standards for noise-sensitive land uses.

NS-1-n **Best Available Technology.** Require new noise sources to use best available control technology to minimize noise emissions.

***Commentary**: Noise from mechanical equipment can be reduced by soundproofing materials and sound-deadening installation; controlling hours of operation will also reduce noise impacts during the morning or evening.*

NS-1-o **Sound Wall Guidelines.** Acoustical studies and noise mitigation measures for projects shall specify the heights, materials, and design for sound walls and other noise barriers. Aesthetic considerations shall also be addressed in these studies and mitigation measures such as variable noise barrier heights, a combination of a landscaped berm with wall, and reduced barrier height in combination with increased distance or elevation differences between noise source and noise receptor, with a maximum allowable height of 15 feet. The City will develop guidelines for aesthetic design measures of sound walls, and may commission area wide noise mitigation studies that can serve as templates for acoustical treatment that can be applied to similar situations in the urban area.

Commentary: *While acoustical studies need to be site-specific in order to appropriately assess particular settings, having prototypical design measures and noise control templates that can be applied for similar situations and contexts can facilitate infill and other development.*

NS-1-p **Airport Noise Compatibility.** Implement the land use and noise exposure compatibility provisions of the adopted Fresno Yosemite International Airport Land Use Compatibility Plan, the Fresno-Chandler Executive Airport Master and Environs Specific Plan, and the Sierra Sky Park Land Use Policy Plan to assess noise compatibility of proposed uses and improvements within airport influence and environs areas.

9.3 SEISMIC AND GEOLOGIC HAZARDS

Seismicity

Fresno is in one of the more geologically stable areas of California and does not lie within a known active earthquake fault zone. Although a number of faults are located within the Sierra Nevada Mountain Range, none are considered active. The nearest active fault is located by Independence, CA, approximately 100 miles to the east along the Fresno County-Inyo County boundary. Overall, seismic-related concerns (including liquefaction and subsidence) are considered fairly minor for the Planning Area. The city is not located in an Alquist-Priolo Special Fault Study Zone, that is, it has not been identified as a zone of special study around active faults. Hidden faulting in Western Fresno County did manifest itself in the Coalinga Earthquake of 1983, causing ground shaking in Fresno, but minimal damage. In the future, Fresno could be affected by major seismic events from the following active fault systems in other regions of California:

- The San Andreas Fault paralleling the Coast Ranges in western Fresno County;
- The Owens Valley Fault system in the Eastern Sierra Region of California;
- The White Wolf Fault paralleling the Tehachapi range southeast of Bakersfield
- Hidden thrust fault(s) in the west side of the San Joaquin Valley; and

- The Long Valley Caldera, a seismic and volcanic area in the Eastern Sierra that lies between Mono Lake and Crowley Lake.

The principal potential earthquake hazard for Fresno is ground shaking, which could cause damage to buildings and infrastructure elements such as bridges and pipes. The distance between Fresno and major faults minimizes this potential hazard.

Soil Hazards

Expansive soils, soil erosion, and water infiltration are issues that can cause safety concerns in Fresno.

Expansive soils are largely comprised of clays, which expand in volume when water is absorbed and shrink as the soil dries. Expansion is measured by shrink-swell potential, which is the volume change in soil with a gain in moisture. If the shrink-swell potential is rated moderate to high, then damage to buildings, roads, structural foundations, and pipes can occur. In the northern portion of Fresno's SOI, there are some areas of expansive clay soil that require special construction standards for foundations and infrastructure. Expansive clay problems can be surmounted by appropriate engineering design and construction techniques.

Highly erodible soils are those that are easily carried by water and, to a lesser extent, by wind. Surface erosion is more commonly visible, but subsurface erosion can lead to damage to pipes, roads, foundations, and other structural elements. Soil erosion potential is identified by a specific soil's "K Factor," which provides an indication of a soil's inherent susceptibility to erosion, absent of slope and groundcover factors. Values of K range from 0.05 to 0.43, and the higher the value, the more susceptible the soil is to sheet erosion by water. The addition of weight, such as pools and decks, onto susceptible soil, as well as private irrigation systems and the action of burrowing rodents, are factors that may aggravate land slippage. Fresno is not susceptible to soil erosion with the exception of land within 300 feet of the toe of the San Joaquin River bluffs, where the steep slopes and soil composition predispose it to instability and erosion.

Soils are also defined by their rainfall runoff potential, which is the degree to which soil allows or disallows rainfall water to infiltrate and transmit down to the groundwater table. Groups of soils having similar runoff potential under similar storm and cover conditions, absent of slope, are placed into

one of four hydrologic group classifications: A, B, C or D. Definitions of the classes are as follows:

- **Soil Group A. High Infiltration (Low runoff potential)**—Soils having high infiltration rates, even when thoroughly wetted and consisting chiefly of deep, well drained sands or gravels. These soils have a high rate of water transmission.
- **Soil Group B. Moderate Infiltration**—Soils having moderate infiltration rates, even when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately fine to moderately course textures. These soils have a moderate rate of transmission.
- **Soil Group C. Slow Infiltration**—Soils having slow infiltration rates, even when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine textures. These soils have a slow rate of transmission.
- **Soil Group D. Very Slow Infiltration (High runoff potential)**—Soils having very slow infiltration rates, even when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

Hydrological groups are used in equations that estimate runoff from rainfall. These estimates are needed for solving hydrologic problems that arise in planning watershed protection and flood prevention projects and for designing structures for the use, control, and disposal of water.

OBJECTIVE

NS-2 Minimize risks of property damage and personal injury posed by geologic and seismic risks.

IMPLEMENTING POLICIES

NS-2-a **Seismic Protection.** Ensure seismic protection is incorporated into new and existing construction, consistent with the Fresno Municipal Code.

NS-2-b **Soil Analysis Requirement.** Identify areas with potential geologic and/or soils hazards, and require development in these areas to conduct a soil analysis and mitigation plan by a registered civil engineer (or engineering geologist

specializing in soil geology) prior to allowing on-site drainage or disposal for wastewater, stormwater runoff, or swimming pool/spa water.

NS-2-c **Landfill Areas.** Require proposed land uses on or near landfill areas to be designed and maintained to comply with California Code of Regulations, Title 27, Section 21190, Post Closure Land Use.

NS-2-d **Bluff Preservation Overlay Zone.** Per the requirements of the Bluff Preservation Overlay Zone District and Policy POSS-7-f (Chapter 5, Parks and Open Space), the following standards shall be applicable for property located within the Bluff Preservation zone:

- Require proposed development within 300 feet of the toe of the San Joaquin River bluffs to undertake an engineering soils investigation and evaluation report that demonstrates that the site is sufficiently stable to support the proposed development, or provide mitigations to provide sufficient stability; and
- Establish a minimum setback of 30 feet from the San Joaquin River bluff edge for all buildings, structures, decks, pools and spas (which may be above or below grade), fencing, lighting, steps, etc.
    - o An applicant may request to reduce the minimum setback to 20 feet from the bluff edge if it can be demonstrated, to the satisfaction of the City's Building Official and the Planning Director, that the proposed building, structure, deck, pool and/or spas (which may be above or below grade), fencing, steps, etc., will meet the objectives of the Bluff Preservation Overlay Ordinance. In no case shall the setback be reduced to less than 20 feet.

9.4 STORM DRAINAGE AND FLOOD CONTROL

Fresno's precipitation comes in episodic storm events, which may be severe and may cause localized flooding. The Fresno area receives inflows

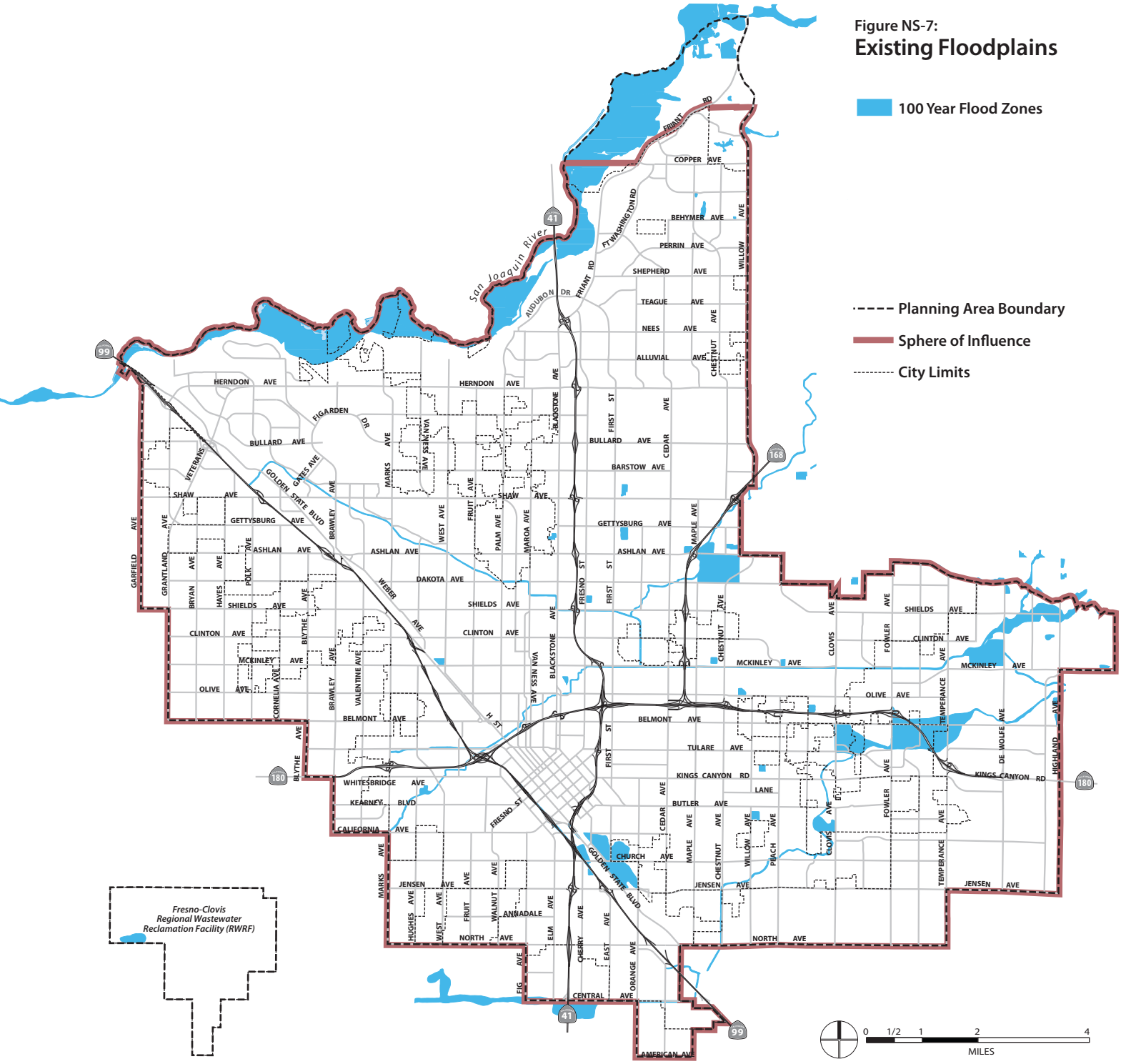
of regional runoff from a large watershed to the east, and is in the path of natural drainage from the valley floor, foothills and Sierra Nevada range. The San Joaquin River, confined between bluffs, comprises the northern boundary of Fresno. Figure NS-7: Flood Plains shows the locations of the existing 100-year floodplains in the Planning Area, as mapped by FEMA's National Flood Insurance Maps.

The Fresno Metropolitan Flood Control District (FMFCD) is responsible for flood control and storm water planning and management. It was authorized as a "special act" district and established by voter approval in 1956 to serve a 54-square mile area. Since its creation the district boundaries have been expanded several times and now include approximately 400 square miles—almost the entire portion of the Fresno-Clovis Metropolitan Area, with the exception of 6.5 square miles of SEDA which has yet to be annexed to the District. Once all of SEDA is annexed, FMFCD will develop and adopt Storm Water Master Plans for SEDA based on this General Plan.

The District was formed for the purpose of acquiring and constructing flood control and drainage facilities to safely convey, discharge, store and conserve storm water received on land within the District boundaries or which flows through the District. Eight flood control reservoirs and major basin facilities have been constructed along the Big Dry Creek, Redbank Creek, Dog Creek, Pup Creek, and Fancher Creek, comprising the Fresno Stream Group. The District also serves as the local sponsor of the U.S. Army Corps of Engineers for five the flood control facilities within the Redbank-Fancher Creeks Flood Control Project.

Figure NS-7:

Existing Floodplains



Source: FEMA, 2014.

The urban storm water drainage program provides a system comprised of storm drainage collection, conveyance, detention and retention serving planned urban and rural areas within the Fresno-Clovis environs. The adopted Storm Drainage and Flood Control Master Plan divides the service area into 163 local drainage areas. Collectively, the system has in excess of 600 miles of storm drainage pipeline and 154 local stormwater management basins together with ancillary facilities, such as storm water lift pump stations.

This system expands as the area of urbanization expands. Facilities are funded and constructed by owners/developers of properties pursuant to the City's drainage fee requirements in Fresno Municipal Code section 12-1901 et. seq., or constructed by FMFCD under publicly awarded contracts. The City also requires drainage to be directed to public streets, so that storm water travels along paved surface areas to inlets per the Fresno Municipal Code. The inlets accept the water into the storm drainage pipelines which convey water to stormwater management basins. The pipeline system is designed with a peak flow capacity to accommodate a two-year intensity storm event (50 percent probability of occurring in any given year). The basin capacity utilizes the percentage of runoff from the two-year pipeline data, but with a volume from six inches of rainfall. All basins are designed with relief systems so that additional capacity can be created by dewatering between rainfall events. The District’s drainage services program includes topographic mapping; master plan engineering and facility design; system construction; and operation and maintenance.

Any infill project that increases the amount of impervious surfacing, changes the existing drainage pattern(s), and/or generates storm flows faster or greater than the existing condition could result in the existing pipeline collection system being overburdened. Typically, infill projects are required to mitigate any increase in runoff by either increasing the capacity of the existing system (i.e., build more infrastructure) or holding storm runoff on site to ensure offsite runoff does not increase.

As the owner and operator of the storm water drainage system, the District has primary responsibility for implementing the U.S. Clean Water Act requirements through a National Pollutant Discharge Elimination System discharge permit issued by the Regional Water Quality Control Board (RWQCB). This program is comprised of pollutant removal in the stormwater basins and education to avoid storm water pollution; best management practices for commercial, industrial and new development storm water quality control; monitoring to assess storm water impacts upon

the quality of receiving water; and the preparation of ordinances for adoption by local governments to enforce storm water quality control measures.

The District's programs include water conservation efforts through its design and operation of storm water drainage facilities to detain and retain water from storm events as well as receive dry season surface water supplies for groundwater recharge. Approximately 90 basins are intertied with Fresno Irrigation District (FID) canals and receive surface water through contracts with the irrigation district and the cities of Fresno and Clovis. Storm water drainage basins serving primarily residential areas are also designed to accommodate passive and active recreational activities. Recreational use of 27 basins has been accommodated by improvements including baseball and playground areas, and two basins have been specifically designed to accommodate use by individuals with disabilities, while a third accommodates a high quality little league baseball facility. District flood control and drainage facilities also provide important open space in the urban area and areas for wildlife habitat. Through a memorandum of understanding, which serves as a Section 1601 Master Streambed Alteration Agreement with the California Department of Fish and Wildlife, restoration and protection of rural streams for flood control purposes also brings long-term net benefits for fish, wildlife, water quality, native plants, and stream habitats.

To address the risks of damaging floods, the City of Fresno adopted and recently updated a Flood Plain Ordinance that meets the standards imposed by California Government Code Section 65302(g)(2). The Government Code specifies that cities should include either directly, or through adoption by reference to a flood plain ordinance (65302(g)(6)), flood hazards zones and maps on flooding in the area (65302(g)(2)(A)), goals to protect new development against flooding (65302(g)(2)(B)), and implementation measures to achieve the stated goals (65302(g)(2)(C)).

The City of Fresno Flood Plain Ordinance incorporates by reference flood hazard zones established by the Federal Emergency Management Agency (FEMA), Federal Insurance Rate Maps completed for Fresno County, and other maps as are needed to review flood risk (FMC 11-607). The Flood Plain Ordinance protects against risk to new and existing development by requiring any building proposed within a special flood hazard area to obtain a building permit and provide information specifically related to flood risk (11-613). The permit is reviewed by the Building Official, who has been designated as the Flood Plain Administrator, to ensure that the project will

be reasonably safe from flooding and will not adversely increase flood risk elsewhere (11-614, 11-616). The Ordinance also includes specific development and construction standards to minimize flood risk (11-623 to 11-636). This permit review process and the applicable standards help to implement the goals found within the Flood Plain Ordinance Statement of Purpose (11=603) and also serve to both implement and complement the Goals, Objectives, and Implementing Policies found within this General Plan.

OBJECTIVE

NS-3 Minimize the risks to property, life, and the environment due to flooding and stormwater runoff hazards.

IMPLEMENTING POLICIES

NS-3-a **Stormwater Drainage and Flood Control Master Plan.** Support the full implementation of the FMFCD Storm Drainage and Flood Control Master Plan, the completion of planned flood control and drainage system facilities, and the continued maintenance of stormwater and flood water retention and conveyance facilities and capacities. Work with the FMFCD to make sure that its Storm Drainage and Flood Control Master Plan is consistent with the General Plan.

NS-3-b **Curb and Gutter Installation.** Coordinate with Fresno Metropolitan Flood Control District (FMFCD) to install curbing, gutters, and other drainage facilities with priority to existing neighborhoods with the greatest deficiencies and consistent with the Storm Drainage and Flood Control Master Plan.

NS-3-c **Dual Use Facilities.** Support multiple uses of flood control and drainage facilities as follows:

- Use, wherever practical, FMFCD facilities for groundwater management and recharge; and
- Promote recreational development of ponding basin facilities located within or near residential areas, compatible with the stormwater and groundwater recharge functions.

NS-3-d **Landscaped Buffer.** City will support the development of FMFCD ponding basins including the landscaping and irrigation for the top one third of the side sloped areas consistent with the FMFCD Basin Design Criteria.

NS-3-e **Pollutants.** Work with FMFCD to prevent and reduce the existence of urban stormwater pollutants pursuant to the requirements of the National Pollution Discharge Elimination Systems Act.

NS-3-f **Flooding Emergency Response Plans.** Work with responsible agencies to update emergency dam failure inundation plans, evacuation plans and other emergency response plans for designated flood-prone areas, including the San Joaquin riverbottom.

NS-3-g **Essential Facilities Siting Outside of Floodplains.** Avoid siting emergency response and essential public facilities, such as fire and police stations, within a 100-year floodplain, unless it can be demonstrated that the facility can be safely operated and accessed during flood events.

NS-3-h **Runoff Controls.** Implement grading regulations and related development policies that protect area residents from flooding caused by urban runoff produced from events that exceed the capacity of the Storm Drainage and Flood Control Master Plan system of facilities. Place all structures and/or flood-proofing in a manner that does not cause floodwaters to be diverted onto adjacent property, increase flood hazards to other property, or otherwise adversely affect other property.

NS-3-i **New Development Must Mitigate Impact.** Require new development to not significantly impact the existing storm drainage and flood control system by imposing conditions of approval as project mitigation, as authorized by law. As part of this process, closely coordinate and consult with the FMFCD to identify appropriate conditions that will result in mitigation acceptable and preferred by FMFCD for each project.

***Commentary**: The City recognizes the expertise and significant role of the FMFCD, and will give the highest*

deference to its recommendations for mitigation measures, consistent with applicable law.

NS-3-j **National Flood Insurance Program.** Continue to participate in the National Flood Insurance Program (NFIP) by ensuring compliance with applicable requirements. Review NFIP maps periodically to determine if areas subject to flooding have been added or removed and make adjustments to the Land Use Diagram Figure LU-1.

NS-3-k **100-Year Floodplain Policy.** Require developers of residential subdivisions to preserve those portions of development sites as open space that may be subject to 100-year flood events, unless the flood hazard can be substantially mitigated by development project design.

NS-3-l **200-Year Floodplain Protection.** Promote flood control measures that maintain natural conditions within the 200-year floodplain of rivers and streams and, to the extent possible, combine flood control, recreation, water quality, and open space functions. Discourage construction of permanent improvements that would be adversely affected by periodic floods within the 200-year floodplain, particularly in the San Joaquin riverbottom.

NS-3-m **Flood Risk Public Awareness.** Continue public awareness programs to inform the general public and potentially affected property owners of flood hazards and potential dam failure inundation. Remind households and businesses located in flood-prone areas of opportunities to purchase flood insurance.

NS-3-n **Precipitation Changes.** Work with FMFCD to evaluate the planned and existing stormwater conveyance system in light of possible changes to precipitation patterns in the future.

9.5 WILDLAND FIRE HAZARDS

Fresno's high summer temperatures, intense sunlight, and low rainfall could encourage wildland fires by drying and pre-heating combustible material and fostering spontaneous combustion of flammable material. Fresno's estimated maximum wind speed is 70 mph, which could fan blazes to a high intensity. Fire hazards are typically highest in heavily

wooded areas, as trees are a great source of fuel, as are grasslands. Given that the Planning Area is largely urbanized or working agricultural land and lacks steep topographies, wildfire threats are minimal. Although Fresno is proximate to high and very high fire hazard designated areas, the city is largely categorized as little or no threat or moderate fire hazard, which is largely attributed to paved areas. Small areas along the San Joaquin River Bluff area in northern Fresno are prone to wildfire due to relatively steep terrain and vegetation and therefore classified as high fire hazard.

Policies related to fire protection and response are located in the Public Utilities and Services Element.

9.6 HAZARDOUS MATERIALS

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, State, or local agency, or if it has characteristics defined as hazardous by such an agency. The California Code of Regulation defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating illness, or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed. Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications and, to a limited extent, in residential areas.

Hazardous wastes are defined in the same manner. Hazardous wastes are hazardous materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal. Hazardous materials and hazardous wastes are classified according to four properties: toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), and reactive (causes explosions or generates toxic gases).

Sites previously contaminated by hazardous materials are required to be identified and cleaned up. The contaminated sites in Fresno are largely associated with leaking underground storage tanks and are predominately clustered south of Downtown, near Fresno Yosemite International Airport and Palm Bluffs Corporate Center (northwest Fresno), and along the Union

Pacific Railroad Tracks as shown on Figure PU-3: Regional Groundwater Contamination shows the locations of known leaking underground storage tanks and known hazardous waste sites requiring cleanup under federal or State direction.

Releases, leaks, or disposal of chemical compounds, such as petroleum hydrocarbons, on or below the ground surface can lead to contamination of underlying soil and groundwater. Depending of the conditions and intensity of the release, groundwater contamination can migrate beyond the property boundary of the original release site. Disturbance of a previously contaminated area through grading or excavation operations could expose the public to health hazards from physical contact with contaminated materials or hazardous vapors. Improper handling or storage of contaminated soil and groundwater can further expose the public to these hazards, or potentially spread contamination through surface water runoff or air-borne dust.

In addition, contaminated groundwater can spread down gradient, potentially contaminating subsurface areas of surrounding properties. This also poses a threat due to the high number of private water wells and the City's reliance on groundwater as the principal potable water source. Groundwater quality is discussed in the Public Utilities and Services Element.

OBJECTIVE

NS-4 Minimize the risk of loss of life, injury, serious illness, and damage to property resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous wastes.

IMPLEMENTING POLICIES

NS-4-a **Processing and Storage.** Require safe processing and storage of hazardous materials, consistent with the California Building Code and the Uniform Fire Code, as adopted by the City.

NS-4-b **Coordination.** Maintain a close liaison with the Fresno County Environmental Health Department, Cal-EPA Division of Toxics, and the State Office of Emergency Services to assist in developing and maintaining hazardous material business plans, inventory statements, risk

management prevention plans, and contingency/emergency response action plans.

NS-4-c **Soil and Groundwater Contamination Reports.** Require an investigation of potential soil or groundwater contamination whenever justified by past site uses. Require appropriate mitigation as a condition of project approval in the event soil or groundwater contamination is identified or could be encountered during site development.

NS-4-d **Site Identification.** Continue to aid federal, State, and County agencies in the identification and mapping of waste disposal sites (including abandoned waste sites), and to assist in the survey of the kinds, amounts, and locations of hazardous wastes.

NS-4-e **Compliance with County Program.** Require that the production, use, storage, disposal, and transport of hazardous materials conform to the standards and procedures established by the County Division of Environmental Health. Require compliance with the County's Hazardous Waste Generator Program, including the submittal and implementation of a Hazardous Materials Business Plan, when applicable.

NS-4-f **Hazardous Materials Facilities.** Require facilities that handle hazardous materials or hazardous wastes to be designed, constructed, and operated in accordance with applicable hazardous materials and waste management laws and regulations.

NS-4-g **Hazmat Response.** Include policies and procedures appropriate to hazardous materials in the City's disaster and emergency response preparedness and planning, coordinating with implementation of Fresno County's Hazardous Materials Incident Response Plan.

NS-4-h **Household Collection.** Continue to support and assist with Fresno County's special household hazardous waste collection activities, to reduce the amount of this material being improperly discarded.

NS-4-i **Public Information.** Continue to assist in providing information to the public on hazardous materials.

9.7 AIRPORT SAFETY

There are two public airports in the Planning Area, Fresno-Yosemite International Airport (FYI) and Chandler Executive Airport (FCH), and one private airport open to public use, Sierra Sky Park. In conjunction with Fresno-Yosemite International Airport, the Air National Guard maintains an airbase for military flight and training operations. Each airport has its own airport land use plan designed to provide for public safety. The Fresno County Airport Land Use Commission (ALUC) provides guidance to local jurisdictions on adjacent land uses through Airport Land Use Compatibility Plans (ALUCPs). This General Plan and all other City land use plans must be compatible with the ALUCPs.

Airports may impact public safety due to the potential for aircraft crashes. Policies in this section are designed to minimize public exposure to risks associated with airport operations and to minimize the siting of land uses near airports that might interfere with airport operations. As shown earlier in this chapter, Figures NS-4 through NS-6 show each airport's safety zones, which are established to identify the land or water area surrounding the airport runways that could be impacted by an airport hazard.

Fresno Yosemite International Airport is one of two public airports in Fresno, and it has its own land use plan.

OBJECTIVE

NS-5 Protect the safety, health, and welfare of persons and property on the ground and in aircraft by minimizing exposure to airport-related hazards.

IMPLEMENTING POLICIES

NS-5-a **Land Use and Height.** Incorporate and enforce all applicable Airport Land Use Compatibility Plans (ALUCPs) through land use designations, zoning, and development standards to support the continued viability and flight operations of Fresno's airports and to protect public safety, health, and general welfare.

- Limit land uses in airport safety zones to those uses listed in the applicable ALUCPs as compatible uses, and regulate compatibility in terms of location, height, and noise.
- Ensure that development, including public infrastructure projects, within the airport approach and departure zones complies with Part 77 of the Federal Aviation Administration Regulations (Objects Affecting Navigable Airspace), particularly in terms of height.

NS-5-b **Airport Safety Hazards.** Ensure that new development, including public infrastructure projects, does not create safety hazards such as glare from direct or reflective sources, smoke, electrical interference, hazardous chemicals, fuel storage, or from wildlife, in violation of adopted safety standards.

NS-5-c **Avigation Easements.** Employ avigation easements in order to secure and protect airspace required for unimpeded operation of publicly owned airports.

Commentary: *Avigation easements are established in the form of land use covenants and are binding upon present and subsequent property owners.*

NS-5-d **Disclosure.** As a condition of approval for residential development projects, require sellers to prepare and provide State Department of Real Estate Disclosure

statements to property buyers notifying of noise and safety issues related to airport operations.

NS-5-e **Planned Expansion.** Allow for the orderly expansion and improvement of publicly-owned airports, while minimizing adverse environmental impacts associated with these facilities.

- Periodically update airport facility master plans in accordance with FAA regulations.
- Require land use within the boundaries of the Fresno-Yosemite International Airport and Chandler Downtown Airport to conform to designations and policies specified in adopted City of Fresno compatible land use plans.
- Provide local jurisdictions surrounding the City's publicly owned airports with specific guidelines for effectively dealing with the presence and operation of these airports.

9.8 EMERGENCY RESPONSE

Police and fire protection services are addressed in the Public Utilities and Services Element.

Emergency Planning

The California Emergency Services Act requires cities to prepare and maintain an Emergency Plan for natural, manmade, or war-caused emergencies that result in conditions of disaster or in extreme peril to life. The City does have an adopted Emergency Operations Plan (EOP). The EOP does not designate evacuation routes, which may not be necessary since Fresno does not face any expected natural hazards from likely sources or locations.

Local Hazard Mitigation Planning

The purpose of a Local Hazard Mitigation Plan is to reduce or eliminate long term risk to human life and property resulting from hazards, by identifying risks before they occur and putting together resources, information, and strategies for emergency response. Fresno County is the lead agency on the Multi-Jurisdictional Local Hazard Mitigation Plan (MHMP) for the county. The Fresno County Board of Supervisors has

adopted the Fresno County MHMP. It includes a City of Fresno annex which lists information most relevant to Fresno in the areas of health, infrastructure, housing, government, environment, and land use.

The MHMP meets the requirements of the Disaster Mitigation Act of 2000 (DMA). A federally-approved hazard mitigation plan enables Fresno County to apply for federal pre-disaster hazard mitigation grant funds to support mitigation projects. The DMA establishes a national hazard mitigation program to reduce the loss of life and property, human suffering, economic disruption and disaster assistance costs resulting from natural disasters. The DMA also provides a source of pre-disaster hazard mitigation funding to assist local governments in implementing effective hazard mitigation measures to ensure the continued functionality of critical services and facilities after a natural disaster.

OBJECTIVE

NS-6 Foster an efficient and coordinated response to emergencies and natural disasters.

IMPLEMENTING POLICIES

NS-6-a **County Multi-Jurisdiction Hazard Mitigation Plan.** Adopt and implement the Fresno County Multi-Jurisdiction Hazard Mitigation Plan and City of Fresno Local Hazard Mitigation Plan Annex.

Commentary: *The federal Disaster Mitigation Act of 2000 requires that cities, counties, and special districts have a Local Hazard Mitigation Plan to be eligible to receive FEMA hazard mitigation funds. Cities and counties can adopt and use all or part of a regional multi-jurisdictional plan, such as the one prepared by Fresno County, in lieu of preparing all or part of a Local Hazard Mitigation Plan.*

NS-6-b **Disaster Response Coordination.** Maintain coordination with other local, State, and Federal agencies to provide coordinated disaster response.

NS-6-c **Emergency Operations Plan.** Update the City's Emergency Operations Plan periodically, using a whole community approach which integrates considerations for

People with access and functional needs in all aspects of planning.

NS-6-d **Evacuation Planning.** Maintain an emergency evacuation plan in consultation with the Police and Fire Departments and other emergency service providers, which shows potential evacuation routes and a list of emergency shelters to be used in case of catastrophic emergencies.

Commentary: *The evacuation plan will be flexible in order to consider many scenarios and multiple modes of transportation beyond private automobiles. It will provide special provisions for disadvantaged populations, such as those with physical disabilities or those with low or very low incomes, and for areas with fewer resources through neighborhood emergency preparedness programs.*

NS-6-e **Critical Use Facilities.** Ensure critical use facilities (e.g. City Hall, police and fire stations, schools, hospitals, public assembly facilities, transportation services) and other structures that are important to protecting health and safety in the community remain operational during an emergency.

- Site and design these facilities to minimize their exposure and susceptibility to flooding, seismic and geological effects, fire, and explosions.
- Work with the owners and operators of critical use facilities to ensure they can provide alternate sources of electricity, water, and sewerage in the event that regular utilities are interrupted in a disaster.

NS-6-f **Emergency Vehicle Access.** Require adequate access for emergency vehicles in all new development, including adequate widths, turning radii, hard standing areas, and vertical clearance.

NS-6-g **Emergency Preparedness Public Awareness Programs.** Continue to conduct programs to inform the general public, including people with access and functional needs, of the City's emergency preparedness and disaster response procedures.

10 HEALTHY COMMUNITIES

The Healthy Communities Element presents a broad and comprehensive initiative to improve community health. The concept of a "healthy community" also includes household income, addressed in the Economic Development and Fiscal Sustainability Element, and environmental health issues, such as air quality, addressed in the Resource Conservation and Resilience Element. This element focuses specifically on subjects not fully discussed in other elements, in particular the relationships between the built, natural, and social environments and community health and wellness outcomes, such as death, chronic disease, and the effects of drug abuse and crime. Many community partners will help the City achieve improvements in individual, family, and community health, and their roles are explained at the end of this element.

10.1 PLANNING FOR COMMUNITY HEALTH

The World Health Organization defines health as the following:

> *"A state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity. Within the context of health promotion, health has been considered less as an abstract state and more as a means to an end which can be expressed in functional terms as a resource which permits people to lead an individually, socially and economically productive life. Health is a resource for everyday life, not the object of living. It is a positive concept emphasizing social and personal resources as well as physical capabilities."*[1]

With this context in mind, this element first assesses the conditions that affect community health in Fresno, followed by a discussion of local opportunities and strategies for improving public health in the city, as well as detailed objectives and policies towards that goal.

There are four key components that directly affect the health of the Fresno community:

1. Physical health, or the medical well-being of individuals, as seen in rates of disease and death, with special consideration given to disparities in health across populations;
2. Environmental conditions, notably air quality, which can enhance or impede health;
3. Household income, which can affect the financial ability to afford medical care and healthy food, as well as mental and social well-being, and can directly relate to other factors such as safety and access to parks; and
4. Safety, particularly exposure to violent crime, which has direct and indirect impacts on individuals and governments alike, reducing productiveness, opportunities, and quality of life and contributing to poor physical and mental health.

This element also discusses some of the indirect contributing factors that the City can influence, including educational attainment, access to parks and recreation, the availability of healthy food, and transportation options.

The health of the Fresno community can be directly measured in the physical health of its residents. It can also be measured in quantitative factors that contribute directly to

[1] Ottawa Charter for Health Promotion. WHO, Geneva, 1986

health: environmental conditions, income, and safety. Several social and physical factors can also influence community health, including educational attainment; access to social services, parks, recreation, and healthy food; affordable housing and transportation options; and youth engagement.

An analysis of these direct and indirect factors will contribute to the evaluation of Fresno's current public health conditions, with community health broadly defined as physical, emotional, and social well-being. Some of these issues, such as the location and programming of public parks, are within the City's ability to plan and improve. Other issues, however, may require broad-based or indirect efforts in consultation with other public agencies and the private sector. All the issues discussed in the Healthy Communities Element are important to consider in the context of the Fresno General Plan as a comprehensive plan that reflects the interdependence of health outcomes with land use, transportation, and other public policies and practices.

A Healthy California Community[2]

There are many components considered when planning for healthy communities, including:

- Basic Needs for All
  - Affordable, accessible and nutritious foods and safe drinking water
  - Affordable, accessible, high quality health care
  - Affordable, safe, integrated, and location efficient housing
  - Safe, sustainable, accessible and affordable transportation options
  - Safe, clean environment
  - Access to quality schools
  - Access to affordable, safe opportunities and spaces for physical exercise and fun activities
  - Safe communities, free of crime and violence
- Safe, Sustainable Environment
  - Clean air, soil, and water
  - Green and open spaces
  - Reduced greenhouse gas emissions and other pollutants

[2] Defining a Healthy Community – CA Planners Roundtable.

  - Reduced waste
  - Affordable and renewable energy resources
  - Nourishes the interrelationship between people, nature and the built environment
- Economic and Social Vitality
  - Living wage, safe and equitable job opportunities to support individuals and families
  - Strong, resilient economy supportive of innovation and entrepreneurial spirit
  - Healthy development of children and adolescents
  - Access to high quality, affordable education from preschool through college and including vocational opportunities
  - Community empowerment through robust social and civic engagement that takes into account diversity and cultural competency
  - Access to opportunities to thrive regardless of income, race, ethnicity, nationality, gender, age, sexual orientation, identity, creed or disability
  - An understanding of the social determinants of health and health equity as strategies to reduce health disparities affecting the most vulnerable populations
  - Opportunities for exercising creativity, artistic expression and fostering imagination
- Efficient Development Patterns
  - Sufficient affordable housing development in appropriate locations
  - Mix of land uses and a built environment that support walking and biking
  - Multimodal, affordable transportation choices
  - Safe public spaces for social interaction
  - Conservation and restoration of open space and preservation of agricultural lands

Relationship to General Plan Goals

This Element provides objectives and policies that support the following General Plan goals:

9. Promote a city of healthy communities and improve quality of life in established neighborhoods.

Emphasize supporting established neighborhoods in Fresno with safe, well maintained, and accessible streets, public utilities, education and job training, proximity to jobs, retail services, and health care, affordable housing, youth development opportunities, open space and parks, transportation options, and opportunities for home grown businesses.

14. Provide a network of well-maintained parks, open spaces, athletic facilities, and walking and biking trails connecting the city's districts and neighborhoods to attract and retain a broad range of individuals, benefit the health of residents, and provide the level of public amenities required to encourage and support development of higher density urban living and transit use.

16. Protect and improve public health and safety.

10.2 HEALTH

Tracking the age and cause of death of local residents against State and national statistics is one simple way of measuring the physical health of the Fresno community. The prevalence of chronic illnesses and health disparities across demographic lines are other important components of evaluating the state of the city's public health. Many health statistics are collected at the county level, so this element relies on that level of data to assess the state of physical health for the city's residents. With 495,000 out of the county of Fresno's 940,000 residents, the city of Fresno makes up 53 percent of the population in the data discussed in this section.

Age and Cause of Death

The median age of death in the county of Fresno, 77.7 years old, is close to that of California (77.9) and the nation (78.2). However, another measure of age of death is years of potential life lost (YPLL) per 1,000 people. This metric computes the estimated number of years of life lost due to premature deaths against a person's theoretical life expectancy. The County of Fresno Department of Public Health performed an assessment in 2009 in partnership with the Central Valley Health Partnership Institute. In an unpublished report, they found the rate of YPLL in the county to be 28.7 years, compared to a statewide rate of 23.1 years. In other words, living in the county results in an average of 5.6 more years of lost potential lifespan per 1,000 residents, compared to the statewide rate, or 24 percent more lost years. Another study in 2011 by the Robert Wood Johnson Foundation used publicly available data for 2005-07 to find a similar disparity between county and the statewide YPLL.

The county's rate of death from cancer is comparable to the State but lower than the national average. Diabetes is a major cause of death for county residents, both

absolutely (fourth highest cause of death) and relatively, resulting in death at a rate 52 percent higher than the statewide average and 43 percent higher than the national average. Indeed, the county's diabetes death rate is one of the worst in California, ranking 56th out of 58 counties, and because diabetes is often created by a lack of exercise and poor diet, these may be major public health issues in Fresno. In addition, county residents die significantly more (a rate greater than 15 percent higher per 100,000 residents) from Alzheimer's disease, stroke, influenza/pneumonia, chronic liver disease and cirrhosis, accidents, motor vehicle accidents, and homicide, compared to the statewide and national average death rates. Overall, the county ranks in the bottom half (29 through 58) for most causes of death.

Chronic Disease-Related Risk Factors

The county ranks quite low in terms of overall health (51 out of 58 California counties) for overall health outcomes.[3] The high rates of death in the county from diabetes, influenza/pneumonia, and chronic liver disease and cirrhosis suggest that notable proportions of local residents may be in chronically poor health, as those causes of death tend to be the result of longer term unhealthy living.

Health Disparities[4]

Health disparities between different racial and ethnic groups can be striking and create radically different qualities of life. Nearly 50 percent of Fresno's population is Latino/of Hispanic origin. Latinos are a population that, as a whole, often has poor health indicators in relation to other ethnicities, as Latinos experience disproportionately high prevalence of and risk factors for asthma, obesity, HIV/AIDS, teenage pregnancy, suicide, and mental health disorders. Factors contributing to poorer health outcomes among the Hispanic population include language and cultural barriers, limited access to preventative care, and lack of insurance.[5]

Obesity

The U.S. Department of Health and Human Services, through its Healthy People Initiative, set national objectives for 2010 for the proportion of the population that is overweight or obese. The target rate was set to 15 percent or less of the adult population to be overweight or obese, but that rate is far exceeded in the county. In 2005, in the county, overweight and obese adults comprised 57 percent of the adult population aged 18 to 64 years, and 65 percent for adults aged 65 and older.

---

[3] Robert Wood Johnson Foundation. 2011 County Health Rankings, Fresno, CA.
[4] U.S. Centers for Disease Control and Prevention, Office of Minority Health and Health Disparities, 2012.
[5] In 2012, over 30 percent of Latinos nationwide lacked health insurance (U.S. Census).

Between 2004 and 2009, the rate of students who were overweight in grades 5, 7, and 9, rose from 30.6 percent, 32.0 percent and 27.4 percent to 36.0 percent, 38.5 percent, and 33.7 percent, respectively.[6] There is a growing body of evidence relating obesity to the consumption of sugar-sweetened beverages. Over 30 years, the average daily caloric intake has increased by nearly 300 calories. In fact, in the county, 53 percent of 2- to 11-year-olds and 69 percent of 12- to 17-year-olds consume at least one soda a day, compared to 24 percent children nationwide.[7]

Smoking

In the county, 14.4 percent of adults report being a smoker, higher than the Healthy People 2020 (HP2020) goal of 12 percent.[8] Smoking prevalence among county youth ages 12 to 17 is 7.2 percent. When looking at the availability of tobacco products, 17 percent, 35 percent, and 49 percent of students in grades 7, 9, and 11 respectively feel that it is easy to obtain cigarettes.[9] Undercover tobacco youth purchase surveys found that 33 percent tobacco retailers in the city attempted to illegally sell cigarettes to minors.[10] This rate of illegal tobacco sales to minors is higher than the HP2020 target of less than 5 percent. Also, no cities in the county meet the HP2020 target of having adopted local ordinances that prohibit smoking in multi-unit housing.

Local Health Disparities

The impact of health disparities is critical to justifying the role of planning in improving public health and creating healthy communities. Health disparities are differences in health outcomes (injury, illness, and death) between different groups of people. There is broad agreement in the literature that people who live in more socially and economically disadvantaged areas are in worse health than those living in more prosperous areas.[11]

A 2011 Community Needs Assessment of Fresno, Madera, Tulare, and Kings counties, undertaken by the Hospital Council of Northern and Central California, found several health disparities by race and ethnic group across the region. In Fresno, Latinos make up almost 47 percent of the city population; yet compared to white residents, Fresno's

[6] California Department of Education. *California Physical Fitness Report Summary of Results*. 2009-2010; 2004-2005

[7] California Health Interview Survey, 2005

[8] California Health Interview Survey, 2009. *Current Smoking Status-Adults and Teens*.

[9] California Healthy Kids Survey, 2007-09, County Results: Main Report San Francisco: WestEd Health and Human Development Program for the California Department of Education.

[10] Krenz, V.D. Brief Evaluation Report: Tobacco Retailer Licensing Policy in Fresno County. American Lung Association. 2010.

Krenz, V.D. & Allen, Fresno County Tobacco Prevention Program Final Evaluation Report. California: Fresno County Tobacco Prevention Program. 2007

[11] *Reducing Health Disparities through a Focus on Communities*. PolicyLink, 2002.

Latino population experiences higher rates of diabetes, hospitalizations, and mortality, and higher rates of death from motor vehicle accidents. Similarly, African-American residents, who make up eight percent of the city population, experience higher hospital use and/or death rates for asthma, cancer, cardiovascular issues, diabetes, homicides, hypertension, and motor vehicle accidents compared to white residents.[12]

In the county, rates of obesity vary greatly by race, with 38 percent of Latinos obese compared to 23 percent of Whites, 22 percent of African-Americans, and just 8 percent of Asians. Only 6 percent of African-Americans in the county undertake vigorous physical exercise at least three times per week, compared to 21 percent of Whites, 24 percent of Asians, and 19 percent of Latinos.[13]

The county has a higher percentage of disabled residents (21.3 percent) than in California as a whole (19.2 percent).[14] This population inherently has greater physical health needs than the rest of the population in the county.

Access to Medical and Health-Related Services

The medical dimension of health encompasses a range of services including primary care, specialty care, home health care, emergency services, mental health services, long-term care, dental care, and alternative care. Access to health care services is an important determinant of community health, since medical monitoring, advice, and care is often essential to preventing disease and improving poor health. In this context, access refers to physical proximity, as well as socioeconomic access.

Physical access to medical services is intertwined with transportation planning, because community members rely on the network of roadways, public transportation services, and walking and biking facilities to get to and from health-related facilities. The location of hospitals, medical clinics, and doctors' and dentists' offices in Fresno are such that parts of the city are underserved for residents in those areas. There are only a few medical facilities west of State Route 99, and a small number of health services in the southeastern section of the city. Northern and central Fresno has the bulk of the city's medical facilities; these are easily accessible from State Route 41, but located far from the poorest populations south of State Route 180.

---

[12] Hospital Council of Northern and Central California. *Community Needs Assessment.* 2011.
[13] California Health Interview Survey. CHIS 2007. Adult, Teen, Child Public Use Files. <http://www.chis.ucla.edu>. Updated January 2007. As cited in Fresno Downtown Neighborhoods Health Impact Assessment.
[14] Fresno Council of Governments. "Coordinated Human Services Transportation Plan." 2008.

For those families and individuals with the least resources or with physical disabilities that restrict function, public transportation systems are particularly important. To the extent that the Plan can improve the frequency and reliability of public transportation services to medical and health-related facilities within the city, this would support the wider goal of increasing access. The City does have good transit options for reaching medical care, with FAX service provided to all the hospitals in Fresno and to Children's Hospital Central California in Madera; a paratransit service, Handy Ride, also services the hospitals and other medical facilities in Fresno.

Other closely related issues are language barriers and overall health literacy. The current operational definition of health literacy used in Healthy People 2010 is, "the degree(s) to which individuals have the capacity to obtain, process and understand basic health information and services for appropriate health decisions." According to the U.S. Department of Health and Human Services, more than 90 million Americans struggle to understand basic health information. In one study in a public hospital, one-third of English-speaking patients could not read basic health materials, more than a quarter could not read appointment slips, and 42 percent did not understand labels on prescription bottles. The 2000 Census counted 20 million people who speak English poorly and 10 million who speak no English at all. In a 2002 report, the White House Office of Management and Budget estimated the number of patient encounters across language barriers each year at 66 million.[15]

[15] U.S. National Library of Medicine National Institutes of Health. *Understanding Health Literacy and its Barriers*. CBM, 2004-1.

Physical and socioeconomic access to health care services is an important determinant of community health.

A related issue is that the county, along with the entire San Joaquin Valley, experiences a relative lack of medical physicians. The county had 2.0 physicians and surgeons per 1,000 residents in 2005, compared to a rate of 2.6 across California, or 23 percent fewer than the statewide average.[16]

OPPORTUNITIES FOR IMPROVEMENT

Many of the physical health issues in this section are being addressed by the County of Fresno Public Health Department and local health care providers. However, this Plan puts in place new policies to help provide better access to physical exercise and fresh food, and to invest in efforts to lower the crime rate, in order to reduce the prevalence and impact of preventable disease. This section supports initiatives of the California Endowment in partnering with the communities of central, southeast, and southwest Fresno as part of its Building Healthy Communities campaign.

Environmental Conditions

Fresno and the San Joaquin Valley as a whole have poor air quality when measured against federal and State guidelines. The area is in nonattainment (fails to meet

[16] Bengiamin, Marlene, and John Amson Capitman and Xi Change. *Healthy People 2010: A 2007 Profile of Health Status in the San Joaquin Valley*. Central Valley Health Policy Institute, 2008.

standards) for federal standards for PM 2.5 (particulate matter less than 2.5 micrometers in diameter) and State standards for 8-hour ozone, PM 10 (less than 10 micrometers in diameter), and PM 2.5. Fresno also is in extreme nonattainment for federal 8-hour ozone standards and severe nonattainment for State 1-hour ozone standards. Ozone is a highly reactive form of oxygen that attacks lung tissue and is particularly damaging to young children and older adults. Reducing the very high levels of ozone and significant concentrations of particulate matter from Fresno's air would be a major step to improving the health of the community.

Local actions and opportunities for improvement in air quality are addressed in the Resource Conservation and Resilience Element.

Income and Poverty

The San Joaquin Valley is one of the least affluent areas of California. Per-capita income is well below the national average, and poverty, in both urban and rural areas, is a significant problem. Valley residents have among the lowest per capita personal incomes, higher rates of unemployment, and more residents living below the Federal Poverty Level than the average for California as a whole.

According to the American Community Survey, 27.5 percent of individuals in the city were living in poverty, significantly higher than the state average of 15.3 percent. Thirty-eight percent of related children under 18 were below the poverty level.[17]

The 2006 Brookings Institution Study listed Fresno as the largest city in the United States with the most concentrated poverty, meaning the degree to which its poor are clustered in high-poverty neighborhoods. High poverty neighborhoods, generally defined as areas where more than 40 percent of people live below the poverty line, are in the central and southwestern part of the city including the Edison, Roosevelt and Lowell communities. Some areas within these communities had between 60 and 70 percent of people living below the poverty line in 2000. For example, the Lowell community, located in Downtown, has a population of nearly 14,000 with approximately 70 percent of individuals living below the poverty line of $15,219 (the federal poverty threshold for a three-person family in 2004) for a family of three in 2000. Neighborhood poverty increased dramatically on the south and west sides of Fresno between 1980 and 2000, and this disparity has not changed in the past decade. Many factors have contributed to this increase in poverty. Immigrants, for example, are more likely to be poor than native-born residents. Growth patterns have also exacerbated the

[17] 2008 – 2012 American Community Survey 5 – Year Estimates.

concentration of poverty. Housing in the northern part of the city caters to upper-income families, while affordable housing investment has occurred in more distressed neighborhoods.

OPPORTUNITIES FOR IMPROVEMENT

Creating more and better paying jobs in Fresno would help address household poverty; these policy opportunities are addressed in the Economic Development and Fiscal Sustainability Element. Improving the rate of education attainment, a major factor in improving income, is addressed later in this element.

The concentrations of poverty in the central, western, and southern portions of Fresno suggest several opportunities for the City, such as targeting the development of jobs that pay a living wage in and near these neighborhoods, and dispersing low-income households to more mixed income neighborhoods. It is anticipated a subsequent community plan, such as the proposed Downtown Neighborhoods Community Plan, may further refine strategies to improve household income in these areas.

Crime and Safety

The cause-and-effect relationships between community design, crime, and public health are difficult to understand, but some general relationships have been found. Notably, both the reality and the perception of safety are indicators of a neighborhood's overall economic and social health. Safety is necessary in neighborhoods in order to foster common values and to improve quality of life. In contrast, crime in neighborhoods creates fear and distrust among residents. Finally, while chronic disease is a major health challenge, many chronic disease prevention strategies—such as urban design that encourages walking and biking, provision of parks and recreation areas, and attracting grocery stores to neighborhoods—are less effective when fear and violence pervade the environment.[18] Findings about this relationship include:

- Violence and fear of violence cause people to be less physically active and spend less time outdoors, and also alter people's purchasing patterns, limiting access to healthy food;
- Experiencing and witnessing violence decrease motivation and capability of eating healthfully and being active;
- Violence reduces social interactions that would otherwise contribute to community cohesion; and

18 Cohen, L., et al. "Addressing the Intersection: Preventing Violence and Promoting Healthy Eating and Active Living." Prevention Institute, May 2010 p 1.

- Violence acts as a barrier to investment in community resources and opportunities, including those that support healthy eating and active living.

OPPORTUNITIES FOR IMPROVEMENT

The Plan continues support of the City of Fresno Police Department's efforts to prevent and investigate crime, as covered in the Public Utilities and Services Element. Target ratios of officers per 1,000 residents will be set as part of the budgetary process. A viable local approach to crime reduction and increasing perceptions of safety in Fresno communities requires attention to the physical and social environments that either support or deter crime. The physical features, layout, and design of many aspects of neighborhoods can influence crime prevention and other crime-related outcomes, such as neighborhood deterioration and residents' fear of crime.[19] In addition, the physical design of buildings and streetscapes can help to deter crime, a concept known as Crime Prevention Through Environmental Design, or CPTED, is an approach that suggests design policies for new development and opportunities to reinvest in better design for established neighborhoods.

Educational Attainment

In the United States, the poorest communities are usually also those with the highest proportions of people without a high school diploma. This is because low-income communities often have poorer quality educational systems and lack access to basic resources that would improve student performance. Poverty also places greater pressure on students to leave school early in order to earn money; and, low quality and incomplete education makes it harder to find well-paying employment, increasing the likelihood that these students grow up and continue to live in poverty. A high poverty rate may also relate to the fact that many residents are foreign-born and may have limited English-language skills, precluding them from higher paying jobs.

Not having a high school diploma is associated with several negative health outcomes. In 2002, 28 percent of adult Americans without a high school diploma lacked health insurance, in comparison to 8 percent of people with at least a Bachelor's degree. More to the point, in 2005, 22 percent of adults in the county aged 18 to 64 had no health insurance, compared to a statewide average of 14 percent.[20]

The rate of educational attainment is not distributed equally across the city. The areas of the city with the lowest rates of high school graduates are in central and

[19] Taylor, R. and A. Harrell. "Physical environment and crime." As presented to the National Justice Institute, 1996.
[20] Bengiamin, *et. seq.* 2008.

southwestern Fresno, at times exceeding 53 percent of the adult population. In contrast, northern Fresno has the highest rates of high school diplomas, with more than 88 percent of the population with diplomas in many areas. This distribution is almost identical to the poverty rate, with higher rates of poverty and lower proportions of high school diplomas appearing to correlate. About 20 percent of the adult population in the county has a college degree, compared to 27 percent statewide, and the city and county lag behind the rest of the state in residents with graduate degrees (6 percent vs. 11 percent). Moreover, about 26 percent of adult residents of Fresno have not graduated from high school, compared with less than 20 percent across the state.

Raising educational attainment is not only critical for health outcomes, but it is also essential to increasing opportunities for jobs and employment, as discussed in the Economic Development and Fiscal Sustainability Element.

OPPORTUNITIES FOR IMPROVEMENT

The City has no control over the local public schools or institutes of high education. It can, however, work with these agencies and with private educational institutions on their location and mission. Opportunities may also exist to partner with neighborhood schools as locations for public services and outreach, which may then encourage greater interest in school and opportunities for adult education and pursuit of a General Education Diploma (GED). Joint use agreements for open space and recreation facilities are discussed elsewhere in this element.

A factor in the city's low rate of educational attainment may also be its lack of appeal to people with a college degree, especially recent graduates in their twenties. Fresno has a shortage of large private employers that offer career development and high salaries and lacks the walkable mixed-use neighborhoods that appeal to this population. The City has the potential to develop these assets, however, particularly by leveraging the presence of a major California State University in the city. Possible strategies are discussed in the Economic Development and Fiscal Sustainability Element.

10.3 ACCESS TO PARKS AND RECREATION

Exercise is critical to achieving positive health outcomes. Lack of physical activity is a primary risk factor in five of the top ten causes of death in California: heart disease, cancer, stroke, diabetes, and Alzheimer's disease. It is also a primary risk factor for obesity, which itself contributes to the same prevalent causes of death. Recent statistics indicate that almost half of adult Californians (ages 18 and older) fail to meet the

national recommended guidelines for physical activity.[21] Planners and public health practitioners recognize that community, neighborhood, and transportation system design often influences the extent to which physical activity fits into daily life, with the biggest barriers being long distances, lack of facilities, and safety concerns. When compared with people who were continually sedentary, those who increased their leisure time physical activity had 34 percent lower mortality, and those who were continually active had 45 percent lower mortality. These results did not vary in analyses stratified by obesity and functional limitations.[22]

Lack of physical activity is also a significant problem in the county. Only 64 percent of children ages 5 to 17 engaged in vigorous physical activity at least three days per week.[23] County students, in grades 5, 7, and 9, lack cardio-respiratory endurance as evidenced by poor results for aerobic capacity. In 2010, two-thirds of students in grades 5, 7, and 9 did not achieve the standards in all six areas of the physical fitness test.

Access to and motivation to use physical recreation resources improves rates of physical activity, and the associated health benefits. Studies suggest people who live within walking distance (one-fourth mile) of a park are 25 percent more likely to meet their minimum recommended weekly amount of exercise.[24] Public parks also serve as places for physical recreation as well as community anchors that can bolster emotional well-being.

Fresno has about 3.28 acres of parkland per 1,000 residents, compared to 5.0 in Visalia and 13.0 in Sacramento (which has 2.5 acres for neighborhood parks; 2.5 acres for community parks; and 8 acres for citywide parks, greenways and open space). In 2012 and 2013, Fresno was ranked last out of the 40 and then 50 largest U.S. cities, respectively, for ParkScore, a measure that takes into account public open space acreage, services, investment, and access.[25] The City's parks are also not distributed proportionate to the population. Overall, only 40 percent of residential lots in the city are within walking distance of a public park. The northern, generally less dense, areas of the city are well served by parks, open space, and bike routes. In contrast, the central areas of Fresno south of Shaw Avenue and west of State Route 41 have fewer and smaller parks, despite being some of the denser populated portions of the city.

---

[21] Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System, Chronic Disease Indicators, Physical Activity Trends for California, 2009.
[22] Balboa-Castillo, T. "Physical activity and mortality related to obesity and functional status in older adults in Spain." *American Journal of Preventive Medicine* Vol. 40, Issue 1, 2011.
[23] California Health Interview Survey, 2009. *Vigorous Physical Activity At Least 3 Days Per Week.*
[24] Frank, L., et al. "Linking objectively measured physical activity with objectively measured urban form: findings from SMARTRAQ." *American Journal of Preventative Medicine* Vol. 28, Issue 2, 2005.
[25] Trust for Public Land: http://parkscore.tpl.org/rankings.php

Some schools allow unrestricted access to their grounds outside of school hours, which helps provide recreational access in areas with few parks, especially west of State Route 99. Few of the school grounds east of State Route 99 and south of Herndon Avenue are unrestricted.

OPPORTUNITIES FOR IMPROVEMENT

Priorities for this Plan include (1) to increase the amount of parks and open space available to its residents, and (2) to enhance access to parks and public recreation facilities within the central area of Fresno for those living in established neighborhoods. While the creation of large parks in the older, denser portions of the city would be difficult, there are vacant parcels in key locations to create Pocket Parks with a children's playground and a running path. The Parks, Open Space, and Schools Element addresses the amount and location of future parks and partnerships with neighborhoods needed to secure new parks and maintenance resources.

Another approach that leverages existing assets is to enter into joint use agreements with public schools in underserved areas, as these schools often have outdoor playfields and space and sometimes indoor resources. Many of the areas underserved by parks have schools located in the neighborhood. However, joint use agreements can be obstructed by the need to establish who ensures and pays for security, cleanup, and liability.

10.4 ACCESS TO HEALTHY FOOD

In addition to lack of exercise, poor diet is another major risk factor contributing to chronic disease prevalence. In the U.S., obesity and diet-related chronic disease rates are escalating; people are experiencing rising antibiotic resistance as a result of the treatment of farm animals; food, air, soil, and water are being contaminated from chemicals and pathogens related to agriculture; and natural resources such as fresh water and prime farmland are being depleted. These threats have environmental, social, and economic costs that are growing, cumulative, and unequally distributed. These issues all relate to the food system—what we eat and how it is produced.

Obesity is a particularly important concern for the healthy development of children. Childhood obesity has more than tripled in the past 30 years. The prevalence of obesity among children aged 6 to 11 years increased from 6.5 percent in 1980 to 19.6 percent in 2008. The prevalence of obesity among adolescents aged 12 to 19 years increased from

5 percent to 18.1 percent.[26] Obese youth are more likely to have risk factors for cardiovascular disease, such as high cholesterol or high blood pressure. Children and adolescents who are obese are also at greater risk for bone and joint problems, sleep apnea, and social and psychological problems such as stigmatization and poor self-esteem.[27,28] Finally, obese youth are more likely than youth of normal weight to become overweight or obese adults, and therefore more at risk for associated adult health problems, including heart disease, Type 2 diabetes, stroke, several types of cancer, and osteoarthritis.

County children and adults are more overweight, suffer from diabetes and heart disease, are less physically active and have less access to healthy food and recreational resources than their statewide counterparts. According to the 2009 California Health Interview Survey, the percentage of overweight and obese adults in the county was 34.4 percent and 30.2 percent, compared to 33.6 percent and 22.7 percent statewide, respectively.[29]

In some communities, healthy food access is a big factor in obesity rates, particularly where there are challenges to both physical proximity and affordability. Residents in communities with a more "imbalanced food environment" (where fast food restaurants and corner stores are more convenient than grocery stores) have more health problems and higher mortality than residents of areas with a higher proportion of grocery stores, other factors held constant.[30] Likewise, the presence of a supermarket in a neighborhood is linked to higher fruit and vegetable consumption and a reduced prevalence of obesity.[31,32] In low-income neighborhoods, the addition of a supermarket has been found to increase residents' likelihood of meeting nutritional guidelines by one-third.[33]

"Food deserts," defined as large and isolated geographic areas where mainstream grocery stores are absent or distant, are linked to poor food habits and associated

---

[26] Ogden, C.L., et al. "Prevalence of high body mass index in US children and adolescents, 2007–2008." *Journal of the American Medical Association*, 303(3):242–9, 2010.
[27] Daniels, S.R., et al. "Overweight in children and adolescents: pathophysiology, consequences, prevention, and treatment." *Circulation,* 111;1999–2002, 2005.
[28] U.S. Surgeon General. *Overweight and Obesity: Health Consequences*. Rockville: MD, 2001.
[29] California Health Interview Survey, 2009. <http://www.chis.ucla.edu/main/DQ3/output.asp?_rn=0.7438928>.
[30] Mari Gallagher Research and Consulting Group. "Examining the Impact of Food Deserts on Public Health in Chicago." 2006.
[31] Inagami, S., et al. "You are where you shop: grocery store locations, weight, and neighborhoods." American Journal of Preventative Medicine Vol. 31, Issue 1, 2006.
[32] Sturm, R., and A. Datar. "Body mass index in elementary school children, metropolitan area food prices, and food outlet density." Public Health Vol. 119, 2005.
[33] Morland, K., et al. "The contextual effect of the local food environment on residents' diet." American Journal of Public Health Vol. 92, Issue 11, November 2002.

negative diet-related health outcomes. The 2007 report "Searching for Healthy Food: The Food Landscape in California Cities and Counties" report found that fast food restaurants and convenience stores were five times more prevalent in the county than supermarkets and produce vendors.[34] According to the USDA Food Desert Locator, there are 12 census tracts in the county that are classified as food deserts. The distribution of retail food outlets in the county is: 50 percent fast-food restaurants, 34 percent convenience stores, 12 percent supermarkets, 3 percent produce stores, and 1 percent farmer's markets.[35]

Furthermore, 21.6 percent of the population in the county is categorized as "food insecure" compared to 16.6 percent nationwide.[36] The county, one of the world's top producers of fruits and vegetables, exports much of its bounty out of the county. It is not uncommon for produce from the county to be sold to a distributor who ships it out of the county, out of California or out of the U.S. for processing or packaging. The product then finds its way back to Fresno via national supermarket chains at a higher cost.

Full service grocery stores and produce markets are inconsistently distributed around Fresno, with fewer on the city's edges. The areas west of State Route 99 are largely devoid of grocery options.

[34] CA Center for Public Health Advocacy. *Searching for Healthy Food, The Food Landscape in Fresno County.* 2007.
[35] United States Department of Agriculture. Food Dessert Locator, Fresno County. 2011.
[36] Feeding America. *Food Insecurity & Food Cost In the US, Fresno County.* 2011

While Fresno is surrounded by some of the most productive agricultural land in the world, one in five residents in the county of Fresno is "food insecure," and less than 10 percent of residential land in the city is within walking distance to a grocery store.

Most city residents would be unable to easily walk to a grocery store, since their locations are spread out. Only 10 percent of residential land in the city is within walking distance of a grocery store or fresh produce market. Farmers markets are also unevenly distributed.

The central areas of Fresno south of Shaw Avenue and west of State Route 41—on both sides of State Route 99—are underserved by grocery stores as well as parks, with fewer and smaller parks than other parts of the city. This quadrant could be considered to be the part of Fresno with the least access to healthy living options. Smaller areas lacking healthy lifestyle access include the neighborhood between McKinley and State Routes 41, 168, and 180; the neighborhood immediately west of the fairgrounds; and the area east of State Route 41 between Herndon, Bullard, and Cedar Avenues.

Urban Agriculture

Urban agriculture is the practice of cultivating, processing, and distributing food in or around a city or town for local consumption. Urban agriculture includes farmers' markets, farm stands, community gardens, on-site garden produce market stands, and urban farms. Direct access to fresh fruits and vegetables through urban agriculture can improve food security and food safety.

The City became involved in healthy food access issues in 2007 when it was approached by several entities seeking to establish farmer's markets. One of these applicants had received grant funding, only to discover that in order to allow a farmers' market on its property, a rezoning was necessary to comply with land use regulations. As a consequence, the City has made the zoning regulations for farmers' markets more flexible. Additional initiatives for farmers' markets and other types of urban agriculture are presented in this element, and the concurrent Development Code update will offer regulations for integrating healthy community concepts into the City's regulations, consistent with General Plan policies and programs.

Another facet of urban agriculture is community gardens, which are on the rise in Fresno and in cities around the country. A community garden is a piece of land gardened by a group of people, utilizing either individual or shared plots on private or public land for the purpose of providing fresh produce and plants for the cultivators personal use as well as satisfying labor, neighborhood improvement, sense of community and connection to the environment. The land may produce fruit, vegetables, and/or ornamentals. They typically occur on a small-scale in urban and suburban areas and may be found in neighborhoods, schools, connected to institutions such as hospitals and churches, and on residential housing grounds. The benefits include:

- Recreational and community-building opportunities for residents;
- Inexpensive access to fresh, healthy produce – which can serve as part of the solution to food deserts and other public health issues related to diet, including obesity;
- Business opportunities for residents to sell goods that they may grow, e.g. at farmers' markets; and
- Productive use for vacant or underutilized land.

Farmers markets provide residents with access to fresh, local produce.

OPPORTUNITIES FOR IMPROVEMENT

This Plan reflects the City's recent efforts to commit to several broad approaches to address these issues, including:

- The 2007 Fresno Green Strategy includes a policy to "encourage all city facilities (including schools) to serve at least 20 percent locally grown and organic foods beginning in 2009." While this policy was intended mostly as an economic development strategy, it has the possibility to improve healthy food access.
- As part of a multi-jurisdictional working group dedicated to improving health by improving the built environment, the City adopted a "Resolution Supporting the Collaborative Efforts of the City of Fresno Development and Resource Management Department and the County of Fresno in their efforts to Incorporate Public Health Strategies into Local Land Use, Transportation and Community Design Planning."
- Additional partnerships with the County of Fresno include Walkability Workshops in underserved neighborhoods, participation in Farmers Market and Community Garden conferences, and now, work on healthy communities in the General Plan and Development Code updates.
- The City also has been working with The California Endowment in partnership with the communities of central, southeast, and southwest Fresno as part of its Building Healthy Communities campaign.

Transportation Options

Transportation system design is related to health outcomes in a number of ways. For instance, while streets are designed to meet safety standards, negligent use by drivers, bicyclists and pedestrians can result in increased collisions or injuries. Statistics have shown traffic collisions and fatalities are substantially higher when vehicles are traveling faster, which naturally occurs on unobstructed and wide multi-lane roads. However, pedestrian injuries can be reduced more than seven-fold by slowing traffic down from 30 to 20 miles per hour miles per hour, and slowing traffic from 40 to 20 miles per hour can reduce a pedestrian's chance of being killed, if hit by a vehicle, from 85 percent to just five percent. Reasonable road widths can naturally support efforts to reduce vehicle speed. Additionally, there is also a correlation between vehicle miles traveled (VMT) and traffic collision rates. Regardless of speed, the lower the VMT, the less likely there will be a traffic collision. A design emphasis of this Plan and the Complete Neighborhoods concept is to reduce VMT. Decreasing the VMT also has the added benefit of reducing air pollution, which has a major impact on local health conditions in Fresno.

By exchanging some of those vehicle trips for non-motorized trips, a community can realize health benefits. For instance, there is evidence that for each half-mile walked per day, people are about five percent less likely to be obese (controlling for age, education, gender, and ethnicity). Almost one-third of Americans who commute to work via public transit meet their daily requirements for physical activity by walking as a part of their daily life, including to and from the transit stop.[37] This kind of access to routine physical activity is critical for individuals and families who lack the funds to support gym memberships or access to other private facilities.

Transit

Public transit provides travels options for people who cannot or choose not to drive, and can be a crucial means of accessing health services as well as jobs and education. The Fresno Area Express (FAX) serves about 17.5 million annual passenger trips. Figure HC-1: Public Transit shows the location of bus stops in the city and a quarter-mile radius from each, representing a normal walking distance. FAX's service area is fairly extensive, with 60 percent of residential and 94 percent of commercial land in Fresno within walking distance of a bus stop.

[37] Besser, L. and A. Dannenberg, "Walking to public transit: steps to help meet physical activity recommendations." American Journal of Preventive Medicine, Vol. 32, Issue 4. November 2005.

Bicycling

The City of Fresno has a long-standing policy that biking is an important activity for many reasons including exercise and health. The City Council adopted the Active Transportation Plan (ATP), which serves as an administrative and implementing guide, to increase the miles of bike lane (along roadways) and bike paths (separate rights-of way) available to bike riders. Bicycle safety is a significant concern addressed in the ATP, which will be addressed by continuing to build safe bike routes and through education.

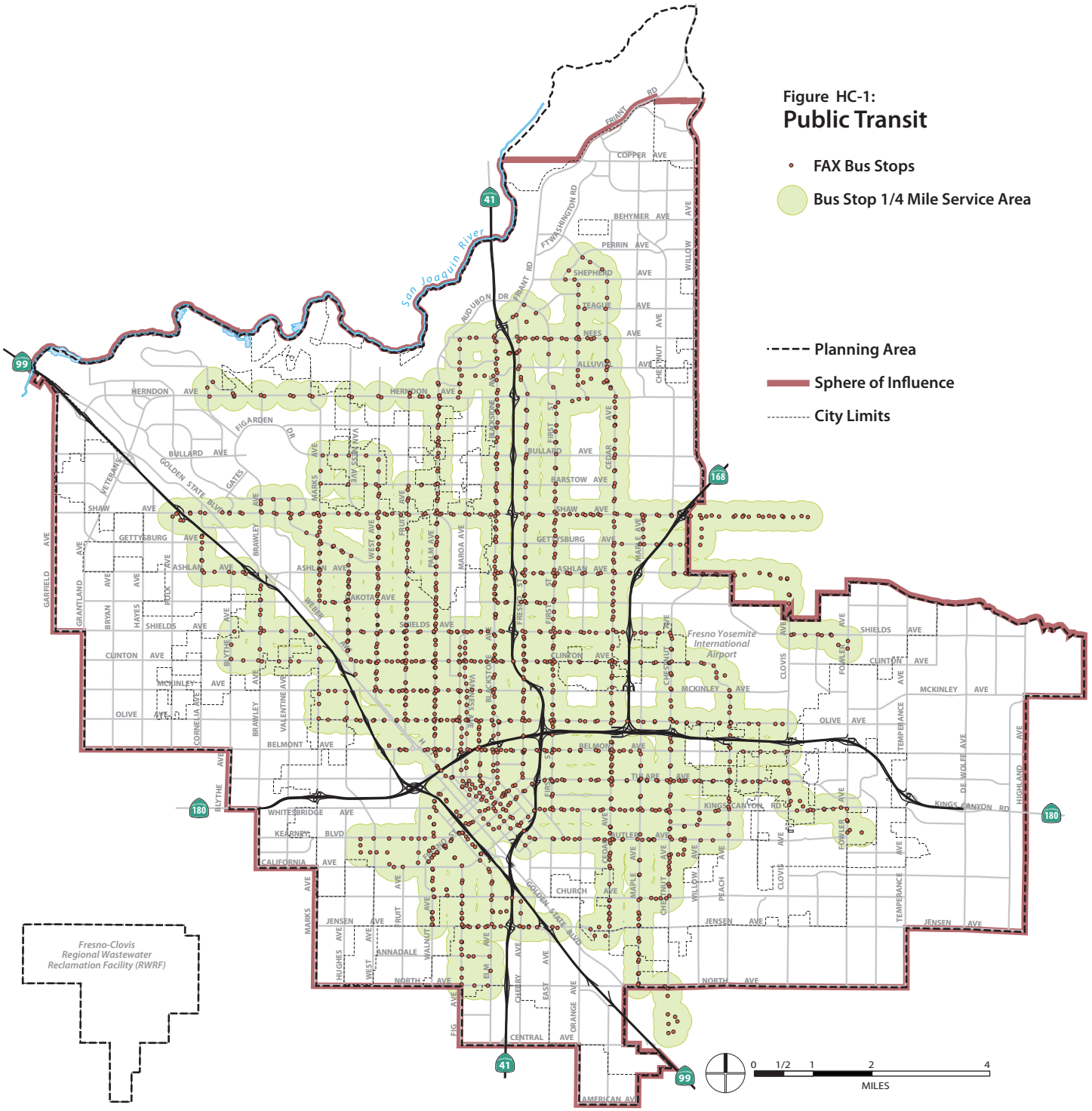
Walking

Walking delivers myriad physical and social benefits. Being able to walk to a job, the store, a park, or simply for recreation provides physical exercise, eliminates travel expenses, and can provide social cohesion and sense of place. While walking is almost always an option, as a practical matter an unpleasant environment or a perception of risk can discourage this activity. For example, walking can be discouraged by the unavailability of sidewalks in certain locations, negligent use of roadways by high-speed automobile traffic, visually uninteresting or unpleasant surroundings, the presence or threat of crime, and long distances between destinations. The City has options for addressing some of these negative factors including through land use designations, development standards, streetscape design, and police services as funding becomes available.

Creating additional safe walking and biking routes to schools for children is an important part of the city's circulation system and a priority for this Plan. Providing these features will allow for physical activity opportunities, help with school attendance, and bolster the role of schools as community resources.

OPPORTUNITIES FOR IMPROVEMENT

This Plan's transportation and mobility policies are intended to further improve the safety and efficiency of the system for all users; this will promote a better environment for walking, biking and the use of transit. This Plan also supports opportunities to increase the number of persons who bicycle to work—or bicycle mode split—from just less than one percent of total commuters to work, to a much greater proportion. Completion of the city's planned bicycle lane and path network will make travel around Fresno by bicycle more feasible. The Mobility and Transportation Element addresses many of these issues.



Source: City of Fresno Public Transportation (FAX), 2014.

Safe and Affordable Housing[38]

Housing can have direct and indirect effects on community health. Physical housing characteristics have been linked directly to several adverse health outcomes. For example, the presence of dampness and mold leads to increased risk of respiratory and other illnesses, while dilapidated and abandoned housing increases the risk of accidental injury among residents and is associated with increased emotional stress. Lead exposure from lead-based paint is one of the largest environmental health hazards facing children throughout the nation, and yet about three-quarters of the nation's housing stock built before 1978 contains some lead-based paint. Population density and overcrowding have also been associated with increased chances of contracting infections and sustaining injury. Based on findings such as these, it follows that well-constructed and managed housing can avoid health problems associated with allergens, neurotoxins, other indoor air quality issues, disease exposure and stress due to overcrowding, and neighborhood safety issues as well.

Not only is there evidence that poor quality housing directly causes negative health effects, but affordable and higher quality housing may have indirect health benefits, too. Affordable housing may improve health outcomes by freeing up resources for nutritious food and health care, and may reduce stress by providing families with greater residential stability, self-esteem, and sense of security and control over their environments.[39] Home ownership in general has been associated with reduced morbidity and mortality risk.[40]

To really get at solutions for ensuring housing affordability beyond those already identified in the Housing Element, Fresno may also need to think about factors addressed by other General Plan elements that contribute to the lack of affordability. For example, family budgets must also factor in the cost of transportation when considering where to live. Compact, mixed-use communities with a balance of housing, jobs, and stores and easy access to transit have lower transportation costs because they enable residents to meet daily needs with fewer cars, the single biggest transportation cost factor for most households. So, efforts to increase walkability of neighborhoods, a key theme in this Plan, may also result in overall increases in affordability for Fresno residents.

---

[38] The Housing Element adopted in 2016 is in a companion volume of this General Plan.

[39] Center for Housing Policy. "The positive impacts of affordable housing on health; a research summary." 2007.

[40] Filakti, H., and J. Fox. "Differences in mortality by housing tenure and by car access from the opcs longitudinal study." *Population Trends.* 81:27-30, 1995.

OPPORTUNITIES FOR IMPROVEMENT

One of the City's primary planning considerations is to address the need for increasing the affordable housing opportunities for low- and moderate-income households, with special emphasis on persons with disabilities, people experiencing homelessness, large families, persons living in substandard housing, and persons paying rent that exceeds 50 percent of their monthly income. As part of the implementation of the Housing Element, programs are identified each year to improve both the quantity and quality of the affordable housing stock in the city. Other considerations include upgrading the city's infrastructure needs in low- and moderate-income neighborhoods, initiating programs to reduce crime, undertaking a code enforcement program and reducing homelessness.

Given its limited budget and fiscal capabilities, the City is working in close partnership with agencies such as the Fresno Housing Authority to contribute to the creation and rehabilitation of safe, affordable housing. The relatively low cost of land and ample supply of housing in the area also means that the market generally provides a supply of affordable housing on its own, although Fresno's incomes are well below the state average and what is considered affordable in some parts of the state may not be in Fresno. This General Plan designates areas for higher densities and calls for by-right zoning to implement higher densities in the Development Code update consistent with the City of Fresno Housing Element. New policies to improve housing overlap with other issues, such as supporting housing that better serves an aging population and implementing the State's newest building code, the CALGreen Code.

Youth Engagement and Empowerment

Engaging the younger members of our community is important to shaping the city's direction. They offer a valuable voice and direction as the future stewards of our community. Soliciting youth feedback and input in designing public programming or infrastructure (parks, schools, etc.) that directly serve youth can provide significant benefits to institutions and neighborhoods. Youth are an important constituency when it comes to long-term care of investments (brick and mortar and time); if they help design and build something, they have proven they will take care of it.[41]

OPPORTUNITIES FOR IMPROVEMENT

Fresno has a Youth Engagement Team (YET) that is a collaborative network of 14 youth serving organizations. The idea is that young people should have a voice in their communities, with the chance to be advocates for change and to participate in the

[41] Comments from leaders at the Fresno Youth Leadership Institute – September 30, 2011.

decision-making process on issues that affect them. Tasks undertaken include researching and documenting local issues, creating campaigns to shift community attitudes, drafting suggestions for and working with local governments to enact policy change, and learning leadership skills necessary to inspire others to get involved. Through the YET work in collaboration with the Building Healthy Communities campaign, youth and adult partnerships are currently working to engage youth in policies surrounding transportation, education equity and urban land use. Some of these initiatives and partnerships include:

- **Students United to Create a Climate of Engagement, Support and Safety (SUCCESS)** led by Youth Leadership Institute. The goal of SUCCESS project is to ensure equal learning opportunities for all students in the Fresno Unified School District (FUSD) through creating healthy school climates that support positive youth development. Currently, the SUCCESS team is working on recommendations to improve FUSD discipline policies and procedures to ensure behavior is addressed fairly and effectively. The goal of the program is to measure school attendance and reduce the number of school days missed due to suspension and expulsion.
- **Summer Night Lights (SNL),** led by the City of Fresno Parks, After School, Recreation and Community Services (PARCS). The SNL program aims to address youth violence prevention in key neighborhoods in Fresno where youth violence is most prevalent, by offering support services and measuring local violent crime data. SNL currently operates at Romain Park and Holmes Park. The underlying goal is to reduce the violence in the areas of these two parks, as measured by Fresno Police Department crime data, particularly violent crimes involving youth.
- **Fresno Youth Council for Sustainable Communities,** led by the Center for Multicultural Cooperation. The California Center for Civic Participation, Center for Multicultural Cooperation and the Wangari Maathai Center, have established Youth Councils for Sustainable Communities in Fresno, Sacramento and the Bay Area. The purpose is to ensure that youth are engaged in important decisions that will help transform communities into thriving, healthy places that preserve the environment and provide economic opportunities for all people.
- **Fresno Boys and Young Men of Color,** led by Stone Soup Fresno. Stone Soup Fresno is working to ensure boys and young men of South East Asian heritage are included in local research and policy efforts to improve local health, education and economic outcomes for boys and young men of color.

Furthering the engagement of the Fresno's youth in these civic activities is a cost effective way for the City to reduce crime, increase educational attainment, and improve a number of health indicators across all populations. This Plan includes specific policies to support the YET program and also provides clear opportunities with

its own departments, such as PARCS, and expand collaborative efforts with local schools.

Building Healthy Communities Initiative

The City has been coordinating with community groups to address priorities of residents in south Fresno – generally those neighborhoods south of State Route 180. One such group, The California Endowment, has launched a "Building Healthy Communities Initiative." The Building Healthy Communities Initiative addresses a broad range of land use and social issues, which include:

- Ensure that the built environment is clean, well maintained and conducive to health in all city neighborhoods and includes adequate and equitable provision of sewer and water within a reasonably priced homeownership market.
- Establish effective education and job training for area youth that is both academic and trade oriented.
- Ensure that underserved neighborhoods are included in strategies for job creation, including opportunities for home grown business development.
- Actively seek opportunities to create and maintain safe parks of all sizes in every city neighborhood to provide families with spaces to interact with their neighbors and promote physical activity.
- Create opportunities both public and private for the Downtown neighborhoods that include entertainment, stores (retail, food, clothing etc.), parks, recreation centers and after school programs, especially for youth.
- Acknowledge and address attitudes within the government institutions, economic systems and law enforcement culture toward immigrant and ethnic minority communities that perpetuate inequality.
- Develop a system of transportation that responds to the needs of the most vulnerable sectors of the community, including focused bus routes for specific geographic areas of need and/or particularly vulnerable subgroups (e.g. the elderly, disabled and farm workers).
- Provide accessible healthcare services beyond emergency care.
- Establish an equitable system of public safety that supports community while also reducing crime.

Although these matters are not identified policies of this Plan, it is a stated policy of this Plan to coordinate with community groups such as those engaged in The California Endowment Building Healthy Communities Initiative to address community land use priorities.

10.5 OBJECTIVES AND POLICIES

The vision for this element strives to:

- Increase access to medical and health services for underserved areas and populations at greater risk for poor physical health.
- Design new development and redevelopment to promote physical activity, access to fresh and healthy food, and deter crime.
- Continue programs to improve regional air quality.
- Expand access to infrastructure and community programs that facilitate healthy living, such as parks, recreation facilities, bike paths, and community gardens.
- Support transportation and housing options that are affordable, reliable, effective, and safe.

OBJECTIVE

HC-1 Work with neighborhood associations of local residents, businesses, and institutions on neighborhood and community health initiatives.

IMPLEMENTING POLICIES

HC-1-a **Neighborhood Associations.** Promote the establishment of formal and self-sufficient "neighborhood associations" of local residents, businesses and institutions who are committed to working together and with others in Fresno to achieve the health, safety, recreation, employment, business development, property maintenance and other goals of their neighborhoods.

Commentary: *Neighborhood associations can help coordinate with the City on setting priorities and obtaining feedback on programs and projects that are implemented.*

HC-1-b **Local Health Workshops.** Work with health providers, schools, religious institutions, neighborhood associations and others to develop and maintain a program of regular health workshops (and mobile health clinics) operated by medical service providers and hosted in local neighborhood facilities such as schools, parks, religious institutions, businesses, and parking lots.

HC-1-c **Neighborhood Care Facilities.** Support public agencies and private sector groups who provide care facilities in neighborhoods and job centers through new partnerships and incentives, and create

opportunities to provide healthy, secure environments for Pre-K children, older adults, and people with disabilities.

HC-1-d **Cultural Sensitivity.** Work with providers to ensure that additional health care services are offered in a way that is culturally sensitive and linguistically appropriate for the diverse communities in Fresno.

Commentary: *The City will encourage collaborative partnerships between the County of Fresno Health Department; California State University, Fresno; medical professionals; community-based agencies; service providers; schools; and local agencies.*

OBJECTIVE

HC-2 Create complete, well-structured, and healthy neighborhoods and transportation systems.

IMPLEMENTING POLICIES

HC-2-a **Healthy Neighborhoods.** Promote the design of Complete Neighborhoods whose physical layout and land use mix allow for walking to local stores and services, biking, and transit use; foster community pride; enhance neighborhood identity; encourage public safety; are family-friendly; and address the needs of residents of all ages and abilities.

Commentary: *Related policies are in the Urban Form, Land Use and Design Element.*

HC-2-b **Supportive Housing.** Continue to promote the availability of group housing facilities, emergency residential shelters, and similar housing arrangements throughout the city consistent with State and federal law.

HC-2-c **Prevent Crime through Design.** Incorporate Crime Prevention Through Environmental Design (CPTED) principles and best practices into project review procedures for new development and major renovations.

HC-2-d **Mobility for Carless Population.** Improve multi-modal mobility for populations that do not have access to a car by connecting neighborhoods to major destinations, including parks; civic facilities; educational institutions; medical facilities; employment centers; shopping destinations; and recreation areas.

Commentary: *Details and related policies in the Transportation and Mobility Element describe how this will accomplished with a variety of modes.*

HC-2-e **Bike and Pedestrian Network.** Continue to promote alternative modes of transportation through development and maintenance of a citywide pedestrian and bicycle network.

OBJECTIVE

HC-3 Create healthy, safe, and affordable housing.

IMPLEMENTING POLICIES

HC-3-a **Universal Design.** Work with residential developers to update the City of Fresno Universal Design Standard to facilitate incorporation of lifecycle design principles in new residential development and make these options available to purchasers, to help community members stay in their homes and neighborhoods as they age.

Commentary: *This idea is valuable to the concept of creating Complete Neighborhoods. Another common term is "visitability," referring to the desire for friends or family of any age or physical ability to be able to visit the home. A life cycle or "visitable" house includes fixed accessible features (wider doors and halls, open floor spaces, clear traffic patterns, etc.), what many people understand to be "universal design" principles. Lifecycle housing also provides for adaptable features, such as wall reinforcement for later installation of grab bars, or removable base cabinets for future knee space, to accommodate wheelchairs.*

HC-3-b **Housing-Related Illness Assessment and Testing.** Support efforts to provide community assessment and testing programs for housing-related illnesses (i.e. blood lead levels, respiratory health, and skin conditions).

Commentary: *Work collaboratively with the American Lung Association to support assessment and testing of housing related illnesses through best practice program, such as the Master Home Environmentalist Program.*

HC-3-c **Housing Services.** Publicize housing programs and help residents make the connection between federal, State, County, City, private, and community-based housing services and local government resources related to rehabilitation and affordable housing improvements.

Commentary: *Recommendations from the National Center for Healthy Housing's "Housing and Health: New Opportunities for Dialogue and Action" will help the City implement this policy.*

HC-3-d **Green Standards for Affordable Housing.** Provide appropriate incentives for affordable housing providers, agencies, non-profit, and market rate developers to use LEED and CALGreen Tier 1 or Tier 2 standards or third-party equivalents.

Commentary: *The City will publicize the health, environmental, and long term economic and maintenance benefits of applying LEED, CALGreen for third-party equivalents to projects in Fresno.*

HC-3-e **Health Services and Medical Facilities in Underserved Neighborhoods.** Publicize existing health programs and help residents make the connection between County and community-based health services and medical facilities. Work with hospitals and the County of Fresno Health Department to increase siting and development of medical clinics and medical facilities.

HC-3-f **New Drive-Through Facilities.** Incorporate design review measures in the Development Code to reduce vehicle emissions resulting from queued idling vehicles at drive-through facilities proximate to residences.

Commentary: *This action will help the City achieve the health benefits associated with improved neighborhood air quality through reduced auto-related emissions.*

HC-3-g **Residential Compatibility.** Consider developing a program with community stakeholders to address compatibility of industrial and heavy commercial uses and zoning with established neighborhoods.

OBJECTIVE

HC-4 Improve property maintenance.

IMPLEMENTING POLICIES

HC-4-a **Business Maintenance Standards.** Update property maintenance standards, codes, and enforcement provisions to include businesses.

Commentary: *Updated maintenance standards will provide additional enforcement options related to certain types of businesses, such as*

"corner stores," which due to their nature and location have significant impacts on a healthy environment.

HC-4-b **Local Business Assistance.** Assist local store owners in established neighborhoods in identifying low-cost solutions to comply with physical accessibility requirements under the Americans with Disability Act. Provide financial assistance to qualifying businesses.

Commentary: *The City will use multi-lingual outreach to include and support small business owners not fluent in English.*

HC-4-c **Residential Maintenance Standards.** Consider the development of a residential housing inspection program to provide a structured review, evaluation and correction process to prevent substandard housing.

Commentary: *This improvement program will be initiated in targeted neighborhood areas with high concentrations of substandard and poorly maintained residential properties.*

HC-4-d **Cooperative Compliance Monitoring.** Work with "neighborhood resident associations" to monitor and enforce basic property maintenance standards to ensure neighborhood cleanliness and safety, and prevent blight-causing conditions.

HC-4-e **Code enforcement.** Conduct resident outreach, including to diverse populations, to assess the accessibility and adequacy of the City's code enforcement procedures and modify them as needed.

HC-4-f **Chronic Violators**. Design and implement procedures to address chronic code violations at single properties.

OBJECTIVE

HC-5 Promote access to healthy and affordable food.

IMPLEMENTING POLICIES

HC-5-a **Healthy Grocery Incentives.** Adopt regulations and incentives in the Development Code for locating healthy food grocery stores to increase communitywide healthy food access, with an emphasis on the attraction of grocery stores to established neighborhoods deficient in grocery stores and access to healthy and fresh food.

- Establish definitions and standards for "healthy food grocery stores" in order to ensure that businesses meeting that description have access to incentives developed with them in mind.

  Commentary: *Criteria is to be established and should consider including in the store: (1) dedicate at least 50 percent of retail space for a general line of food and non-food grocery products intended for home preparation, consumption, and use; (2) dedicate at least 30 percent of retail space for perishable goods that include dairy, fresh produce, fresh meats-poultry-fish, and frozen foods; and/or (3) dedicate at least 500 square feet of retail space for fresh produce.*

- Provide flexibility for established neighborhoods with corner stores and markets to meet the intent of a healthy grocery store, but with a lower square footage of produce area;
- Offer incentives for suitable sites that could be developed as healthy food grocery stores (with a focus on neighborhood areas with little or no access);
- Expedite permit processing as resources are available for healthy food grocery store development;
- Enable potential new healthy food grocers to consolidate parcels and/or make necessary improvements; and
- Allow for grocery stores that use less space, require less parking, and focus on the day-to-day needs of nearby residents.

HC-5-b **Food Assistance Awareness.** Support local agencies and community groups in increasing community awareness of and participation in existing federal food assistance programs, such as the Women, Infants, and Children (WIC) nutrition program and the Supplemental Nutrition Assistance Program (SNAP, formerly food stamps).

HC-5-c **Refrigeration Assistance for Local Stores.** Work with philanthropic and community institutions to create a revolving fund granting zero-interest loans to neighborhood convenience stores for the purchase of refrigeration and other fixtures necessary to allow for the sale of fresh produce.

HC-5-d **Work with Farmers Markets.** Promote comprehensive listing of all farmers markets in Fresno and support local agencies and community groups in working with farmers' markets to accept WIC and EBT by

providing technical assistance, such as providing an exchange or voucher system.

HC-5-e **Food Policy Council.** Participate in the creation of a Fresno Food Policy Council with community-based groups to study the food system as a whole and recommend changes to appropriate agencies regarding food policy that increase access.

Commentary: *The Fresno Food Policy Council will include stakeholders from many sectors of the food system, e.g., anti-hunger and food justice advocates, educators, employees of non-profits involved in food system reform, government officials, farmers, grocers, chefs, business people, food processors, and food distributors. Opportunities for youth involvement in the work of the Fresno Food Policy Council will also be provided, as well as the County of Fresno Health Department's Transformation Project and the Central California Obesity Prevention Program.*

HC-5-f **Urban Agriculture.** Promote a full range of urban agriculture activities, including farmers' markets, farm stands, community gardens, on-site garden produce market stands, and urban farms. Support associations involved in these activities, which can be accomplished by a combination of the following:

- Amend the FMC to provide clear and concise permitting procedures regarding Community Gardens, On-site Garden Produce Market Stands, and Urban Farms that allow sale of foods grown locally.
- Create a policy for reduced planning entitlements and plan check fees.
- Make publically available an inventory of City-owned surplus land that could be used for urban agriculture.
- Continue to allow and promote community gardens in City-owned parks.
- Support the planning of community gardens within walking distance of high-density residential areas to compensate for the reduced amount of open space in these areas.
- Emphasize opportunities for urban agriculture in all areas of the city, schools, parks, residential food deserts, and especially in areas of the city with a relatively high proportion of "food insecure" individuals.

Commentary: *These provisions will supplement the availability of fresh produce in the city, while encouraging social cohesion, supporting local farmers, and reducing greenhouse gases.*

HC-5-g **Commercial Agriculture.** Continue to develop policies to allow agriculture on land greater than 50 acres in area.

OBJECTIVE

HC-6 Improve access to schools and their facilities for the community.

IMPLEMENTING POLICIES

HC-6-a **Safe Routes to Schools.** Continue to improve the conditions for youth walking and bicycling in the areas surrounding schools by working with the school districts including Fresno USD, Clovis USD, Central USD, Sanger USD, and Washington Union USD, as well as California State University, Fresno, Fresno Pacific University, and State Center Community College District to implement a safe routes to school program. Prioritize identified safe routes to school infrastructure improvements in annual transportation improvement budgets.

Commentary: *The program will identify schools and neighborhoods where the program is most needed, and engage local residents in safe routes to school workshops. This will enhance students' health and well-being, ease traffic congestion near schools, and improve air quality and community members' overall quality of life.*

HC-6-b **Site Schools on Safe Streets.** Work with all school districts operating in Fresno and private and charter schools to locate and design new school sites so they are located on safe streets.

HC-6-c **Work with School Districts on Facilities Agreements.** Work with school districts to promote the use of schools as community wide facilities. Help broker agreements between recreation organizations and school districts.

Commentary: *To make these agreements viable, the City will need to resolve issues over security, maintenance, liability, fees, and other contractual obstacles with all the school districts operating within the city.*

HC-6-d **New School Strategies.** Advocate for school siting standards that allow smaller neighborhood schools. Allow new schools to be constructed in

existing urbanized areas, and design schools to be focal points of community life.

OBJECTIVE

HC-7 Establish priorities and mechanisms for park facilities improvements linked to effectiveness and improving health.

IMPLEMENTING POLICIES

HC-7-a **Prioritization System for Parks Improvements.** Link park facility improvement priorities to a ranking system keyed to public health and safety and recreational goals, prioritize gaps in local park service areas (especially in the areas west of State Route 99, and in south central and southeast Fresno), and respond with options for pocket parks and other walkable open space amenities.

Commentary: *The best options may involve joint use and improvement of ponding basins and school-owned land.*

HC-7-b **Performance-Based Capital Improvements.** Establish a performance-based priority system for capital improvements, based upon the health and recreation goals ranking system, as one of as one of the items the City must consider prior to constructing capital improvements.

Commentary: *Unlike traditional capital improvements programs, a performance-based priority system establishes a ranking scale that measures each component (e.g., pool, court, bench, or trail) of its system against the scale related to public health. For example, it might be a one-to-three scale in which one is below expectations, two indicates that the component can meet its intended function for a given period of time, and three means that it exceeds expectations. A performance-based park planning approach will take the conversation beyond "How many acres are there?" to "How well are the parks serving the community?"*

HC-7-c **Funding Mechanisms for Open Space Maintenance.** Work with neighborhood associations and business and homeowners organizations to establish community facilities districts or pursue other citywide financing mechanisms to generate funds for maintenance of new parks and open space, or to improve the level of maintenance of existing facilities based upon neighborhood needs and priorities.

Commentary: *Options may include a voter-approved sales tax initiative for park maintenance and related needs.*

HC-7-d **Integrated Pest Management.** Formulate and implement an Integrated Pest Management Program to reduce the use of pesticides at City-owned parks and landscape areas.

OBJECTIVE

HC-8 Support programs, leadership, and opportunities for Fresno's youth.

IMPLEMENTING POLICIES

HC-8-a **Out-of-School Youth Programs.** Work with public agencies, community-based organizations, and school districts including Fresno USD, Clovis USD, Central USD, Sanger USD, and Washington Union USD to support the development of a unified and central student leadership entity for out-of-school time in Fresno, including the development of citywide standards.

- Define and promote a public image and message on the youth development approach;
- Create and engage in activities that build the field of youth development;
- Promote broad-based support and facilitate connections to schools and community resources;
- Develop programs that encourage involvement by youth of all abilities.
- Develop and increase access to resources; and
- Develop programs and learning communities through technical assistance and consultation.[42]

HC-8-b **Youth Leadership Program.** Work with the Youth Leadership Institute, Center for Multi-Cultural Communication, and other youth-oriented community organizations, including organizations that provide services for youth with disabilities, to design, support, promote, and

[42] This program is modeled on "How after-school programs can most effectively promote positive youth development as a support to academic achievement: A report commissioned by the Boston After-School for All Partnership." Wellesley, MA: Wellesley Centers for Women. National Institute on Out-of-School Time, 2003.

seek funding for a youth leadership program to involve youth directly in planning for services and programs.

Commentary: *Involvement will yield contact with caring adults, and youth leadership creates innovation in programming and facilities and helps young people shape the future of their communities. Enabling and valuing the contributions of young people is critical to keeping them involved.*

HC-8-c **Job Training, Apprenticeships, and Placement.** Work with the Workforce Investment Board, or other interested organizations, businesses, schools, and residents to create an expanded youth job development partnership, helping connect local businesses to teens for after school and summer work, volunteer positions, and other skills development opportunities.

HC-8-d **Youth Master Plan.** Work with local youth groups and organizations to seek adequate funding for City staff time, consultants, and participating neighborhood and community organizations to formulate a Fresno Youth Master Plan based upon appropriate youth goals related to land use, transportation, housing and other General Plan Elements.

This page intentionally left blank.

11 HOUSING ELEMENT CHAPTER

The purpose of the Housing Element is to provide residents, public officials, and the general public with an understanding of the city's housing needs and the goals, policies and programs that have been developed to help meet those needs. The Housing Element provides analysis of i) the city's existing, projected and special housing needs; ii) a land inventory for residential development; iii) household characteristics; iv) adequate sites to provide for the needs of households at all income levels; v) governmental and nongovernmental constraints; and vi) a statement of the communities' goals, polices, quantified objectives, financial resources, and scheduled programs for the preservation, improvement, and development of housing.

The 2015-2023 Housing Element was adopted on April 28, 2016 by Resolution No. 2016-60 and amended April 13, 2017, by Resolution No. 2017-107. It is included as a separate document.

12 IMPLEMENTATION

The Fresno General Plan provides specific policy guidance for implementation in each of the Plan elements, which also establishes a basis for coordinating City actions with adjacent jurisdictions, and regional and State agencies. This element describes the implementation process and summarizes the major City actions; the implementing policies in each element of the Plan provide details that will guide program development. A summary of the implementing policies is also provided, showing which City officials and departments are responsible for these actions, and what the timelines are expected to be. The specific timing of Plan implementation will be dependent on the City's budgetary resources and staffing and may vary depending on how market forces affect development. The Annual Report on the General Plan will keep City officials and others up-to-date on Plan implementation.

12.1 OVERVIEW

This Implementation Element provides guidance and policies for the process of implementing the Fresno General Plan. The first section of the element presents elected officials, commissions, and departments of the City that are involved in the implementation process with an overview of their responsibilities. The next section of the element describes the City's role in the implementation process through the City's Capital Improvement Program (CIP) and fiscal management strategies. Then, the relationship between the Plan and the regulatory system that guides private sector development is described. It includes an overview of the Development Code (Code) and other regulations and presents information on streamlining California Environmental Quality Act (CEQA) review and the sequencing of development. Lastly, the element includes a table with detailed actions, responsible parties, and corresponding policies that are needed to implement the Plan.

The CIP will be the primary means of scheduling and funding public infrastructure improvements of citywide benefit, consistent with the General Plan Economic Development and Fiscal Sustainability Element policies. To implement the goals of this Plan revised or new master plans for specific facilities and services may be necessary. The City has completed many studies, master plans, and management plans for City facilities and infrastructure, including the BRT Master Plan (2008), Long Range Transit Master Plan (2002), Bicycle, Pedestrian and Trails Master Plan (2010), Urban Water Management Plan (2010), Metro Water Plan (2014), Recycled Water Master Plan (2013), and the Wastewater Collection Plan (2006). Additional master plans that could enhance the goals of this Plan will need to be evaluated and may include plans such as a parks, recreation, and open space plan and a bikes and trails implementation plan. As part of the Plan implementation the City will completely reassess fees for levels of service. The public facility development impact fees of the City or other special districts will need to be reviewed and updated as necessary. Special assessment districts or other means of financing improvements benefiting specific areas, such as the South Industrial Area, employment centers adjacent to the Airport, and new neighborhoods, may be needed.

In many areas, the Plan implementation will depend on actions of other public agencies and of the private sector, which will fund most of the development and related infrastructure, consistent with California and US constitutional requirements of nexus and proportionality. The Plan will serve as a coordinating function for private sector decisions; it also provides a basis for action on concept plans and individual development applications, which must be consistent with the Plan.

The idea of concept plans, presented in the Urban Form, Land Use, and Design Element, will be further developed by, and have regulations provided in, the new Development Code. After the adoption of the General Plan, the City also anticipates

that the new Development Code will establish updated procedures for making findings for General Plan conformity decisions in new regulating and zoning implementation provisions. The City will reevaluate the General Plan every five years using information from, but not limited to, market demand studies and analysis to determine land use needs.

The major implementation process for land use proposals will be updating and administering the Code through the Zoning Map and development review procedures. The City's zoning ordinance is being updated by the preparation of the Code following the adoption of the Plan in order to implement the goals, objectives, policies, and planned land uses of the Plan. The Code will modify and add zone districts reflecting the designations on the General Plan Land Use Diagram. The Code will also update the City's Subdivision Ordinance to amend or add provisions related to land dedication and improvements for public facilities such as public streets, schools, parks, paths or trails, and waterway corridors, and reservation of sites for the community facilities, consistent with current State law.

12.2 RESPONSIBILITIES

Implementing the General Plan will involve the Mayor, the City Council (Council), the Planning Commission (Planning Commission), and other City boards, committees, commissions, and departments. The City also will need to consult with Fresno County, Madera County, the City of Clovis, the City of Sanger, and other public agencies about implementation proposals that affect their respective areas of jurisdiction. The principal responsibilities that City officials and staff have for the Plan implementation are briefly summarized below; details on their powers and duties are defined in the Fresno Municipal Code (FMC) and the Charter of the City of Fresno.

Mayor

The City of Fresno is a "strong mayor" city, in which the Mayor serves as the top-level executive for the organization. The Mayor appoints the City Manager, who is the chief administrator of the City and has overall responsibility for the day-to-day implementation of the Plan, and the members of the Planning Commission with Council approval. The Mayor also prepares and submits the City budget, which includes the Capital Improvement Plan, to the Council, and may also recommend legislation to the Council. These responsibilities are delineated in the City's Charter.

City Council

The City Council is the governing body of the City and is vested with all powers of legislation in municipal affairs. As the legislative body, the Council is responsible for

adoption of the Plan, subject to Mayoral veto or referendum, and any amendments to the Plan. The Council also adopts the zoning and subdivision ordinances embodied in the Development Code, including the Official Zone Map, to implement the Plan, and approves final subdivision maps consistent with the Plan. The Council also may adopt community plans, neighborhood plans and Specific Plans, among others, as needed for General Plan implementation, and it hears appeals from the Planning Commission regarding certain development project decisions. The Council also approves a CIP and budget to carry out the Plan.

Planning Commission

The Planning Commission hears, reviews, and makes recommendations to the City Council on development, land use, and environmental issues, including the Plan, zoning and subdivision ordinances, and other land use regulations. The Planning Commission may also prepare and recommend adoption of design guidelines and Specific Plans, community plans, Concept Plans, neighborhood plans as needed for Plan implementation. Finally, the Commission is responsible for tentative map approvals under the City's Subdivision Regulations, if it finds them to be consistent with the Plan and Specific Plans and certain development project review, as specified in the Development Code, and for other implementation actions, as specified in the Plan elements or in the Development Code.

Historic Preservation Commission

In 1979, the Council adopted the City's Historic Preservation Ordinance (HPO) and updated it in 1999, 2010 and 2012. It established the City's Historic Preservation Commission and a Local Register of Historic Resources (Local Register), patterned after the 1966 National Register of Historic Places. Fresno's Local Register thus serves to protect and preserve buildings, structures, objects and sites which are (generally) at least 50 years of age and which have both historic significance as well as integrity.

The HPO provides for three separate local landmark programs: individual designation on the Local Register, inclusion within a Local Register District and the Heritage Property program. The HPO provides legislative mechanisms to protect certain cultural resources, including:

- **Heritage Properties,** defined as a resource which is worthy of preservation because of its historical, architectural or aesthetic merit but which is not proposed for and is not designated as an Historic Resource under the HPO.
- **Historic Resources,** defined as any building, structure, object or site in existence generally more than 50 years which possesses integrity of location, design, setting, materials, workmanship, feeling and association, and is associated with historic events or with the lives of persons significant in Fresno's past, or embodies the

distinctive characteristics of a type, period or method of construction, or represents the work of a master or possesses high artistic values; or reflects, important information about prehistory or history, and has been designated by the Council to the Local Register as required by the HPO.

- **Local Historic Districts,** defined as resources related to one another in a clearly distinguishable way or any geographically definable area which possesses a significant concentration, linkage or continuity of sites, buildings, structures or objects united historically or aesthetically by plan or physical development. Contributors to Historic Districts are any building, structure, object or site that contributes to the significance of the specific Local Historic District. The Local Historic District must be significant as well as identifiable, and must meet the Local Register Criteria for listing on that Register including formal designation by the Council as required by the HPO.
- **National Register Historic Districts** is a local district that must be significant as well as identifiable and meet National Register Criteria for listing on that Register.

Unlike properties considered for the Local Register, there is no age, integrity or historic significance requirements for a Heritage Property. As with all landmark programs under the HPO, the owner of a Heritage Property may use the California Historical Building Code (CHBC), a more flexible way to meet health and safety standards. In addition to the CHBC, historic property owners may claim a federal tax credit for commercial properties placed in service prior to 1936 and may find some leniency under local zoning. The City participates in the Certified Local Government (CLG) Program administered by the California State Office of Historic Preservation. CLGs benefit from expedited review of some federally funded projects and may also apply for pass-through grants from the federal government. However, a CLG must also meet a variety of requirements to maintain this status, including a Historic Preservation ordinance, a citizen's commission, an inventory of local historic properties, adequate public participation and compliance with CEQA.

Projects that comply with the Secretary of the Interior's Standards may qualify for a categorical exemption under CEQA and a finding of no adverse effect under Section 106 of the National Historic Preservation Act. The use of these criteria and standards make environmental review faster, more efficient, and reduce costs and delays.

Development and Resource Management

The City's Development and Resource Management Department (DARM) focuses on public and private property development throughout the city and prudent management of the city's land and water resources, and public infrastructure. It manages both development and neighborhood services through downtown and neighborhood revitalization, long range land use planning, new development entitlements, building

permit issuance, building plan reviews, inspections, code enforcement, housing grant programs, and resource efficiency programs for residential and commercial properties.

Specific duties related to Plan implementation include, preparing zoning and subdivision ordinance amendments and design guidelines for Planning Commission review and City Council approval; reviewing development applications; and conducting investigations and making reports and recommendations on planning and land use, zoning, subdivisions, development plans and environmental controls. DARM also coordinates activities with numerous school districts and community college districts related to school and college sites. Finally, DARM has the primary responsibility for preparing the annual report on the Plan and conducting the five-year review. These reporting requirements are described in Chapter 1 of the Plan.

DARM also includes the Building and Safety Services Division, which is responsible for permit processing, plan review, and inspection services for public and private projects; the Community Revitalization Division which has a strategic and proactive focus on code enforcement and neighborhood revitalization services; the Parking Division, which focuses on parking facility management, vehicle code enforcement, citation management, and abatement of abandoned vehicles left on city streets; and the Housing and Community Revitalization Division, which administers housing grant programs and offers programs and services that provide affordable housing opportunities and directs implementation of the Housing Element of the Plan. DARM also administers the City's Historic Preservation Program. In collaboration with other departments, DARM facilitates development reviews to enhance investment and job creation in Fresno.

Public Works

The City's Department of Public Works (DPW) is responsible for planning, design, and development of public infrastructure projects; traffic and transportation engineering, including bike lanes, paths and sidewalks; street maintenance; public parking; and engineering support to DARM for private development project and subdivision infrastructure review. DPW also handles the review of current development applications, subdivision maps, public improvement plans, encroachment permits, and development in the flood zone. In addition, DPW manages construction inspection for permits it issues and is responsible for the design and construction of the projects included in the CIP. DPW is presently managing the City's Parks, After School, Recreation and Community Services (PARCS) Department's landscape maintenance efforts.

Parks, After School, Recreation and Community Services (PARCS)

The City's Parks, After School, Recreation and Community Services (PARCS) Department offers numerous parks, including regional parks, neighborhood parks,

action sports facilities, play structures and golf courses. PARCS owns and maintains many community and neighborhood centers that are open to the public and offer various programs for all ages. In addition, PARCS offers several trails for the community to enjoy.

The PARCS maintenance program also aims to rehabilitate, through various sources of funding and capital improvements, at least one park per year. Development of new parks is also a priority. In Fiscal Year 2014 construction began on Martin Ray Reily Park. There are plans to begin construction in the immediate future on Inspiration Park, which will accommodate the needs of the disabled community and is the only one of its kind in the Central Valley.

Fresno Area Express

Through the California Department of Transportation, the City offers public transit with the Fresno Area Express (FAX) bus services and Handy Ride Paratransit Service. FAX provides 16 fixed-route bus lines and Handy Ride offers a demand-response service for people with disabilities. FAX is the largest mass public transportation provider in the San Joaquin Valley. In 2016, the City's Bus Rapid Transit (BRT) is expected to implement "Phase 1" service to provide improved service reliability and travel time along two corridors (Blackstone Avenue and Ventura Avenue/Kings Canyon Road) along with enhanced bus service along Shaw Avenue.

Airports

The City's Airports Department is responsible for the safe, secure, and efficient operation of Fresno Yosemite International Airport (FYI) and Fresno Chandler Executive Airport (FCH). This includes compliance with federal, State and local regulations, managing and growing business relationships, planning and implementing CIPs to keep the both airports infrastructure viable into the future, marketing the airports, and maintaining and developing air service at FYI.

Public Utilities

The City's Department of Public Utilities (DPU) provides water, wastewater, and solid waste services within the city limits and a few other select locations. The DPU - Water Division manages and operates the City of Fresno's water system. It delivers drinking water to urban residential, commercial, and industrial customers in the city and many of the County Islands, and it plans long-range water supply. The DPU - Wastewater Management Division is responsible for the operation and administration of the Fresno-Clovis Regional Wastewater Reclamation Facility, sanitary sewer lines, and provides recycled treated wastewater for irrigation. The DPU - Solid Waste and Recycling Division collects residential solid waste, recyclables, and greenwaste. Specific

implementing responsibilities are established in the Mobility and Transportation, Public Facilities and Services, Resource Conservation and Resilience, and Noise and Safety elements of the Plan.

Other Utilities

The County of Fresno handles hazardous waste disposal and operates the regional landfill. The Fresno Metropolitan Flood Control District provides flood control and urban storm water services to the city. PG&E provides power services through electricity and natural gas to homes, business, and industry.

Police and Fire Departments

Within the City, responsibility for public safety is assigned to the City's Police and Fire Departments. The Police Department is responsible for preventing crime and maintaining law and order, while the Fire Department is responsible for fighting urban and wildland fires, as well as emergency response and rescue. Both departments coordinate with the County and State on mutual aid. Specific implementing responsibilities under the Plan are established in the Public Utilities and Services Element.

Other Commissions, Committees, Councils, Counties, and Partnering Agencies

The City has a number of standing commissions and advisory committees, and appoints City representatives to several non-municipal governing boards, which may assist in the Plan implementation endeavors as directed or requested by the Administration and the Council. These currently include:

- Bicycle and Pedestrian Advisory Committee
- Disability Advisory Commission
- Downtown Neighborhoods Community Advisory Committee
- Fulton Corridor Specific Plan Community Advisory Committee
- Fulton/Lowell Design Review and Specific Plan Implementation Committee
- Housing and Community Development Commission
- Mayor's Industrial Council
- Tower District Design Review and Specific Plan Implementation Committee
- Utility Advisory Committee

Partnering Agencies include:

- Fresno County Economic Opportunities Commission
- Fresno County Transportation Authority
- Fresno Housing Authority
- Fresno Madera Area Agency On Aging Board
- Fresno Metropolitan Flood Control District
- Fresno Mosquito Abatement District
- Fresno Regional Workforce Investment Board
- San Joaquin River Conservancy
- San Joaquin Valley Air Pollution Control District
- Transit Rate And Services Committee
- Transit Security Advisory Committee
- Fresno Irrigation District
- Fresno County Local Agency Formation Commission
- Fresno County Council of Governments
- Fresno County
- Madera County
- City of Clovis
- City of Sanger
- California State University, Fresno
- State Center Community College District
- Fresno Unified School District
- Clovis Unified School District
- Central Unified School District
- Sanger Unified School District
- Washington Union Unified School District

The Plan does not envision any substantive change in the responsibilities assigned to these commissions, committees, councils, counties and partnering agencies except to the extent that new policies and programs may expand the scope of discussion relative to their assigned responsibilities.

Transition for "Redevelopment" Programs

During the preparation of this Plan, the State of California passed legislation that terminated the existence of Redevelopment Agencies (RDAs) throughout the State. Fresno's RDA worked to redevelop blighted land, rehabilitate structures, and build infrastructure within its six designated project areas and to develop affordable housing. The RDA previously played a major role in the implementation of the General Plan, but with the end of the City's RDA program, the Successor Agency to the Redevelopment Agency of the City of Fresno will take a more limited role in financing the Plan's implementation and will be supplemented with other efforts. The City's Infill Development Act and the Mayor's Fresno General Plan Implementation and Infill Finance Task Force, both discussed below, recommended a number of initiatives and incentives to implement major components of the Plan. A number of these recommendations have been integrated into the Plan and the Code. The purpose will continue to be focused on the removal of blight and encouraging reinvestment in Fresno.

12.3 INFILL INITIATIVES

Two important initiatives by the City informed development of this element: the Infill Development Act championed by Councilmember Brand and adopted by the City Council on November 1, 2012, and Mayor Swearengin's Fresno General Plan Implementation and Infill Finance Task Force formed in 2013. Understanding them provides background information for the specific implementation roles and responsibilities of those involved and the summary of implementation actions, which follows.

Infill Development Act

The Council passed the Infill Development Act (Act) on November 1, 2012. Recognizing the inherent design, policy, and cost challenges to developing infill properties, the Act was intended to begin finding creative solutions and incentives to implement a successful infill development program across the city. The Act created an Ad Hoc Council Subcommittee on Infill Development to improve the business climate in the City and improve the City's relationship with the private sector. That work has been incorporated into the Business Friendly Fresno initiative convened by the Mayor and Council. In addition, the Subcommittee examined other incentives and policy recommendations to promote infill development in Fresno, including financial incentives, infrastructure incentives, and regulatory incentives, among others. The Act also called on the Mayor to convene a task force specifically focused on addressing the funding gap associated with infill and rehabilitation projects within established neighborhoods throughout the city. Recommendations from the Infill Finance Task Force are summarized below. The policy recommendations from the Infill Finance Task

Force and Ad Hoc Council Subcommittee are integrated into the Plan, the Code, and assessed by the General Plan Master Environmental Impact Report (MEIR).

BUILD Act

The passage of the BUILD Act (Best Utilization of Infill Lot Development) of June 2013 represented a creative and practical approach toward addressing the problem of incentivizing infill development in the City of Fresno by waiving fees on properties in core neighborhoods where there would be no impact to major streets, streetlights, parks, police and fire.

The Act's goal is to make infill development more financially attractive to developers who are considering building in the urban core. Moving forward, the BUILD Act should be promoted and considered a model as city staff consider future incentives to infill development.

Fresno General Plan Implementation and Infill Finance Task Force

The Mayor of Fresno created the Fresno General Plan Implementation and Infill Finance Task Force (Task Force) with support from the White House's Strong Cities, Strong Communities (SC2) initiative, the U.S. Environmental Protection Agency's Office of Smart Growth, and Governor Brown's Office of Planning and Research. The Mayor and the Governor's Office of Planning and Research jointly convened the Task Force, which included many of California's leading development, finance, legal, and policy experts to participate on the Task Force in 2013. In addition, the Task Force included local public and private developers, as well as Councilmembers Steve Brandau and Paul Caprioligio.

Recognizing the current challenges associated with infill development, the Task Force was charged with identifying specific strategies to support infill development in the City. The group began its work by evaluating the different types of neighborhoods and commercial districts that exist in the established parts of the city and quickly assessed that, depending on the type, age, and location of the neighborhood or commercial area, different strategies would be needed to support reinvestment in different parts of the city. In other words, while there are some overarching recommendations for all of Fresno's established neighborhoods, the Task Force recommended different strategies based on three different priority areas which are depicted in Figure IM-1: Priority Areas for Development Incentives and include:

- **Established Neighborhoods Generally South of Herndon Avenue.** Included within this broad area are neighborhoods that are the most distressed in the city and among the most distressed in the nation. These areas need catalytic reinvestment. There are other neighborhoods in this area that are not currently distressed, but do need strategic investments now in order to prevent decline. Finally, some

neighborhoods in this area are perfectly healthy today, but may be surrounded by neighborhoods that are starting to decline.

- **BRT Corridors.** The Task Force recognized the importance of the Bus Rapid Transit investment and its potential to, over time, support mixed-use, transit-oriented development along its corridors. The BRT priority corridors include the first phase along Blackstone Avenue and Ventura Avenue/Kings Canyon Road, and the second phase along Shaw Avenue and California Avenue.
- **Downtown Planning Area.** The Downtown Planning Area includes the Central Business District, Civic Center and other Downtown Centers, Chinatown, South Stadium/South Van Ness, and Downtown neighborhoods and special districts. Together, these districts form the civic and cultural heart of the City. BRT and enhanced transit will connect established neighborhoods generally south of Herndon Avenue to a functioning, vibrant Downtown.

The Task Force identified the major barriers to infill and revitalization that the Plan implementation strategy should seek to address and made a number of specific recommendations, many of which are integrated into the fiscal management strategies presented in the Economic Development and Fiscal Sustainability Element. The greatest barrier is the dilemma that infill development and/or adaptive reuse of historic buildings can cost too much relative to the return on those investments from rental, leased, or sale income. As a result, lending institutions often view development in established neighborhoods as a higher risk proposition than greenfield sites in more affluent suburbs and are unwilling to provide traditional financing for the projects. As traditional financing has flowed almost exclusively in the Fresno Area for decades to greenfield development, the market for projects in established neighborhoods is further undermined, creating a vicious cycle that is difficult to break. Redevelopment funds historically could be used to address the "risk gap" associated with development in established neighborhoods, but that is no longer an available tool in the State of California. And, given the City's fragile financial position, public sector financial capacity to address the "risk gap" does not exist.

An additional barrier cited by developers is the cost of infrastructure improvements that are required to support development in established neighborhoods. The older the neighborhood is, the older its infrastructure. For developers to invest, either in substantial rehabilitation of existing buildings or in new construction on underutilized or vacant land in established neighborhoods, they have to absorb the cost of replacing the aging infrastructure. Given the overall weakness of the Fresno economy, that additional cost can make infill and rehabilitation unaffordable for investors.

The Task Force also identified as a barrier the lack of experience among local developers in navigating available subsidy programs for infill and revitalization projects.

There are some financing tools that are available in California, but the local development community and City staff are largely inexperienced in working with these programs. They are complex and onerous, but can be mastered as they have been in other markets in California. While it may not be desirable in the medium and long-term to rely on these types of financing tools for redevelopment and reinvestment in Fresno's established neighborhoods, in the short-term, these tools can be of use in addressing the financing "risk gap." Improving the technical capacity of the local development community and City staff is an achievable goal that is included in the Task Force's recommendations.

Lastly, the Task Force cautioned against spreading energy and resources too thinly across the City and instead called for focusing on smaller geographic areas in order to leverage private investment. The following points summarize the Task Force's recommendations:

- **Identify all potential funding mechanisms to replace infrastructure in established neighborhoods and improve service levels.** New development alone cannot absorb the cost of replacing infrastructure that today serves existing residents and neighborhoods. While new development must pay for its portion of any "up-sizing" required to support increased densities and infrastructure requirements, there must also be sources of public financing of infrastructure to absorb the cost attributed to replacements and repairs that would be needed to serve existing residents. Examples include community facilities districts (Mello-Roos districts), infrastructure financing districts, and State and federal grants. Other cities in California have also leveraged naming rights of parks and other public amenities to generate a revenue stream that can be applied to public improvements. In addition, the Task Force identified ways in which the City could better position itself as a strong investment relative to municipal credit bond market. Doing so would help strengthen the City's ability to borrow money to pay for public infrastructure, and could also reinforce the strength of the "Fresno brand" to other lending institutions needed to finance private development projects.
- **Close Funding Gap for Development.** The Task Force recommended the following as strategies needed to address the risk gap for early infill and revitalization projects. Over time and if projects are successful, this will become less of an issue as the market is proven and becomes viable for traditional financing.
    - *State Loan Guarantee Program* – The City should join similar cities in California and petition the Governor and the legislature to create a loan guarantee program for reinvestment in low income, environmentally challenged areas of the state. Such a program would generate virtually no risk to the State's finances but would make infill markets viable within inland parts of California.

- *Modify the City's Impact Fee Program* – Today, the City's impact fee program is based on building public facilities that are unrealistic in today's fiscal climate. The impact fee program should be re-evaluated with a realistic plan for needed public facilities. It should also take into consideration that rehabilitation and infill projects within established neighborhoods already have infrastructure in place and, therefore, should not have to "pay twice" for infrastructure that already exists. Modifying the impact fee program in such a manner would likely result in low to no-cost impact fees for development in infill areas, which would help address the funding gap.
- *Property Tax Abatement or Rebate* – The Task Force recommended putting an incentive in place for property owners to improve their properties in neighborhoods generally south of Herndon Avenue. For the program to serve as a meaningful incentive, State legislation would likely be required although the City could use federal housing grant funds or other local sources of funds to at least create an incentive program in the short term.
- *Developer Technical Assistance/"Concierge"* – The City could retain an expert in community development finance with knowledge of the various State and federal assistance programs available to support infill development to help walk developers through the options.
- *Streamlined Development Review Process* – Expediting and streamlining the development review process helps to reduce uncertainty for developers, which can lower their costs. The intent of the forthcoming Downtown Development Code and various land use plans is to make more projects permissible "by right" if they conform to the plan in order to streamline the development process.
- *Crowdfunding* – "Crowdfunding" is quickly becoming a common way to bring together interested citizens and investors to help address the risk gap. Fundrise.com is one such example and has been used to complete several redevelopment projects in major U.S. cities. Peeve's, a local public house and restaurant on Fulton Mall, secured the funding it needed to expand its public market through the crowdfunding site Kickstarter.com.

- **Share the Risk & Reward through Partnerships.** Residents, major employers such as hospitals, institutions such as colleges, and utility companies all benefit from the economic, environmental, and social benefits brought by infill development. Engaging these institutions on Downtown revitalization, for example, is a key to improving the city. Such collaborations have been extremely successful in cities across the U.S. They are a true win-win.
- **Change Perceptions.** Strengthening public perceptions of Fresno as a good investment choice can also help foster infill development in untested or marginal areas. Recent residential projects in the Downtown Planning Area have done well, but they still required a subsidy in order to cover development costs. In order to

realize the goals of this Plan, the City must continue to change perception of the Downtown and other infill areas so that they are viewed as safe, vibrant, and enriching places to live. Promoting the positive improvements that are taking place in neighborhood schools is a critical component to changing perceptions about Fresno's established neighborhoods, as is improving the aesthetic quality of these neighborhoods, and forming property owner associations that can put on events and positively "brand" their neighborhoods.

12.4 IMPLEMENTATION IN THE PUBLIC REALM

Various public sector entities will play an important role in implementing the Plan by shaping the public realm through the funding, building, and regulating of infrastructure and development projects. The CIP includes a list of public works projects that the City intends to design and construct in coming years. Creating a long-term CIP for City-sponsored projects is a new requirement of this Plan under Policy RC-1-b in the Resource Conservation and Resiliency Element. Under the Charter and this Plan, the City Council through the budget process will review the CIP to determine whether funding for improvements and services will implement the Plan. Specifically, the Plan policies in Chapters 6 and 7 anticipate that the Council will review funding for all City-funded improvements and public services, particularly projects in the CIP requiring any of the following Council actions:

- Acquisition of land for public purposes;
- Disposition of land;
- Street vacations; and
- Authorization or construction of public buildings or structures.

The City Council also has the authority to comment on CIPs prepared by school districts, community college districts, and utility providers. These CIPs, and any annual revision proposed to them, are to be forwarded to the City at least 60 days prior to adoption for the City's review for consistency with the Plan.

Infrastructure Priorities And Phasing

Infrastructure and revenue allocation priorities for the Plan implementation will be established in consultation with City departments, guided by policies found in multiple locations in this Plan, as well as take into consideration recommendations from the Fresno General Plan Implementation and Infill Finance Task Force. These latter recommendations will be periodically updated by the DPU and DPW.

The phasing of future infrastructure projects will be determined by the policies in this Plan in consultation with the relevant City departments and determined by the amount of funding available from federal, State, local, and private sources. Priority will be given to serving established neighborhoods, including established neighborhoods generally south of Herndon Avenue (as shown in Figure IM-1: Priority Areas for Development Incentives), along BRT and enhanced transit corridors, and in the Downtown Planning Area, consistent with the Plan policies. Most desirable, from a fiscal perspective are projects that are revenue-producing, meaning they would create positive impacts on the City's property tax base and the City's retail base or otherwise generated needed revenues that could flow to the General Fund.

Public Works Standards

Following adoption of the Plan, the Public Works Standards and the subdivisions regulations for the City will be updated to be in conformance with the Plan and the Development Code, when adopted. Public Works design and improvement standards apply to all subdivisions in the city and will be imposed on a subdivider as a condition of approval of a tentative map or parcel map. Exceptions to design standards may be approved if the City finds that an alternative design substantially conforms to the intent of the standards of this chapter and to the Plan.

Updated standards in the Code will address:

- Block dimensions: maximum length and width;
- Lot sizes and provisions for a diversity of lot sizes in subdivisions;
- Major utility easements for major utilities, such as high-tension lines and utility trunk lines, to ensure they are incorporated into subdivisions as open space or recreation use and connect with a regional trail system;
- A continuous street system, so that new streets, alleys, bicycle facilities, and pedestrian ways connect to other streets, alleys, bicycle facilities, and pedestrian ways to form a continuous vehicular, bicycle, and pedestrian network;
- Urban tree canopy, with street trees spaced to provide continuous shade for pedestrians;
- Sidewalks, which must be constructed to City standards on both sides of the street or be consistent with an approved pedestrian access plan on qualifying subdivisions involving private streets;
- Parks and playgrounds which are generally centrally-located in new neighborhoods will abut public streets for improved access; and
- Detention basins, which can be designed for multiple uses and treated as an amenity in new neighborhoods.

12.5 IMPLEMENTATION BY THE PRIVATE SECTOR

The private sector will be instrumental in implementing the Plan in the private realm, which will be overseen by the City's regulations. To this end, the City will use a variety of regulatory mechanisms and administrative procedures to implement the Plan. Overall legislative responsibility for the Plan implementation is vested in the City Council, which by ordinance has delegated certain responsibilities to the Planning Commission, the DARM Director and other City departments (e.g. the DPU, the DPW, the Police Department and the Fire Department). The Plan calls for the revision and adoption of a new Development Code to ensure that the Plan policies will be implemented and that environmental resources earmarked for protection in the Plan will be preserved. Other regulatory mechanisms, including subdivision standards and processes, building and housing codes, CIP, and environmental review procedures, also will be used to implement Plan policies.

Zoning Regulations In The Development Code

After adoption of the General Plan, the City's Development Code (Code) will be structured to translate plan policies into specific use regulations, development standards, design standards, and performance criteria that will govern development on individual properties and development sites. The Code will also include regulations for landscaping, on-site parking and loading, signs, antennas and wireless communications facilities, and affordable housing density bonus provisions, among other regulations.[1] The Plan establishes the policy and implementation framework, while the Code prescribes standards, rules and procedures for development along with criteria and findings required for acting on project applications. The Zoning Map (the "Official Zone Map") will provide more detail than the Figure LU-1: Land Use Diagram, consistent with this Plan.

The Plan calls for several new zoning districts. Regulations for these districts will be established as part of the comprehensive zoning update following the Plan update. The use regulations and development standards for existing zoning districts will undergo amendments to conform to Plan policies. Density and intensity limits, consistent with the Plan's land use classifications, will also be updated. For purposes of evaluating Plan consistency, the density of proposed projects will be rounded up or down to the nearest whole number, as appropriate.

[1] The General Plan anticipates that the Development Code and the Official Zone Map will be further amended and refined by a code for the Downtown Planning Area.

The City will bring the Code into conformance with the Plan within a reasonable period of time. The City will take steps to ensure projects are consistent with the General Plan, which may include an interim zoning ordinance or other actions as appropriate. In the future, if the Plan is subsequently amended, the Code and Zoning Map may also need to be amended to maintain consistency between the documents.

Finally, the goals, objectives, and policies of this Plan are long-term in nature. As part of Plan implementation, future refinement and updates of the Code may be needed to translate those long-term objectives and policies into regulations and standards, supported by appropriate permitting procedures, in order to address emerging needs and conditions and gradually fulfill the policy direction of the Plan. Timing of these refinements will be guided by the various stages of implementation, the City's accomplishments and budgetary resources, and the sequencing of development concepts, which are in this chapter, updated as may be appropriate, as contemplated within the planning horizon of the Plan.

Consistency Between the General Plan and Development Code

As mentioned above, the City will implement many General Plan policies through the Code. To realize the City's land use, housing, and open space policies zoning designations will be amended. A fundamental link between the Plan and zoning is land use/zoning consistency. Table 12-1 shows how the updated zoning districts in Fresno are consistent with the land use designations of this Plan. This will facilitate administration and ensure a closer link with Plan policies because new zones will mirror classifications on the Land Use Diagram. Planned development still will be permitted, but with a flexible process that will be "findings-driven" and have specific criteria for approval.

TABLE 12-1: GENERAL PLAN LAND USE DESIGNATIONS AND ZONING DISTRICTS CONSISTENCY

General Plan Land Use Designation	Development Code Zoning District	
Buffer	B	Buffer
Residential		
Low Density	RE	Residential Estate
	RS-1	Residential Single Family, Extremely Low Density
	RS-2	Residential Single Family, Very Low Density
	RS-3	Residential Single Family, Low Density
Medium Low Density	RS-4	Residential Single Family, Medium Low Density
Medium Density	RS-5	Residential Single Family, Medium Density
Medium High Density	RM-MH	Mobile Home Park

	RM-1	Residential Multi-Family, Medium High Density
Urban Neighborhood	RM-2	Residential Multi-Family, Urban Neighborhood
High Density	RM-3	Residential Multi-Family, High Density
Mixed-Use		
Neighborhood	NMX	Neighborhood Mixed Use
Corridor/Center	CMX	Corridor/Center Mixed Use
Regional	RMX	Regional Mixed Use
Downtown		
Downtown Neighborhood	DTN	Downtown Neighborhood
Downtown General	DTG	Downtown General
Downtown Core	DTC	Downtown Core
Commercial		
Main Street	CMS	Commercial - Main Street
Community	CC	Commercial - Community
Regional	CR	Commercial - Regional
General	CG	Commercial - General
Highway and Auto	CH	Commercial - Highway and Auto
Recreation	CRC	Commercial - Recreation
Employment		
Office	O	Office
Business Park	BP	Business Park
Regional Business Park	RBP	Regional Business Park
Light Industrial	IL	Light Industrial
Heavy Industrial	IH	Heavy Industrial
Other		
Open Space	OS	Open Space
	PR	Parks and Recreation
Public Facilities	PI	Public and Institutional

Subdivision Regulations

No subdivision of land may be approved under California law and the City's subdivision regulations unless its design and proposed improvements are found to be consistent with the Plan, including the open space plan. Dedication of land for park facilities will be required for subdivisions above a certain size, consistent with the policies and standards prescribed by the Plan and the subdivision regulations. The subdivision regulations also can require dedication of land for elementary schools, riparian habitat and reservation of land for fire stations, libraries, bike paths, transit facilities, and other public facilities.

After adoption of the Plan, the City's subdivision regulations will be amended to conform to Plan policies. Subdivision approval will continue to require findings of consistency with the Plan as a condition of approving parcel maps and tentative maps. Reservation requirements for bus turnout facilities and bike and pedestrian facilities also will be included to carry out Plan policies for appropriate projects. The subdivision

ordinance will require connections between new streets and existing streets and will ensure that adequate public rights-of-way are provided, consistent with the policies for transportation and mobility facilities of this Plan and City standards. Facilitating use of solar energy with appropriate lot layouts and roof orientations to maximize efficiency of collector systems and provision of solar access easements will also be addressed.

Building and Housing Codes

Under California law (Government Code Section 65567) no building permit may be issued, no subdivision map approved, and no open-space zoning ordinance adopted, unless the proposed construction, subdivision or ordinance is consistent with local open-space plan. This plan is the Parks, Open Space, and Schools Element of the General Plan.

To provide an administrative mechanism to ensure consistency with the Plan, the City will establish a requirement for zoning permits or other forms of zoning clearance before building and grading permits are issued. The City does not currently have this specific type of clearance.

Energy Conservation

The Code will establish standards and regulations, supported by guidelines and administrative review procedures for subdivision design to provide for passive or natural heating or cooling opportunities and for other measures that conserve nonrenewable energy resources, consistent with the Plan. Design measures to accomplish these objectives may include, but are not limited to, the arranging of streets, lots, buildings and landscaping. The purpose of such design measures will be to provide solar access for active solar water and space heating systems and passive space heating, minimize solar heat gain in the summer, and take advantage of prevailing breezes. These measures will be crafted so that there will not be an impact on the maximum allowable density otherwise allowed.

At such time as the City has adopted solar access standards, and when required as a condition for approval of a tentative map, the Code will require subdividers to dedicate or make an irrevocable offer of dedication of easements for the purpose of assuring that each parcel or unit in the subdivision for which approval is sought has the ability to receive sunlight across adjacent parcels or units in the subdivision for any solar energy system. The dimensions and locations of such easements will need to be consistent with any standards for solar access adopted by the City Council.

Permit Streamlining

The State's Permit Streamlining Act, enacted in 1977, was intended to expedite the processing of permits for development projects by setting various time limits within which government agencies must either approve or disapprove permits. The City of Fresno has followed and will continue to follow the regulations in the Permit Streamlining Act. DARM will coordinate zoning, environmental review, and any other development review procedures to ensure compliance with the Permit Streamlining Act requirements.

In October 2013, the Mayor commissioned an external Task Force and an internal Action Team to provide recommendations to ensure that development was streamlined and processes clarified. This lead to the creation of the Development Review Committee (DRC), launched in January 2014, managed from within DARM, and includes representatives from all City departments that provide input on development projects within the city. The DRC serves as the single point of contact to customers with the goal of offering a friendly and welcoming atmosphere thus setting the tone for positive and productive future interactions.

Fee Policies, Reductions, And Exemptions

The City Council and Mayor will continue to work with relevant directors of City departments and stakeholders to establish and implement an impact fee program that is based on (1) realistic public infrastructure requirements given the current fiscal climate and (2) a recognition that public infrastructure already exists in infill project areas. As a result, projects completed within established neighborhoods should have lower infrastructure requirements and fee reductions or exemptions. The new impact fee program will need to define which projects qualify for lower fees and/or exemptions, based on the types and locations of projects and other criteria. Finally, the expectation of this Plan is that the Council will establish a ministerial process for receiving the fee reductions or exemptions to facilitate infill development; this will be a detailed and firmly established program with "by right" provisions for automatic reductions with minimal oversight, and discretionary review would be preferable to a case-by-case approval process and consistent with the principles of fiscal sustainability presented in the Economic Development and Fiscal Sustainability Element.

Code Enforcement

The Code will include provisions for the enforcement of the Code's land use regulations, development standards and other provisions and the Plan. The various departments, officials, and public employees of the City will enforce the requirements of the Code to ensure that all issued permits and licenses conform to the provisions of the Code and implement the Plan. The DARM Director or his/her designee will enforce

all provisions of the Development Code related to the construction, conversion, alteration, addition of any building or structure and regarding all uses in the city.

12.6 DEFINING AND SUPPORTING INFILL

The City will remove regulatory obstacles to infill development, by first adopting the Code with a streamlined permitting and approval process; by-right standards; reduced parking requirements; and streamlined CEQA review, using existing legislative authority. It will also adopt an adaptive reuse and historic preservation program with enabling provisions in the Code. The City Council may enter into Development Agreements for individual projects on a case-by-case basis, under provisions of applicable law, which can advance infill development.

The City also can establish Community Facilities Districts (CFDs) in geographically defined areas, with the consent of two-thirds of the proposed district's voters. Once the CFD's are approved, the City can directly issue bonds to pay for building facilities that are then repaid through an increment on top of the baseline property taxes paid by property owners in the CFD. By contrast, maintenance districts are typically self-financed through tax revenue, and do not involve bonds. Similarly, the City can create an Infrastructure Financing District (IFD), in which increased property values are used to pay back bonds, rather than through an addition to the baseline property tax. Neither of these options are currently used for infill developments.

Non-profits and other agencies also can issue a bond, in which case the developer is responsible for obtaining the bond directly from those agencies. The proceeds are then used to provide a financing mechanism to build the infrastructure; the City does not administer the bond where it is not the issuer.

Under this Plan, the City will retain the option to issue a bond for a "build" (and maintenance) CFD, if necessary, but the Council has no current plans to do so. The City may seek approval of a "shelf registration" for financing multiple CFDs and IFDs. The City's name and "brand" can be used to invite financial institutions to bid on master financing programs for key projects. In addition, the City can raise revenue for infrastructure projects by selling advertising space and naming rights to major facilities, such as its BRT system.

The City also anticipates completing and adopting the Downtown Neighborhoods Community Plan and, assuming the State program for the High-Speed Train system proceeds, a station area master plan to further support infill development in the Downtown. Additionally, forming partnerships with public, private, and non-profit entities will advance infill development as these institutions expand and develop infill sites to meet facility and housing needs as they grow.

Lastly, as noted by the Fresno General Plan Implementation and Infill Development Task Force, the City can play a very important role in shifting the perception of the Downtown Planning Area and other infill areas so they become attractive places for investors. These established neighborhoods need to be viewed as safe and vibrant places in order to attract market rents and sale prices that can support the cost of development. Neighborhood branding can greatly assist the effort to change the perception of different areas in the city. Through efforts like the Downtown Fresno Partnership or a similar association with civic leaders, the City will support improvements that help change perceptions of the neighborhood. These strategies will include promoting safety, removing litter, improving the landscaping, recruiting businesses, supporting maintenance and marketing, and organizing and promoting Downtown events. The creation of local "community development corporations," which may be formed with guidance and resources available from State and federal job training and economic development programs. The California Community Economic Development Association can also assist in these efforts in neighborhoods across Fresno.

Priority Investment in Established Neighborhoods

The Plan focuses a reasonable proportion of future development within the city's existing footprint to fulfill the Plan policy that roughly half of development through the year 2035 occurs in infill locations. This Plan policy is not expected to be fulfilled in a linear or "one-to-one" pattern and may progress in an uneven pattern due to market forces and the timing of incentives. However, the City expects to make steady progress toward all the goals and objectives, and fulfillment of this Plan policy is expected to occur at or near the close of General Plan Horizon in 2035. To support investment and infill development, the City will establish a priority development program for eligible properties, using "infill development," as defined in the Glossary, to facilitate implementation of this Plan and gain the benefits of permit streamlining and other incentives that State law provides for qualifying infill development.

Substantial rehabilitation, as defined by the California Building Code, and new construction within the city limits that is consistent with Public Resources Code 21061.3 can qualify as infill development. Development outside the city limits or in areas of the city that are less than 10 years old will be considered "new development."

While infill development will help achieve the overall goals of the Plan, the City will prioritize specific areas within the city limits for incentives and other benefits to

accelerate reinvestment and rehabilitation. The following priority areas are identified in Figure IM-1: Priority Areas for Development Incentives.[2]

- **"Infill Opportunity Zones" (IOZs) – Established Neighborhoods Generally South of Herndon Avenue,** including many of Fresno's established neighborhoods, which are in need of both large, catalytic reinvestment projects, as well as smaller-scale strategic interventions;
- **BRT Corridors,** including the Phase 1 corridors along Blackstone Avenue and Ventura Avenue/Kings Canyon Road and the Phase 2 corridors along Shaw Avenue and California Avenue;
- **Downtown Planning Area,** which includes the Central Business District, Civic Center and other Downtown centers, Chinatown, South Stadium/South Van Ness, Downtown neighborhoods and special districts; and
- **South Industrial Area,** including much of Fresno's established heavy industrial uses, which may need infrastructure investment to meet the needs of major job-creation industry sectors, as well as improvements to enhance current business operations.

The City will implement a number of strategies to support investment in these priority areas.

Strategic Sequencing of Development

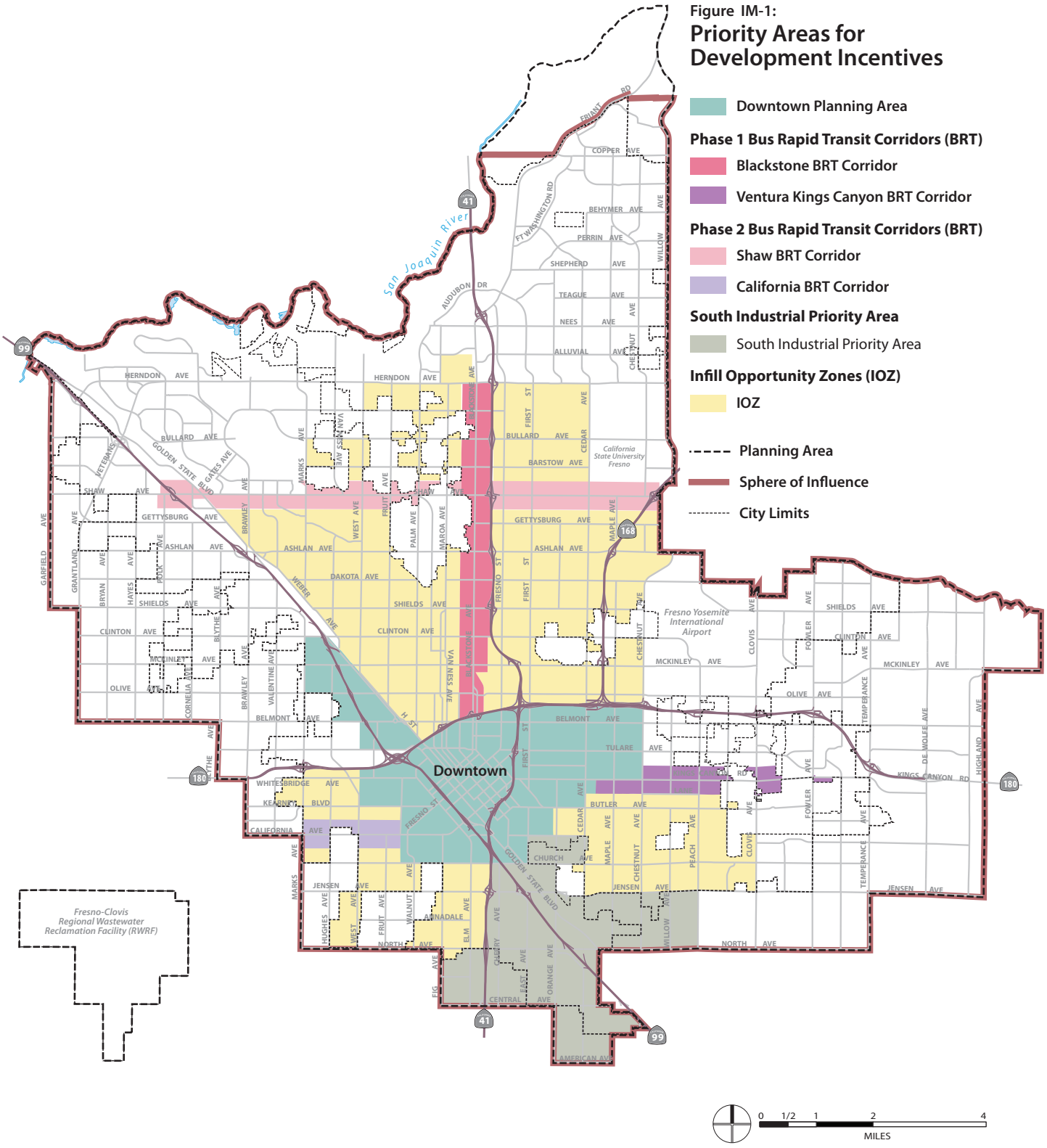
Following the adoption of the Plan, the City will focus on infill development as well as new development within Growth Area 1 based on planned infrastructure expansion, public service capacity, and fiscal considerations. The boundaries of these areas are shown in Figure 1-3: Residential Capacity Allocation as Development Areas 1 North, 1 South, 2 North, and 2 South and depicted in IM-2: Sequencing of Development as Growth Area 1.

Growth Area 2 needs critical infrastructure improvements, and the City does not anticipate that funding for this area can be committed in the near-term. Due to these limitations, the City will need to establish a method to monitor investment within infill areas and Growth Area 1 prior to approving development in areas subject to the restrictions enumerated in the City/County Memorandum of Understanding (MOU). As part of upcoming negotiations with the County for an updated MOU, the City will explore options to create a plan that allows for student-serving uses, such as housing

[2] These priority areas are consistent with the recommendations from the Fresno General Plan Implementation and Infill Finance Task Force

and related commercial uses, to be developed in conjunction with the new State Center Community College District Southeast campus.

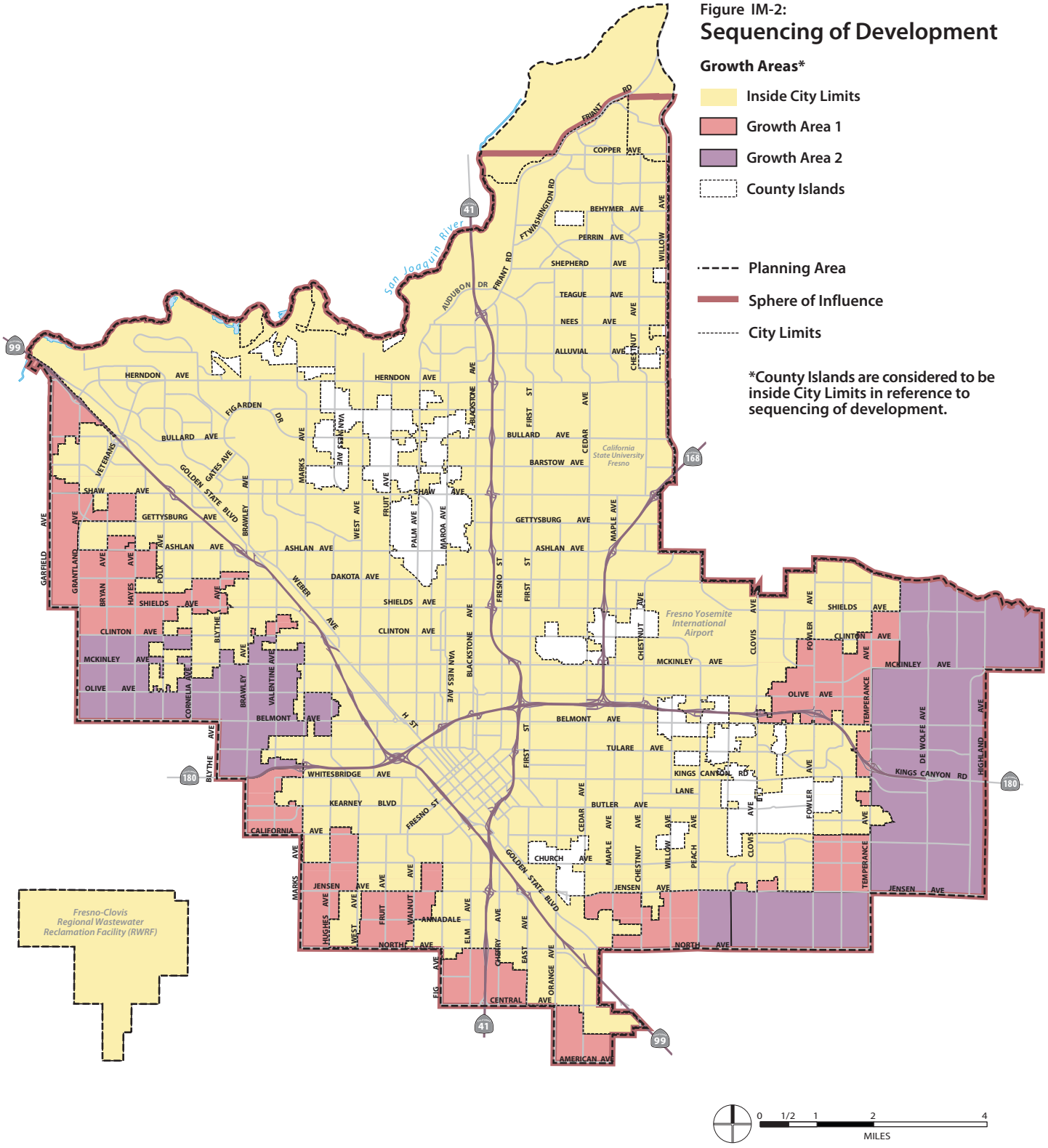
The recommendations for annexations into the City will comply with the MOU. Whatever method is ultimately adopted, the City should implement an easy-to-track, objective, transparent measurement that can be used to determine the appropriate timing for allowing development in areas subject to the restrictions enumerated in the MOU for new growth. The City will use strategic phasing to achieve the overall goals of the plan, as opposed to annual limits of some sort that place unrealistic controls on the local market.



Source: City of Fresno, 2014.

Figure IM-2:

Sequencing of Development



Source: City of Fresno, 2014.

Growth Areas

While roughly one half of the city's development will be within infill areas through 2035, the other half or so of the city's development will be in growth areas, which include unincorporated land planned for urban use. There will be no incentives or public financial assistance programs for new development that would not otherwise qualify for aid in these areas, and development projects in the growth areas will be obligated to pay their fair and proportional payment of fees and all development mitigation costs. Public and private development in these growth areas will proceed under the supportive sequencing detailed above.

12.7 SUMMARY OF IMPLEMENTATION ACTIONS

The following table summarizes implementation actions that will be undertaken to carry out the policies proposed in each element of the Plan except the adopted Housing Element, which already has implementation actions to implement Plan policies. The Housing Element implementation actions will be regularly updated and revised as required by State law.

The first column in each table lists the implementation actions for each element, and the second column lists the policies for each element (by policy number) that will be enacted by the action. The third column names the parties involved in implementing the action, with responsibilities detailed in the FMC and in some of the Plan policies. Some of these entities are listed by acronym in the table, including the City Manager (CM), the City Attorney's Office (CAO), the Development and Resource Management Department (DARM), the Department of Public Works (DPW), the Department of Public Utilities (DPU), the Fresno Area Express Department (FAX), and Parks, After School, Recreation, and Community Services (PARCS). The fourth column provides a timeframe for implementing the action, ranging from ongoing efforts to 1 – 20 years. The Annual Report on the Plan will provide an opportunity to update the timeframe, as budget and staffing resource constraints may dictate changes in the overall timeframe for the implementing actions. Finally, if the Plan policy is discretionary, the implementation action also is discretionary.

TABLE 12-2: SUMMARY OF IMPLEMENTATION ACTIONS FOR PLAN POLICIES

Implementation Actions	General Plan Policies	Responsible Parties	Timing
Economic Development and Fiscal Sustainability			
Build relationships with the Fresno business community and improve the business climate through development of a comprehensive economic development strategy, expanded marketing, a "buy local campaign," an annual economic development progress report, and a possible economic development web portal.	ED-1-a, ED-1-b, ED-1-c, ED-1-d, ED-1-e, ED-1-f, ED-1-g, ED-1-h, ED-1-i, ED-1-j, ED-3-a, ED-3-b, ED-3-c, ED-3-d, ED-3-e, ED-3-f	Mayor, City Council, DARM, CM, CAO, Fresno EDC	1-5 years
Identify sites that would be suitable for new business development and expansion, prioritizing infill sites and districts.	ED-1-d, ED-1-e, ED-1-f, ED-3-d, ED-3-e, ED-3-f, ED-5-a	DARM, Planning Commission	1-5 years
Improve access to resources and capital by providing technical and financial support, creating partnerships for initial capital, and establishing a revolving loan program.	ED-2-a, ED-2-b, ED-3-a, ED-3-b, ED-3-c	Mayor, City Council, DARM, CM, CAO	Ongoing
Utilize economic development tools, bonuses and incentives, reduced fees for infill projects and other resources to attract businesses.	ED-1-d, ED-1-e, ED-1-f, ED-1-g, ED-1-j, ED-2-a, ED-2-b, ED-3-a, ED-3-b, ED-3-c, ED-3-d, ED-3-e, ED-3-f	Mayor, City Council, DARM, DPW, CAO, CM	Ongoing
Retain talented people and attract new talent to the city; increase educational attainment and relevant job skill levels in the Fresno workforce.	ED-1-h, ED-3-a, ED-4-a, ED-4-b, ED-4-c, ED-4-d, ED-4-e, ED-4-f	Mayor; City Council; DARM; Fresno County Office of Education; Workforce Investment Board; California State University, Fresno; Fresno Pacific University; State Center Community College; and various technical schools and training institutes	Ongoing
Prepare and implement measures to achieve fiscal sustainability.	ED-5-a, ED-5-b, ED-5-c, ED-5-d, ED-5-e, ED-5-f, ED-5-g, ED-5-h, ED-5-i	Mayor, DPW, DARM, City Council, CAO, CM	5-20 years
Coordinate, establish partnerships, and strengthen relationships with other local and regional public and private entities, including California State University, Fresno.	ED-1-h, ED-4-a, ED-4-b, ED-4-c, ED-4-d, ED-4-e, ED-4-f	Mayor; City Council; DARM; California State University, Fresno; Fresno Pacific University; State Center Community College	5-10 years

TABLE 12-2: SUMMARY OF IMPLEMENTATION ACTIONS FOR PLAN POLICIES

Implementation Actions	General Plan Policies	Responsible Parties	Timing
Urban Form, Land Use and Design			
Continue to implement housing programs that support a diversity of neighborhoods, activities, and housing types in the Fresno Planning Area, while accommodating market/cost constraints.	UF-1-a, UF-1-b, UF-1-c, UF-1-d, UF-1-e, UF-1-f, UF-13-a, LU-2-a, LU-2-b, LU-2-c, LU-2-d, LU-2-e, LU-2-f, LU-5-a, LU-5-b, LU-5-c, LU-5-d, LU-5-e, LU-5-f, LU-5-g, LU-5-h, LU-5-i, LU-5-j	DARM, Planning Commission, City Council, CAO	1-5 years
Prepare and implement measure to locate roughly one-half of future residential development in infill areas and locate roughly one-half of future residential development in Growth Areas.	UF-1-a, UF-1-b, UF-1-c, UF-1-d, UF-1-e, UF-1-f, UF-12-a, UF-12-b, UF-12-c, UF-12-d, UF-12-e, UF-12-f, UF-12-g, UF-12-h, UF-13-a, LU-1-a, LU-2-a, LU-2-b, LU-2-c, LU-2-d, LU-2-e, LU-2-f	DARM, Planning Commission, City Council, CAO	Ongoing
Prepare design guidelines and concept plans that improve the urban form and enhance multi-modal connectivity across the city.	UF-12-a, UF-12-b, UF-12-c, UF-12-d, UF-12-e, UF-12-g, UF-12-h, UF-13-a, UF-14-a, UF-14-b, UF-14-c	DARM, Planning Commission, City Council, DPW, FAX, CM	5-20 years
Implement a comprehensive citywide land use planning strategy to facilitate infill development and provide for a diversity of housing types, building forms, and land uses.	LU-1-a, LU-1-b, LU-1-c, LU-1-d, LU-1-e, LU-1-f, LU-1-g, LU-2-a, LU-2-b, LU-2-c, LU-2-d, LU-2-e, LU-2-f	DARM, Planning Commission, City Council, CAO, Mayor, CM	1-5 years
Adopt and implement plan(s) and regulations for Fresno's Downtown and surrounding land uses to supplement and support the Downtown.	LU-1-a, LU-1-b, LU-1-c, LU-1-d, LU-3-a, LU-3-b, LU-3-c, LU-9-a, LU-9-b, LU-9-c, LU-9-d, LU-9-e, LU-9-f, LU-9-g	DARM, Planning Commission, City Council, CAO, CM	1-5 years
Support Fresno's established residential neighborhoods, with priority investments in community infrastructure and services in areas with the greatest need.	LU-1-a, LU-2-d, LU-2-e, LU-4-a, LU-4-b, LU-4-c, LU-5-a, LU-5-b, LU-5-c, LU-5-d, LU-5-e, LU-5-f, LU-5-g, LU-5-h, LU-5-i	DARM, Planning Commission, City Council, DPW, FAX, CAO, CM	5-10 years
Adopt regulations and programs to retain and improve Fresno's established commercial areas and promote industrial development.	LU-6-a, LU-6-b, LU-6-c, LU-6-d, LU-6-e, LU-6-f, LU-6-g, LU-7-a, LU-7-b, LU-7-c, LU-7-d, LU-7-e	DARM, Planning Commission, City Council, DPW, FAX	5-10 years
Adopt regulations and programs to provide for civic and institutional land uses.	LU-8-a, LU-8-b, LU-8-c, LU-8-d	DARM, Planning Commission, City Council, Mayor, CAO	1-5 years
Promote regional cooperation and coordination among local jurisdictions on land use and planning issues and the provision of public services, infrastructure, and economic development.	LU-10-a, LU-10-b, LU-10-c, LU-11-a, LU-11-b, LU-11-c	DARM, Planning Commission, City Council, Mayor, Fresno County	5-10 years
Strengthen the city's image, create a "sense of place," and enhance all "gateway" routes that enter Fresno, as identified by the City. Encourage design that celebrates the cultural and ethnic diversity of Fresno.	D-1-a, D-1-b, D-1-c, D-1-d, D-1-e, D-1-f, D-1-g, D-1-h, D-1-i, D-1-j, D-2-a, D-2-b, D-2-c, D-3-a, D-3-b, D-3-c, D-3-d, D-6-a, D-6-b	DARM, Planning Commission, City Council, CM, CAO	10-20 years
Adopt and apply local urban form, land use, and design policies to	D-7-a, D-7-b, D-7-c		

TABLE 12-2: SUMMARY OF IMPLEMENTATION ACTIONS FOR PLAN POLICIES

Implementation Actions	General Plan Policies	Responsible Parties	Timing
specific neighborhoods and locations.			
Prepare urban design guidelines for development review and implementation plans for programs that improve the community's appearance.	D-3-a, D-3-b, D-3-c, D-3-d, D-4-a, D-4-b, D-4-c, D-4-d, D-4-e, D-4-f, D-4-g, D-4-h, D-5-a, D-5-b, D-5-c, D-5-d, D-5-e	DARM, Planning Commission, City Council, CAO	1-5 years
Mobility and Transportation			
Provide and maintain a safe, multi-modal, efficient, and equitable transportation system across the city, including in established and planned neighborhoods.	MT-1-a, MT-1-b, MT-1-c, MT-1-d, MT-1-e, MT-1-f, MT-1-g, MT-1-h, MT-1-i, MT-1-j, MT-1-k, MT-1-l, MT-1-m, MT-1-n, MT-1-o, MT-1-p, MT-2-a, MT-2-b, MT-2-c, MT-2-d, MT-2-e, MT-2-f, MT-2-g, MT-2-h, MT-2-i, MT-2-j, MT-2-k, MT-2-l, MT-4-a, MT-4-b, MT-4-c, MT-4-d, MT-4-e, MT-4-f, MT-4-g, MT-4-h, MT-4-i, MT-4-j, MT-4-k, MT-5-a, MT-5-b, MT-5-c, MT-5-d, MT-5-e, MT-5-f, MT-6-a, MT-6-b, MT-6-c, MT-6-d, MT-6-e, MT-6-f, MT-6-g, MT-6-h, MT-6-i, MT-6-j, MT-6-k, MT-6-l, MT-6-m, MT-6-n, MT-7-a, MT-7-b, MT-7-c, MT-8-a, MT-8-b, MT-8-c, MT-8-d, MT-8-e, MT-8-f, MT-8-g, MT-8-h, MT-8-i, MT-8-j, MT-9-a, MT-9-b, MT-9-c, MT-9-d, MT-9-e, MT-9-f	CM, CAO, City Council, Mayor, DARM, Planning Commission, DPW, FAX, Bicycle and Pedestrian Commission	10-20 years
Utilize the existing and proposed transportation system efficiently, and provide adequate resources to operate and maintain it.	MT-1-k, MT-1-l, MT-1-m, MT-1-n, MT-1-o, MT-1-p, MT-2-a, MT-2-b, MT-2-c, MT-2-d, MT-2-e, MT-2-f, MT-2-g, MT-2-h, MT-2-i, MT-2-j, MT-2-k, MT-2-l	CM, CAO, City Council, Mayor, DARM, Planning Commission, DPW, FAX	1-5 years
Adopt regulations and programs to identify, promote, and preserve scenic or aesthetically unique corridors.	MT-3-a, MT-3-b	DPW, City Council, Mayor, DARM, CM, FAX	5-10 years
Fund road-width reductions in neighborhoods that would most benefit from narrower streets, while ensuring the streets retain the ability to convey major storm flows and underground infrastructure.	MT-1-g, MT-1-h, MT-1-i, MT-1-j, MT-2-d, MT-2-k	DPU, DPW, FAX, Fresno Metropolitan Flood Control District, City Council, CM, CAO, Mayor, DARM, Planning Commission	Ongoing
Provide and maintain a continuous, safe, and accessible bikeway system; a well-integrated network of pedestrian facilities; and a network of multi-purpose pedestrian, bicycle, and limited access paths and trails.	MT-4-a, MT-4-b, MT-4-c, MT-4-d, MT-4-e, MT-4-f, MT-4-g, MT-4-h, MT-4-i, MT-4-j, MT-4-k, MT-5-a, MT-5-b, MT-5-c, MT-5-d, MT-5-e, MT-5-f, MT-6-a, MT-6-b, MT-6-c, MT-6-d, MT-6-e, MT-6-f, MT-6-g, MT-6-h, MT-6-i, MT-6-j, MT-6-k, MT-6-l, MT-6-m, MT-6-n, MT-	CM, CAO, City Council, DPW, PARCS, Mayor, DARM, Planning Commission, Bicycle and Pedestrian Commission, FAX	Ongoing

TABLE 12-2: SUMMARY OF IMPLEMENTATION ACTIONS FOR PLAN POLICIES

Implementation Actions	General Plan Policies	Responsible Parties	Timing
	7-a, MT-7-b, MT-7-c		
Provide feasible, efficient, frequent, and safe public transit options to the maximum number and diversity of people practicable.	MT-8-a, MT-8-b, MT-8-c, MT-8-d, MT-8-e, MT-8-f, MT-8-g, MT-8-h, MT-8-i, MT-8-j, MT-9-a, MT-9-b, MT-9-c, MT-9-d, MT-9-e, MT-9-f	FAX, CM, CAO, City Council, DPW, Mayor, DARM	Ongoing
Establish strategic, supportive parking programs and standards, including demand-oriented pricing for on-street parking.	MT-10-a, MT-10-b, MT-10-c, MT-10-d, MT-10-e, MT-10-f	FAX, CM, CAO, City Council, DPW, Mayor, DARM, Planning Commission	1-5 years
Support the goods movement transportation system with capacity increasing and inter-modal connectivity enhancing improvements.	MT-11-a, MT-11-b, MT-11-c, MT-11-d, MT-11-e, MT-11-f	CM, CAO, City Council, DPW, Mayor, FAX	5-10 years
Continue to improve municipal airport facilities and Fresno Yosemite International Airport, while complying with federal regulations, enhancing safety, minimizing adverse effects, and promoting the local economy.	MT-12-a, MT-12-b, MT-12-c, MT-13-a, MT-13-b, MT-13-c, MT-13-d, MT-13-e, MT-13-f	FAX, CM, CAO, City Council, DPW, Mayor, Airports Department	5-10 years
Parks, Open Space and Schools			
Provide an expanded, safe, high quality, and diversified park system throughout the city, including infill and Growth Areas. Support efforts to refine and apply the Valley Arboretum concept, particularly in areas of the city with the greatest deficiencies, based on ParkScore or comparable methodology.	POSS-1-a, POSS-1-b, POSS-1-c, POSS-1-d, POSS-1-e, POSS-1-f, POSS-1-g, POSS-2-a, POSS-2-b, POSS-2-c, POSS-2-d, POSS-2-e, POSS-3-a, POSS-3-b, POSS-3-c, POSS-3-d, POSS-3-e, POSS-3-f, POSS-3-g, POSS-3-h, POSS-3-i, POSS-5-g	PARCS, City Council, Mayor, CM, CAO, DARM, DPW	10-20 years
Utilize park land efficiently, and design and manage parks for the entire Fresno community.	POSS-3-a, POSS-3-b, POSS-3-c, POSS-3-d, POSS-3-e, POSS-3-f, POSS-3-g, POSS-3-h, POSS-3-i	PARCS, City Council, Mayor, CM, DARM, DPW	Ongoing
Pursue sufficient and dedicated funding for acquisition, operation, and maintenance of Fresno parks, including pocket parks created by residential subdivisions.	POSS-4-a, POSS-4-b, POSS-4-c, POSS-4-d	PARCS, City Council, Mayor, CM, DARM, DPW, CAO	5-20 years
Provide for long-term preservation, restoration, enhancement, and enjoyment of plant, wildlife, and aquatic habitat, particularly along the San Joaquin River corridor.	POSS-5-a, POSS-5-b, POSS-5-c, POSS-5-d, POSS-5-e, POSS-5-f, POSS-5-g, POSS-6-a, POSS-6-b, POSS-7-a, POSS-7-b, POSS-7-c, POSS-7-d, POSS-7-e, POSS-7-f, POSS-7-g, POSS-7-h, POSS-7-i	PARCS, City Council, Mayor, CM, CAO, DARM, DPW, San Joaquin River Conservancy	5-20 years
Collaborate with school districts to find appropriate locations and campus sizes for schools to meet the needs of all students and neighborhoods.	POSS-8-a, POSS-8-b, POSS-8-c	Fresno County Office of Education, Fresno County School Districts, DARM, City Council, Mayor,	Ongoing

TABLE 12-2: SUMMARY OF IMPLEMENTATION ACTIONS FOR PLAN POLICIES

Implementation Actions	General Plan Policies	Responsible Parties	Timing
		CAO, CM	
Collaborate with institutions of higher learning in Fresno, especially California State University, Fresno, Pacific University and Fresno City College to enhance the City's workforce, job creation, and economic development.	POSS-9-a, POSS-9-b, POSS-9-c	Mayor; City Council; CAO; CM; DARM; California State University, Fresno; Fresno Pacific University; State Center Community College District	Ongoing
Public Utilities and Services			
Provide the level of law enforcement and crime prevention services necessary to maintain a safe, secure, and stable urban living environment.	PU-1-a, PU-1-b, PU-1-c, PU-1-d, PU-1-e, PU-1-f, PU-1-g, PU-1-h, PU-1-i, PU-1-j	Fresno County Sheriff's Office, City of Fresno Police Department, CAO, CM, City Council, Mayor	Ongoing
Ensure the Fire Department's staffing and equipment resources are sufficient to meet all fire and emergency service level objectives and are provided in an efficient and cost effective manner.	PU-2-a, PU-2-b, PU-2-c, PU-2-d, PU-2-e, PU-2-f, PU-2-g, PU-3-a, PU-3-b, PU-3-c, PU-3-d, PU-3-e, PU-3-f, PU-3-g, PU-3-h, PU-3-i	City of Fresno Fire Department, CAO, CM, City Council, Mayor	Ongoing
Provide adequate trunk sewer and collector main capacities to serve existing and future urban development. Use the Regional Wastewater Treatment and Reclamation Facility, together with supplemental subregional facilities, for sewage treatment and disposal.	PU-4-a, PU-4-b, PU-4-c, PU-4-d, PU-4-e, PU-6-a, PU-6-b	DPU, DARM, City Council, Mayor, CAO, CM	Ongoing
Protect groundwater quality from private on-site disposal systems. Adopt regulations and programs to promote reduction in wastewater flows and develop facilities to reuse reclaimed water and biosolids.	PU-5-a, PU-5-b, PU-5-c, PU-7-a, PU-7-b, PU-7-c, PU-7-d, PU-7-e, PU-7-f	DPU, City Council, Mayor, CAO, CM	Ongoing
Continue to manage the City's water facilities on a strategic timeline basis.	PU-8-a, PU-8-b, PU-8-c, PU-8-d, PU-8-e, PU-8-f, PU-8-g	DPU, DARM, City Council, Mayor, CAO, CM	Ongoing
Provide adequate solid waste facilities and services.	PU-9-a, PU-9-b, PU-9-c, PU-9-d, PU-9-e, PU-9-f	DPU, DARM, City Council, Mayor, CAO, CM	5-10 years
Resource Conservation and Resilience			
Utilize existing and future public infrastructure efficiently, and adopt priority improvement programs for neighborhoods with the greatest needs.	RC-1-a, RC-1-b, RC-1-c, RC-1-d, RC-1-e, RC-1-f, RC-1-g, RC-1-h	DPU, DPW, DARM, FAX, City Council, Mayor, CAO, CM	Ongoing
Adopt regulations and programs to promote land uses that conserve resources, and engage, educate, listen to, and enlist the support of the community for resource conservation.	RC-2-a, RC-2-b, RC-3-a, RC-3-b, RC-3-c	City Council, Mayor, DARM, Planning Commission, PARCS, CAO, CM	1-5 years

TABLE 12-2: SUMMARY OF IMPLEMENTATION ACTIONS FOR PLAN POLICIES

Implementation Actions	General Plan Policies	Responsible Parties	Timing
Achieve and maintain compliance with State and federal air quality standards for criteria pollutants and reductions in greenhouse gas emissions, in collaboration with other jurisdictions and agencies in the San Joaquin Valley Air Basin.	RC-4-a, RC-4-b, RC-4-c, RC-4-d, RC-4-e, RC-4-f, RC-4-g, RC-4-h, RC-4-i, RC-4-j, RC-4-k, RC-5-a, RC-5-b, RC-5-c, RC-5-d, RC-5-e, RC-5-f, RC-5-g	City Council, Mayor, CAO, CM, DARM, Planning Commission, San Joaquin Valley Air Pollution Control District	Ongoing
Adopt regulations and programs to insure that Fresno has a reliable, long-range source of drinkable water, and promote water conservation through standards, incentives, and capital investments.	RC-6-a, RC-6-b, RC-6-c, RC-6-d, RC-6-e, RC-6-f, RC-6-g, RC-6-h, RC-6-i, RC-7-a, RC-7-b, RC-7-c, RC-7-d, RC-7-e, RC-7-f, RC-7-g, RC-7-h, RC-7-i	DPU, City Council, Mayor, CAO, CM, DARM, DPW	10-20 years
Adopt regulations and programs to require conservation measures and the use of alternative energy sources.	RC-8-a, RC-8-b, RC-8-c, RC-8-d, RC-8-e, RC-8-f, RC-8-g, RC-8-h, RC-8-i, RC-8-j, RC-8-k	DPU, City Council, Mayor, CAO, CM, DARM, DPW	1-5 years
Protect agricultural land outside of the area planned for urbanization under this General Plan.	RC-9-a, RC-9-b, RC-9-c	DARM, City Council, Mayor, DPU	Ongoing
Adopt regulations and programs to conserve aggregate mineral resources within the Planning Area, and allow for responsible extraction to meet Fresno's needs.	RC-10-a, RC-10-b, RC-10-c, RC-10-d, RC-10-e, RC-10-f	DARM, City Council, Mayor, DPU	1-5 years
Reduce the solid waste that goes to landfills.	RC-11-a, RC-11-b, RC-11c	DPU, DARM, City Council, Mayor, CAO, CM	10-20 years
Historic and Cultural Resources			
Formulate and implement a comprehensive preservation program to identify, protect, and assist in the preservation of historic and cultural resources, including necessary zoning.	HCR-1-a, HCR-1-b, HCR-1-c, HCR-2-a, HCR-2-b, HCR-2-c, HCR-2-d, HCR-2-e, HCR-2-f, HCR-2-g, HCR-2-h, HCR-2-i, HCR-2-j, HCR-2-k, HCR-4-e, HCR-4-f	City Council, DARM, Mayor, Historic Preservation Commission	Ongoing
Identify and preserve Fresno's historic and cultural resources that reflect important cultural, social, economic, and architectural features.	HCR-1-a, HCR-1-b, HCR-1-c, HCR-2-a, HCR-2-b, HCR-2-c, HCR-2-d, HCR-2-e, HCR-2-f, HCR-2-g, HCR-2-h, HCR-2-i, HCR-2-j, HCR-2-k, HCR-2-l, HCR-2-m, HCR-2-n, HCR-4-e, HCR-4-f	City Council, DARM, Mayor, Historic Preservation Commission	Ongoing
Adopt regulations and programs to promote a "New City Beautiful" ethos, and foster an appreciation of Fresno's history and cultural resources.	HCR-3-a, HCR-3-b, HCR-3-c, HCR-4-a, HCR-4-b, HCR-4-c, HCR-4-d, HCR-4-e, HCR-4-f	City Council, DARM, Mayor, Historic Preservation Commission, Public Art Committee	Ongoing
Noise and Safety			
Update the Noise Ordinance and establish performance standards for acceptable and unacceptable exterior and interior noise standards, particularly in mixed-use residential areas and the Downtown Planning Area.	NS-1-a, NS-1-b, NS-1-c, NS-1-d, NS-1-e, NS-1-f, NS-1-g, NS-1-h, NS-1-i, NS-1-j, NS-1k, NS-1-l, NS-1-m, NS-1-n	DARM, Mayor, Planning Commission, City Council, CAO, CM, DPU, DPW	1-5 years

TABLE 12-2: SUMMARY OF IMPLEMENTATION ACTIONS FOR PLAN POLICIES

Implementation Actions	General Plan Policies	Responsible Parties	Timing
Establish noise mitigation measure requirements for new development, including transportation projects.	NS-1-i, NS-1-g, NS-1-m, NS-1-n, NS-1-o	DARM, Mayor, Planning Commission, DPW, City Council, CAO, CM, DPU, DPW, FAX	1-5 years
Incorporate new noise thresholds in the City's environmental review process, and review all projects that may be affected by or cause a significant increase in noise levels.	NS-1-i, NS-1-j, NS-1-k, NS-1-l, NS-1-m	DARM, Mayor, Planning Commission, DPW, City Council, CAO, CM	1-5 years
Implement land use and noise exposure compatibility provisions with Fresno's airport plans.	NS-1-p	DARM, Planning Commission, Mayor, DPW, City Council, CAO, CM, Fresno Yosemite International Airport, Fresno-Chandler Airport, Sierra Sky Park Airport	1-5 years
Adopt regulations and programs as appropriate to minimize the risk of property damage and personal injury posed by seismic and geologic risks, as well as flooding and stormwater runoff hazards.	NS-2-a, NS-2-b, NS-2-c, NS-2-d, NS-3-a, NS-3-b, NS-3-c, NS-3-d, NS-3-e, NS-3-f, NS-3-g, NS-3-h, NS-3-i, NS-3-j, NS-3-k, NS-3-l, NS-3-m, NS-3-n	DPU, DPW, FAX, DARM, Planning Commission, DPW, City Council, CAO, CM	Ongoing
Adopt regulations and programs as appropriate to minimize the risk of loss of life, injury, and property from the use, transport, treatment, and disposal of hazardous waste and materials.	NS-4-a, NS-4-b, NS-4-c, NS-4-d, NS-4-e, NS-4-f, NS-4-g, NS-4-h, NS-4-i	DPU, DPW, FAX, Mayor, DARM, Planning Commission, DPW, City Council, CAO, CM	Ongoing
Adopt regulations and programs as appropriate to minimize exposure to airport hazards.	NS-5-a, NS-5-b, NS-5-c, NS-5-d, NS-5-e	DARM, Planning Commission, Mayor, DPW, City Council, CAO, CM, Fresno Yosemite International Airport, Fresno-Chandler Airport, Sierra Sky Park Airport	Ongoing
Continue to respond in a coordinated and efficient manner to natural disasters.	NS-6-a, NS-6-b, NS-6-c, NS-6-d, NS-6-e, NS-6-f, NS-6-g	Mayor, DPU, DPW, FAX, DARM, Planning Commission, DPW, City Council, CAO, CM	Ongoing
Healthy Communities			
Coordinate and strengthen relationships with neighborhood associations, businesses, and local institutions to implement community health initiatives.	HC-1-a, HC-1-b, HC-1-c, HC-1-d	Mayor, DPU, DPW, FAX, DARM, Planning Commission, DPW, City Council, CAO, CM, County of	5-10 years

TABLE 12-2: SUMMARY OF IMPLEMENTATION ACTIONS FOR PLAN POLICIES

Implementation Actions	General Plan Policies	Responsible Parties	Timing
		Fresno	
Adopt regulations and programs to create complete and healthy neighborhoods and transportation systems.	HC-2-a, HC-2-b, HC-2-c, HC-2-d, HC-2-e, LU-1-a, LU-1-b, LU-1-c, LU-1-d, LU-1-e, LU-1-f, LU-1-g, LU-2-a, LU-2-b, LU-2-c, LU-2-d, LU-2-e, LU-2-f, MT-1-a, MT-1-b, MT-1-c, MT-1-d, MT-1-e, MT-1-f, MT-1-g, MT-1-h, MT-1-i, MT-1-j, MT-1-k, MT-1-l, MT-1-m, MT-1-n, MT-1-o, MT-1-p, MT-2-a, MT-2-b, MT-2-c, MT-2-d, MT-2-e, MT-2-f, MT-2-g, MT-2-h, MT-2-i, MT-2-j, MT-2-k, MT-2-l, MT-4-a, MT-4-b, MT-4-c, MT-4-d, MT-4-e, MT-4-f, MT-4-g, MT-4-h, MT-4-i, MT-4-j, MT-4-k, MT-5-a, MT-5-b, MT-5-c, MT-5-d, MT-5-e, MT-5-f, MT-6-a, MT-6-b, MT-6-c, MT-6-d, MT-6-e, MT-6-f, MT-6-g, MT-6-h, MT-6-i, MT-6-j, MT-6-k, MT-6-l, MT-6-m, MT-6-n, MT-7-a, MT-7-b, MT-7-c, MT-8-a, MT-8-b, MT-8-c, MT-8-d, MT-8-e, MT-8-f, MT-8-g, MT-8-h, MT-8-i, MT-8-j, MT-9-a, MT-9-b, MT-9-c, MT-9-d, MT-9-e, MT-9-f	Mayor, DPU, DPW, FAX, DARM, Planning Commission, DPW, City Council, CAO, CM	5-20 years
Adopt regulations and programs and support efforts to create safe, healthy, and affordable housing, and to improve property maintenance.	HC-3-a, HC-3-b, HC-3-c, HC-3-d, HC-3-e, HC-3-f, HC-3-g, HC-4-a, HC-4-b, HC-4-c, HC-4-d, HC-4-e, HC-4-f	Mayor, City Council, CM, CAO, Planning Commission, DARM, DPU, DPW	5-20 years
Adopt regulations and programs to continue promoting access to healthy and affordable food.	HC-5-a, HC-5-b, HC-5-c, HC-5-d, HC-5-e, HC-5-f, HC-5-g	Mayor, City Council, CM, CAO, Planning Commission, DARM	5-10 years
Continue to improve access to schools and their facilities.	HC-6-a, HC-6-b, HC-6-c, HC-6-d	Mayor, City Council, CM, CAO, Planning Commission, DARM, Fresno Unified School Districts, Clovis USD, Central USD, Sanger USD, Washington USD	1-5 years
Adopt regulations and programs to improve park facilities to support public health.	HC-7-a, HC-7-b, HC-7-c, HC-7-d	Mayor, City Council, CM, CAO, PARCS, DPU, DPW, Planning Commission, DARM	5-10 years
Support Fresno's youth with programs and leadership	HC-8-a, HC-8-b, HC-8-c, HC-8-d	Mayor, City Council, CM, CAO, PARCS,	Ongoing

TABLE 12-2: SUMMARY OF IMPLEMENTATION ACTIONS FOR PLAN POLICIES

Implementation Actions	General Plan Policies	Responsible Parties	Timing
opportunities, developed in collaboration with youth.		Fresno Unified School District (USD), Clovis USD, Central USD, Sanger USD, Washington USD	

This page intentionally left blank.

GLOSSARY

100-Year Flood. That flood event that has a one-percent chance of occurrence in any one year.

500-Year Flood. The magnitude of a flood expected to occur on the average every 500 years, based on historical data. The 500-year flood has a 1/500, or 0.2 percent, chance of occurring in any given year.

Acreage, Gross (or Acres, Gross). Area of a site calculated to the centerline of bounding streets and other public rights-of-way.

Acreage, Net (or Acres, Net). Area of a site excluding land to be dedicated for required easements for vehicles and rights of way, either public or private; land dedicated to be hazardous and unbuildable; and land to be dedicated for schools and parks or other facilities dedicated for public use. The General Plan calculates residential density on net acreage, defined as the land area of a lot remaining after dedication of all areas for major streets, schools, regional trails, certified wetlands or floodplains, and land underneath large electric transmission lines (e.g. transmission towers).

Activity Center. A type of urbanized development that can occur at multiple scales based upon its planned density, intensity, and location. Activity Centers typically include buildings with mixed land uses integrated with and connected by multiple modes of transit, including walking, biking and public transit, providing a single destination where people can live, work, and shop. Activity Centers, as defined for use in this General Plan, are Mixed-Use designated areas along BRT and other transit corridors. Mixed-use designations within the Downtown Planning Area are considered the Primary Activity Center for the purpose of this General Plan. See Primary Activity Center.

Affordable Housing. Affordable Housing as defined by the State of California, which generally considers housing to be affordable when a household pays less than 30% of its gross monthly income for housing, property taxes, insurance, and utilities.

Alternative Public Improvement Standards. Modification of adopted street standards.

Aquifer. An underground, water-bearing layer of earth, porous rock, sand, or gravel, through which water can seep or be held in natural storage. Aquifers generally hold sufficient water to be used as a water supply.

Archeological Resource. Places where human activity has measurably altered the earth or left deposits of physical remains. Archaeological resources may be either prehistoric (before the introduction of writing in a particular area) or historic (after the introduction of writing). The majority of such places in this region are associated with either Native American or Euroamerican occupation of the area.

Arterial. Four- to six-lane divided (median island separation) roadways, with somewhat limited motor vehicle access to abutting properties, and with the primary purpose of moving traffic within and between neighborhoods and to and from freeways and expressways. In addition to major street intersections, appropriately designed and spaced local street intersections may allow left-turn movements to and from the arterial streets.

Attainment Status. Under amendments to the Federal Clean Air Act, the EPA has classified air basins or portions thereof, as either "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the national standards have been achieved.

Best Management Practices (BMP). The combination of conservation measures, structure, or management practices that reduces or avoids adverse impacts of development on adjoining site's land, water, or waterways, and waterbodies.

Buffer. A land use designation that is intended to separate urban uses from long-term agricultural uses in order to preserve long-term viable agricultural areas.

Bus Rapid Transit (BRT). A bus-based mass transit system with specialized design, services, and infrastructure to improve system quality and remove the typical causes of delay. BRT combines the speed, reliability and amenities of rail-based rapid transit systems with the flexibility of buses.

BRT Corridor. A transportation corridor that allows for express bus service with such features as dedicated stops and/or travel lanes, or signal priority (early green to go ahead of other cars) to allow for faster travel times. BRT corridors in the City include, but are not limited to: Blackstone/Abbey corridor from Downtown to Audubon; Ventura/Kings Canyon Corridor from Downtown to Clovis Avenue, with future phases to east of Temperance; Shaw Avenue; California Avenue Corridor from Downtown to Hughes/Marks to connect a proposed Veteran's Community Transit Village with the Downtown.

Buy Local. A preference to buy locally produced goods and services over those produced farther away.

California High-Speed Rail Authority. California State Agency responsible for planning, designing, building and operation of the first high-speed rail system in the nation, the California High-Speed Train.

California High-Speed Train. High-speed train service being designed to connect the mega-regions of California. By 2029, the system is to run from San Francisco to the Los Angeles basin and the Central Valley in under three hours at speeds capable of over 200 miles per hour. The system is to eventually extend to Sacramento and San Diego, totaling 800 miles with up to 24 stations.

Capital Improvement Program (CIP). The multi-year scheduling of public physical improvements based on studies of fiscal resources available and the choice of specific improvements to be constructed.

Carbon Dioxide (CO_2). The most common of the greenhouse gases, CO_2 is emitted as a result of fossil fuel combustion, with contributions from cement manufacture.

Carbon Dioxide Equivalent (CO_2e). A standard measurement for assessing total greenhouse gas emissions, scaling emissions of non-CO_2 greenhouse gases based on their relative global warming potential compared to CO_2.

Carbon Footprint. The amount of greenhouse gases and specifically carbon dioxide emitted by something (as a person's activities or a product's manufacture and transport) during a given period.

Carbon Monoxide (CO). A colorless, odorless gas formed by the incomplete combustion of fuels, which is toxic because of its tendency to reduce the oxygen-carrying capacity of the blood.

City (capitalized) and city (non-capitalized). Capitalized "City" refers to the municipal entity and its functions as a local government entity which is also referred to as "City of Fresno" while non-capitalized "city" refers to the geographical area or the people of Fresno which is also referred to as "city of Fresno."

City of Fresno (capitalized City) and city of Fresno (non-capitalized city). See City (Capitalized) for "City of Fresno" and city (non-capitalized) for "city of Fresno" for definitions.

Citywide (capitalized) and citywide (non-capitalized). References to "Citywide" are in relation to a characteristic, regulation or other factor that occurs within the incorporated boundaries of the City of Fresno while "citywide" may refer to occurrences within the Fresno Planning Area (FPA).

City Council. The City Council is the governing body of the City of Fresno and, except where expressly limited by the City Charter, is vested with all powers of legislation in municipal affairs. As the legislative body, the City Council is responsible for adoption of the Plan, subject to Mayoral veto or referendum, and any amendments to the Plan.

City Limits. The incorporated boundaries of the City of Fresno.

Climate Change. Climate change, or global climate change, refers to a change in the average climate of the earth that may be measured by wind patterns, storms, precipitation, and temperature. The baseline by which these changes are measured originates in historical records identifying temperature changes that have occurred in the distant past, such as during previous ice ages.

Climatized Plant. A plant that has acclimated to the environment in which it will be planted for landscaping purposes prior to planting thus preparing the plant to maintain performance across a range of environmental conditions.

Code. See Development Code for definition.

Collector. Two- to four-lane undivided (opposing travel lanes not separated by a median island) roadways, with the primary function of connecting local streets and arterials and neighborhood traffic generators and providing access to abutting properties.

Community Development Corporation (CDC). A not-for-profit organization incorporated to provide programs, offer services and engage in other activities that

promote and support community development. CDCs usually serve a geographic location such as a neighborhood. They often focus on serving lower-income residents or struggling neighborhoods. They can be involved in a variety of activities including economic development, education, community organizing and real estate development. These organizations are often associated with the development of affordable housing.

Community Facilities District (CFD). A method used by local government to finance public improvements and services. A CFD is created by a sponsoring local government agency. The proposed district includes all properties that will benefit from the improvements to be constructed or the services to be provided. A CFD cannot be formed without a two-thirds majority vote of residents living within the proposed boundaries. Or, if there are fewer than 12 residents, the vote is instead conducted of current landowners. In many cases, that may be a single owner or developer. Once approved, a Special Tax Lien is placed against each property in the CFD. Property owners then pay a Special Tax each year. If the project cost is high, municipal bonds are sold by the CFD to provide the large amount of money initially needed to build the improvements or fund the services.

Community Garden. A cooperatively-managed garden in an urbanized area. Community gardens can be a source of fresh produce and provide learning opportunities for community members.

Community Institution. An organization or establishment founded for a specific purpose, such as a hospital, religious institution, school, community center, or hospital.

Community Noise Equivalent Level (CNEL). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of 10 decibels to sound levels in the night from 10 p.m. to 7 a.m.

Community Park. A park of more than 10 and up to 40 acres in size (typically at least 20 acres), which helps define a community or district and is intended to serve the more active recreational needs of persons who live or work within a two to four-mile radius. These parks typically include facilities such as lighted sport fields and a community center building with a gym, meeting rooms, and restrooms. Other features may include swimming pools, tennis courts, concession stands, community defining pubic art, courtyard or plaza.

Community Plan. A refinement of the General Plan for a component geographic area of the General Plan. A community plan advances the provisions of the General Plan to a

more precise level of detail. A community plan is adopted, amended, or repealed by resolution of the City Council.

Compatible. Capable of existing together without conflict or ill effects.

Complete Neighborhood. Refers to a neighborhood where one has safe and convenient access to the goods and services needed in daily life. This envisions a variety of housing options, grocery stores and other commercial services, quality public schools, public open spaces and recreational facilities, active transportation options and civic amenities. An important element of a Complete Neighborhood is that it is built at a walkable and bikeable human scale, and meets the needs of people of all ages and abilities.

Complete Streets. Streets which are designed and operated to enable safe, attractive, and comfortable access and travel for all users, including motorists, pedestrians, bicyclists, children, seniors, individuals with disabilities, and users of public transportation.

Concept Plan. A framework for growth which identifies future land uses, major road networks, and other challenges and opportunities for growth within the larger area adjacent or surrounding a proposed project. Concept plans require project implementation to involve coordination between new growth areas and existing development that includes subdivisions, some of which were built many years ago, in order to achieve Complete Neighborhoods. Concept Plans may include parks, schools, trails, and other public services and amenities. Concept Plans should demonstrate how subdivisions, proposed commercial and other developments may impact surrounding properties, and how connectivity amongst the sites will be achieved.

Connectivity. The quality of street patterns and pedestrian paths that allow for through movement between and within neighborhoods.

Connector. Two- to three-lane undivided roadways planned to provide access to larger, well integrated neighborhoods typically 40 to 160 acres in size and generally having a range of residential densities and one or more supporting uses, such neighborhood serving recreational open space, school, civic, quasi-public and shopping.

Conservation. The management of natural resources to prevent waste, destruction, or neglect.

Consistent. Free from variation or contradiction. Policies and programs in the General Plan are to be consistent, not contradictory.

Council. See City Council for definition.

County (capitalized) and county (non-capitalized). Non-capitalized county refers to the geographical area or the people of the county of Fresno. Capitalized County refers to the local government which is also referred to as either the County of Fresno or Fresno County.

County Island. Unincorporated land surrounded by the city.

Criteria Air Pollutants. Six pollutants identified by EPA under the federal Clean Air Act that are pervasive in urban environments and for which State and national health-based ambient air quality standards have been established. These are ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM), and lead.

Cultural Resource. Collective evidence of past activities and accomplishments of people. Buildings, objects, features, sites, and structures with scientific, historic, and cultural value are all examples of cultural resources.

Curb Cut. The opening along the curb line at which point vehicles or other wheeled forms of transportation may enter or leave the roadway. Curb cuts are essential at street corners for wheelchair users.

Day-Night Average Sound Level (Ldn). The A-weighted average sound level for a given area (measured in decibels) during a 24-hour period with a 10 dB weighting applied to night-time sound levels (after 10 p.m. and before 7 a.m.). The Ldn is approximately numerically equal to the CNEL for most environmental settings.

Decibel (dB). A unit of measurement used to express the relative intensity of sound as heard by the human ear describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

Decibel, A-weighted (dBA). The "A-weighted" scale for measuring sound in decibels; weights or reduces the effects of low and high frequencies in order to stimulate human hearing. Every increase of 10 dBA doubles the perceived loudness though the noise is actually ten times more intense.

Dedication. The commitment by an owner or developer of private land for public use, and the acceptance of land for such use by the governmental agency having jurisdiction

over the public function for which it will be used. Dedications for roads, parks, school sites, or other public uses often are required by the city as conditions of approval on a development.

Dedication, In-lieu of. Certain cash payments which may be required of an owner or developer as a substitute for a dedication of land, usually calculated in dollars per lot, and referred to as in lieu fees or in lieu contributions.

Density. The number of residential dwelling units per acre of land. Densities specified in the General Plan are expressed in units per net acre. (See "Acreage, Net.")

Density Bonus. The allocation of development rights that allow a parcel to accommodate additional square footage or additional residential units beyond the maximum for which the parcel is zoned, usually in exchange for the provision or preservation of an amenity at the same site or at another location. Under California State Law, residential projects that provide affordable housing may be entitled to as much as a 35 percent increase of the underlying zone district.

Detention Area. A detention area is an area in the natural environment where rainwater runoff and stormwater naturally collects. Human activity and construction of homes have the effect of changing the size and shape of a detention area.

Detention Basin. Facilities classified according to the broad function they serve, such as storage, diversion or detention. Detention facilities are constructed to retard flood runoff and minimize the effect of floods.

Developer. An individual who, or business which, prepares land for the construction of buildings or builds or causes to be built physical building space for use primarily by others, and in which the preparation of the land or the creation of the building space is in itself a business and is not incidental to another business or activity.

Development. The physical extension and/or construction of urban land uses. Development activities include but are not limited to: subdivision of land; construction or alteration of structures, roads, utilities, and other facilities; installation of septic systems; grading; deposit of refuse, debris, or fill materials; and clearing of natural vegetation cover (with the exception of agricultural activities). Routine repair and maintenance activities are not considered as "development."

Development Code. Refers to the proposed City of Fresno Municipal Code, Chapter 15, Development Code which will contain the City's zoning and subdivision regulations and

is proposed to be the new planning, zoning, and development implementing code. This code is to be adopted following the adoption of this General Plan.

Development Area. Development Areas are specifically defined geographic areas within the General Plan used to manage urban development through the application of policies and implementation measures to assure that commensurate urban public facilities and improvements are provided as necessary to accommodate the planned development. See Figure 1-3 for representation of Development Areas.

Disadvantaged Unincorporated Communities (DUCs). Settled places not within city limits where the median household income is 80 percent or less than the statewide median household income.

Downtown. The area in the city of Fresno bound by State Routes 99, 41 and 180.

Downtown Core. See Downtown for definition.

Downtown District. See Downtown for definition.

Downtown Neighborhoods Community Plan (DNCP). A subsequent community plan to further refine the Downtown Planning Area. Considered a visionary document that will lay out the community's long-term goals for the Downtown Plan Area and provides detailed policies concerning a wide range of topics, including land use and development, transportation, the public realm of streets and parks, infrastructure, historic resources, and health and wellness.

Downtown Planning Area. Refers to the land area addressed by the Downtown Neighborhoods Community Plan and includes the Central Business District, Civic Center and other Downtown centers, Chinatown, South Stadium/South Van Ness, Downtown neighborhoods and special districts. It is represented in Figure LU-1.

Drought-Tolerant Plants. Plants that are adapted to arid or drought conditions. Once established these plants are able to withstand long periods of dryness without deterioration, going several weeks or a season between watering.

Easement. A right given by the owner of land to another party for specific limited use of that land. An easement may be acquired by a government through dedication when the purchase of an entire interest in the property may be too expensive or unnecessary; usually needed for utilities or shared parking.

Economic Base. Basic economic sectors in a community are those that make products and services that are sold outside the community, thereby creating income for local workers and companies.

Endangered Species, California. A native species or sub-species of a bird, mammal, fish, amphibian, reptile, or plant, which is in serious danger of becoming extinct throughout all or a significant portion of its range, due to one or more factors, including loss in habitat, change in habitat, over-exploitation, predation, competition, or disease. The status is determined by the State Department of Fish and Game together with the State Fish and Game Commission.

Endangered Species, Federal. A species which is in danger of extinction throughout all or a significant portion of its range, other than the species of the Class Insect determined to constitute a pest whose protection under the provisions of the 1973 Endangered Species Act, as amended, would present an overwhelming and overriding risk to humans. The status is determined by the US Fish and Wildlife Service and the Department of the Interior.

Environmental Impact Report (EIR). A document used to evaluate the potential environmental impacts of a project, evaluate reasonable alternatives to the project, and identify mitigation measures necessary to minimize the impacts. The California Environmental Quality Act (CEQA) requires that the agency with primary responsibility over the approval of a project (the lead agency) evaluate the project's potential significant impacts in an Environmental Impact Report (EIR).

Environmental Justice. Environmental Justice refers to the fair treatment of all people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.

Equivalent Sound Level (Leq). A single-number representation of the fluctuating sound level in decibels over a specified period of time. It is a sound-energy average of the fluctuating level.

Established Neighborhoods. Development inside the city limits that is more than 10 years old.

Erosion. The process by which material is removed from the earth's surface (including weathering, dissolution, abrasion, and transportation), most commonly by wind or water.

Expansive Soils. Soils which swell when they absorb water and shrink as they dry.

Expressway. Four- to six-lane divided (median island separation) roadways primarily serving through and crosstown vehicle traffic, with at-grade major street intersections located at approximately one-half mile intervals and no driveways for direct motor vehicle access to abutting property.

Farmland Classification. California Department of Conservation system for categorizing farmland with respect to its potential for agricultural productivity based on soil type and other physical characteristics.

Fault. A fracture in the earth's crust forming a boundary between rock masses that have shifted. An active fault is a fault that has moved recently and which is likely to again. An inactive fault is a fault which shows no evidence of movement in recent geologic time and little potential for movement.

Findings. Findings are defined as the results of an investigation, carried out by an investigating team.

Fire Department. The City of Fresno Fire Department for definition.

Fiscal Analysis. Analysis focused on the city's General fund budget, comparing costs of providing services and maintaining public facilities with the primary revenue source available to cover these expenditures. The analysis is designed to inform key planning and policy parameters associated with the General Plan.

Flashover. The temperature point at which the heat in a room, area or region is high enough to ignite all flammable material simultaneously.

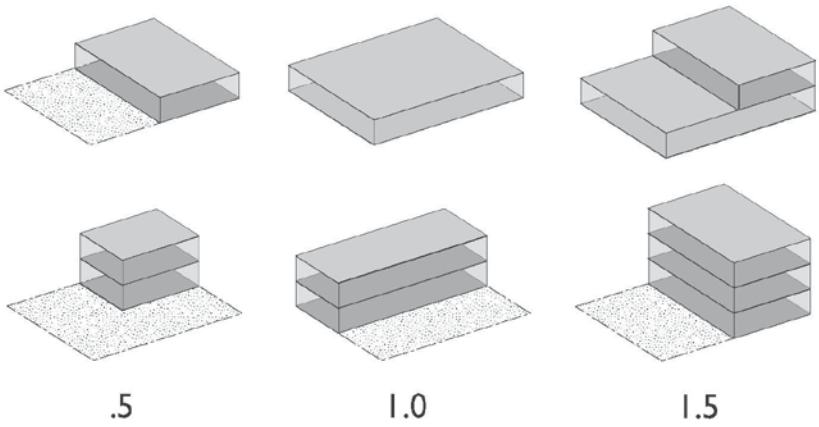
Floodplain. An area adjacent to a lake, stream, ocean or other body of water lying outside the ordinary banks of the water body and periodically inundated by flood flows. Often referred to as the area likely to be inundated by the 100-year flood.

Flood Zone. The relatively level land area on either side of the banks of a stream that is subject to flooding under a 100-year or a 500-year flood.

Floor Area, Gross. The total horizontal area in square feet of all floors within the exterior walls of a building, but not including the area of unroofed inner courts or shaft enclosures.

Floor Area Ratio (FAR). The ratio between gross floor area of structures on a site and gross site area. Thus, a building with a floor area of 100,000 square feet on a 50,000 square-foot lot will have a FAR of 2.0.

Examples showing the concept of FAR:



Food Insecure. The term used to describe people who have insufficient quantities of food available on a consistent basis, have insufficient resources to obtain appropriate foods for a nutritious diet, and do not use food appropriately based on knowledge of basic nutrition and care, as well as adequate water and sanitation. There are two levels of food insecurity as defined by the USDA: Low food security and very low food security.

Food Value Chain. A food venture that links producers, processors, marketers, food service companies, retailers and supporting groups such as shippers, research groups and suppliers designed to increase competitive advantage through collaboration. A Value Chain can be defined as a strategic partnership among inter-dependent businesses that collaborate to progressively create value for the final consumer resulting in a collective competitive advantage.

Form-Based Code. A method of regulating development to achieve a specific urban form. Form-Based Codes create a predictable public realm primarily by controlling physical form, with a lesser focus on land use, through city of county regulations.

Freeway. Freeways provide intra- and inter-regional mobility. Freeway access is restricted to primary arterials via interchanges. Multiple-lane divided (median island separation) roadways on adopted State route alignments servicing through and crosstown traffic, with no access to abutting property and no at-grade intersections. Freeways are under the jurisdiction of the State, outside the control of the City.

Fresno. A general reference to a geographic area located within the jurisdiction of the City of Fresno and its sphere of influence.

Fresno-Clovis Regional Wastewater Reclamation Facility (RWRF). Operated by the City of Fresno this facility provides wastewater treatment services for the greater Fresno metropolitan area in order to protect public health and the environment. It is located at Jensen and Cornelia avenues in southwest Fresno. Wastewater generated from homes and businesses in the Fresno/Clovis metro area travels through 1,500 miles of sanitary sewer lines to the Facility. Currently, the RWRF is a biological, secondary level treatment plant. Future capital improvement projects will upgrade this facility to be able to treat a portion of the incoming wastewater to a tertiary level.

Fresno Fire Department. See Fire Department for definition.

Fresno Police Department. The City of Fresno Police Department for definition.

Fresno's City Limits. See City Limits for definition.

Fulton Corridor Specific Plan (FCSP). A subsequent Specific Plan to further refine the Downtown Planning Area and more specifically the Fulton Corridor.

General Fund. Monies from local property and sales taxes, and other revenue sources, that pay for City of Fresno services.

General Plan. This document, including the adopted Housing Element, which is an integrated, internally consistent, comprehensive, and long-range set of goals, objectives, policies, implementation measures and diagrams for the general physical development of the city and any land outside the City's boundaries which bears relation to the City's planning.

General Plan Buildout. The level of development characterized by full occupancy of all developable sites in accordance with the General Plan Buildout does not necessarily

assume parcels are developed at maximum allowable intensities. General Plan Buildout will occur past 2050.

General Plan Horizon. The level of development predicted to occur by 2035, in accordance with the General Plan.

Goals and Related Terms:

> ***Goal.*** A goal is a general direction-setter. It is an ideal future end related to the public health, safety or general welfare. A goal is a general expression of community values and, therefore, may be abstract in nature and is generally not quantifiable or time-dependent.
>
> ***Objective.*** An objective is a specified end, condition, or state that is an intermediate step toward attaining a goal. It should be achievable, and preferably measurable.
>
> ***Policy.*** A policy is a specific statement that guides decision-making and indicates a commitment of the local legislative body to a particular course of action to accomplish goals and objectives.
>
> ***Implementation Measure.*** An implementation measure is an action, procedure, program or technique that carries out general plan policy.

Global Warming Potential. The relative impact of each greenhouse gas on climate change, on a scale based on the impact of carbon dioxide, whose Global Warming Potential (GWP) is 1.

Graywater. Wastewater generated from wash hand basins, showers and baths, which can be recycled on-site for uses such as water closet flushing, landscape irrigation and constructed wetlands. It often includes discharge from laundry, dishwashers and kitchen sinks.

Green Building. A Green Building generally refers to one that is environmentally friendly in terms of energy consumption, or the waste they produce during its entire life-cycle. A Green Building will have little or no significant impact on the environment. Green buildings are scored by rating systems, such as the Leadership in Energy and Environmental Design (LEED) rating system developed by the U.S. Green Building Council, Green Globes from GBI and other locally developed rating systems.

Green Building Rating System. A building certification system that rates or rewards relative levels of compliance or performance with specific environmental goals and requirements. Rating systems and certification systems are frequently used

interchangeably. Green building rating systems address every project type from single-family houses and commercial buildings to entire neighborhoods and are available for new construction and existing buildings. The goal of rating systems is to improve the design and operations of buildings so that they operate in a more sustainable manner by addressing what the buildings industry has identified as the major aspects of green buildings (i.e., siting, energy, water, greenhouse gas, materials, indoor environment, recycled content, thermal comfort, daylighting, moisture control, acoustics, building system controls, integrated design and commissioning).

Green Enterprise. A business functioning in a capacity where minimal negative impact is made on the local or global environment, the community, or the economy and may have progressive environmental and human rights policies. A business that incorporates principles of sustainability into each of its business decisions, supplies environmentally friendly products or services that replaces demand for nongreen products and/or services, is greener than traditional competition, and has made an enduring commitment to environmental principles in its business operations. A business that participates in environmentally friendly or green activities to ensure that all processes, products, and manufacturing activities adequately address current environmental concerns.

Green Streets. An aspect of the city's urban forest which consists of well-balanced variety and spacing of trees and continuous canopy for shading and visual continuity of each streetscape.

Green Technology. The development and application of products, equipment and systems used to conserve the natural environment and resources, which minimizes and reduces the negative impact of human activities.

Greenhouse Gases. Greenhouse gases are gases in the atmosphere that absorb and emit radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect. Carbon dioxide, methane, and ozone are examples of greenhouse gases.

Greenway. A greenway is a long, narrow piece of land, where vegetation is encouraged, which is managed for public recreation and slow travel.

Groundwater. Water under the earth's surface, often confined to aquifers capable of supplying wells and springs.

Groundwater Recharge. The natural process of infiltration and percolation of rainwater from land areas or streams through permeable soils into water-holding rocks that provide underground storage (i.e. aquifers).

Growth Area. All land within the City's SOI, as of December 31st, 2012, but outside of the City Limits that requires annexation to be incorporated into the City of Fresno.

Habitat. The natural environmental of a plant or animal.

Hazardous Material. A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, State, or local agency, or if it has characteristics defined as hazardous by such an agency. The California Code of Regulation defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating, illness, or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed.

Hazardous Waste. Materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal. Hazardous materials and hazardous wastes are classified according to four properties: toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), and reactive (causes explosions or generates toxic gases).

Healthy People 2020. Healthy People 2020 is a 10-year agenda for improving the Nation's health. It is a multiyear process that reflects input from a diverse group of individuals and organizations. More information can be found at http://www.healthypeople.gov/2020/default.aspx.

High-Speed Rail and High-Speed Train. Rail services with top speeds of 110 MPH to 150 MPH or higher, as defined by the U.S. Department of Transportation. See also California High-Speed Train.

Highway. A public roadway that is publicly maintained and open to the public for purposes of vehicular travel to connect cities and towns.

Historic Resource. Any building, structure, object or site generally in existence more than 50 years which possesses integrity of location, design, setting, materials,

workmanship, feeling and association, and is associated with historic events or with the lives of persons significant in Fresno's past, or embodies the distinctive characteristics of a type, period or method of construction, or represents the work of a master or possesses high artistic values; or reflects, important information about prehistory or history, and has been designated by the City Council to the Local as required by the Historic Preservation Ordinance.

Historic Structure. A structure deemed to be historically significant based on its visual quality, design, history, association, context, and/or integrity.

Household. An occupied housing unit.

Impact Fee. A fee, also called a development fee, levied on the developer of a project by a city, county, or other public agency as compensation for otherwise-unmitigated impacts the project will produce. California Government Code § 54990 specifies that development fees shall not exceed the estimated reasonable cost of providing the service for which the fee is charged. To lawfully impose a development fee, the public agency must verify its method of calculation and document proper restrictions on use of the fund.

Impervious Surface. Any material which reduces or prevents absorption of water into land.

Implementation. Actions, procedures, programs, or techniques that carry out policies.

Infill. The terms "infill area" and "infill development" are intended to be used interchangeably, and shall be defined as consistent with the definition of "infill area" set forth in Objective UF-12 as follows: "Locate roughly one-half of future residential development in infill areas—defined as being within the City on December 31, 2012—including the Downtown core area and surrounding neighborhoods, mixed-use centers and transit-oriented development along major BRT corridors, and other non-corridor infill areas, and vacant land." To the extent that the City must comply with alternative statutory definitions, the definitions of "infill" contained within Public Resources Code 21061.3 and CEQA Guidelines 15332, as may be amended, may apply.

Infill Opportunity Zone (IOZ). General or specifically defined geographic areas for which policies and implementation measures are established to promote development or planned land uses. Includes many of Fresno's established neighborhoods, which are in need of both large, catalytic reinvestment projects and small-scale strategic interventions.

Infrastructure. Permanent utility installations, including roads, water supply lines, sewage collection pipes, and power and communications lines.

Integrated Pest Management. A broad-based approach to pest control that takes into consideration all available pest control techniques as well as subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment. It emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms. This includes managing insects, plant pathogens and weeds.

Intelligent Transportation System (ITS). The application of advanced information and communications technology to surface transportation in order to achieve managed traffic signal timing coordination which improves traffic operations and increases traffic-carrying capacity, while reducing unnecessary congestion and decreasing air pollution emissions.

Intensity. Refers to the relative magnitude of the use or activity which may occur upon a given property or area of land and is typically reflected by the ratio of building area to land area calculated as floor area ratio (i.e. the building area divided by the land area). Intensity may also be measured by other characteristics such as the rate at which the uses of a property generate demand for water consumption, demand for wastewater disposal or generates demand for travel such a private vehicle, public transportation, bicycling or walking.

Intersection Capacity. The maximum number of vehicles that has a reasonable expectation of passing through an intersection in one direction during a given time period under prevailing roadway and traffic conditions.

Intrusive Noise. That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or information content as well as the prevailing noise level.

ISO Rating. This rating considers a community's fire defense capacity versus fire potential, and then uses the score to set property insurance premiums for homeowners and commercial property owners.

Jobs-Employed Residents Ratio. Total jobs divided by total employed residents (i.e. people who live in the area, but may work anywhere). A ratio of 1.0 typically indicates a balance. A ratio greater than 1.0 indicates a net in-commute; less than 1.0 indicates a net out-commute.

K Factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Land Use Designation. See Use for definition.

LEED. The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings.

Level of Service, LOS (traffic). A qualitative measure describing operational conditions within a traffic stream and the perception of motorists and/or passengers regarding these conditions. A level of service definition generally describes these conditions in terms of such factors as traffic volumes, speed and travel time, delays at traffic signals, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. The LOS grades are:

> ***LOS A:*** represents free-flow travel with an excellent level of comfort and convenience where individual vehicles are virtually unaffected by the presence of other vehicles.
>
> ***LOS B:*** a stable operating condition, but the presence of other vehicles begins to be a noticeable, though slight. Freedom to select desired speeds is relatively unaffected, but there is a slight reduction in comfort, convenience, and maneuvering freedom.
>
> ***LOS C:*** a stable operating condition, but this level marks the beginning of congestion and the operation of individual users is affected by the intersection with others in the traffic stream.
>
> ***LOS D:*** represents high-density and crowded but stable traffic flow condition. Users experience substantial restriction in speed and freedom to maneuver with drivers experiencing generally poor level of comfort and convenience.

LOS E: represents operating conditions at or near capacity. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver is difficult with users experiencing frustration and poor comfort and convenience. Small increases in traffic volume will cause breakdown in traffic movement.

LOS F: is used to define forced or breakdown conditions (stop-and-go). This condition exists when the amount of traffic exceeds the amount that can travel to a destination. Long queues of vehicles can form behind these bottleneck points with the queued traffic traveling in a stop-and-go fashion.

Liquefaction. A sudden large decrease in the shearing resistance of cohesion less soil, caused by a collapse of the structure by shock or strain, and associated with a sudden but temporary increase of the pore fluid pressure.

Low Impact Development. Site planning and development features that reduce impermeable surface areas and increase infiltration, such as use of permeable paving, vegetated swales, and water retention facilities.

Major Streets. See "Streets, Major" for definition.

Maximum Contaminant Level. Standards that are set by the Environmental Protection Agency for drinking water quality in Title 40 of the Code of Federal Regulations. The limit is usually expressed as a concentration in milligrams or micrograms per liter of water.

Median Strip. The dividing area, either paved or landscaped, between opposing lanes of traffic on a roadway.

Minerals. Any naturally occurring chemical element or compound, or groups of elements and compounds, formed from inorganic processes and organic substances, including, but not limited to, coal, peat, and bituminous rock, but excluding geothermal resources, natural gas, and petroleum (Public Resources Code Section 2005).

Mitigation. A specific action taken to reduce environmental impacts. Mitigation measures are required as a component of environmental assessments (EIR) if measures are identified.

Mitigation Measures. Action taken to avoid, minimize, or eliminate environmental impacts. Mitigation includes: avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of

the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance during the life of the action; and compensating for the impact by repairing or providing substitute resources or environments.

Mixed Use. A development type consisting of a diversity of both residential uses and nonresidential uses, which may include but are not limited to office, retail, public, or entertainment, in a compact urban form with a strong pedestrian orientation.

> ***Vertical Mixed-Use.*** A development that contains at least one multi-story mixed-use building.
>
> ***Horizontal Mixed-Use.*** An integrated mixed-use development consisting of adjacent residential and non-residential uses.

Mode (transportation). Each form of transportation is a mode: public transit, bicycling, walking, and driving.

Mode split (transportation). The proportion of trips that use each mode of transportation.

Multi-modal. Supporting more than one mode of transportation.

Neighborhood Center. Mixed use area located within a neighborhood that provides local services and amenities that build upon the character and identity of the surrounding neighborhoods and communities. Neighborhood Centers can have, as a focus, public facilities such as parks or community center, or include neighborhood scale commercial centers with multi-modal access directly to the neighborhoods it is located within. They have a lower intensity of use than an Activity Center located within a transit corridor.

Neighborhood Park. A park of more than 2 and up to 10 acres in size, which provides basic recreational activities for neighborhoods located generally within a one-mile radius. These parks contribute to neighborhood identity and accommodate a range of facilities, such as play fields and courts, children's play structures, picnic tables, restrooms, and may include a small center with a multi-purpose room, but also passive recreational features such as walking trails, community gardens, or nature areas.

Nitrogen Oxides (NOx). Chemical compounds containing nitrogen and oxygen; reacts with volatile organic compounds, in the presence of heat and sunlight to form ozone. It is also a major precursor to acid rain.

Noise Attenuation. Reduction of the level of a noise source using a substance, material, or surface.

Noise Contours. Lines drawn about a noise source indicating equal levels of noise exposure. CNEL and Ldn are the metrics utilized herein to describe annoyance due to noise and to establish land use planning criteria for noise.

Open Space. Any parcel or area of land or water that is essentially unimproved. The General Plan designates privately-owned rural/grazing lands, and devoted open space areas as defined by California planning law.

Overdraft. A groundwater basin is in overdraft conditions when the amount of water being drawn out exceeds the amount of water being recharged.

Overlay District. A zoning designation that may be applied in addition to the "underlying" zoning district, to meet a specific, additional goal, such as to encourage protection to environmentally sensitive areas.

Ozone. A compound consisting of three oxygen atoms that is the primary constituent of smog. It is formed through chemical reactions in the atmosphere involving volatile organic compounds, nitrogen oxides, and sunlight. Surface level Ozone can initiate damage to the lungs as well as damage to trees, crops, and materials. There is a natural layer of Ozone in the upper atmosphere, which shields the earth from harmful ultraviolet radiation.

"Package" Treatment Plants. A pre-engineered and pre-fabricated method of treating wastewater with an aerobic process to remove most pollutants from water. The final effluent can be released safely into the environment such as receiving streams, rivers, etc. Treated non-potable water can also being used as a new source of water to promote agricultural and aquaculture production, industrial uses, water sustainability, and reclamation uses such as irrigation, wash down, and artificial recharge.

Paleontological Resources. The mineralized remains of prehistoric plant and animal life, not including human remains or artifacts—also known as fossils.

Park Ratio. The amount of parkland in acres per 1,000 residents.

Parkway. A wide road with trees and grass along the sides and often in the middle.

Particulate Matter (PM-10 and PM-2.5). Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. PM-10 and PM-2.5 consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. PM-10 and PM-2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects.

Peak Hour. The busiest one-hour period for traffic during a 24-hour period. The PM peak hour is the busiest one hour period of traffic during the evening commute period. The AM peak hour is the busiest one hour period during the morning commute.

Pedestrian-Oriented Development. Development designed with an emphasis on the street sidewalk and on pedestrian access to the building, rather than an auto access and parking areas.

Performance Standards. A statement representing a commitment by a public agency to attain a specified level or quality of performance through its programs and policies.

Plan. See General Plan for definition.

Planning Area. Refers to the land area addressed by a General Plan, including land within the city limits and land outside the city limits that bears a relation to the City's planning. This area is not all intended for development; the General Plan Land Use Diagram shows the future development area. The Planning Area established by the City of Fresno includes all areas within the City's current City limits, including the Fresno-Clovis Regional Wastewater Reclamation Facility, the area within the current Sphere of Influence (SOI), and an area north of the most northeasterly portion of the city.

Planning Commission. The City of Fresno Planning Commission. The Planning Commission hears, reviews, and makes recommendations to the City Council on development, land use, and environmental issues, including the General Plan, zoning and subdivision ordinances, and other land use regulations. If authorized, the Planning Commission also approves and denies projects.

Pocket Parks. A park of 0.5 to 2.0 acres in size, which is intended to serve the needs of a smaller, specific neighborhood located within a half-mile radius of the pocket park. Pocket Parks should include amenities to draw neighbors to the park such as a tot lot, picnic bench, or shade structure.

Ponding Basin. See Detention Basin for definition.

Police Department. See Fresno Police Department for definition.

Preservation Mitigation Fund. A fund established to support efforts to preserve and maintain historic and cultural resources. The fund could be used for the restoration of historic properties or cultural heritage programming, and may be generated through a plan or program or other qualifying mechanism to allow for payment of fees to reduce impacts from loss of historic resources.

Primary Activity Center. The Downtown mixed-use areas that are located within the Downtown Planning Area.

Rare or Endangered Species. A species of animal or plant listed in Sections 670.2 or 670.5, Title 14, California Administrative Code; or Title 50, Code of Federal Regulations, Section 17.11 or Section 17.2, pursuant to the Federal Endangered Species Act designating species as rare, threatened, or endangered.

Regional Park. A large park of more than 40 acres in size, which is meant to serve a large number of residents across a broad area of the city, or around 100,000 residents. Regional parks typically include community park features that allow for a variety of sports and active recreation. A park less than 40 acres in size may also be defined as a Regional Park if it provides unique recreational opportunities, such as a zoo or access to the San Joaquin River.

Renewable Energy. Any naturally occurring, theoretically inexhaustible source of energy, as biomass, solar, wind, tidal, wave, and hydroelectric power, that is not derived from fossil or nuclear fuel.

Residential Density. See Density for definition.

Retention Area. A pond, pool, lagoon, or basin used for the storage of water runoff, which is not pumped to another location.

Right-of-Way. A continuous strip of land reserved for or actually occupied by a road, crosswalk, railroad, electric transmission lines, oil or gas pipeline, water line, sanitary storm sewer or other similar use, which may be an easement, fee (ownership) or other interest in land.

Riparian. Characteristic vegetation relating to or located on the bank of a natural watercourse often described as "riparian corridors."

San Joaquin Valley Blueprint. A regional planning effort that originated in 2006 when the eight Councils of Governments in the San Joaquin Valley began developing a common vision for the Valley to help guide land use and transportation decisions. The Blueprint is intended to help urban areas in Fresno County to better deal with existing and expected future growth-related challenges to public resources, housing, mobility, health, air quality and environment. More information can be found at http://www.valleyblueprint.org.

Satellite Treatment and Reclamation Facility. Satellite wastewater systems are used to treat wastewater at or near the point of waste generation and reuse. Satellite treatment plants generally do not have solids processing facilities; solids are returned to the collection system for processing in a central treatment plant located downstream. Individual satellite systems can be used for water reclamation and reuse for applications such as landscape irrigation, toilet flushing, cooling applications, and water features. Use of satellite systems is predicated on the assumption that the existing collection system can be utilized for the transport of solids and reduced flow. Onsite reclamation systems may obviate the need for large-scale dual piping systems, which are generally prohibitively expensive in urbanized areas and reduce the need to expand existing treatment plants to meet future growth projections.

Satellite Treatment Plants. See Satellite Treatment and Reclamation Facility for definition.

Seismic. Caused by or subject to earthquakes or earth vibrations.

Sensitive Receptors. Persons or land users that are most sensitive to negative effects of air pollutants. Persons who are sensitive receptors include children, the elderly, the acutely ill, and the chronically ill. The term "sensitive receptors" can also refer to the land use categories where these people live or spend a significant amount of time. Such areas include residences, schools, playgrounds, child-care centers, hospitals, retirement homes, and convalescent homes.

Short-Range Transit Plan. A document that assesses the existing conditions for a transit system, projects' short term (usually five year) demand, and outlines a plan for meeting those needs.

Shrink-Swell Potential. The extent to which a soil expands in volume when water is absorbed and shrinks as the soil dries. Expansive soils, with a high shrink-swell potential, are largely comprised of clays.

Significant Effect. A beneficial or detrimental impact on the environment. May include, but is not limited to, significant changes in an area's air, water, and land resources.

Siltation. The process of silt deposition. Silt is a loose sedimentary material composed of finely divided particles of soil or rock, often carried in cloudy suspension in water.

Site Area. The land area of a lot remaining after dedication of all areas for public streets, regional trails, and certified wetlands or floodplains.

Smart Growth. An urban planning and transportation theory that concentrates growth in compact walkable urban centers to avoid sprawl. It also advocates compact, transit-oriented, walkable, bicycle-friendly land use, including neighborhood schools, complete streets, and mixed-use development with a range of housing choices. Smart growth values long-range, regional considerations of sustainability over a short-term focus. Its sustainable development goals are to achieve a unique sense of community and place; expand the range of transportation, employment, and housing choices; equitably distribute the costs and benefits of development; preserve and enhance natural and cultural resources; and promote public health.

Smart Growth Principles. There are ten accepted principles of smart growth and they are: create a range of housing opportunities and choices; create walkable neighborhoods; encourage community and stakeholder collaboration in development decisions; foster distinctive, attractive communities with a strong sense of place; make development decisions predictable, fair, and cost effective; mix land uses; preserve open space, farmland, natural beauty, and critical environmental areas; provide a variety of transportation choices; strengthen and direct development towards existing communities; and take advantage of compact building design.

Solar Power. Energy from the sun that is converted into thermal or electrical energy, either directly using photovoltaics, or indirectly using concentrated solar power.

Solid Waste. General category that includes organic wastes, paper products, metals, glass, plastics, cloth, brick, rock, soil, leather, rubber, yard wastes, and wood.

Special Districts. As identified by DNCP, Downtown Development Code or Fulton Corridor Specific Plan (Central Business District, Cultural Arts District, Civic Center, Chinatown, South Stadium, South Van Ness Specific Plan), a precise plan or based on, and consistent with, the General Plan and the Community Plan within which it is located, and shall contain precise land use designations, regulations, programs, and legislation that are required for the systematic implementation of the General Plan and Community Plan.

Special Status Species. Any species which is listed, or proposed for listing, as threatened or endangered by the U.S. Fish and Wildlife Service or National Marine Fisheries Service under the provisions of the Endangered Species Act. It also includes any species designated by the U.S. Fish and Wildlife Service as a "candidate" or "species of concern" or species identified on California Native Plant Society's Lists 1A, 1B, or 2, implying potential danger of extinction.

Specific Plan. Refers to a plan that provides detailed design and implementation tools for a specific portion of the area covered by a general plan. A Specific Plan may include all regulations, conditions, programs, and/or proposed legislation which may be necessary or convenient for the systematic implementation of any general plan element(s).

Sphere of Influence (SOI). The ultimate service area of an incorporated city, as established by the Fresno Local Agency Formation Commission (LAFCo).

State. Non-capitalized state refers to the geographical area or the people of state of California. Capitalized State refers to the state government which is also referred to as the State of California.

State Route (Officially Known as State Highway Route). A number assigned to a California state highway.

Stationary Source. A source of air pollution that is not mobile, such as a heating plant or an exhaust stack from a laboratory.

Stormwater Runoff. Surplus surface water generated by rainfall that does not seep into the earth but flows overland to a watercourse.

Stormwater Management. A coordinated strategy to minimize the speed and volume of stormwater runoff, control water pollution, and maximize groundwater recharge.

Street, Major. Shall mean a roadway designated by the General Plan Circulation Diagram as a Collector, Arterial, Super-arterial, Scenic, Expressway, State Route, or other road identified on the City's Circulation Plan.

Street, Local. Shall mean a street which is not a major street.

Student Generation Rate. The number of new students that is projected to occur with new housing units.

Subsidence. Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas.

Superarterial. Four- to six-lane divided (median island separation) roadways with a primary purpose of moving multiple modes of travel traffic to and from major traffic generators and between community plan areas.

Threatened Species, California. A species of animal or plant is endangered when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors; or when although not presently threatened with extinction, the species is existing in such small numbers that it may become endangered if its environment worsens. A species of animal or plant shall be presumed to be rare or endangered as it is listed in Sections 670.2 or 670.5, Title 14, California Code of Regulations; or Title 50, Code of Federal Regulations Sections 17.11 or 17.12 pursuant to the Federal Endangered Species Act as rare, threatened, or endangered.

Threatened Species, Federal. A species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Total Dissolved Solids (TDS) Total dissolved solids comprise inorganic salts and small amounts of organic matter that are dissolved in water. The principal constituents are usually calcium, magnesium, sodium and potassium and the anions carbonate, bicarbonate, chloride, sulphate and, particularly in groundwater, nitrate (from agricultural use).

Toxic Air Contaminant. An air pollutant that may increase a person's risk of developing cancer and/or other serious health effects. Toxic air contaminants include more than 700 chemical compounds that have been determined to have potential adverse health impacts.

Transit Oriented Development. A development or planning concept typified by the location of residential and commercial districts around a transit station or corridor with high quality service, good walkability, parking management and other design features that facilitate transit use and maximize overall accessibility.

Transit Village. A predominantly residential community with some nearby retail activities planned around a transportation hub, such as a bus stop or train station, with the intent to make it convenient for village dwellers to get to/from work or run errands and travel via a public transportation network. Some key components are a core commercial area with offices and retail surrounding a transit stop supported by high density residential and mixed-use development with progressively lower-density development spreading outward from the center with a focus on creating a sense of place, common places, such as public squares and civic centers, and diversified housing. Multiple Transit Orientated Developments can occur within a Transit Village. For the purposes of this Plan a Transit Village is an Activity Center.

Transportation Demand Management (TSM). Measures to improve the movement of persons and goods through better and more efficient utilization of existing transportation systems (e.g., streets and roads, freeways and bus systems) and measures to reduce the number of single-occupant vehicles utilized for commute purposes.

Transportation System Management. A set of strategies that largely aim to reduce GHG emissions by reducing congestion, primarily by improving transportation system capacity and efficiency. TSM strategies may also address a wide range of other externalities associated with driving such as pedestrian/driver safety, efficiency, congestion, travel time, and driver satisfaction. Some TSM strategies are designed to reduce total and systemic congestion and improve system-wide efficiency, while other strategies target particularly problematic areas where improvements could greatly affect congestion, safety, efficiency, and GHG emissions.

Trip Generation. The number of vehicle trip ends associated with (i.e., produced by) a particular land use or traffic study site. A trip end is defined as a single vehicle movement. Roundtrips consist of two trip ends.

Urban Area. The area planned for residential, commercial, industrial, civic and institutional uses under this General Plan.

Urban Artifacts. Include infrastructure (such as Work Projects Administration 'WPA' stamped sidewalks), street furniture (such as "pineapple" lampposts), signage and other amenities that help to define the urban landscape and create a sense of place.

Urban Form and Urban Design. Refers to the location, mass, and design of various urban components and combines elements of urban planning, architecture, and landscape architecture.

Urban Growth Management (UGM). The City of Fresno's Urban Growth Management (UGM) identifies methods for providing municipal services, facilities, or improvements to serve proposed development. Its purpose is better defined in the City's Development Code describing the UGM process in Section 12-40.501:

> "An integral part of Urban Growth Management is a process referred to herein as the Urban Growth Management Process. The Urban Growth Management Process is intended neither to prevent any development or growth nor to permit free or disorganized development or growth in the Urban Growth Management Area. Such process is instead intended to identify the demands on municipal facilities, improvements, or services created by any proposed residential, commercial, industrial, or other type of development and to provide the means for satisfying such demands; to identify any deleterious effects of any such development and protect the city and its residents against such effects by minimizing the costs of municipal facilities, improvements, and services; and to maintain a high quality of such facilities, improvements, and services. (Added Ord. 76-6, § 1, eff. 2-22-76; Am. Ord. 98-54, § 2, 8-27-98)."

Urban Parkway. Local streets lined with trees and landscaping and ample pedestrian space.

Use. The purpose for which a lot or structure is or may be leased, occupied, maintained under the Development Code and General Plan land use designation.

Vehicle Miles Traveled (VMT). A measure of both the volume and extent of motor vehicle operation; the total number of vehicle miles traveled within a specified geographical area (whether the entire country or a smaller area) over a given period of time.

View Corridor. The line-of-sight (identified as to height, width, and distance) of an observer looking toward an object of significance to the community (e.g., ridgeline, river, historic building, etc.).

Walkable. A characteristic of an area in which a variety of housing types, retail uses, parks, schools and other destinations are in close proximity and well-connected by streets and paths that provide a good pedestrian environment.

Waste Diversion. The prevention and reduction of generated waste through source reduction, recycling, reuse, or composting. Waste diversion generates a host of environmental, financial, and social benefits, including conserving energy, reducing disposal costs, and reducing the burden on landfills and other waste disposal methods.

Wastewater Treatment "Package" Plants. See "Package" Treatment Plants for definition.

Water Recycling. The reuse of tertiary-treated wastewater for landscaping, industrial cooling, irrigation, groundwater recharge, or other uses.

Watershed. The total area above a given point on a watercourse which contributes water to the flow of the watercourse; the entire region drained by a watercourse.

Wetlands. Areas that are permanently wet or periodically covered with shallow water, such as saltwater and freshwater marshes, open or closed brackish marshes, swamps, mud flats, and fens.

Wildlife Corridor. A natural corridor, such as an undeveloped ravine, that is frequently used by wildlife to travel from one area to another.

Williamson Act. Known formally as the California Land Conservation Act of 1965, it was designed as an incentive to retain prime agricultural land and open space in agricultural use, thereby slowing its conversion to urban and suburban development. The program entails a ten-year contract between an owner of land and (usually) a county whereby the land is taxed on the basis of its agricultural use rather than the market value. The land becomes subject to certain enforceable restrictions, and certain conditions need to be met prior to approval of an agreement.

Zero Waste. A philosophy that encourages the redesign of resource life cycles so that all products are reused. No trash is sent to landfills and incinerators. It is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use. It means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.

Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.

Zoning Code and Zoning Regulations. Presently City of Fresno Municipal Code, Chapter 12, Articles 1,2,3, 4 and 4.5 comprise the "Comprehensive Zoning Ordinance" and can be referred to as "Zoning Ordinance of the City of Fresno". The present Zoning Ordinance and many other Articles of Chapter 12 will be repealed and replaced by updated Code provisions in a new Development Code. Use of these terms normally will be in reference to old implementing tools to be replaced.

LIST OF ACRONYMS

ABC: State Department of Alcoholic Beverage Control

af/yr: acre feet/year

ADA: Americans with Disabilities Act

ADT: Average daily traffic

ALUC: Airport Land Use Commission

ALUCP: Airport Land Use Compatibility Plan

ATP: Active Transportation Plan

BNSF: Burlington Northern Santa Fe Railway

BRT: Bus Rapid Transit

CALEA: Commission of Accreditation for Law Enforcement Act

Caltrans: California Department of Transportation

CalGreen or CalGreen Code: California Green Building Standards Code

CAP: Climate Action Plan

CARB: California Air Resources Board

CBC: California Building Code

CBD: Central Business District

CDFG: California Department of Fish and Game

CEQA: California Environmental Quality Act

CFCs: Chlorofluorocarbons

cfs: Cubic feet per second

CIP: Capital Improvement Program

CLG: Certified Local Government

CMP: Congestion Management Program

CNEL: Community Noise Equivalent Level

CO_2e: Carbon Dioxide Equivalent

COFCG or FCOG: Council of Fresno County Governments

COG: Council of Governments

CSUF: California State University, Fresno

CUSD: Clovis Unified School District

CWMA: Consolidated Waste Management Authority

DARM: City of Fresno Development and Resource Management Department

dB: Decibel

dBA: Decibel A-Weighted

DBCP: Dibromo-3-Chloropropane

DDC: Downtown Development Code

DMA: Disaster Mitigation Act of 2000

DNCP: Downtown Neighborhoods Community Plan

DNL: Day-Night Average Noise Level

DPM: Diesel Particulate Matter

DPU: City of Fresno Department of Public Utilities

DPW: City of Fresno Department of Public Works

du: Dwelling Unit

du/ac: Dwelling Units per acre (measure of density)

DWR: Department of Water Resources

EDB: Ethylene dibromide

EIR: Environmental Impact Report (CEQA)

EPA: Environmental Protection Agency

FAR: Floor Area Ratio (measure of intensity)

FAX: Fresno Area Express

FEMA: Federal Emergency Management Act

FCSP: Fulton Corridor Specific Plan

FID: Fresno Irrigation District

FLYP: Fresno's Leading Young Professionals

FMC: Fresno Municipal Code, also known as the Municipal code of Fresno

FMFCD: Fresno Metropolitan Flood Control District

FPU: Fresno Pacific University

FUSD: Fresno Unified School District

FYI: Fresno Yosemite International Airport

GCC: Global Climate Change

GED: General Education Diploma

GHG: Greenhouse Gases

GIS: Geographic Information Systems

GP: General Plan

GPCC: General Plan Citizens Advisory Committee

gpcpd: gallons per capita per day (water use)

GWP: Global Warming Potential

HSR: California High-Speed Rail

HHW: Household Hazardous Waste

IDA: Infill Development Act

ISO: Insurance Services Office

LAFCO: Fresno Local Agency Formation Commission

LEED: Leadership in Energy and Environmental Design

Leq: Equivalent Sound Level

Ldn: Day-Night Average Sound Level

LOS: Level of Service

LPPO: Local Planning Procedures Ordinance

LUST: Leaking Underground Storage Tank

MEIR: Master Environmental Impact Report

mgd: Million gallons per day (water or wastewater)

MOU: Memorandum of Understanding

NAHC: Native American Heritage Commission

NAICS: North American Industry Classification System

NESWTF or SWTF: Northeast Surface Water Treatment Facility

NFPA: National Fire Protection Association

NFIP: National Flood Insurance Program

OSHA: Occupational Safety and Health Administration

PACE: Property Assessed Clean Energy

PG&E: Pacific Gas and Electric

PM-2.5: Suspended particulate matter 2.5 microns or less in diameter

PM-10: Suspended particulate matter 10 microns or less in diameter

ppb: Parts per billion

ppd: Pounds per person per day (waste)

ppm: Parts per million (10^6) by volume or weight

RHNA: Regional Housing Needs Allocation

RTP: Regional Transportation Plan

RWRF: Fresno/Clovis Regional Wastewater Reclamation Facility

SCCCD: State Center Community College District

SCS: Sustainable Community Strategy

SEGA: Southeast Growth Area

SEDA: Southeast Development Area (formerly SEGA)

SIP: State Implementation Plan (Air Pollution)

SJVAPCD: San Joaquin Valley Air Pollution Control District

SJVAB: San Joaquin Valley Air Basin

SNAP: Supplemental Nutrition Assistance Program

SOI: Sphere of Influence

Sq. Ft.: Square Feet

SR: State Route

SWMP: Storm Water Management Plan

SWTF: Surface Water Treatment Facility

TAZ: Traffic Analysis Zone

TCE: Tetrachloroethylene

TCP: Trichloropropane

TOD: Transit Oriented Development

TTCIS: Traffic, Transportation and Connectivity Impact Study

UGM: Urban Growth Management

UP: Union Pacific Railroad

USBR: United States Bureau of Reclamation

USD: Unified School District

USDA: United States Department of Agriculture

UWMP: Urban Water Management Plan

VMT: Vehicle Miles Traveled

VOC: Volatile Organic Chemicals

WIC: Women, Infants and Children

YET: Youth Engagement Team

This page intentionally left blank.

DYETT & BHATIA
Urban and Regional Planners

755 Sansome Street, Suite 400
San Francisco, California 94111
415 956 4300 415 956 7315

VALLEY FEVER

VALLEY FEVER
BASICS

What is Valley fever?

Valley fever (also called coccidioidomycosis or “cocci”) is a disease caused by the *Coccidioides* fungus that grows in the soil and dirt in some areas of California and the southwestern United States. This fungus can infect the lungs and cause respiratory symptoms, including cough, difficulty breathing, fever, and tiredness or fatigue. In rare cases, the Valley fever fungus can spread to other parts of the body and cause severe disease – this type of Valley fever is less common and is called disseminated Valley fever.

Valley fever can be serious and even fatal. Each year in California, there are around 80 deaths from Valley fever and more than 1,000 people are hospitalized with it.

Did you know?

In California, the number of reported Valley fever cases has greatly increased in recent years. Since 2000, the number of cases has increased from less than 1,000 cases to more than 9,000 cases in 2019.

How do you get Valley fever?

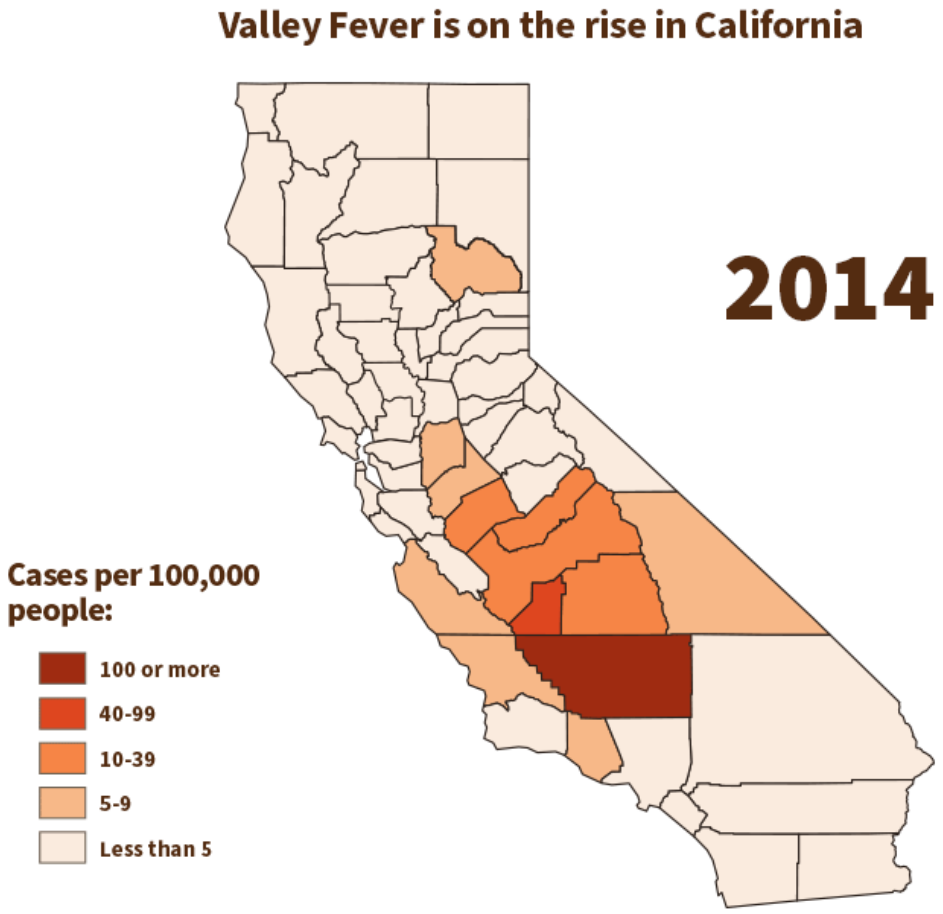
You can get Valley fever by breathing in dust from outdoor air that contains spores of the *Coccidioides* fungus that grows in the soil. Like seeds from a plant, a fungus grows and spreads from tiny spores that are too small to see. When soil or dirt is stirred up by strong winds or while digging, dust containing these fungus spores can get into the air. Anyone who lives, works, or travels in an area where the Valley fever fungus grows can breathe in these fungus spores from outdoor dust without knowing it and become infected. **Valley fever is not contagious, meaning it cannot spread from one person or animal to another.**

Animals, including pets, can also get Valley fever by breathing in fungus spores from dirt and outdoor dust.

Page Last Updated: January 6, 2023

Where can you get Valley fever?

Most cases of Valley fever in California(over 65%)are reported from the Central Valley and Central Coast regions. People are more likely to get Valley fever if they live, work, or travel in these areas or travel to **other places where Valley fever has been reported**. There is no commercial test available to see if the Valley fever fungus is in the dirt or dust in certain areas, but we do know that Valley fever has been diagnosed in people living throughout California. The map below shows the rates (or number of cases per 100,000 population) of reported Valley fever cases by county in California from 2014 to 2018.



More Valley Fever Q&As

Do I have Valley fever or COVID-19?

Valley fever and COVID-19 share many of the same symptoms, including fever, cough, fatigue, and body aches. If you are experiencing these symptoms, isolate yourself from others and contact your healthcare provider immediately. Laboratory tests are needed to know whether symptoms are caused by COVID-19 or Valley fever. Usually, Valley fever is diagnosed using a blood test, but the lab test for COVID-19 uses a respiratory sample from your nose or throat.

Is Valley fever still a problem in California?

Yes. **The number of reported Valley fever cases in California has greatly increased in recent years.** Since 2000, the number of cases has increased from less than 1,000 cases to more than 9,000 cases in 2019.

Is Valley fever found only in the Central Valley?

No. While most cases of Valley fever in California are reported in people who live in the Central Valley or Central Coast, **it has been diagnosed in people living throughout California.** More and more cases have also been recently reported in Central and Southern California.

Can I get Valley fever from someone who is sick with Valley fever?

No. **Valley fever is not contagious**, meaning it can't spread from one person to another. You can't get or spread Valley fever by touching or being around another person or animal that is sick with Valley fever.

Can I get Valley fever from being exposed to pesticides?

No. Valley fever is caused by breathing in the Valley fever fungus from dust in outdoor air, not from pesticides. This fungus grows in the dirt and soil and **does not come from pesticides** that are sprayed on crops and farmland.

Can my pets get Valley fever?

Yes. **Pets, including cats and dogs, can get Valley fever.** Valley fever in dogs is similar to Valley fever in humans. If you're concerned about your pet's risk of getting Valley fever, or if you think your pet has Valley fever, please talk to a veterinarian. Learn more about Valley fever in pets and other animals.

If I was born in the Central Valley, am I immune to Valley fever?

No. Even if you've lived in California's Central Valley your whole life and have never been sick from it, you can still get Valley fever. **Anyone who lives in or travels to areas where Valley fever has been reported can get Valley fever.** Valley fever can affect adults and children of any age, even if they are healthy.

Certain groups of people are more likely to get very sick from Valley fever if they get it. Learn more about groups at risk for severe Valley fever.

If I've already had Valley fever, am I immune to it and can't get sick again?

It depends. If you've already had Valley fever, **your immune system will most likely protect you from getting it again.** However, in rare cases where a person's immune system is weakened because of a health condition like cancer, organ transplant, or autoimmune disease, then that person may get Valley fever again.

How much dust do I need to breathe in to get Valley fever?

You can get Valley fever from **just one breath of dust** from outdoor air that contains spores of the Valley fever fungus.

Will wearing any type of face mask help prevent Valley fever?

Wearing a properly fitted, National Institute for Occupational Safety and Health (NIOSH)-approved respirator (mask) with particulate filters rated N95, N99, N100, P100, or HEPA may help protect you from breathing in dust and spores that can cause Valley fever. Cloth face masks, simple dust masks (with just one strap), KN95s (not certified by NIOSH), and household fabrics, such as washcloths, bandanas, and handkerchiefs, do not provide the same level of protection as N95 or higher-rated respirators. If your work involves dusty environments or soil disturbing activities, click here to learn more about Valley fever safety in the workplace.

Learn More

SYMPTOMS

GROUPS AT RISK

PREVENTION TIPS

l

ROB BONTA
Attorney General

State of California
DEPARTMENT OF JUSTICE

Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act

Table of Contents

I. Background 1
II. Proactive Planning: General Plans, Local Ordinances, and Good Neighbor Policies 3
III. Community Engagement 4
IV. Warehouse Siting and Design Considerations 5
V. Air Quality and Greenhouse Gas Emissions Analysis and Mitigation 7
VI. Noise Impacts Analysis and Mitigation 10
VII. Traffic Impacts Analysis and Mitigation 11
VIII. Other Significant Environmental Impacts Analysis and Mitigation 12
IX. Conclusion 13

Updated September 2022

In carrying out its duty to enforce laws across California, the California Attorney General's Bureau of Environmental Justice (Bureau)[1] regularly reviews proposed warehouse projects for compliance with the California Environmental Quality Act (CEQA) and other laws. When necessary, the Bureau submits comment letters to lead agencies regarding warehouse projects, and in rare cases the Bureau has filed litigation to enforce CEQA.[2] This document builds upon the Bureau's work on warehouse projects, collecting information gained from the Bureau's review of hundreds of warehouse projects across the state.[3] It is meant to help lead agencies pursue CEQA compliance and promote environmentally-just development as they confront warehouse project proposals.[4] While CEQA analysis is necessarily project-specific, this document provides information on feasible best practices and mitigation measures, nearly all of which have been adapted from actual warehouse projects in California.

I. Background

In recent years, the proliferation of e-commerce and rising consumer expectations of rapid shipping have contributed to a boom in warehouse development.[5] California, with its ports, population centers, and transportation network, has found itself at the center of this trend. In 2020, the Ports of Los Angeles, Long Beach, and Oakland collectively accounted for over 34% of all United States international container trade.[6] The Ports of Los Angeles and Long Beach alone generate about 35,000 container truck trips every day.[7] Accordingly, the South Coast Air Basin now contains approximately 3,000 warehouses of over 100,000 square feet each, with a total warehouse capacity of approximately 700 million square feet, an increase of 20 percent over the last five years.[8] This trend has only accelerated, with e-commerce growing to

[1] https://oag.ca.gov/environment/justice.
[2] https://oag.ca.gov/environment/ceqa; *People of the State of California v. City of Fontana* (Super. Ct. San Bernardino County, No. CIVSB2121829); *South Central Neighbors United et al. v. City of Fresno et al.* (Super. Ct. Fresno County, No. 18CECG00690).
[3] This September 2022 version revises and replaces the prior March 2021 version of this document.
[4] Anyone reviewing this document to determine CEQA compliance responsibilities should consult their own attorney for legal advice.
[5] As used in this document, "warehouse" or "logistics facility" is defined as a facility consisting of one or more buildings that stores cargo, goods, or products on a short- or long-term basis for later distribution to businesses and/or retail customers.
[6] Data from the Bureau of Transportation Statistics, Container TEUs (Twenty-foot Equivalent Units) (2020), https://data.bts.gov/stories/s/Container-TEU/x3fb-aeda/ (Ports of Los Angeles, Long Beach, and Oakland combined for 14.157 million TEUs, 34% of 41.24 million TEUs total nationwide) (last accessed September 18, 2022).
[7] U.S. Dept. of Transportation, Federal Highway Administration, *FHWA Operations Support – Port Peak Pricing Program Evaluation* (2020), available at https://ops.fhwa.dot.gov/publications/fhwahop09014/sect2.htm (last accessed September 18, 2022).
[8] South Coast Air Qual. Mgmt. Dist., *Final Socioeconomic Assessment for Proposed Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program and Proposed Rule 316 – Fees for Rule 2305*, at 7-8, 41 (May 2021).

13% of all retail sales and 2021 being a second consecutive record year for new warehouse space leased.[9] The latest data and forecasts predict that the next wave of warehouse development will be in the Central Valley.[10]

When done properly, these activities can contribute to the economy and consumer welfare. However, imprudent warehouse development can harm local communities and the environment. Among other pollutants, diesel trucks visiting warehouses emit nitrogen oxide (NO_x)—a primary precursor to smog formation and a significant factor in the development of respiratory problems like asthma, bronchitis, and lung irritation—and diesel particulate matter (a subset of fine particular matter that is smaller than 2.5 micrometers)—a contributor to cancer, heart disease, respiratory illnesses, and premature death.[11] Trucks and on-site loading activities can also be loud, bringing disruptive noise levels during 24/7 operation that can cause hearing damage after prolonged exposure.[12] The hundreds, and sometimes thousands, of daily truck and passenger car trips that warehouses generate contribute to traffic jams, deterioration of road surfaces, and traffic accidents.

These environmental impacts also tend to be concentrated in neighborhoods already suffering from disproportionate health impacts and systemic vulnerability. For example, a comprehensive study by the South Coast Air Quality Management District found that communities located near large warehouses scored far higher on California's environmental justice screening tool, which measures overall pollution and demographic vulnerability.[13] That

---

[9] U.S. Census Bureau News, Quarterly Retail E-Commerce Sales 4th Quarter 2021 (February 22, 2022), https://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf (last accessed September 18, 2022); CBRE Research, *2022 North America Industrial Big Box Report: Review and Outlook*, at 2-3 (March 2022), *available at* https://www.cbre.com/insights/reports/2022-north-america-industrial-big-box#download-report (last accessed September 18, 2022).

[10] CBRE Research, *supra note* 9, at 4, 36; New York Times, *Warehouses Are Headed to the Central Valley, Too* (Jul. 22, 2020), *available* at https://www.nytimes.com/2020/07/22/us/coronavirus-ca-warehouse-workers.html.

[11] California Air Resources Board, Nitrogen Dioxide & Health, https://ww2.arb.ca.gov/resources/nitrogen-dioxide-and-health (last accessed September 18, 2022) (NOx); California Air Resources Board, Summary: Diesel Particular Matter Health Impacts, https://ww2.arb.ca.gov/resources/summary-diesel-particulate-matter-health-impacts (last accessed September 18, 2022); Office of Environmental Health Hazard Assessment and American Lung Association of California, Health Effects of Diesel Exhaust, https://oehha.ca.gov/media/downloads/calenviroscreen/indicators/diesel4-02.pdf (last accessed September 18, 2022) (DPM).

[12] Noise Sources and Their Effects, https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm (last accessed September 18, 2022) (a diesel truck moving 40 miles per hour, 50 feet away, produces 84 decibels of sound).

[13] South Coast Air Quality Management District, "Final Socioeconomic Assessment for Proposed Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program and Proposed Rule 316 – Fees for Rule 2305" (May 2021), at 4-5.

study concluded that, compared to the South Coast Air Basin averages, communities in the South Coast Air Basin near large warehouses had a substantially higher proportion of people of color; were exposed to more diesel particulate matter; had higher rates of asthma, cardiovascular disease, and low birth weights; and had higher poverty and unemployment rates.[14] Each area has its own unique history, but many of these impacts and vulnerabilities reflect historic redlining practices in these communities, which devalued land and concentrated poverty, racial outgroups, and pollution into designated areas.[15]

II. Proactive Planning: General Plans, Local Ordinances, and Good Neighbor Policies

To systematically guide warehouse development, we encourage local governing bodies to proactively plan for logistics projects in their jurisdictions. Proactive planning allows jurisdictions to prevent land use conflicts before they materialize and direct sustainable development. Benefits also include providing a predictable business environment, protecting residents from environmental harm, and setting consistent expectations jurisdiction-wide.

Proactive planning can take many forms. Land use designation and zoning decisions should channel development into appropriate areas. For example, establishing industrial districts near major highway and rail corridors but away from sensitive receptors[16] can help attract investment while avoiding conflicts between warehouse facilities and residential communities. Transition zones with lighter industrial and commercial land uses may also help minimize conflicts between residential and industrial uses.

In addition, general plan policies, local ordinances, and good neighbor policies should set minimum standards for logistics projects. General plan policies can be incorporated into existing economic development, land use, circulation, or other related general plan elements. Many jurisdictions alternatively choose to consolidate policies in a separate environmental justice element. Adopting general plan policies to guide warehouse development may also help

---

[14] *Id*. at 5-7.

[15] Beginning in the 1930s, federal housing policy directed investment away from Black, immigrant, and working-class communities by color-coding neighborhoods according to the purported "riskiness" of loaning to their residents. In California cities where such "redlining" maps were drawn, nearly all of the communities where warehouses are now concentrated were formerly coded "red," signifying the least desirable areas where investment was to be avoided. *See* University of Richmond Digital Scholarship Lab, Mapping Inequality, https://dsl.richmond.edu/panorama/redlining/#loc=12/33.748/-118.272&city=los-angeles-ca (Los Angeles), https://dsl.richmond.edu/panorama/redlining/#loc=13/32.685/-117.132&city=san-diego-ca (San Diego), https://dsl.richmond.edu/panorama/redlining/#loc=11/37.81/-122.38&city=oakland-ca (Oakland), https://dsl.richmond.edu/panorama/redlining/#loc=13/37.956/-121.326&city=stockton-ca (Stockton), https://dsl.richmond.edu/panorama/redlining/#loc=12/36.751/-119.86&city=fresno-ca (Fresno) (all last accessed September 18, 2022).

[16] In this document, "sensitive receptors" refers to residences, schools, public recreation facilities, health care facilities, places of worship, daycare facilities, community centers, or incarceration facilities.

jurisdictions comply with their obligations under SB 1000, which requires local government general plans to identify objectives and policies to reduce health risks in disadvantaged communities, promote civil engagement in the public decision making process, and prioritize improvements and programs that address the needs of disadvantaged communities.[17]

Local ordinances and good neighbor policies that set development standards for all warehouses in the jurisdiction are a critical and increasingly common tool that serve several goals. When well-designed, these ordinances direct investment to local improvements, provide predictability for developers, conserve government resources by streamlining project review processes, and reduce the environmental impacts of industrial development. While many jurisdictions have adopted warehouse-specific development standards, an ordinance in the City of Fontana provides an example to review and build upon.[18] Good neighbor policies in Riverside County and by the Western Riverside Council of Government include additional measures worth consideration.[19]

The Bureau encourages jurisdictions to adopt their own local ordinances that combine the strongest policies from those models with measures discussed in the remainder of this document.

III. Community Engagement

Early and consistent community engagement is central to establishing good relationships between communities, lead agencies, and warehouse developers and tenants. Robust community engagement can give lead agencies access to community residents' on-the-ground knowledge and information about their concerns, build community support for projects, and develop creative solutions to ensure new logistics facilities are mutually beneficial. Examples of best practices for community engagement include:

- Holding a series of community meetings at times and locations convenient to members of the affected community and incorporating suggestions into the project design.
- Posting information in hard copy in public gathering spaces and on a website about the project. The information should include a complete, accurate project description, maps and drawings of the project design, and information about how the public can provide input and be involved in the project approval process. The

[17] For more information about SB 1000, *see* https://oag.ca.gov/environment/sb1000.
[18] https://oag.ca.gov/system/files/attachments/press-docs/Final%20Signed%20Fontana%20Ordinance.pdf (last accessed September 18, 2022).
[19] For example, the Riverside County policy requires community benefits agreements and supplemental funding contributions toward additional pollution offsets, and the Western Riverside Council of Governments policy sets a minimum buffer zone of 300 meters between warehouses and sensitive receptors. https://www.rivcocob.org/wp-content/uploads/2020/01/Good-Neighbor-Policy-F-3-Final-Adopted.pdf (last accessed September 18, 2022) (Riverside County); http://www.wrcog.cog.ca.us/DocumentCenter/View/318/Good-Neighbor-Guidelines-for-Siting-Warehouse-Distribution-Facilities-PDF?bidId= (last accessed September 18, 2022) (Western Riverside Council of Governments).

information should be in a format that is easy to navigate and understand for members of the affected community.

- Providing notice by mail to residents and schools within a certain radius of the project and along transportation corridors to be used by vehicles visiting the project, and by posting a prominent sign on the project site. The notice should include a brief project description and directions for accessing complete information about the project and for providing input on the project.
- Providing translation or interpretation in residents' native language, where appropriate.
- For public meetings broadcast online or otherwise held remotely, providing for access and public comment by telephone and supplying instructions for access and public comment with ample lead time prior to the meeting.
- Partnering with local community-based organizations to solicit feedback, leverage local networks, co-host meetings, and build support.
- Considering adoption of a community benefits agreement, negotiated with input from affected residents and businesses, by which the developer provides benefits to the affected community.
- Creating a community advisory board made up of local residents to review and provide feedback on project proposals in early planning stages.
- Identifying a person to act as a community liaison concerning on-site construction activity and operations, and providing contact information for the community liaison to the surrounding community.
- Requiring signage in public view at warehouse facilities with contact information for a local designated representative for the facility operator who can receive community complaints, and requiring any complaints to be answered by the facility operator within 48 hours of receipt.

IV. Warehouse Siting and Design Considerations

The most important consideration when planning a logistics facility is its location. Warehouses located in residential neighborhoods or near sensitive receptors expose community residents and those using or visiting sensitive receptor sites to the air pollution, noise, traffic, and other environmental impacts they generate. Therefore, placing facilities away from sensitive receptors significantly reduces their environmental and quality of life harms on local communities. The suggested best practices for siting and design of warehouse facilities does not relieve lead agencies' responsibility under CEQA to conduct a project-specific analysis of the project's impacts and evaluation of feasible mitigation measures and alternatives; lead agencies' incorporation of the best practices must be part of the impact, mitigation and alternatives analyses to meet the requirements of CEQA. Examples of best practices when siting and designing warehouse facilities include:

- Per California Air Resources Board (CARB) guidance, siting warehouse facilities so that their property lines are at least 1,000 feet from the property lines of the nearest sensitive receptors.[20]
- Providing adequate amounts of on-site parking to prevent trucks and other vehicles from parking or idling on public streets and to reduce demand for off-site truck yards.
- Establishing setbacks from the property line of the nearest sensitive receptor to warehouse dock doors, loading areas, and truck drive aisles, and locating warehouse dock doors, loading areas, and truck drive aisles on the opposite side of the building from the nearest sensitive receptors—e.g., placing dock doors on the north side of the facility if sensitive receptors are near the south side of the facility.
- Placing facility entry and exit points from the public street away from sensitive receptors—e.g., placing these points on the north side of the facility if sensitive receptors are adjacent to the south side of the facility.
- Ensuring heavy duty trucks abide by the on-site circulation plans by constructing physical barriers to block those trucks from using areas of the project site restricted to light duty vehicles or emergency vehicles only.
- Preventing truck queuing spillover onto surrounding streets by positioning entry gates after a minimum of 140 feet of space for queuing, and increasing the distance by 70 feet for every 20 loading docks beyond 50 docks.
- Locating facility entry and exit points on streets of higher commercial classification that are designed to accommodate heavy duty truck usage.
- Screening the warehouse site perimeter and onsite areas with significant truck traffic (e.g., dock doors and drive aisles) by creating physical, structural, and/or vegetative buffers that prevent or substantially reduce pollutant and noise dispersion from the facility to sensitive receptors.
- Planting exclusively 36-inch box evergreen trees to ensure faster maturity and four-season foliage.
- Requiring all property owners and successors in interest to maintain onsite trees and vegetation for the duration of ownership, including replacing any dead or unhealthy trees and vegetation.
- Posting signs clearly showing the designated entry and exit points from the public street for trucks and service vehicles.
- Including signs and drive aisle pavement markings that clearly identify onsite circulation patterns to minimize unnecessary onsite vehicle travel.
- Posting signs indicating that all parking and maintenance of trucks must be conducted within designated on-site areas and not within the surrounding community or public streets.

[20] CARB, Air Quality and Land Use Handbook: A Community Health Perspective (April 2005), at ES-1. CARB staff has released draft updates to this siting and design guidance which suggests a greater distance may be warranted in some scenarios. CARB, Concept Paper for the Freight Handbook (December 2019), *available at* https://ww2.arb.ca.gov/sites/default/files/2020-03/2019.12.12%20-%20Concept%20Paper%20for%20the%20Freight%20Handbook_1.pdf (last accessed September 18, 2022).

V. Air Quality and Greenhouse Gas Emissions Analysis and Mitigation

Emissions of air pollutants and greenhouse gases are often among the most substantial environmental impacts from new warehouse facilities. CEQA compliance demands a proper accounting of the full air quality and greenhouse gas impacts of logistics facilities and adoption of all feasible mitigation of significant impacts. Although efforts by CARB and other authorities to regulate the heavy-duty truck and off-road diesel fleets have made excellent progress in reducing the air quality impacts of logistics facilities, the opportunity remains for local jurisdictions to further mitigate these impacts at the project level. Lead agencies and developers should also consider designing projects with their long-term viability in mind. Constructing the necessary infrastructure to prepare for the zero-emission future of goods movement not only reduces a facility's emissions and local impact now, but it can also save money as demand for zero-emission infrastructure grows. In planning new logistics facilities, the Bureau strongly encourages developers to consider the local, statewide, and global impacts of their projects' emissions.

Examples of best practices when studying air quality and greenhouse gas impacts include:

- Fully analyzing all reasonably foreseeable project impacts, including cumulative impacts. In general, new warehouse developments are not ministerial under CEQA because they involve public officials' personal judgment as to the wisdom or manner of carrying out the project, even when warehouses are permitted by a site's applicable zoning and/or general plan land use designation.[21]
- When analyzing cumulative impacts, thoroughly considering the project's incremental impact in combination with past, present, and reasonably foreseeable future projects, even if the project's individual impacts alone do not exceed the applicable significance thresholds.
- Preparing a quantitative air quality study in accordance with local air district guidelines.
- Preparing a quantitative health risk assessment in accordance with California Office of Environmental Health Hazard Assessment and local air district guidelines.
- Refraining from labeling compliance with CARB or air district regulations as a mitigation measure—compliance with applicable regulations is required regardless of CEQA.
- Disclosing air pollution from the entire expected length of truck trips. CEQA requires full public disclosure of a project's anticipated truck trips, which entails calculating truck trip length based on likely truck trip destinations, rather than the distance from the facility to the edge of the air basin, local jurisdiction, or other truncated endpoint. All air pollution associated with the project must be considered, regardless of where those impacts occur.

[21] CEQA Guidelines § 15369.

- Accounting for all reasonably foreseeable greenhouse gas emissions from the project, without discounting projected emissions based on participation in California's Cap-and-Trade Program.

Examples of measures to mitigate air quality and greenhouse gas impacts from construction are below. To ensure mitigation measures are enforceable and effective, they should be imposed as permit conditions on the project where applicable.

- Requiring off-road construction equipment to be hybrid electric-diesel or zero-emission, where available, and all diesel-fueled off-road construction equipment to be equipped with CARB Tier IV-compliant engines or better, and including this requirement in applicable bid documents, purchase orders, and contracts, with successful contractors demonstrating the ability to supply the compliant construction equipment for use prior to any ground-disturbing and construction activities.
- Prohibiting off-road diesel-powered equipment from being in the "on" position for more than 10 hours per day.
- Using electric-powered hand tools, forklifts, and pressure washers, and providing electrical hook ups to the power grid rather than use of diesel-fueled generators to supply their power.
- Designating an area in the construction site where electric-powered construction vehicles and equipment can charge.
- Limiting the amount of daily grading disturbance area.
- Prohibiting grading on days with an Air Quality Index forecast of greater than 100 for particulates or ozone for the project area.
- Forbidding idling of heavy equipment for more than three minutes.
- Keeping onsite and furnishing to the lead agency or other regulators upon request, all equipment maintenance records and data sheets, including design specifications and emission control tier classifications.
- Conducting an on-site inspection to verify compliance with construction mitigation and to identify other opportunities to further reduce construction impacts.
- Using paints, architectural coatings, and industrial maintenance coatings that have volatile organic compound levels of less than 10 g/L.
- Providing information on transit and ridesharing programs and services to construction employees.
- Providing meal options onsite or shuttles between the facility and nearby meal destinations for construction employees.

Examples of measures to mitigate air quality and greenhouse gas impacts from operation include:

- Requiring all heavy-duty vehicles engaged in drayage[22] to or from the project site to be zero-emission beginning in 2030.

[22] "Drayage" refers generally to transport of cargo to or from a seaport or intermodal railyard.

- Requiring all on-site motorized operational equipment, such as forklifts and yard trucks, to be zero-emission with the necessary charging or fueling stations provided.
- Requiring tenants to use zero-emission light- and medium-duty vehicles as part of business operations.
- Forbidding trucks from idling for more than three minutes and requiring operators to turn off engines when not in use.
- Posting both interior- and exterior-facing signs, including signs directed at all dock and delivery areas, identifying idling restrictions and contact information to report violations to CARB, the local air district, and the building manager.
- Installing solar photovoltaic systems on the project site of a specified electrical generation capacity that is equal to or greater than the building's projected energy needs, including all electrical chargers.
- Designing all project building roofs to accommodate the maximum future coverage of solar panels and installing the maximum solar power generation capacity feasible.
- Constructing zero-emission truck charging/fueling stations proportional to the number of dock doors at the project.
- Running conduit to designated locations for future electric truck charging stations.
- Unless the owner of the facility records a covenant on the title of the underlying property ensuring that the property cannot be used to provide refrigerated warehouse space, constructing electric plugs for electric transport refrigeration units at every dock door and requiring truck operators with transport refrigeration units to use the electric plugs when at loading docks.
- Oversizing electrical rooms by 25 percent or providing a secondary electrical room to accommodate future expansion of electric vehicle charging capability.
- Constructing and maintaining electric light-duty vehicle charging stations proportional to the number of employee parking spaces (for example, requiring at least 10% of all employee parking spaces to be equipped with electric vehicle charging stations of at least Level 2 charging performance)
- Running conduit to an additional proportion of employee parking spaces for a future increase in the number of electric light-duty charging stations.
- Installing and maintaining, at the manufacturer's recommended maintenance intervals, air filtration systems at sensitive receptors within a certain radius of facility for the life of the project.
- Installing and maintaining, at the manufacturer's recommended maintenance intervals, an air monitoring station proximate to sensitive receptors and the facility for the life of the project, and making the resulting data publicly available in real time. While air monitoring does not mitigate the air quality or greenhouse gas impacts of a facility, it nonetheless benefits the affected community by providing information that can be used to improve air quality or avoid exposure to unhealthy air.
- Requiring all stand-by emergency generators to be powered by a non-diesel fuel.
- Requiring facility operators to train managers and employees on efficient scheduling and load management to eliminate unnecessary queuing and idling of

trucks.

- Requiring operators to establish and promote a rideshare program that discourages single-occupancy vehicle trips and provides financial incentives for alternate modes of transportation, including carpooling, public transit, and biking.
- Meeting CalGreen Tier 2 green building standards, including all provisions related to designated parking for clean air vehicles, electric vehicle charging, and bicycle parking.
- Designing to LEED green building certification standards.
- Providing meal options onsite or shuttles between the facility and nearby meal destinations.
- Posting signs at every truck exit driveway providing directional information to the truck route.
- Improving and maintaining vegetation and tree canopy for residents in and around the project area.
- Requiring that every tenant train its staff in charge of keeping vehicle records in diesel technologies and compliance with CARB regulations, by attending CARB-approved courses. Also require facility operators to maintain records on-site demonstrating compliance and make records available for inspection by the local jurisdiction, air district, and state upon request.
- Requiring tenants to enroll in the United States Environmental Protection Agency's SmartWay program, and requiring tenants who own, operate, or hire trucking carriers with more than 100 trucks to use carriers that are SmartWay carriers.
- Providing tenants with information on incentive programs, such as the Carl Moyer Program and Voucher Incentive Program, to upgrade their fleets.

VI. Noise Impacts Analysis and Mitigation

The noise associated with logistics facilities can be among their most intrusive impacts to nearby sensitive receptors. Various sources, such as unloading activity, diesel truck movement, and rooftop air conditioning units, can contribute substantial noise pollution. These impacts are exacerbated by logistics facilities' typical 24-hour, seven-days-per-week operation. Construction noise is often even greater than operational noise, so if a project site is near sensitive receptors, developers and lead agencies should adopt measures to reduce the noise generated by both construction and operation activities.

Examples of best practices when studying noise impacts include:

- Preparing a noise impact analysis that considers all reasonably foreseeable project noise impacts, including to nearby sensitive receptors. All reasonably foreseeable project noise impacts encompasses noise from both construction and operations, including stationary, on-site, and off-site noise sources.
- Adopting a lower significance threshold for incremental noise increases when baseline noise already exceeds total noise significance thresholds, to account for the cumulative impact of additional noise and the fact that, as noise moves up the decibel scale, each decibel increase is a progressively greater increase in sound

pressure than the last. For example, 70 dBA is ten times more sound pressure than 60 dBA.

- Disclosing and considering the significance of short-term noise levels associated with all aspects of project operation (i.e. both on-site noise generation and off-site truck noise). Considering only average noise levels may mask noise impacts sensitive receptors would consider significant—for example, the repeated but short-lived passing of individual trucks or loading activities at night.

Examples of measures to mitigate noise impacts include:

- Constructing physical, structural, or vegetative noise barriers on and/or off the project site.
- Planning and enforcing truck routes that avoid passing sensitive receptors.
- Locating or parking all stationary construction equipment as far from sensitive receptors as possible, and directing emitted noise away from sensitive receptors.
- Verifying that construction equipment has properly operating and maintained mufflers.
- Requiring all combustion-powered construction equipment to be surrounded by a noise protection barrier
- Limiting operation hours to daytime hours on weekdays.
- Paving roads where truck traffic is anticipated with low noise asphalt.
- Orienting any public address systems onsite away from sensitive receptors and setting system volume at a level not readily audible past the property line.

VII. Traffic Impacts Analysis and Mitigation

Warehouse facilities inevitably bring truck and passenger car traffic. Truck traffic can present substantial safety issues. Collisions with heavy-duty trucks are especially dangerous for passenger cars, motorcycles, bicycles, and pedestrians. These concerns can be even greater if truck traffic passes through residential areas, school zones, or other places where pedestrians are common and extra caution is warranted.

Examples of measures to mitigate traffic impacts include:

- Designing, clearly marking, and enforcing truck routes that keep trucks out of residential neighborhoods and away from other sensitive receptors.
- Installing signs in residential areas noting that truck and employee parking is prohibited.
- Requiring preparation and approval of a truck routing plan describing the facility's hours of operation, types of items to be stored, and truck routing to and from the facility to designated truck routes that avoids passing sensitive receptors. The plan should include measures for preventing truck queuing, circling, stopping, and parking on public streets, such as signage, pavement markings, and queuing analysis and enforcement. The plan should hold facility operators responsible for violations of the truck routing plan, and a revised plan should be required from any new tenant that occupies the property before a business license

is issued. The approving agency should retain discretion to determine if changes to the plan are necessary, including any additional measures to alleviate truck routing and parking issues that may arise during the life of the facility.

- Constructing new or improved transit stops, sidewalks, bicycle lanes, and crosswalks, with special attention to ensuring safe routes to schools.
- Consulting with the local public transit agency and securing increased public transit service to the project area.
- Designating areas for employee pickup and drop-off.
- Implementing traffic control and safety measures, such as speed bumps, speed limits, or new traffic signs or signals.
- Placing facility entry and exit points on major streets that do not have adjacent sensitive receptors.
- Restricting the turns trucks can make entering and exiting the facility to route trucks away from sensitive receptors.
- Constructing roadway improvements to improve traffic flow.
- Preparing a construction traffic control plan prior to grading, detailing the locations of equipment staging areas, material stockpiles, proposed road closures, and hours of construction operations, and designing the plan to minimize impacts to roads frequented by passenger cars, pedestrians, bicyclists, and other non-truck traffic.

VIII. Other Significant Environmental Impacts Analysis and Mitigation

Warehouse projects may result in significant environmental impacts to other resources, such as to aesthetics, cultural resources, energy, geology, or hazardous materials. All significant adverse environmental impacts must be evaluated, disclosed and mitigated to the extent feasible under CEQA. Examples of best practices and mitigation measures to reduce environmental impacts that do not fall under any of the above categories include:

- Appointing a compliance officer who is responsible for implementing all mitigation measures, and providing contact information for the compliance officer to the lead agency, to be updated annually.
- Creating a fund to mitigate impacts on affected residents, schools, places of worship, and other community institutions by retrofitting their property. For example, retaining a contractor to retrofit/install HVAC and/or air filtration systems, doors, dual-paned windows, and sound- and vibration-deadening insulation and curtains.
- Sweeping surrounding streets on a daily basis during construction to remove any construction-related debris and dirt.
- Directing all lighting at the facility into the interior of the site.
- Using full cut-off light shields and/or anti-glare lighting.
- Requiring submission of a property maintenance program for agency review and approval providing for the regular maintenance of all building structures, landscaping, and paved surfaces.
- Using cool pavement to reduce heat island effects.

- Planting trees in parking areas to provide at least 35% shade cover of parking areas within fifteen years to reduce heat island impacts.
- Using light colored roofing materials with a solar reflective index of 78 or greater.
- Including on-site amenities, such as a truck operator lounge with restrooms, vending machines, and air conditioning, to reduce the need for truck operators to idle or travel offsite.
- Designing skylights to provide natural light to interior worker areas.
- Installing climate control and air filtration in the warehouse facility to promote worker well-being.

IX. Conclusion

California's world-class economy, ports, and transportation network position it at the center of the e-commerce and logistics industry boom. At the same time, California is a global leader in environmental protection and environmentally just development. The guidance in this document furthers these dual strengths, ensuring that all can access the benefits of economic development. The Bureau will continue to monitor proposed projects for compliance with CEQA and other laws. Lead agencies, developers, community advocates, and other interested parties should feel free to reach out to us as they consider how to guide warehouse development in their area.

Please do not hesitate to contact the Environmental Justice Bureau at ej@doj.ca.gov if you have any questions.

The importance of coccidioidomycosis as an occupational disease has increased in the southwestern United States. This report discusses the aspects of the disease in terms of its geography, the agent, occupation, dust conditions, and various other factors. A control program is outlined.

EXPOSURE FACTORS IN OCCUPATIONAL COCCIDIOIDOMYCOSIS

Lawrence L. Schmelzer, M.P.H., and Irving R. Tabershaw, M.D., F.A.P.H.A.

THE rapid and increasing influx of industry and agriculture into the southwestern United States has heightened the importance of coccidioidomycosis as an occupational disease. Before 1938, this disease was of little interest because relatively few clinical cases were recognized and the morbidity caused by primary infection was not appreciated. In that year, Dickson and Gifford,[1] reporting on several years of study, clearly established that the benign, primary form of the disease was an important cause of illness in the endemic areas, and that the disease is caused by inhalation of spores of Coccidioides immitis. During World War II, coccidioidomycosis was shown to be the cause of significant illness among soldiers in training at camps in the endemic areas. Studies by Smith, et al.,[2] showed that preventive measures, notably dust control, were effective in reducing the rate of infection and the seriousness of epidemics.

Epidemics have also been reported in susceptible groups of university personnel that entered endemic areas. In 1942, Davis, et al.,[3] reported infection in seven of 14 students and staff from Stanford University who made a field trip to the San Joaquin Valley. In 1954, four students from the University of California at Los Angeles contracted the disease in similar circumstances, and one student, not participating in the field trip, developed disease through the handling of contaminated specimens in the laboratory.[4] In 1962, 100 per cent infection was reported in a group of 16 persons from UCLA who participated in an archaeological field study near Los Banos, Calif.[4] Again in 1965 three students from UC Berkeley developed clinical disease after a field trip in the same general area.

Coccidioidomycosis ranks high among the infectious occupational diseases[5] as shown in Table 1. Further, the case fatality rate closely parallels that of tuberculosis as shown in Table 2.[6] These rates are based on reported clinically recognized cases. In both diseases, primary infection usually goes unnoticed. Fatality rates for both diseases are considerably less when based on total number of infections.

In spite of the fact that coccidioidomycosis is in most instances inapparent or mild, the disease causes significant dis-

Table 1—Number of disability cases of selected occupational diseases in California by fiscal year of report*

Disease	Number of disability cases			
	1962-1963	1963-1964	1964-1965	3-year total
Coccidioidomycosis	21	34	27	82
Tuberculosis	28	29	24	81
Anthrax, brucellosis, Q fever	11	13	13	37
Psittacosis	1	1	1	3
Tetanus	1	2	1	4

* From: Work Injuries in California, Quarterly Statistical Summary. State of California Department of Industrial Welfare, Division of Labor Statistics and Research.

ability in California workers. Although the 106 cases reported in six years[7] may not appear an unduly large number, the degree of disability in these cases is noteworthy (Table 3).

A large proportion required hospitalization and absence from work lasting weeks or months was not unusual. As late as 1957, coccidioidomycosis caused more disability at Williams Air Force Base in Arizona than any other disease including the upper respiratory infections.[8] While the average incidence of both infections was the same, the average disability of 34.6 days caused by coccidioidomycosis was seven times higher than that caused by upper respiratory infections.

Since it is not now possible to provide artificial immunity to those entering an endemic area and since susceptibility to coccidioidomycosis is essentially universal, the introduction of industrial or agricultural workers into endemic areas carries with it the responsibility of assessing the hazard of the disease to such populations. None of the exposure factors in the production of coccidioidomycosis is susceptible to control to the degree necessary to prevent infection entirely. Sufficient knowledge of the direct and predisposing causes of the disease, however, does exist so that it may be possible to reduce both the incidence of infection and its severity.

Geography

Coccidioides immitis has been reported only in the arid and semiarid regions of southwestern United States, in Mexico, Central America, Venezuela, and in the Chaco region of Argentina. The areas of endemicity roughly parallel the boundaries of the lower Sonoran Life Zone, which is characterized by scant rainfall, hot dry summers, alkaline soil, mild winters, sparce flora and fauna and, until recently, few human inhabitants (Figure 1).[9] The creosote bush, Larrea tridentata, is often considered a specific indicator of this life zone.

Evaluation of geography and ecology as exposure factors is complicated by the fact that areas within the lower Sonoran Life Zone may be free of C. immitis, and conversely small endemic areas may occur outside the zone. However, the potential of serious sequelae to infection is sufficient justification to consider any entry into suspected endemic areas as leading to exposure to the disease.

Infectious Agent

Spores of C. immitis are found in the first few inches of the soil and in larger numbers in the vicinity of rodent bur-

Table 2—Case fatality rates for coccidioidomycosis and tuberculosis in California 1960-1963*

	Case fatality rates†			
	1960	1961	1962	1963
Coccidioidomycosis	8.6	12.8	12.3	11.1
Tuberculosis	15.7	12.7	13.1	12.1

* From: California Public Health Statistical Report 1963, Part II Communicable Diseases. California State Department of Public Health.
† Case fatality rates are per 100 cases reported.

B3 Attach #2 of 3

Table 3—Number of cases of occupational coccidioidomycosis reported in California during the period January, 1959, to March, 1965, by industry*

Industry		Cases reported
Agriculture		32
Animal husbandry	16	
Field crops	11	
Gardening	3	
Other	2	
Construction		39
Equipment operator	19	
Truck driver-mechanic	6	
Building trades	14	
Professional		22
Engineer	9	
Scientist	8	
Geologist	5	
Other and unknown		13
Total		106

* From: Summary of Reports of Occupationally Contracted Coccidioidomycosis 1959-1965. California State Department of Public Health, Bureau of Occupational Health.

rows.[10] These spores produce mycelial growth during the winter rains and, as the soil dries in the spring, arthrospores are again produced. Tests have shown that the concentration of arthrospores in the soil is highest at the end of the wet season and becomes lower as the dry season progresses. Season and rainfall patterns must therefore be considered in the evaluation of exposure potential for persons entering endemic zones. Importance of this has been shown by Smith, et al.,[2] in the San Joaquin Valley, and by Hugenholtz in a study of 13 years' experience at Williams Air Force Base in Arizona.[11] The average number of infections of base personnel was found to decrease during rainy months and to increase during the dry periods.

The highly infectious nature of C. immitis is illustrated by the fact that from seven to 15 arthrospores insufflated intranasally into mice causes infection and dissemination to the liver and spleen in 35 per cent to 40 per cent of susceptible

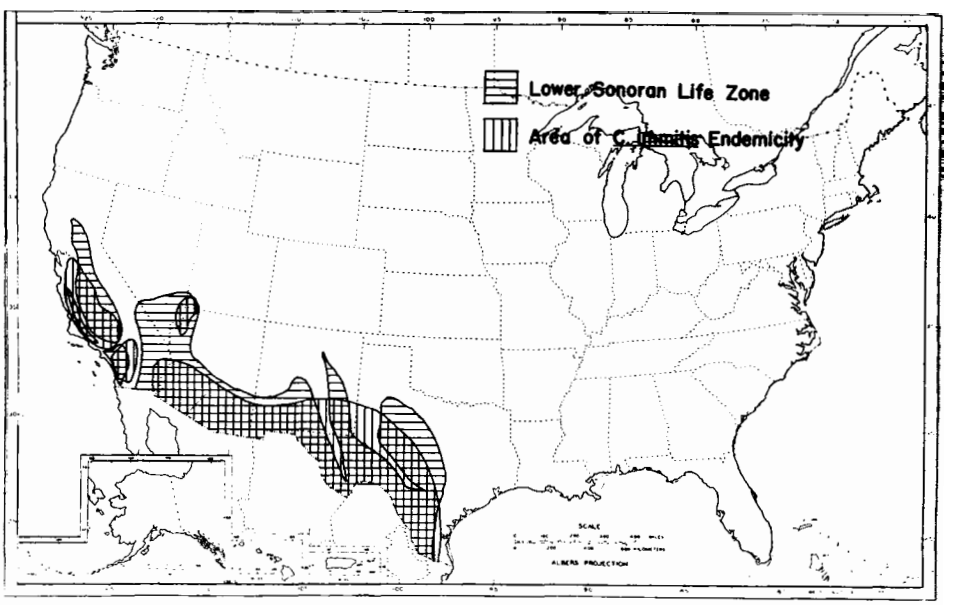


Figure 1—Lower Sonoran Life Zone and area of Coccidioides immitis endemicity in the United States [After Smith, C. E.[9]]

animals.[12] The organism has very simple nutritional requirements for growth, grows on practically any medium, and has been shown to prefer a saline environment[13] including body fluids.

Physical Properties

Typical mature hyphae of C. immitis yield barrel-shaped arthrospores, approximately 2.5 microns in diameter and 4 microns long, alternating with smaller sterile cells. The empty cells rupture easily to free the spores, leaving on the latter cell wall fragments which add to the length of the spore and also decrease the apparent specific gravity. Particle dynamics help to explain the highly infectious nature of the C. immitis and its wide distribution by winds. The important factors are terminal settling velocity and impingement forces, both of which are proportional to the particle size and specific gravity. Although actual spore dimensions vary and the specific gravity is not accurately known, it can be postulated that effective spore diameter is about 5 microns and its specific gravity is about 0.75. Terminal settling velocity for the spores is 0.01 centimeters per second when computed on the basis of these figures. In comparison, a quartz particle having this terminal settling velocity would have a diameter of 1.4 microns. From this it is clear that spores of C. immitis are easily air-borne, settle slowly, can penetrate into the smallest bronchioles and alveoli, and that a significant percentage of retention in the lung can be expected.

Dust Conditions

In the heat of early summer, what little ground cover that exists in the endemic areas withers and dies, winds disturb the surface dust and lift the spores into the air. The slow terminal settling velocity permits the spores to become essentially a permanent atmospheric contaminant under turbulent wind conditions. Such conditions are not unusual in arid regions where thermal phenomena generate severe atmospheric disturbances. Very small, intense, local whirlwinds, known as "dust devils," can raise dust containing large numbers of spores if they pass over pockets of high concentration in the soil. Large, rapidly moving air masses are also common, such as the "Santa Ana Winds" which blow from the Mojave Desert south into the San Fernando Valley. These winds will carry spores into nonendemic areas but the concentration will be low because of the nonselective raising of dust. Soil tests, therefore, cannot assure that an area within or close to an endemic zone is free of the organism and surface travel through or near endemic areas has resulted in exposure and infection.

Occupation

Varying racial and sexual susceptibility influences the severity and disability from coccidioidomycosis. However, since it results from inhalation of air-borne arthrospores, occupational factors must be considered in relation to the magnitude of probable dust exposure. It has been shown that a susceptible population entering an endemic area can experience an annual infection rate of about 20 per cent.[2] No overt dust exposure is necessary; infection can result from wind-borne spores traveling long distances in turbulent air conditions. Labor groups where occupation involves close contact with the soil are at greater risk, especially if the work involves dusty digging operations. The period of disability in cases of occupational coccidioidomycosis reported in California is classified by industry in Table 4.[7] The significant differences in the periods of disability can be ascribed to the variations in exposure resulting from occupation.

Agricultural workers suffered less dis-

B3 Attach #2 of 3

ability because their exposure is probably to a few spores at a time. In field crop operations, burrowing rodents are not tolerated and the focus of endemicity associated with them is not present. Tilling of the soil will tend to disperse pockets of high spore concentration so that the dust raised can be expected to contain a relatively low concentration of spores. Similarly, a sheepherder would not be expected to receive a heavy, concentrated dose of arthrospores. This would tend to produce milder disease and a large proportion of inapparent and mild infections.

In the construction trades, exposures may be very different depending on the specific operations. Pipeline, highway, and utility construction often involves work in remote areas where the soil has not been disturbed and where foci of endemicity are usual. When these foci are disturbed, the dust raised can have a high concentration of spores. Digging of foundation and pipe trenches in residential or commercial buildings can lead to similar massive exposure. Similarly, engineers involved in highway or other heavy construction may be subjected to heavy doses if they are working with the construction crews, but may suffer exposure comparable to an agricultural worker if they are only surveying.

The exposures of professionals are highly variable and difficult to predict. Groups of paleontologists and archaeologists have suffered 100 per cent infection when their pursuits led them to dig in or around rodent burrows. Other groups digging in endemic areas have completely escaped infection.

Discussion

Prevention of coccidioidomycosis is complicated by the fact that the organism is a natural and persistent inhabitant of the environment. Determination of concentration of spores in specific locations is not feasible because the selection of appropriate sampling sites and identification of C. immitis is difficult and time-consuming. Furthermore, as previously mentioned, spores can be air-borne for long periods of time and travel great distances. Consequently, the importation of any susceptible labor force into endemic areas carries with it the responsibility for reducing the rate and severity of infection through whatever dust control measures are possible and for providing a vigorous program of medical surveillance.

Control of dust for the prevention of coccidioidomycosis is not a simple matter because of the wide variations in exposures. General dust control measures can afford some degree of protection to all persons working and living in an en-

Table 4—Number of disability cases of occupational coccidioidomycosis in California by length of disability and industry for the period January, 1959, to June, 1962

Industry	Period of disability in days					Total
	0	1–14	15–29	30–50	>60	
Agriculture	6	0	4	4	4	18
Construction	2	1	0	5	13	21
Professions	5	1	2	6	8	22

From: Summary of Reports of Occupationally Contracted Coccidioidomycosis, 1959-1965. California State Department of Public Health, Bureau of Occupational Health.

demic area. As shown by Smith,[2] oiling of parade grounds and barracks areas in military establishments reduced the rate of infection. Similarly, planting of trees and lawns around residences and industrial plants can reduce the rate of infection by about half.[14] Further protection can be provided by filtering and conditioning of air supplied to plants and offices, but this is not complete since it does not control infection resulting from exposure outside the working hours. Protection of agricultural workers and animal husbandmen to any realistic degree is exceedingly difficult. Their exposure to dust is an inseparable part of their employment and working conditions preclude the effective use of respiratory protection.

Operators of heavy earth moving equipment can be effectively protected during working hours by providing air conditioned cabs. This not only protects from coccidioidomycosis but also controls exposure to other dust, noise, and engine exhaust fumes. Efficient and comfortable hoods for individual use are now available with powered blowers for providing filtered air. These are useful on smaller earth moving equipment and for semistationary operations such as oil well drilling. Exposures resulting from manual digging are less easily controlled. Continued use of respirators is very uncomfortable in the usually high ambient temperatures, and workers resist use of this kind of protection. The wearing of respirators can, however, be enforced during recognized periods of high exposure. For instance, building tradesmen should wear respirators when digging foundation excavations or pipeline trenches. Similarly, highway engineers can wear respirators when working around earth moving machinery but could dispense with this when surveying ahead of or behind construction crews. Scientists should be protected during actual digging operations but not necessarily during exploration.

Skin testing for previous infection by C. immitis is easy to perform and defines the immune population. All persons hired for work in endemic areas (or whose assignments take them there) should be tested. Assigning immune workers to operations involving known heavy exposures can effectively reduce the incidence of infection. Hiring lifelong residents of the endemic areas can also reduce the incidence of infection since the level of immunity in these people can be expected to be high. This should not, however, be substituted for a program of skin testing and medical surveillance. Negroes and Filipinos have been shown to be more susceptible to developing the highly fatal disseminating form of the disease.[15] Unless such individuals are shown to have developed immunity, they should whenever possible be assigned to work in areas or at jobs where exposure to high concentrations of spores will be minimal.

Periodic medical examinations or interviews are useful to discover a history of low grade or subclinical infection and to evaluate the level of health of the individual. This examination must include repeated skin testing of susceptibles until the patient shows conversion to a positive reaction signifying immunity. Such an individual can then be dropped from medical surveillance for coccidioidomycosis. The medical management of any respiratory ailment suffered by persons at risk who are not immune to coccidioidomycosis should include a skin test.

Research is presently being pursued to develop an effective antigen for producing artificial active immunity to coccidioidomycosis. If successful, this vaccine will make possible the total protection of populations entering endemic areas. However, since man is not the reservoir of the disease, but only an accidental host, eradication will not be possible. Consequently the efforts to prevent disability from coccidioidomycosis must be continued so long as susceptible populations enter endemic areas.

B3 Attach #2 of 3

Control Program

A program for limiting the incidence of occupational coccidioidomycosis and reducing the severity of disease in those who become infected would entail the following:

1. Determine if the work location is within the endemic area.
2. Hire resident labor whenever available, particularly if dust exposures may be heavy.
3. Establish a medical program including:
   a. Skin tests on all new employees. If positive they can be assigned to any job; if negative, especially Negroes and Filipinos, job exposure must be carefully evaluated. If heavy concentration of dust cannot be avoided, those with negative skin tests should not be employed at that job.
   b. Retest of susceptibles. This should be continued every three to six months until immunity is demonstrated by conversion to a positive reaction.
   c. Prompt treatment of respiratory illness in susceptibles. Coccidioidomycosis is a suspect in such illnesses (and if such is the case early chemotherapy can reduce the severity).
4. Educate the exposed population.
   a. New employees should be informed of the potential of infection and its consequences.
   b. All employees should be advised to seek prompt medical treatment for any respiratory illness and to inform the attending physician of their possible exposure to the fungus, particularly if the physician practices outside the endemic area.
5. Control dust exposure by:
   a. Oiling or planting of areas around plants, offices, and residences.
   b. Filtering and conditioning of air supplies to plants and offices; providing air conditioned cabs on heavy equipment.
   c. Providing respirators, air supplied helmets, and the like, as indicated.
   d. Preventing transport of C. immitis outside endemic area by thoroughly cleaning equipment and specimens before shipment to other work locations.

REFERENCES

1. Dickson, E. C., and Gifford, M. A. Coccidioides Infection (Coccidioidomycosis); the Primary Type of Infection. Arch. Int. Med. 62:852–871, 1938.
2. Smith, C. E.; Beard, R. R.; Rosenberg, H. G.; and Whiting, E. G. Effect of Season and Dust Control on Coccidioidomycosis. J.A.M.A. 132:833–838, 1946.
3. Davis, B. L.; Smith, R. T.; and Smith, C. E. An Epidemic of Coccidioidal Infection (Coccidioidomycosis). Ibid. 118:1182–1186, 1942.
4. Huberty, G. T. An Epidemic of Coccidioidomycosis. J. Am. College Health A. 12:131 (abstract), 1963.
5. State of California Department of Industrial Welfare. Work Injuries in California. Quart. Statist. Summary. State of California Department of Industrial Welfare. P. O. Box 965, San Francisco, Calif.
6. California State Department of Public Health. California Public Health Statistical Report, 1963, Part II, Communicable Diseases. California State Department of Public Health, 2151 Berkeley Way, Berkeley, Calif.
7. California State Department of Public Health. Summary of Reports of Occupationally Contracted Coccidioidomycosis 1959-1965. California State Department of Public Health, 2151 Berkeley Way, Berkeley, Calif.
8. Hugenholtz, P. G. Skin Test Survey at Williams Air Force Base, Arizona. Proceedings of Symposium on Coccidioidomycosis. PHS Publ. No. 575. Atlanta, Ga.: U. S. Public Health Service, 1957.
9. Smith, C. E. Diagnosis of Pulmonary Coccidioidal Infections. California Med. 75:385–391, 1951.
10. Elconin, A. F.; Egeberg, R. O.; and Lubarsky, R. Growth Patterns of Coccidioides immitis in the soil of endemic areas. Proceedings of Symposium of Coccidioidomycosis. PHS Publ. No. 575. Atlanta, Ga.: U. S. Public Health Service, 1957.
11. Hugenholtz, P. G. Climate and Coccidioidomycosis. Proceedings of Symposium on Coccidioidomycosis. PHS Publ. No. 575. Atlanta, Ga.: U. S. Public Health Service, 1957.
12. Kong, Y. M.; Levine, H. B.; Madin, S. H.; and Smith, C. E. Fungal Multiplication and Histopathological Changes in Vaccinated Mice Infected with Coccidioides immitis. J. Immunol. 92:779–790, 1964.
13. Elconin, A. F.; Egeberg, R. O.; and Egeberg, M. C. Significance of Soil Salinity on the Ecology of Coccidioides immitis. J. Bact. 87:500–503, 1964.
14. Maddy, K. T.; Doto, I. L.; Furcolow, M. L.; Lehan, P. H.; Rubin, H.; Greene, J. C.; Casper, E.; and Coleman, P. J. Coccidioidin, Histoplasmin, and Tuberculin Sensitivity of Students in Selected High Schools and Colleges in Arizona. Proceedings of Symposium on Coccidioidomycosis. PHS Publ. No. 575. Atlanta, Ga.: U. S. Public Health Service, 1957.
15. Gifford, M. A.; Buss, W. C.; and Douds, R. J. Data on Coccidioides Fungus Infection, Kern County, 1900-1936. Kern County Health Dept. Annual Rep. 1936-1937. Bakersfield, Calif.: Kern County Health Department.

Mr. Schmelzer is environmental health and safety officer, and Dr. Tabershaw is professor of occupational medicine and head, Environmental Health and Safety, Office of Environmental Health, University of California, Berkeley, Calif.

This paper was presented before the Occupational Health Section of the American Public Health Association at the Ninety-Fourth Annual Meeting in San Francisco, Calif., October 31, 1966.

State of California—Health and Human Services Agency
California Department of Public Health

Tomás Aragón, MD, MPH, DrPH
Director and State Public Health Officer

GAVIN NEWSOM
Governor

Coccidioidomycosis in California Provisional Monthly Report

January - April 2023

(as of April 30, 2023)

Center for Infectious Diseases
Division of Communicable Disease Control
Infectious Diseases Branch
Surveillance and Statistics Section

An accessible Excel file version of the
April 2023 Coccidioidomycosis in California Provisional Monthly Report
is available for download

Cumulative Reported Suspect, Probable, and Confirmed Cases of Coccidioidomycosis in January through April by Local Health Jurisdiction and Year of Estimated Onset, California, 2021-2023
(reported as of April 30 of each year*)

	Year of Estimated Onset**		
County	**2023**	**2022**	**2021**
California Total	2,115	2,103	2,321

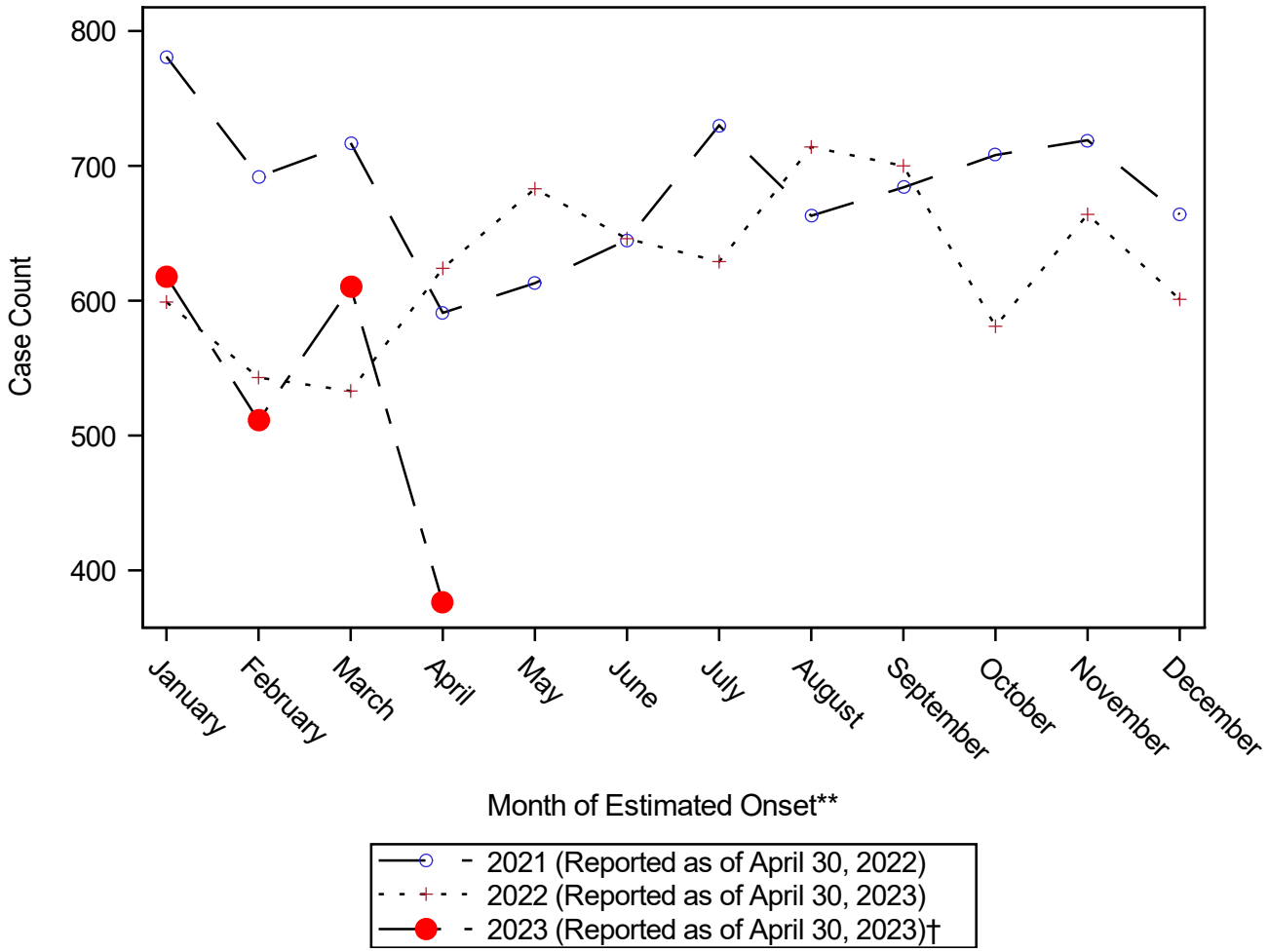
	Year of Estimated Onset**		
Local Health Jurisdiction	**2023**	**2022**	**2021**
Alameda County Total	21	23	37
Alpine	0	0	0
Amador	SC***	SC	0
Butte	3	1	3
Calaveras	SC	SC	0
Colusa	0	SC	0
Contra Costa	24	31	56
Del Norte	SC	0	SC
El Dorado	1	1	0
Fresno	114	123	121
Glenn	0	SC	0
Humboldt	1	1	0
Imperial	5	5	1
Inyo	0	SC	SC
Kern	687	635	580
Kings	39	52	64
Lake	0	0	SC
Lassen	0	0	0
Los Angeles County Total	405	445	454
Madera	12	18	13
Marin	3	1	1
Mariposa	SC	SC	0
Mendocino	SC	SC	0
Merced	21	20	27
Modoc	0	0	0
Mono	0	0	SC
Monterey	35	44	41
Napa	0	0	2
Nevada	0	SC	0
Orange	106	70	106
Placer	4	4	4
Plumas	0	0	0
Riverside	125	105	161
Sacramento	28	19	22
San Benito	0	SC	SC
San Bernardino	70	69	89
San Diego	78	124	149
San Francisco	8	4	10
San Joaquin	41	42	37
San Luis Obispo	34	39	57
San Mateo	14	3	11
Santa Barbara	14	9	32
Santa Clara	28	23	7
Santa Cruz	2	4	2
Shasta	1	0	1
Sierra	0	0	0
Siskiyou	0	0	0
Solano	13	11	8
Sonoma	5	4	6
Stanislaus	10	18	23
Sutter	0	0	1
Tehama	SC	0	0
Trinity	0	0	0
Tulare	100	75	86
Tuolumne	SC	0	0
Ventura	50	67	96
Yolo	5	2	2
Yuba	0	0	SC

Cumulative Reported Suspect, Probable, and Confirmed Annual Cases of Coccidioidomycosis by Local Health Jurisdiction and Year of Estimated Onset, California, 2020-2022
(reported as of April 30 of the following year*)

	Year of Estimated Onset**		
County	2022	2021	2020
California Total	7,517	8,207	6,787

	Year of Estimated Onset**		
Local Health Jurisdiction	2022	2021	2020
Alameda County Total	79	99	68
Alameda	76	98	67
Berkeley	3	1	1
Alpine	0	0	0
Amador	8	3	8
Butte	2	13	12
Calaveras	2	1	8
Colusa	1	0	1
Contra Costa	91	145	145
Del Norte	0	3	1
El Dorado	6	3	3
Fresno	448	405	446
Glenn	2	3	1
Humboldt	3	2	2
Imperial	23	4	10
Inyo	1	3	1
Kern	2,409	2,821	2,006
Kings	168	169	156
Lake	2	2	2
Lassen	2	0	3
Los Angeles County Total	1,564	1,485	1,106
Long Beach	66	53	56
Los Angeles	1,487	1,411	1,047
Pasadena	11	21	3
Madera	59	49	35
Marin	2	7	6
Mariposa	2	2	1
Mendocino	5	1	3
Merced	71	81	80
Modoc	1	0	0
Mono	0	2	0
Monterey	114	120	118
Napa	1	5	2
Nevada	1	1	4
Orange	297	284	239
Placer	9	12	10
Plumas	0	0	0
Riverside	354	471	370
Sacramento	56	81	59
San Benito	2	10	2
San Bernardino	230	252	235
San Diego	389	453	464
San Francisco	18	29	18
San Joaquin	105	136	136
San Luis Obispo	150	177	182
San Mateo	22	22	19
Santa Barbara	44	66	63
Santa Clara	84	65	44
Santa Cruz	15	17	3
Shasta	0	1	4
Sierra	0	0	0
Siskiyou	1	0	2
Solano	27	38	22
Sonoma	10	20	7
Stanislaus	68	90	69
Sutter	0	2	1
Tehama	2	2	3
Trinity	0	0	0
Tulare	319	319	308
Tuolumne	2	1	2
Ventura	236	219	285
Yolo	8	9	10
Yuba	2	2	2

Reported Suspect, Probable, and Confirmed Cases of Coccidioidomycosis by Month and Year of Estimated Onset, California, 2021-2023



	Month of Estimated Onset**											
Year of Estimated Onset**	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
2023 (Reported as of April 30, 2023)†	618	511	610	376	.	.	.	.	.	.	.	.
2022 (Reported as of April 30, 2023)	599	543	533	624	683	646	629	714	700	581	664	601
2021 (Reported as of April 30, 2022)	781	692	717	591	613	645	730	663	684	708	719	664

Technical Notes

In interpretation of the numbers in this report, please consider the following points:

* Data presented in this report may differ from previously published data due to delays inherent to case reporting, laboratory reporting, and epidemiologic investigation.

** Estimated onset date is the date closest to the time when symptoms first appeared. For cases which date of onset was not recorded, the estimated onset date can range from the date of first appearance of symptoms to the date the report was made to the California Department of Public Health.

*** SC Case counts have been suppressed due to small numbers based on Publication Scoring Criteria published in https://www.dhcs.ca.gov/dataandstats/Documents/DHCS-DDG-V2.0-120116.pdf.

† Due to reporting delays, counts for January - April 2023 (reported as of April 30 of same year) are likely to increase and not directly comparable to counts for January - April 2022 and January - April 2021 (reported as of April 30 of the following year) as presented.

Because coccidioidomycosis can occur as a chronic condition and be reported more than once, we included only the first report of coccidioidomycosis per person using a probabilistic de-duplication method spanning multiple reporting years.

Local health jurisdictions reviewed cases and determined whether surveillance case definitions were met to classify cases as Confirmed, Probable, or Suspect according to established clinical and laboratory criteria. All cases classified as Confirmed, Probable, and Suspect are included in this report.

Combined provisional Suspect, Probable, and Confirmed case counts in this report may differ from counts of Confirmed cases that CDPH will eventually publish in final year-end surveillance reports.

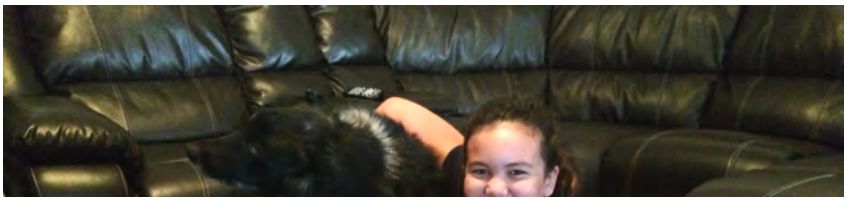
Prepared by Alyssa Nguyen, Gail Sondermeyer Cooksey, Yanyi Djamba, and Duc Vugia, Infectious Diseases Branch, Division of Communicable Disease Control, Center for Infectious Diseases, California Department of Public Health.

New Valley Fever Skin Test Shows Promise, But Obstacles Remain

KVPR | By Kerry Klein

Published November 21, 2016 at 12:51 PM PST

LISTEN • 5:55



Kerry Klein/KVPR /

Eleven-year-old Faith Herrod, recovering from valley fever, plays with Moses, Ninja and her other four pets when she has the energy for it.

We continue our reporting this week on the fungal disease known as valley fever with a story about a potential route to prevention. One of the first lines of defense against any disease is determining who's at risk. It's possible to develop immunity to valley fever, and a new skin test could be used to screen for that immunity—but that's only if the test overcomes some maior hurdles.

KVPR
1A

Faith Herrod wants to be a veterinarian when she grows up. The 11-year-old lives in the small Central California town of Lemoore with her family, three dogs and three cats. Someday, she'll get a rabbit, too—as soon as her mother lets her.

In her free time, Faith should be out playing with her dogs. But for almost a year, she was not able to do so. She would come home from school at 4 p.m. and go right to bed. That's because last October the sixth-grader was diagnosed with valley fever, a fungal infection that kept her out of school for months and left her with regular headaches and chronic pain.

"Sometimes, when you get super tired, it'll feel like your ribs will go in," she said, wrapping her arms around her stomach. "It'll feel like your ribs go in and hurt really bad."

Faith contracted valley fever by breathing in fungal spores carried by the wind. That's how the disease is contracted, and it can happen at any time. Faith's mother, Caren Herrod, isn't entirely sure when it happened, but her best guess is while they were doing yard work one day—something they had done dozens of times before. Herrod never imaged that, after so much time, Faith would not have built up natural immunity and that she could still be at risk.

"If I had known that she was susceptible, it would've been different," Herrod said. "We would've done things differently."

As it turns out, Faith and her mother could have known. A new skin test called Spherusol can detect whether a person has developed natural immunity, meaning they've overcome valley fever before. Because most valley fever cases are asymptomatic, many people whose immune systems have battled the disease may never know it.

Advocates are excited about the test. So are doctors — like Dr. John Galgiani, director of the University of Arizona's Valley Fever Center for Excellence. He dreams of seeing Spherusol being used as a tool to screen for past infections.

"I think that Spherusol's best use will be in primary care doctors' offices, to test their patients on a routine basis to find out if they've indeed previously had valley fever," Galgiani said. If patients knew they had never conquered valley fever, they could better

KVPR
1A

Experts call for a change in FDA rules on promising test

But despite its promise, the test isn't in wide use.

"Frankly, I don't use it very often myself," Galgiani said. "Even specialists don't use it very often."

That's because the Food and Drug Administration hasn't approved Spherusol for testing immunity. Instead, the test is supposed to be used by clinicians only after a person has been diagnosed with the disease. Galgiani and others would like to see the FDA change the rules to allow its use whenever a clinician thinks a test is warranted.

"If the labeling is changed to allow the test to be used to test for prior infection, then it opens up a whole different value of the test to the clinical community," Galgiani said.

Valley fever lurks in dirt and dust in the desert throughout the Southwest. Most people who inhale the spores fight off the disease without ever knowing they had it. Some develop flu- or pneumonia-like symptoms. In rare cases, it can cause severe lung infection or disseminate throughout the body, requiring lifelong treatment or leading to fatal meningitis.

But there is some good news.

"Once you've had valley fever and gotten over it, you are for all practical purposes immune from a second infection," Galgiani said.

KVPR
1A

Spherusol comes in vials of 10 doses. A positive result indicates a previous bout with valley fever and an acquired immunity to the disease.

Revealing a disease exposure with a skin test

That's why Spherusol could have such an impact: It could reveal a person's history of exposure. Before, that was something most people could only wonder about.

Spherusol works similarly to a tuberculosis skin test. A clinician injects a small amount of spores under the skin, and the reaction indicates whether immunity has developed. Similar skin tests for valley fever were first developed in the 1930s, but the most recent iteration was discontinued in the 1990s after the company that produced it was unable to turn a profit.

Spherusol was released in 2014 and costs about $62. No studies have directly compared its efficacy to previous tests.

Right now, Spherusol is only indicated for use after a patient has already been diagnosed with the disease. So, instead of being used as a way to determine valley fever exposure, it's considered a sort of immune system checkup for those recovering from the disease.

"It's indicated for understanding how their body is reacting to the disease," said Tom Carpenter, president and CEO of Nielsen Biosciences, the San Diego-based company that developed Spherusol. "Is their immune system engaged? Or is their immune system overwhelmed? Or are they potentially immune-compromised and not even able to respond to the infection?"

Carpenter says that screening patients could be a great way to use the test, but getting the FDA to approve a change in the labeling could take years. It would involve new clinical trials and potentially millions of dollars of investment. He says his company is looking into it.

In the meantime, however, he points out that doctors are already allowed to use Spherusol for off-label uses.

"Health care providers right now have the ability to make a medical judgment on how

KVPR
1A

making that use, but we can't speak to that use."

But using Spherusol off-label has challenges —like its price tag. A single test may not break a budget, but regular valley fever screening would mean periodic trips to the doctor to pay $62 for a prick under the skin. Most health insurers in California, including Medi-Cal, say they cover it — but only for its prescribed use. Even then, some insurers could reimburse as little as $4. By contrast, a patient getting a flu shot would likely pay nothing, and the clinic would be reimbursed up to around $35.

And then there's the fact that the test is packaged in bulk. Spherusol can only be bought in vials of 10 doses; once the vial is open, the countdown to expiration begins. Dr. Royce Johnson, chief of infectious disease at Kern Medical in Bakersfield, says the test is "extraordinarily stable." Even so, he said, many pharmacies have policies against storing products more than 30 days after they've been opened. "If you don't use it all, it costs a lot of money," Johnson said. "So there's some resistance to stocking it."

Another problem? Spherusol is only approved for 18- to 64-year-olds, even though children can be hit hard by valley fever and the CDC says people over 60 are most at risk.

Prisoners benefit from new test

Despite all of its obstacles, the test has been used to screen one very large patient group: California state prisoners, where it appears to be helping to prevent the disease. Prisoners who test negative to Spherusol, which indicates they haven't built up an immunity to valley fever, are not sent to serve their terms in the two Central Valley prisons hit hardest by the disease.

Caren Herrod may wish that her daughter Faith had access to Spherusol a year ago, but she admits that still wouldn't have solved the root of the problem: that she didn't take valley fever seriously enough because so little information about it is available.

"It's so, so limited," Herrod said. "With a disease that is so prevalent, for there to be so little information, it's sad. It's very sad."

Meanwhile, Faith is back at school full-time, and hopes she can soon take her dogs Moses and Jasmine out for a walk.

KVPR
1A

This project results from a new venture – the Center for Health Journalism Collaborative – which currently involves the Bakersfield Californian, Radio Bilingüe in Fresno, Valley Public Radio in Fresno and Bakersfield, Vida en el Valle in Fresno, the Voice of OC in Santa Ana, the Arizona Daily Star in Tucson, La Estrella de Tucsón and CenterforHealthJournalism.org. The collaborative is an initiative of the Center for Health Journalism at the University of Southern California's Annenberg School for Communication and Journalism.

Next in this series: Accurate valley fever counts elude health officials

Tags Health | disease | valley fever | lemoore | health | centers for disease control and prevention | valley fever center for excellence

Kerry Klein

Kerry Klein is an award-winning reporter whose coverage of public health, air pollution, drinking water access and wildfires in the San Joaquin Valley has been featured on NPR, KQED, Science Friday and Kaiser Health News. Her work has earned numerous regional Edward R. Murrow and Golden Mike Awards and has been recognized by the Association of Health Care Journalists and Society of Environmental Journalists. Her podcast Escape From Mammoth Pool was named a podcast "listeners couldn't get enough of in 2021" by the radio aggregator NPR One.

See stories by Kerry Klein

KVPR
1A

Latest News

California lawmakers block bill allowing people to sue oil companies over health problems

It will cost up to $21.5 billion to clean up California's oil sites. The industry won't make enough money to pay for it.

Fresno County struggles to find permanent home for state-issued trailers meant for homeless

Families of men shot by California cops lose faith in new accountability law as reviews drag on

California is losing population and building new houses. When will home prices come down?

KVPR
1A

Related Content

Health

New Legislation Would Allocate $1 Million For Valley Fever Research

Diana Aguilera, May 7, 2015

The fight against valley fever may reach a new milestone. A bill in the state legislature would fund research for this disease in hopes of finding a cure.…

LISTEN • 1:17

KVPR
1A

Health

Valley Fever Clinical Trial To Begin At Kern Medical

October 14, 2016

Bakersfield's Kern Medical has selected to work with the National Institutes of Health and the Centers for Disease Control on a new clinical trial for…

KVPR
1A

Health

Forecasting An Epidemic: Does Weather Hold The Key To Predicting Valley Fever Outbreaks?

November 13, 2016

When a punishing drought besieged California in the late 1980s, relief came with 30 days of rain in 1991 — dubbed the March Miracle because of how it…

Health

Collaborative Launches New Reporting Series On Valley Fever

Joe Moore, November 15, 2016

Valley fever has long been a major health concern for people who live in the San Joaquin Valley. A fungus that grows in the soil can become airborne. If…

LISTEN • 13:06

KVPR
1A

Health

CDC Technology Advances Promise Better Valley Fever Detection

November 21, 2016

New technology could reveal the microscopic, sometimes deadly spores that cause valley fever that currently float in the air undetected.The U.S. Centers…

KVPR
1A

Health

My Valley, My Story: Valley Fever After Decades Of Dust

Kerry Klein, November 22, 2016

The fungal disease can afflict individuals of any age and ethnic group—even those who have lived and worked in the valley for decades. As part of our…

LISTEN • 2:21

Stay Connected

© 2023 KVPR | Valley Public Radio - White Ash Broadcasting, Inc. :: 89.3 Fresno / 89.1 Bakersfield

About

Programs

Schedule

Privacy

Contact

Staff

Support

Sponsorships

FCC Applications

KVPR
1A

KPRX Public File

KVPR Public File

Contest Rules

Western Riverside Council of Governments
Technical Advisory Committee

AGENDA

Thursday, February 21, 2019
9:30 a.m.

Western Riverside Council of Governments
Citrus Tower
3390 University Avenue, Suite 450
Riverside, CA 92501

In compliance with the Americans with Disabilities Act and Government Code Section 54954.2, if special assistance is needed to participate in the Technical Advisory Committee meeting, please contact WRCOG at (951) 405-6703. Notification of at least 48 hours prior to meeting time will assist staff in assuring that reasonable arrangements can be made to provide accessibility at the meeting. In compliance with Government Code Section 54957.5, agenda materials distributed within 72 hours prior to the meeting which are public records relating to an open session agenda item will be available for inspection by members of the public prior to the meeting at 3390 University Avenue, Suite 450, Riverside, CA, 92501.

The Technical Advisory Committee may take any action on any item listed on the agenda, regardless of the Requested Action.

1. CALL TO ORDER (George Johnson, Chair)

2. SELF INTRODUCTIONS

3. PLEDGE OF ALLEGIANCE

4. PUBLIC COMMENTS

At this time members of the public can address the Technical Advisory Committee regarding any items with the subject matter jurisdiction of the Committee that are not separately listed on this agenda. Members of the public will have an opportunity to speak on agendized items at the time the item is called for discussion. No action may be taken on items not listed on the agenda unless authorized by law. Whenever possible, lengthy testimony should be presented to the Committee in writing and only pertinent points presented orally.

5. MINUTES

A. Summary Minutes from the January 17, 2019, Technical Advisory Committee Meeting are Available for Consideration. **P. 1**

Requested Action: *1. Approve the Summary Minutes from the January 17, 2019, Technical Advisory Committee meeting.*

6. CONSENT CALENDAR

All items listed under the Consent Calendar are considered to be routine and may be enacted by one motion. Prior to the motion to consider any action by the Committee, any public comments on any of the Consent Items will be heard. There will be no separate action unless members of the Committee request specific items be removed from the Consent Calendar.

A. Finance Department Activities Update ***Andrew Ruiz*** **P. 9**

Requested Action: *1. Receive and file.*

B. WRCOG Committees and Agency Activities Update ***Rick Bishop*** **P. 15**

Requested Action: *1. Receive and file.*

C. Western Community Energy Activities Update ***Barbara Spoonhour*** **P. 31**

Requested Action: *1. Receive and file.*

D. Regional Streetlight Program Activities Update ***Daniel Soltero*** **P. 33**

Requested Action: *1. Receive and file.*

E. High-Cube Warehouse Trip Generation Study and Proposed TUMF Calculation Handbook Update ***Daniel Ramirez-Cornejo*** **P. 35**

Requested Action: *1. Receive and file.*

F. PACE Programs Activities Update: General Activities Update, and Addition of New Providers ***Casey Dailey*** **P. 71**

Requested Action: *1. Receive and file.*

G. 2nd Quarter Draft Budget Amendment for Fiscal Year 2018/2019 ***Andrew Ruiz*** **P. 75**

Requested Action: *1. Recommend that the Executive Committee approve the 2nd Quarter Draft Budget Amendment for Fiscal Year 2018/2019.*

H. **Fiscal Year 2017/2018 Comprehensive Annual Financial Report (CAFR)** — ***Andrew Ruiz*** — **P. 105**

Requested Action: *1. Receive and file.*

I. **Environmental Department Activities Update** — ***Kyle Rodriguez*** — **P. 217**

Requested Action: *1. Receive and file.*

7. REPORTS / DISCUSSION

A. **Report from the League of California Cities** — ***Erin Sasse, League of California Cities*** — **P. 221**

Requested Action: *1. Receive and file.*

B. **Census Update – Report from UCR and Riverside County** — ***Sono Shah, UCR*** ***Jason Farin, Riverside County*** — **P. 223**

Requested Action: *1. Receive and file.*

C. **Presentation on Riverside County Efforts To Address Homelessness** — ***Natalie Profant Komuro, County of Riverside*** — **P. 225**

Requested Action: *1. Receive and file.*

D. **Options for Potential WRCOG Assistance for Regional Housing Needs Assessment Update** — ***Christopher Gray, WRCOG*** — **P. 227**

Requested Action: *1. Discuss and provide input.*

8. REPORT FROM THE EXECUTIVE DIRECTOR — Rick Bishop

9. ITEMS FOR FUTURE AGENDAS — Members

10. GENERAL ANNOUNCEMENTS — Members

Members are invited to announce items/activities which may be of general interest to the Technical Advisory Committee.

11. NEXT MEETING:

The next Technical Advisory Committee meeting is scheduled for Thursday, March 21, 2019, at 9:30 a.m., at WRCOG's office located at 3390 University Avenue, Suite 450, Riverside.

12. ADJOURNMENT

Page Intentionally Left Blank

Technical Advisory Committee **Item 5.A**
January 17, 2019
Summary Minutes

1. CALL TO ORDER

The meeting of the Technical Advisory Committee was called to order at 9:30 a.m. by Chair George Johnson at WRCOG's office, Citrus Conference Room.

2. ROLL CALL

Members present:

Doug Schulze, City of Banning (9:41 a.m. arrival)
Bonnie Johnson, City of Calimesa (9:41 a.m. arrival)
Ernie Reyna, City of Eastvale
Gary Thompson, City of Jurupa Valley
Armando Villa, City of Menifee
Allen Brock, City of Moreno Valley
Andy Okoro, City of Norco
Moises Lopez, City of Riverside
Travis Randel, City of San Jacinto
Gary Nordquist, City of Wildomar
George Johnson, County of Riverside (Chair)
Mathew Evans, March Joint Powers Authority (9:35 a.m. arrival)
Craig Miller, Western Municipal Water District
Floyd Velasquez, Morongo Band of Mission Indians

Staff present:

Steve DeBaun, Legal Counsel
Rick Bishop, Executive Director
Barbara Spoonhour, Deputy Executive Director-Operations
Andrew Ruiz, Interim Chief Financial Officer
Christopher Gray, Director of Transportation & Planning
Tyler Masters, Program Manager
Daniel Ramirez-Cornejo, Program Manager
Andrea Howard, Program Manager
Christopher Tzeng, Program Manager
Rachel Hom, Staff Analyst
Daniel Soltero, Staff Analyst
Jessica May, Staff Analyst
Suzy Nelson, Administrative Assistant
Sofia Perez, Staff Analyst
Anthony Segura, Staff Analyst
Kyle Rodriguez, Staff Analyst
Mei Wu, Intern
Ivana Medina, Fellow
Rayza Sison, Intern
Diane Sanchez, Intern

Guests present:

Erin Sasse, League of California Cities
Alma Ramirez, WRCOG Fellow, Eastern Municipal Water District
Melanie Sotelo, Riverside County Transportation Department
Michelle Cervantes, Riverside County Transportation Department

Darcy Kuenzi, Riverside County Flood Control and Water Conservation District
Cordell Chavez, City of Corona
Ahab Hussain, City of Beaumont
Kristen Jensen, City of Hemet
Araceli Ruiz, County of Riverside, District 1

3. PLEDGE OF ALLEGIANCE

Chair George Johnson led the members and guests in the Pledge of Allegiance.

4. PUBLIC COMMENTS

There were no public comments.

5. MINUTES

A. Summary Minutes from the October 18, 2018, Technical Advisory Committee Meeting are Available for Consideration.

Action: *1. Approved Summary Minutes from the October 18, 2018, Technical Advisory Committee meeting.*

(Jurupa Valley / Morongo) 12 yes; 0 no; 0 abstain; Item 5.A was approved. The Cities of Banning, Beaumont, Calimesa, Canyon Lake, Corona, Hemet, Lake Elsinore, Murrieta, Perris, and Temecula and the Eastern Municipal Water District were not present. This item was taken out of order.

6. CONSENT CALENDAR *(Riverside / WMWD) 12 yes; 0 no; 0 abstain; Items 6.A – 6.K were approved. The Cities of Banning, Beaumont, Calimesa, Canyon Lake, Corona, Hemet, Lake Elsinore, Murrieta, Perris, and Temecula and the Eastern Municipal Water District were not present. This item was taken out of order.*

A. Finance Department Activities Update

Action: *1. Received and filed.*

B. WRCOG Committees and Agency Activities Update

Action: *1. Received and filed.*

C. Western Community Energy Activities Update

Action: *1. Received and filed.*

D. Environmental Department Activities Update

Action: *1. Received and filed.*

E. Regional Streetlight Program Activities Update

Action: *1. Received and filed.*

F. Western Riverside Energy Partnership Activities Update

Action: *1. Recommended that the Executive Committee authorize the Executive Director to execute the Third Contract Amendment with Southern California Gas Company to jointly deliver the 2013-2014 Western*

Riverside Energy Efficiency Partnership Program, including the continuation of the Western Riverside Energy Partnership, through year 2019, substantially as to form.

G. TUMF Program Activities Update

Action: *1. Received and file.*

H. International City / County Management Association Activities Update

Action: *1. Received and file.*

I. Approval of Technical Advisory Committee 2019 Meeting Schedule

Action: *1. Approved the Schedule of Technical Advisory Committee meetings for 2019.*

J. PACE Programs Activities Update

Action: *1. Recommended that the Executive Committee authorize the Executive Director to enter into contract negotiations and execute any necessary documents to include Lord Capital under WRCOG's Commercial PACE umbrella.*

K. Approval of Revised Purchasing and Procurement Policy

Action: *1. Recommended that the Executive Committee adopt WRCOG Resolution Number 19-01; A Resolution of the Executive Committee of the Western Riverside Council of Governments Adopting a Revised Purchasing and Procurement Policy.*

7. REPORTS / DISCUSSION

A. Report from the League of California Cities

Erin Sasse presented an update on Assembly Bill (AB) 11 (Chiu), Community Redevelopment Law of 2019. AB 11 allows a city or county, or two or more cities acting jointly, to form an Affordable Housing and Infrastructure Agency to fund projects such as infrastructure and affordable housing projects. Thirty percent of tax increment must be deposited into low / moderate income housing fund. Some of the key elements include annual unspecified state commitment at the discretion of the State Controller; schools will be made whole, no impact to Prop 98; and extensive upfront planning and costs required before a city or county can form an agency and receive project funding from the state.

Senate Bill 5 (Beall), a Local-State Sustainable Investment Incentive Program, creates a local-state partnership to reduce poverty and advance other state priorities finance, in part, by property tax increment. Twenty percent of the overall funding for the program shall be set aside for counties with populations of less than 200,000. Some of the pros include up to $2 billion state investment in affordable housing and infrastructure; 50% of the funds are required to be spent on affordable housing; relies on post redevelopment tools; and allows a wide-range of agency participation. Some of the cons include less flexibility than redevelopment agencies, and fewer resources available for economic development.

Action: *1. Received and filed.*

B. Santa Ana Municipal Separate Storm Sewer System (MS4) Permit Compliance Program Update

Darcy Kuenzi, Riverside County Flood Control and Water Conservation District, presented a bi-annual update on the MS4 permit compliance and other mandates for addressing stormwater management in the region.

The Santa Ana National Pollutant Discharge Elimination System (NPDES) Permit requires City Managers for Beaumont, Calimesa, Canyon Lake, Corona, Eastvale, Hemet, Jurupa Valley, Lake Elsinore, Menifee, Moreno Valley, Norco, Perris, Riverside and San Jacinto, as well as the County Executive Officer to meet at least two times annually to discuss the NPDES MS4 Compliance Program.

These permits, issued pursuant to the federal Clean Water Act, are designed to protect lakes, rivers and streams from pollution (such sediment, oils, grease, fertilizers, animal and human waste, trash and dissolved metals) associated with urban land use. The District has created a Public Education Strategic Plan for Riverside County Permittees to comply with the educational requirements of the Permits and to foster a community wide commitment to clean water. The District is working to renew all three Permits that fall within the WRCOG subregion to the respective Regional Boards this next calendar year.

Committee member Armando Villa asked how long the permits are good for.

Ms. Kuenzi responded that the permits are good for four to five years.

WRCOG staff is working closely with the District on alternative approaches to cost-effectively address stormwater management in Western Riverside County.

Action: *1. Received and filed.*

C. Public Service Fellowship Activities Update

Andrea Howard presented an overview of the Fellowship Program that launched in 2016. When the Fellowship was launched, it began partnership with WRCOG, UCR and CBU. Since then the partnership has expanded to CSUSB. Currently, the Program is operating in its third round and has 15 Fellows placed with member agencies.

Looking into the upcoming fourth round of the Program, staff has discussed several topics and ideas to focus on the sustainability and recruitment of Fellows. The Ad Hoc Committee, comprised of TAC members from Beaumont, Lake Elsinore, Moreno Valley, Temecula, and Eastern Municipal Water District, convened in November and discussed how we could create a more sustainable practice and eligibility requirements. What was found was that, historically, the recruitment process has been 100% focused on students from the partnered universities and, while staff has always considered academic standing, there has never been a minimum GPA requirement. The Ad Hoc Committee recommended making a GPA requirement threshold to all applicants.

The Ad Hoc Committee also supported expanding recruitment to additional universities within and outside of the region, with the focus on attracting students in technical disciplines in which members have expressed a need for, such as planning, engineering, and IT. As an extension of this policy, members also supported allowing all candidates with a connection to the subregion, including those who do not necessarily live or attend school here, but may be from the area.

The current practice is to place Fellows in the member agencies only, though members of the private sector and non-member public agencies have expressed interest. The Ad Hoc Committee recommended continuing the current practice for now but was open to expanding to non-member and public sector agencies in the future, provided all Program costs would be paid by the Fellow host agency.

Currently, WRCOG funds the entire Program; which if we place a Fellow in each member agency costs are $375k per cohort. Historically, funding for the Program has come from PACE carryover revenues, which are declining. To extend Program funding, the Ad Hoc Committee recommended alternating placements at each jurisdiction every other year. Members also showed interest in directing any unused BEYOND funds to the Program when that distribution occurs. Another option discussed was a local match from that jurisdiction receiving a Fellow, but the members were reluctant to institute. With staff struggling to recruit enough qualified candidates to fill the desired number of Program seats, staff has come up with some ideas to help sustain the Program and make it more desirable for the Fellow to stay, versus leaving for employment mid-Fellowship. Some recommendations made include hiring for both full-time and part-time status. For example, currently enrolled students would be hired on in a part-time basis for nine months and recently graduated students would be hired on in a full-time basis for six to nine months. For the Fellows that would be on for nine months, they would serve a total of 20 hours per week in two separate host agencies.

Many Committee members congratulated WRCOG on this great Program.

Action: *1. Recommended that the Executive Committee direct staff to implement the following changes to the Fellowship Program: 1) recruit Fellows from additional universities, both within and outside of the subregion; 2) expand candidate eligibility to students and recent graduates who live, work, attend school in, or are from the region and meet other minimum qualifications, 3) establish a minimum 3.0 GPA threshold for all applicants; 4) alternate Fellow placements over two years so members receive a Fellow every-other year, and 5) admit Fellows to serve in either a part-time or full-time capacity within CalPERS requirements.*

(Banning / Menifee) 14 yes; 0 no; 0 abstain; Item 7.C was approved. The Cities of Beaumont Canyon Lake, Corona, Hemet, Lake Elsinore, Murrieta, Perris, and Temecula, and Eastern Municipal Water District were not present.

D. Update on the Development of a Sustainability Indicators Report

Christopher Gray provided an update regarding the 2012 Economic Development and Sustainability Indicators Report (Report). When this Report was completed staff intended to serve the following four broad objectives: to provide a starting point for dialogue about sustainability and its importance in the region; provide a vision for a sustainable Western Riverside County and establish goals to inform and guide regional collaboration; define and prioritize short-term actions that WRCOG can pursue; and define initial indicators, benchmarks, and targets by which WRCOG can measure the effectiveness of efforts to create a more sustainable subregion.

The Framework identified six key areas related to the Region, including economic development, education, transportation, health, water and energy, and environment. An initial list that was established in 2012, had identified over 50 sustainability indicators, but staff had found that regular tracking and updating of this list was very difficult for many reasons. To keep the Framework relevant, WRCOG contracted with AECOM to assist with refining and updating the indicators list based on experience. After review, the indicators were paired down from approximately 40 indicators to 14.

Some of the key considerations used to refine the list of indicators from 50 to the recommended 14 included, does the indicator reflect broadly on key issues affecting the region such as water and energy use, transportation, employment, and education; is the indicator one that is commonly tracked across comparable regions; is there historical data for the indicator that would document trends; and, is data readily available for the indicator at a regional or Countywide level;

A few of the key indicators recommended for further evaluation were job growth, household income, educational attainment, healthcare facilities, violent crime, and water usage, to name a few.

Some "good" results that came out of the Study included an increase in good vs. moderate air quality days over a 3-year average. There was a reduction in violent crimes per 100k residents vs. the state average. The daily water usage per resident decreased between 2013 vs. 2017. Some of the "okay" results included that only 48% of high school graduates in Riverside County are meeting the UC/CSU requirements vs. the state average of 50%. Even though we have had a growth in jobs, the median income has decreased. This is because the jobs being brought in are low-skilled, low-paying jobs. Transportation, warehousing and manufacturing make up 27% of the growth, but do not pay much. There was a 30% growth in the food service and retail but, just like transportation, warehousing and manufacturing, the pay is not as well as it would be if we had more of jobs with higher skill levels.

Chair George Johnson asked how are we able to take these issues that arise to the next level.

Mr. Gray responded that once this information is summarized, staff plans on distributing the information via WRCOG's website and other distribution channels. Staff also anticipates that this information will be presented at upcoming events and conferences to document how the region is performing in regard to these key items.

Committee member Armando Villa suggested the formation of a subcommittee to help work together towards issues that arise.

Committee members were in agreeance and the Cities of Banning, Eastvale, Jurupa Valley, Menifee, and Riverside, and the County of Riverside volunteered to be a part of this subcommittee.

Committee member Travis Randel suggested bringing in the Riverside County Office of Education to be a part of this subcommittee since education is a part of the issues.

Action: *1. A sub committee was formed comprised of representatives from the Cities of Banning, Eastvale, Jurupa Valley, Menifee, and Riverside, and the County of Riverside to address issues that arise from the Indicators Report.*

(Menifee / Banning) 14 yes; 0 no; 0 abstain; Item 7.D was approved. The Cities of Beaumont Canyon Lake, Corona, Hemet, Lake Elsinore, Murrieta, Perris, and Temecula, and Eastern Municipal Water District were not present.

8. REPORT FROM THE EXECUTIVE DIRECTOR

Rick Bishop shared that with the new election, the Executive Committee now has 10 new members and the RCHCA has 8 new members.

9. ITEMS FOR FUTURE AGENDAS

There were no items for future agendas.

10. GENERAL ANNOUNCEMENTS

Committee member Moises Lopez shared that the Homeless Point-in-Time is taking place January 29, 2019, from 5:30 a.m. – 9:30 a.m.

11. NEXT MEETING — **The next Technical Advisory Committee meeting is scheduled for Thursday, February 21, 2019, at 9:30 a.m., at WRCOG's office located at 3390 University Avenue, Suite 450, Riverside.**

12. ADJOURNMENT — **The meeting of the Technical Advisory Committee adjourned at 10:36 a.m.**

Page Intentionally Left Blank

Item 6.A

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **Finance Department Activities Update**

Contact: **Andrew Ruiz, Interim Chief Financial Officer, aruiz@wrcog.us, (951) 405-6741**

Date: **February 21, 2019**

The purpose of this item is to *provide an update on the Fiscal Year (FY) 2017/2018 Agency Audit, Annual TUMF review, and the Agency Financial Report summary through December 2018.*

Requested Action:

1. Receive and File.

FY 2017/2018 Agency Audit

Financial auditors from Rogers, Anderson, Malody, and Scott (RAMS) have completed the financials of the Comprehensive Annual Financial Report (CAFR). The CAFR was issued the week of November 26, 2018, and the Finance Directors Committee received a report on the audit and financial statements at its January 24, 2019, meeting. The report, which is included under agenda item 6.H, was presented to the Administration & Finance Committee at its February meeting, and the Executive Committee is expected to receive the report no later than at its March meeting.

Annual TUMF Review of Participating Agencies

Each year, WRCOG meets with participating members to review TUMF Program fee collections and disbursements to ensure compliance with Program requirements. The FY 2017/2018 reviews began in November 2019. To date, staff has received information related to TUMF accounting, credits issued, and exemptions awarded from each member agency except for the City of San Jacinto. Staff is following up with the City of San Jacinto to receive the necessary information and expects to complete the City's review by March 2019. All information from member agencies have been submitted electronically. However, staff is available to review documentation at the City to reduce City staff time in preparing the information electronically.

The over payment of TUMF on a development project with a valid Credit Agreement (which should not pay TUMF) has resulted in more than $1 million in TUMF refunds for FY 2017/2018. To reduce the amount of refunds being processed, WRCOG staff has been requesting information from jurisdictional staff regarding the tracking of credits to ensure a development project with a valid Credit Agreement has not paid TUMF. Information regarding Credit Agreements has been requested of each TUMF participating agency. For FY 2017/2018 staff has identified some inconsistencies in monthly TUMF remittance reports, such as the reporting of TUMF exemptions and the under collection of TUMF for utilizing old fee rates. In these instances, staff is working with the specific member agency to remedy these issues.

Letters to each member agency regarding its review are being finalized and will be distributed by the end of February 2019. For member agencies that will maintain the current TUMF collection process, these annual reviews will continue.

Financial Report Summary through December 2018

The Agency Financial Report summary through December 2018, a monthly overview of WRCOG's financial statements in the form of combined Agency revenues and costs, is provided as Attachment 1.

Prior Action:

None.

Fiscal Impact:

This item is for informational purposes only; therefore, there is no fiscal impact.

Attachment:

1. Financial Report summary – December 2018.

Item 6.A

Finance Department Activities Update

Attachment 1

Financial Report summary – December 2018

Page Intentionally Left Blank

Western Riverside Council of Governments
Monthly Budget to Actuals
For the Month Ending December 31, 2018

Total Agency

	Approved Budget 6/30/2019	Thru Actual 12/31/2018	Remaining Budget 6/30/2019
Revenues			
Member Dues	311,410	311,410	-
PACE Residential Revenue	560,000	159,597	400,403
WRELP Phase 2 Revenue	86,750	35,278	51,472
Statewide HERO Revenue	2,400,000	648,204	1,751,796
Gas Co. Prtnrshp Revenue	86,676	41,599	45,077
PACE Commercial Revenue	25,000	24,075	925
WRCOG HERO-Recording Revenue	122,500	82,987	39,513
PACE Commercial Recording Revenue	2,500	445	2,055
Statewide Recording Revenue	600,000	408,640	191,360
Regional Streetlights Revenue	300,000	261,500	38,500
Solid Waste	107,313	107,313	-
Used Oil Grants	228,820	203,820	25,000
NW Clean Cities - Air Quality	132,500	132,500	-
LTF Revenue	675,000	775,500	(100,500)
General Assembly Revenue	300,000	11,750	288,250
Commerical/Service	110,645	29,807	80,838
Retail	130,094	65,347	64,747
Industrial	272,663	343,972	(71,309)
Residential/Multi/Single	1,144,551	563,171	581,380
Multi-Family	142,045	127,426	14,619
Interest Revenue - Other	-	80,066	(80,066)
HERO - Other Revenue	-	149,833	(149,833)
Commercial/Service - Non-Admin Portion	2,655,491	745,175	1,910,316
Retail - Non-Admin Portion	3,122,265	1,633,675	1,488,590
Industrial - Non-Admin Portion	6,543,923	8,599,300	(2,055,377)
Residential/Multi/Single - Non-Admin Portion	27,469,233	14,079,275	13,389,958
Multi-Family - Non-Admin Portion	3,409,088	3,185,650	223,438
FY 17/18 Carryover Funds Transfer in	945,845	945,845	-
Carryover Funds Transfer in	4,268,757	4,268,757	-
Overhead Transfer in	2,084,260	868,441	1,215,819
Total Revenues and Carryover Funds	**58,937,742**	**39,158,743**	**19,788,812**

Expenditures	Approved	Actual	Remaining
Wages and Benefits	**6/30/2019**	**12/31/2018**	**Budget**
Salaries & Wages	2,987,699	1,188,273	1,799,426
Fringe Benefits	929,898	427,347	502,551
Overhead Allocation	2,084,260	1,042,598	1,041,662
Total Wages, Benefits and Overhead	**6,001,857**	**2,658,218**	**3,343,639**
General Legal Services	615,000	297,268	317,732
PERS Unfunded Liability	198,823	152,327	46,496
Audit Svcs - Professional Fees	27,500	25,480	2,020
Bank Fees	19,000	18,100	900

Commissioners Per Diem	62,500	34,500	28,000
Office Lease	400,000	200,889	199,111
WRCOG Auto Fuels Expenses	1,250	734	516
WRCOG Auto Maintenance Expense	84	84	-
Parking Validations	27,550	8,800	18,750
Staff Recognition	800	248	552
Coffee and Supplies	3,000	399	2,601
Event Support	129,926	112,632	17,294
Program/Office Supplies	24,150	10,437	13,713
Computer Equipment/Supplies	8,000	51	7,949
Computer Software	30,000	2,999	27,001
Rent/Lease Equipment	30,000	7,817	22,183
Membership Dues	33,000	19,337	13,663
Subscription/Publications	1,124	1,025	99
Meeting Support Services	9,681	1,703	7,978
Postage	6,015	2,233	3,782
Other Household Exp	750	286	464
COG HERO Share Expenses	15,000	1,672	13,328
Storage	16,000	3,812	12,188
Printing Services	4,607	1,670	2,937
Computer Hardware	14,100	2,664	11,436
Communications - Regular Phone	15,000	7,182	7,818
Communications - Cellular Phones	21,000	4,882	16,118
Communications - Computer Services	57,500	19,973	37,527
Communications - Web Site	8,000	6,932	1,068
Equipment Maintenance - General	10,000	4,450	5,550
Equipment Maintenance - Comp/Software	21,000	17,776	3,224
Insurance - Gen/Busi Liab/Auto	79,850	97,802	(17,952)
PACE Residential Recording	727,500	164,870	562,630
Seminars/Conferences	13,150	2,049	11,101
General Assembly Expenses	300,000	23,305	276,695
Travel - Mileage Reimbursement	23,600	5,883	17,717
Travel - Ground Transportation	4,800	1,489	3,311
Travel - Airfare	11,500	6,654	4,846
Lodging	8,750	3,838	4,912
Meals	8,150	1,566	6,584
Other Incidentals	9,950	4,544	5,406
Training	9,250	298	8,952
Supplies/Materials	34,168	3,541	30,627
Advertisement Radio & TV Ads	49,500	13,870	35,630
Consulting Labor	3,102,373	1,110,011	1,992,362
TUMF Project Reimbursement	38,000,000	20,786,737	17,213,263
BEYOND Program REIMB	2,799,015	325,014	2,474,001
Computer Equipment/Software	3,500	1,880	1,620
Misc Equipment Purchased	3,000	2,735	265
Total General Operations	**47,676,204**	**23,524,448**	**24,180,521**
Total Expenditures and Overhead	**53,678,061**	**26,182,666**	**27,524,160**

Item 6.B

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **WRCOG Committees and Agency Activities Update**

Contact: **Rick Bishop, Executive Director, rbishop@wrcog.us, (951) 405-6701**

Date: **February 21, 2019**

The purpose of this item *is to provide updates on noteworthy actions and discussions held in recent standing Committee meetings, and to provide general project updates.*

Requested Action:

1. Receive and file.

Attached are summary of actions and activities from recent WRCOG standing Committee meetings that have taken place for meetings which have occurred during the month of January.

Prior Actions:

February 13, 2019: The Administration & Finance Committee received and filed.

February 4, 2019: The Executive Committee received and filed.

Fiscal Impact:

This item is for informational purposes only; therefore, there is no fiscal impact.

Attachments:

1. WRCOG January Committees Activities Matrix (Action items only).
2. Summary recaps from January Committee meetings.

Page Intentionally Left Blank

Item 6.B

WRCOG Committees and Agency Activities Update

Attachment 1

WRCOG January Committees Activities Matrix (Action items only)

Page Intentionally Left Blank

WRCOG Committees Activities Matrix (Action Items Only)	Executive Committee	Administration & Finance Committee	Technical Advisory Committee	Planning Directors Committee	Public Works Committee	Finance Directors Committee	Solid Waste Committee
Date of Meeting:	**1/7/19**	**1/9/19**	**1/17/19**	**Did not meet**	**Did not meet**	**1/24/19**	**Did not meet**
Current Programs / Initiatives:							
Regional Streetlights Program	Received and filed.	n/a	Received and filed.			n/a	
Property Assessed Clean Energy (PACE) Programs	Approved the proposed administrative changes to the WRCOG Energy Efficiency and Water Conservation Program Administrative Guidelines and Program Report.	1) Considered the recommendation from the PACE Ad Hoc Committee recommending that the Executive Committee authorize the Executive Director to enter into contract negotiations and execute any necessary documents to include Lord Capital under WRCOG's Commercial PACE umbrella; 2) Recommended that Executive Committee authorize up to $75,000 for legislative advocacy services;	Considered the recommendation from the PACE Ad Hoc Committee recommending that the Executive Committee authorize the Executive Director to enter into contract negotiations and execute any necessary documents to include Lord Capital under WRCOG's Commercial PACE umbrella.			n/a	
Community Choice Aggregation (CCA) / Western Community Energy	Received and filed.	n/a	Received and filed.			n/a	
TUMF	Recommended that the Executive Committee approve the proposed revisions to the TUMF Administrative Plan.	n/a	Authorized the Executive Director to execute a TUMF Reimbursement Agreement with the City of Eastvale; 2) Authorized the Executive Director to execute a TUMF Reimbursement Agreement with the City of Eastvale for the Right of Way and Construction Phases of the Hamner Avenue Widening; 3) Approved the Second Amendment to the Professional Services Agreement between the Western Riverside Council of Governments and WG Zimmerman Engineering to provide TUMF Program technical support in an amount not to exceed $50,000 for this Amendment and $200,000 in total;			Received and filed.	
Fellowship	n/a	n/a	Recommended that the Executive Committee direct staff to implement the following changes to the Fellowship Program: 1) recruit Fellows from additional universities, both within and outside of the subregion; 2) expand candidate eligibility to students and recent graduates who live, work, attend school in, or are from the region and meet other minimum qualifications, 3) establish a minimum 3.0 GPA threshold for all applicants; 4) alternate Fellow placements over two years so members receive a Fellow every-other year, and 5) admit Fellows to serve in either a part-time or full-time capacity.			n/a	
New Programs / Initiatives:							
EXPERIENCE	n/a	n/a	n/a			n/a	

Page Intentionally Left Blank

Item 6.B

WRCOG Committees and Agency Activities Update

Attachment 2

Summary recaps from January Committee meetings

Page Intentionally Left Blank

Western Riverside Council of Governments
Executive Committee
Meeting Recap
January 7, 2019

Following is a summary of key items discussed at the last Executive Committee meeting. To review the full agenda and staff reports for all items, click here. To review the meeting PowerPoint presentations, click here.

New Representatives Welcomed

- WRCOG's Executive Committee welcomed eight new representatives from member jurisdictions including: Jeff Hewitt (County of Riverside), Karen Spiegel (County of Riverside), Mike Lara (Beaumont), Jim Hyatt (Calimesa), Micheal Goodland (Jurupa Valley), Jason Scott (Corona), Joe Tessari (Eastvale) and Matt Liesemeyer (Menifee).

2018 Year in Review

- WRCOG's Executive Director, Rick Bishop, provided an overview of the agency and highlighted a selection of 2018 accomplishments, including the Grant Writing Assistance Program's 104:1 return on investment, garnering $13 million for the subregion to date; the continuation of the WRCOG Public Service Fellowship Program, which has provided invaluable learning opportunities and a career path into the public sector for 53 Fellows to date; and the complete consolidation of the Riverside County Habitat Conservation Agency into WRCOG.

TUMF Program Activities Update

- The Executive Committee approved revisions to the TUMF Administrative Plan in the following areas:
  - Annual reviews for TUMF member agencies, clarifying the role of WRCOG in reviewing TUMF records for member agencies maintaining the responsibility of TUMF collection versus the review process for agencies which have delegated collection responsibility to WRCOG;
  - Member agency requirements to be a TUMF Program participant;
  - Clarifying language regarding TUMF miscalculation repayments for member agencies maintaining TUMF collection responsibilities;
  - TUMF exemption reporting responsibility clarifications; and
  - A requirement to include non-residential project building permits or site plans in remittance reports submitted by agencies maintaining TUMF collection responsibilities.

PACE Programs Activities Update

- In February 2018, the Executive Committee adopted WRCOG PACE Consumer Protections Policy v2.0.
- In order to achieve consistency in underwriting standards across multiple residential PACE providers, in lieu of the changes made to the Consumer Protections Policy, the Executive Committee approved administrative changes to the WRCOG Energy Efficiency and Water Conservation Program Administrative Guidelines and Program Report.

Report from the South Coast Air Quality Management District (SCAQMD)

- SCAQMD staff provided a report on a legislative proposal to authorize a potential local sales tax increase ballot measure for the South Coast Air District.
- The measure would support SCAQMD's 2016 Air Quality Management Plan (AQMP) and the significant regional air pollution reductions needed to meet federal air quality attainment deadlines and reduce the existing public health risk from air pollution; currently the region's air quality is categorized in the "extreme non-attainment" for ozone.

- SCAQMD does not have regulatory authority over mobile source emissions, which are the primary source of the ozone pollutants; the proposed tax would be used to provide an incentive for mobile source fleets to update to more fuel efficient, lower polluting vehicles.

Next Meeting

The next Executive Committee meeting is scheduled for Monday, February 4, 2019, at 2:00 p.m., at the County of Riverside Administrative Center, 1st Floor Board Chambers.

Western Riverside Council of Governments
Administration & Finance Committee
Meeting Recap
January 9, 2019

Following is a summary of major items discussed at the January 9, 2019, Administration & Finance Committee meeting. To review the full agenda and staff reports, please click here. To review the meeting PowerPoint Presentation, please click here.

Nomination for 2nd Vice-Chair made

- The Committee recommended that Councilmember Kevin Bash (Norco) serve as the Executive Committee 2nd Vice-Chair for the remainder of the fiscal year. The position became vacant when Laura Roughton was unsuccessful in her re-election attempt. The recommendation will be considered by the Executive Committee in February.

New PACE Provider Coming Soon

- The Committee is recommending that Lord Capital be brought in under WRCOG's PACE umbrella. Lord Capital has experience in a wide range of asset classes with a broad expanse of banking and capital markets expertise and operates in 11 states; WRCOG's Statewide Program would be the only Issuer Lord Capital plans to work with in California.

Appointments to Various Committees

- WRCOG is responsible for a number of appointments to outside agencies. The Committee provided recommendations for appointments to SCAG, CALCOG, the Santa Ana Watershed Project Authority One Water One Watershed Steering Committee, and the Riverside County Waste Management Local Task Force, to be considered by the Executive Committee at its February meeting.

Economic Development and Sustainability Indicators Report is Being Refined

- An initial list of over 50 sustainability indicators was established in the 2012 Economic Development and Sustainability Framework document and WRCOG has found that regular tracking and updating of this list is difficult for a variety of reasons. The list is being refined from 50 indicators to 14, as recommended by the Planning Directors Committee.
- Once finalized, this information will be summarized by staff in a brief report and distributed via WRCOG's website and other distribution channels. Staff also anticipates that this information will be presented at upcoming events and conferences to document how the region is performing with regards to these key items.

Revised Purchasing and Procurement Policy approved

- In an effort to expand Environmental Program funding opportunities, WRCOG staff has been researching grants through CalRecycle, which required updating the Policy to incorporate certain environmentally friendly purchasing policies.

Next Meeting

The next Administration & Finance Committee meeting is scheduled for Wednesday, February 13, 2019, at 12:00 p.m. in WRCOG's office, located at 3390 University Avenue, Suite 450, Riverside.

Western Riverside Council of Governments
Technical Advisory Committee
Meeting Recap
January 17, 2019

Following is a summary of key items discussed at the last Technical Advisory Committee meeting. To review the full agenda and staff reports for all items, click here. To review the meeting PowerPoint presentations, click here.

League Update

- AB 11 (Chiu), Community Redevelopment Law of 2019, allows a city or county, or two or more cities acting jointly, to form an Affordable Housing and Infrastructure Agency to fund projects such as infrastructure and affordable housing projects. 30% of tax increment must be deposited into low/moderate income housing fund. Some of the key elements include: Annual unspecified state commitment at the discretion of the State Controller; Schools will be made whole, no impact to Prop 98; Extensive upfront planning and costs required before a city or county can form an agency and receive project funding from the state.
- SB 5 (Beall), Local-State Sustainable Investment Incentive Program, creates a local-state partnership to reduce poverty and advance other state priorities finance, in part, by property tax increment. 20% of the overall funding for the program shall be set aside for counties with populations of less than 200,000. Some of the pros include: up to $2 billion state investment in affordable housing and infrastructure; 50% of the funds are required to be spent on affordable housing; relies on post redevelopment tools; allows wide-range of agency participation; Some of the cons include: less flexibility than redevelopment agencies; less resources available for economic development;

Riverside County Flood Control

- Riverside County Flood Control and Water Conservation District provided their bi-annual update to the TAC members on MS4 permit compliance and other mandates for addressing stormwater management in the region.
- These permits, issued pursuant to the federal Clean Water Act, are designed to protect local lakes, rivers and streams from pollution (such as sediment, oils, grease, fertilizers, animal and human waste, trash and dissolved metals) associated with urban land use.
- The District has created a Public Education Strategic Plan for Riverside County Permittees to comply with the educational requirements of the NPDES MS4 permits and to foster a community wide commitment to clean water.
- The District is working to renew all three MS4 permits that fall within the WRCOG jurisdictions to the respective Regional Boards this next calendar year.
- WRCOG staff is working closely with Flood Control on alternative approaches to cost-effectively address stormwater management in Western Riverside County.

WRCOG Public Service Fellowship Round IV Preparations

- TAC members supported a series of recommended changes to the Fellowship program, largely focused on the financial sustainability of the Program and candidate recruitment, including:
    - Expending Program eligibility to students from additional Universities,
    - Alternating Fellow placements between member agencies on a bi-annual basis, and
    - Exploring opportunities to adjust Fellow work schedules in an effort to make the Program more attractive to the most talented applicants.
- Recruitment for the next round of the Program will begin in early February.

- Host agency interest forms will be released in late February or early March—placements will be prioritized for jurisdictions which did not receive a Fellow in the current round.

Economic Development and Sustainability Indicators Report

- WRCOG's 2012 Economic Development and Sustainability Framework established a list of over 50 sustainability indicators. WRCOG has found that regular tracking and updating of this list is difficult and have thus refined the list from 50 indicators to 14.
- Included among the 14 indicators are educational attainment, household median income, and job growth. Most of this data has been aggregated to the subregion level based on city-wide, zip-code, census-tract data, and is available to the member jurisdictions.
- This information will be summarized by staff in a brief report and distributed via WRCOG's website and other distribution channels. Staff also anticipate that this information will be presented at upcoming events and conferences to document how the region is performing with regards to these key items.
- Committee members discussed the need to utilize the data from the indicators update to assist the subregion's economic development activities and directed staff to form an Ad Hoc Committee to address this issue—staff will return to the Committee with additional details regarding the Ad Hoc Committee formation.

Next Meeting

The next meeting of the Technical Advisory Committee is scheduled for Thursday, February 21, 2019, at 9:30 a.m. in WRCOG's office, located at 3390 University Avenue, Suite 450, Riverside.

Western Riverside Council of Governments
Finance Directors Committee
Meeting Recap
January 24, 2019

Following is a summary of major items discussed at the last Finance Directors Committee meeting. To review the full agenda and staff reports, please click here. To review the meeting PowerPoint Presentation, please click here.

Presentation by the Riverside County Auditor-Controller

- The Riverside County Auditor-Controller spoke about his background and his role as the Riverside County Auditor-Controller.

2nd Quarter Draft Budget Amendment for Fiscal Year 2018/2019

- The single largest amendment was to the Energy Department revenues. The HERO Program has continued to experience a decline in revenues and volumes and will be reduced by $850k.
- Overall, there was a net revenue increase of $238, as there were offsetting expenditures for the reduction in HERO revenue, and also an increase in revenue from other PACE providers.

Comprehensive Annual Financial Report (CAFR) Fiscal Year 2017/2018

- WRCOG received an unmodified opinion for their FY 2017/2018 audit. An unmodified opinion is the highest form of assurance an auditing firm can provide to its client and means that the audit and associated Agency financials are both in good form and the accounting practices are solid.
- Revenues are up 41%, mainly attributable to increased TUMF collections. Expenditures are down 44%, mainly attributable to decreased TUMF project reimbursements and less projects programmed on the TIP in FY 2017/2018.
- WRCOG's ending General Fund balance is down from $12.6 to $11.3 and TUMF fund balance is up from $9.4 to $38.1.

TUMF Calculation and Collection Process Update

- TUMF has collected $30M in the first six months of the fiscal year and is up $7M from the same time last year.
- Industrial is now the second-highest contributor to TUMF collections.
- WRCOG staff are continuing to work with member agencies in the transition to take over the TUMF calculation/collection process.

The Economy and Financial Markets

- Richard Babbe from Public Financial Management spoke on the economy and the general consensus is that the economy has strengthened over the past year, unemployment is at a 49-year low, and interest rates have risen sharply with no expectation for them to go down. Trade concerns, higher interest rates, and geo-political events could impact longer-term economic growth.

Items for Future Agenda

- The Finance Directors Committee expressed an interest in hearing from the Sheriff about upcoming rates and how they will effect each jurisdiction. The Committee also discussed hearing from Cal Fire. Terry Shea, City of Canyon Lake, offered to provide a GAAP update.

Next Meeting

The next meeting of the Finance Directors Committee is scheduled for Thursday, April 25, 2019, at 1:00 p.m., at WRCOG's office located at 3390 University Avenue, Suite 450, Riverside.

Page Intentionally Left Blank

Item 6.C

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **Western Community Energy Activities Update**

Contact: **Barbara Spoonhour, Deputy Executive Director – Operations, bspoonhour@wrcog.us, (951) 405-6760**

Date: **February 21, 2019**

The purpose of this item is to *provide an update on the status of implementing Western Community Energy (WCE), a Community Choice Aggregation, for participating jurisdictions in the subregion.*

Requested Action:

1. Receive and file.

Community Choice Aggregation (CCA) allows cities and counties to aggregate their buying power to secure electrical energy supply contracts on a region-wide basis. A CCA provides a choice for the community, which it does not currently have (unless their community is served by a separate public utility). Under a CCA, residents and businesses can choose from new rates and power sources (which are often more renewable) offered by the CCA, or they can choose to stay with SCE. Local jurisdictions, by participating in a CCA, allow for their businesses and residents to voluntarily make these choices. Importantly, a CCA also provides local control over rate setting and programs by locally elected city councilmembers. Rates and programs would be designed and implemented at the local level, at local public meetings, where members of the public who are living within the CCA boundaries can readily participate.

Background

Over the past six months, the WCE Board of Directors has been meeting to adopt policies and provide staff and its consultants direction on various data inputs (i.e., energy mixture, rate savings goals, etc.) needed for an April 2020 launch. To date, all assumptions regarding a savings off the bottom line of SCE's utility bills remains intact.

Current WCE member jurisdictions are expected to save its residents and businesses over $6 million per year.

Update

The Board of Directors remains interested in having other jurisdictions (whether members of WRCOG or outside the subregion) join our efforts. Please contact WRCOG staff if your jurisdiction is interested in joining Western Community Energy.

Any jurisdiction that joins in 2019 will not be able to begin service until 2021 (compared to April 2020 for the current members) but it would be able to participate in the many policy decisions that will take place between now and that subsequent launch period.

The below graph outlines the timeline to a 2021 launch.

Timeline to a 2021 Launch

What drives the timeline?

ANSWER

CPUC Resolution E-4907

- Jurisdictions must submit an Implementation Plan or Revised Implementation Plan by January 1st in order to have the ability to launch the year following (i.e., 2021).

Prior Action:

January 17, 2019: The Technical Advisory Committee received and filed.

Fiscal Impact:

This item is for informational purposes only; therefore, there is no fiscal impact.

Attachment:

None.

Item 6.D

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **Regional Streetlight Program Activities Update**

Contact: **Daniel Soltero, Staff Analyst, dsoltero@wrcog.us, (951) 405-6738**

Date: **February 21, 2019**

The purpose of this item is to *provide an update on the Western Riverside County streetlight acquisition and transition, and on jurisdictions who have acquired their streetlights and are now starting the retrofit project.*

Requested Action:

1. Receive and file.

WRCOG's Regional Streetlight Program will assist member jurisdictions with the acquisition and retrofit of their Southern California Edison (SCE)-owned and operated streetlights. The Program has three phases: 1) streetlight inventory; 2) procurement and retrofitting of streetlights; and 3) ongoing operations and maintenance. A major objective of the Program is to provide cost savings to participating member jurisdictions.

Background

At the direction of the Executive Committee, WRCOG developed a Regional Streetlight Program allowing jurisdictions (and Community Service Districts) to purchase streetlights within their boundaries that are currently owned and operated by SCE. Once the streetlights are owned by the member jurisdiction, the lamps will be retrofitted to Light Emitting Diode (LED) technology to provide more economical operations (i.e., lower maintenance costs and reduced energy use).

Murrieta Streetlight Retrofit Starts Up

In late September 2018, Murrieta became the first City within Western Riverside County to fully acquire its approximately 6,400 lights from SCE. On February 11, 2019, the City became the first City to begin retrofitting its streetlights; the retrofit is anticipated to be completed by summer. The City will have Siemens retrofit the old lamps to LED fixtures and provide routine operations and maintenance to the streetlight systems. The City has selected low wattage residential fixtures to maximize energy efficiencies, utility bill savings, and mitigate any perceived change in lighting brightness by matching previous lighting outputs. A medium wattage fixture was selected for larger roadways that match previous lighting levels to meet the City's public safety goals. Overall, the City's GE LED fixture selection will significantly lower energy consumption and reduce electric utility costs for street lighting.

As part of the Program's services, WRCOG is providing GIS-support which includes a mobile and online application allowing for organized field work, verification of pole information, project tracking, and real-time retrofit updates to a project dashboard. The project dashboard pictured below is currently showing 105 streetlights which have been successfully retrofitted after only one and a half days. The yellow dots represent lights "to be retrofitted," and the dark-grey dots represent lights that "have been retrofitted without issue." The blue bars in the lower-middle portion of the dashboard represents the number of lights that have been retrofitted and the number of streetlights remaining in the retrofit queue.

Moreno Valley Update

In November 2018, the City of Moreno Valley acquired approximately 3,400 streetlights from SCE as the first of three acquisition phases. Due to the large number of streetlights within the City, a coordinated, phased-in approach for transitioning the streetlights from SCE to local control will occur. By utilizing ENCO Utility Services, the City's electric utility contractor, the City started the retrofit of its streetlights on December 18, 2018, and will continue installing GE LED fixtures through 2019. GE was selected to provide fixtures though a regional Request for Quotation (RFQ) process last year, from which the City selected a medium wattage residential fixture and a higher wattage fixture for larger roadways. Once the retrofit is completed with the current lighting selection, the City is anticipating lower costs for energy consumption, operations and maintenance, and improved roadway visibility throughout the City.

Prior Actions:

February 13, 2019: The Administration & Finance Committee received and filed.

February 4, 2019: The Executive Committee received and filed.

Fiscal Impact:

Activities for the Regional Streetlight Program are included in the Agency's adopted Fiscal Year 2018/2019 Budget in the Energy Department.

Attachment:

None.

Item 6.E

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **High-Cube Warehouse Trip Generation Study and Proposed TUMF Calculation Handbook Update**

Contact: **Daniel Ramirez-Cornejo, Program Manager, dramirez-cornejo@wrcog.us, (951) 405-6712**

Date: **February 21, 2019**

The purpose of this item is to *present a proposed adjustment to the High-Cube Warehouse component of the TUMF Calculation Handbook based on data from the Trip Generation Study.*

Requested Action:

1. Receive and file.

WRCOG's Transportation Uniform Mitigation Fee (TUMF) Program is a regional fee program designed to provide transportation and transit infrastructure that mitigates the impact of new growth in Western Riverside County. Each of WRCOG's member jurisdictions and the March JPA participates in the Program through an adopted ordinance, collects fees from new development, and remits the fees to WRCOG. WRCOG, as administrator of the TUMF Program, allocates TUMF to the Riverside County Transportation Commission (RCTC), groupings of jurisdictions – referred to as TUMF Zones – based on the amounts of fees collected in these groups, the Western Riverside County Regional Conservation Authority (RCA) and the Riverside Transit Agency (RTA).

Background

During the 2016 TUMF Nexus Study update process, staff received questions from several stakeholders regarding the TUMF calculation for fulfillment centers. In spring 2018, the Public Works Committee (PWC) requested that staff review the available data and undertake a study to provide additional information and potential support of an additional rate or calculation methodology in the TUMF Calculation Handbook for fulfillment centers and distribution centers. A subcommittee was formed consisting of representatives from the Cities of Eastvale, Jurupa Valley, Moreno Valley, Perris, and Riverside. The purpose of the subcommittee was to conduct a Trip Generation Study of sites within and around Western Riverside County and to determine if a separate component of the TUMF Calculation Handbook would be necessary for fulfillment centers.

WRCOG retained WSP to conduct a trip generation study at sites recommended by the members of the subcommittee. Traffic counts were collected at 16 sites over a 72-hour period for three midweek days beginning on June 26, 2018. In December 2018, staff provided a presentation on the findings of the study to the PWC. Since the presentation on this item to the PWC, staff has received comments from stakeholders. One comment regarding the square footage of a site resulted in a revision to the Trip Generation Study. Additional comments included the types of land uses of the sites selected for trip counts and whether these sites represent fulfillment centers. Staff would note that the land uses selected represent high-cube warehouses in the region and, for TUMF calculation purposes, this is generally the only information provided when a fee obligation is calculated. Since TUMF is assessed and/or collected at issuance of building permit, the end use of the development project is not known. For reference, comments received by WRCOG are included as Attachment 3 to this Staff Report.

The Trip Generation Study is included as Attachment 1 to this Staff Report. Findings of the data collection include:

- Daily trip generation rates for fulfillment centers are roughly 50% higher than the comparable rate for conventional trans load and short-term storage warehouses previously defined in the 10th edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.
  - Higher trip generation rates are the result of higher passenger car traffic at these sites.
- The data developed as part of this Study indicates that the trip generation rates for fulfillment centers in Riverside County are generally in the same order of magnitude as the average of all high-cube warehouse uses as described in the ITE Trip Generation Manual, 9th edition.

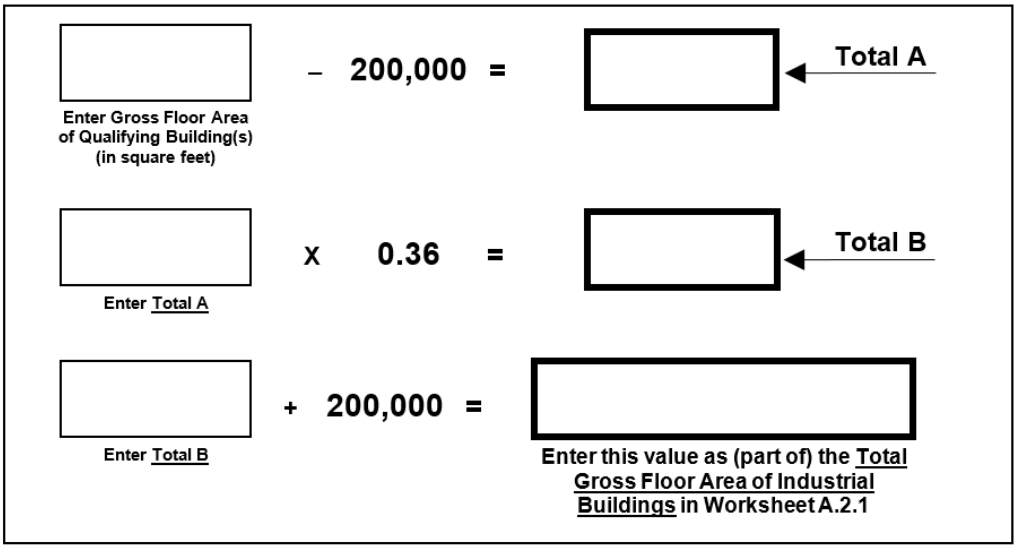
Category	Daily Trips per Thousand Square Feet			
	All Vehicles	Cars	Trucks	5+ Axle Trucks
2016 High-Cube Warehouse Study by ITE / NAIOP / SCAQMD				
Transload, Short-Term Storage (91)	1.432	1.000	0.454	0.233
Cold Storage (9)	2.115	1.282	0.836	0.749
Fulfillment Center (1)	8.178	7.461	0.717	0.242
Parcel Hub (1)	10.638	6.631	4.007	0.982
Current Study				
Fulfillment Center (11)	2.129	1.750	0.379	0.217

Proposed Adjustment to High Cube Warehouse Calculation

Based on the results of the Trip Generation Study and recommendation by the subcommittee, staff does not recommend the inclusion of a separate component of the TUMF Calculation Handbook for fulfillment centers. However, staff does recommend an adjustment to the current High-Cube Warehouse TUMF calculation component in the TUMF Calculation Handbook to better accommodate the data gathered in this Study regarding the higher number of trips generated by large fulfillment centers. This approach would recognize that fulfillment centers are a subset of the general High-Cube Warehouse Fee calculation category.

The proposed adjustment to the calculation worksheet for high-cube warehouses would increase the multiplier from 0.32 to 0.36 and is as follows:

Worksheet A.2.8 High-Cube Warehouse TUMF Calculation Worksheet



For High-Cube warehouses that are approximately 250,000 square feet, this update would result in an approximately $3,500 difference, or an approximately 1% increase in fees. For larger projects, such as a one million square foot warehouse, this update would increase fees by approximately $56,000, representing an approximate 7% increase based on current fees.

For reference, attached to this Staff Report is the adjusted component of the TUMF Calculation Handbook for High-Cube Warehouses (Attachment 2).

Prior Action:

December 13, 2018: The Public Works Committee directed staff to adjust the High-Cube Warehouse component of the TUMF Calculation Handbook with the data from the Trip Generation Study.

Fiscal Impact:

Transportation Department activities are included in the Agency's adopted FY 2018/2019 Budget under the Transportation Department.

Attachments:

1. Trip Generation Study.
2. TUMF Calculation Handbook – High Cube Warehouse.
3. Trip Generation Study – Stakeholder comments.

Page Intentionally Left Blank

Item 6.E

High-Cube Warehouse Trip Generation Study and Proposed TUMF Calculation Handbook Update

Attachment 1

Trip Generation Study

Page Intentionally Left Blank

Technical Memorandum

To: Daniel Ramirez-Cornejo, Program Manager, WRCOG

From: Billy Park, Supervising Transportation Planner, WSP

Subject: **TUMF High-Cube Warehouse Trip Generation Study**

Date: January 29, 2019

Background

High-cube warehousing is emerging as an important development type in the Inland Empire. Studies such as Logistics & Distribution: *An Answer to Regional Upward Social Mobility*[1] and *Multi-County Goods Movement Action Plan*[2] suggests that this trend is likely to increase over time due to the Inland Empire's relative abundance of suitable sites compared to coastal counties.

A recurring analytical problem for the analyses of traffic impacts associated with proposed high-cube warehouses is the lack of reliable data regarding the number and vehicle mix of trips generated by this land development type. Specifically:

- The *2003 Fontana Truck Trip Generation Study*, which has been used for years by agencies in the Inland Empire, is based on the older type of high-cube warehouse. Newer warehouses generally are larger (often over 1 million square feet), much more automated, and generate far fewer trips per square foot.
- The use of overly-conservative estimates has produced results that were unreasonable when compared to actual field conditions. For example, the Environmental Impact Report (EIR) for the Skechers high-cube warehouse building in Moreno Valley included traffic forecasts that were substantially higher than the actual post-construction trip generation for both cars and trucks. Overstated forecasts are misleading to decision makers and could result in oversized infrastructure that could itself have environmental consequences, creates an undue burden on development, and could even have adverse legal consequences for the agencies involved.
- In 2011 the Commercial Real Estate Development Association, also known by its former acronym NAIOP, commissioned a trip generation study of high-cube warehouses focused on large highly-automated warehouses in the Inland Empire. NAIOP had hoped that their study, which found trip-gen rates considerably lower than previous studies, would be used in CEQA analyses going forward. However, concerns about potential bias by the sponsoring party have placed into question the validity of the study results. Similarly, a study commissioned by SCAQMD was viewed as possibly having an anti-development bias.
- Finally, in 2015 NAIOP and SCAQMD jointly sponsored a trip-gen study for high-cube warehouses through a respected neutral party, the Institute of Transportation Engineers (ITE). The report for this study, *High-Cube Warehouse Vehicle Trip Generation Analysis*, was completed in 2016.

The joint NAIOP/SCAQMD/ITE study resulted in a consensus on the trip generation rates to be used for the most common type of high-cube warehouse, a category they call "transload and short-term storage". The findings of the joint study generally indicated the trip generation rates for this use as being consistent with the trip generation rates for the broader category of high-cube warehouses as described by ITE in the 9th Edition of the *Trip*

[1] *Logistics & Distribution: An Answer to Regional Upward Social Mobility*, Dr. John Husing for SCAG, June 2004
[2] *Multi-County Goods Movement Action Plan*, Wilbur Smith Associates, August 2008

Generation Manual. However, the report did not settle the issue of trip generation rates for two other specific types of high-cube warehouses:

> *"The single data points for fulfillment centers and parcel hubs indicate that they have significantly different vehicle trip generation characteristics compared to other HCWs. However, there are insufficient data from which to derive useable trip generation rates."*

The purpose of this technical memorandum is to gather sufficient data to develop reliable trip generation rates for fulfillment centers and parcel hubs for use in traffic impact studies in the Inland Empire.

Methodology

Number of Sites: The study team reviewed ITE's *Trip Generation Handbook 2nd* Edition, Chapter 4 of which describes how to perform a trip generation study that meets ITE's standards (which improves the defensibility of the results if they are used for CEQA analyses). ITE recommends that at least three sites, and preferably five, be surveyed for a given land use category. Based on the review of candidate sites identified by Western Riverside Council of Governments (WRCOG) staff, it was recommended that data be collected at a total of 16 sites for the purposes of this study.

Independent Variables: ITE's Trip Generation Manual measures the size of proposed developments using more than a dozen different independent variables, such as students (for schools), acres (for parks), etc. All High-Cube related categories in both 9th and 10th Editions of the Trip Generation Manual are reported in Square Foot Gross Floor Area (GFA) measured in thousands of square feet (TSF), which is also the independent variable used for the TUMF program. Some other ITE employment categories use employment as the independent variable, as does SCAG in its Sustainable Communities Strategy. WRCOG provided GFA for all sites and employment data for eight fulfillment centers and one parcel hub site.

The ITE *Trip Generation Manual* typically reports trip generation rates two ways; namely as the average rate and using the "best fit" mathematical relationship between the number of trips generated and the independent variable. R-squared, also known as the coefficient of determination, is used to measure how well the best fit equations match the surveyed traffic counts. The *Trip Generation Manual* recommends that the best fit equation only be used when the R^2 is greater than or equal to 0.50 and certain other conditions being met; otherwise the average rate should be used.

Data Collection

WRCOG provided a list of recommended trip generation study sites after reviewing potential sites within the Inland Empire with its member agencies. The list included 11 fulfillment centers and 5 parcel hub sites as follows:

Fulfillment Centers

1. Walmart: 6750 Kimball Ave, Chino, CA 91708
2. Amazon: 24208 San Michele Rd, Moreno Valley, CA 92551
3. Lineage Logistics: 1001 Columbia Ave Riverside, CA 92507
4. P&G: 16110 Cosmos Street, Moreno Valley, CA 92551
5. Big 5: 6125 Sycamore Canyon Blvd, Riverside, CA 92507
6. Nestle USA: 3450 Dulles Drive, Jurupa Valley, CA
7. Home Depot: 11650 Venture Drive, Jurupa Valley, CA
8. ACT Fulfillment Center: 3155 Universe Drive, Jurupa Valley, CA
9. Petco: 4345 Parkhurst Street, Jurupa Valley, CA
10. Komer: 11850 Riverside Drive, Jurupa Valley, CA
11. Ross: 3404 Indian Ave Perris, CA 92571

Parcel Hubs

12. UPS: 15801 Meridian Pkwy, Riverside, CA 92518
13. FedEx: 330 Resource Dr, Bloomington, CA 92316
14. FedEx Freight: 12100 Riverside Drive, Jurupa Valley, CA
15. UPS Chain Logistics: 11811/11991 Landon Drive, Jurupa Valley, CA
16. DHL: 12249 Holly St N, Riverside, CA 92509

Traffic counts were collected at all of these sites. These were 72-hour driveway counts collected using video cameras for three-midweek days starting June 26, 2018. Video collection was determined to be preferable to collection data by means of machine counts, which can be problematic for driveways where vehicles are maneuvering at slow speeds. Video counts provide the ability for human viewers to review the captured footage to classify vehicles into 5 types (car, large 2-axle, 3-axle, 4-axle, and 5+ axle truck). The three-day average was calculated and used for the purposes of this study.

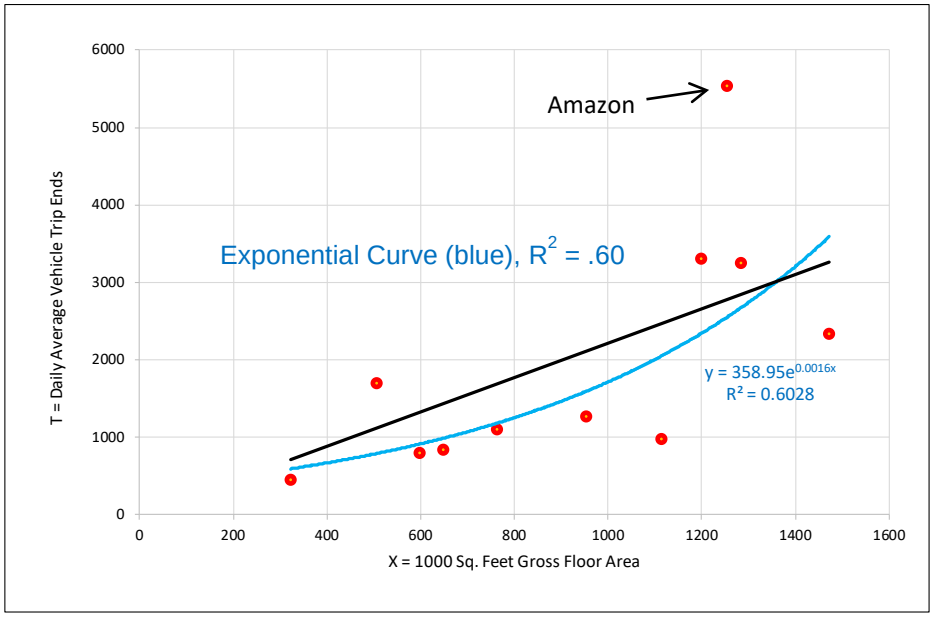
Fulfillment Centers

By Building Size

Exhibit 1 displays a data plot of daily vehicle trips for the 11 fulfillment centers against building size as the independent variable. The average trip generation rate for fulfillments centers (see black line in Exhibit 1) was found to be 2.2 trips/TSF, compared to the 1.4 trips/TSF found for conventional high-cube warehouses in the ITE/SCAQMD/NAIOP study (i.e. about 50% higher).

Exhibit 1 denotes one outlier data point representing the Amazon site in the upper right of the chart. As shown, the average daily trips generated at this facility is over 50% higher than the trips generated at the two sites of similar size (Walmart and Ross), which appears indicative of a greater frequency of same day e-commerce deliveries from Amazon to individual consumers.

Exhibit 1: Data Plot for Daily Total Vehicle Trip Ends against Building Size (Fulfillment Center)



The best fit equation was an exponential relationship with R^2 of 0.60 (i.e. high enough to meet the criteria of acceptability). This is shown as a blue line in Exhibit 1. An exponential relationship, meaning that the larger the

building the higher the trip generation rate, is quite unusual. Exhibit 2 takes a deeper look at this by showing the daily vehicle trip generation rates for each of the 11 surveyed fulfillment centers sorted by the smallest to the largest building size from left to right. As shown, small sites tend to generate fewer trips per thousand square feet, but higher percentage of trucks. On the other hand, largest sites tend to generate a higher number of car trips, but fewer truck trips. So not only is the overall trip generation rate affected by building size, the vehicle mix is affected as well.

Exhibit 2: Daily Vehicle Trip Generation Rates by Building Size for Each Fulfillment Center

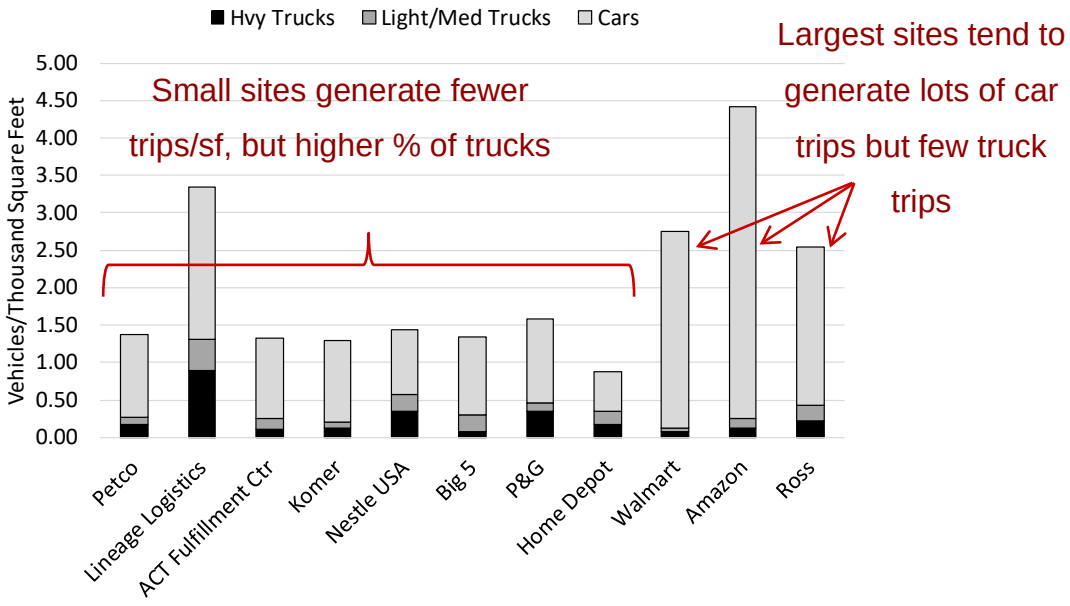


Exhibit 3 and Exhibit 4 show data plots for AM and PM peak hour vehicle trip ends against building size (respectively). The fitted curves had a low R^2, and so we recommend using the average rate.

Exhibit 3: Data Plot for AM Peak Hour Vehicle Trip Ends against Building Size (Fulfillment Center)

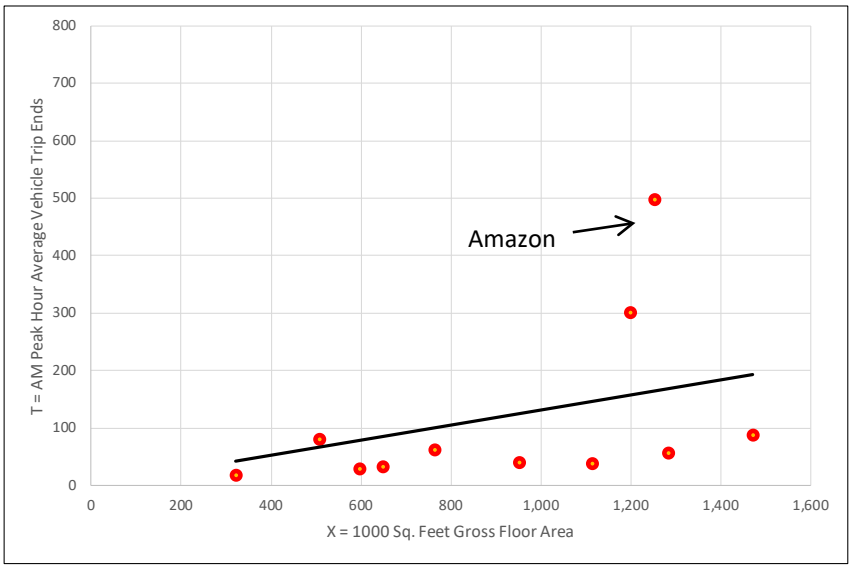


Exhibit 4: Data Plot for PM Peak Hour Vehicle Trip Ends against Building Size (Fulfillment Center)

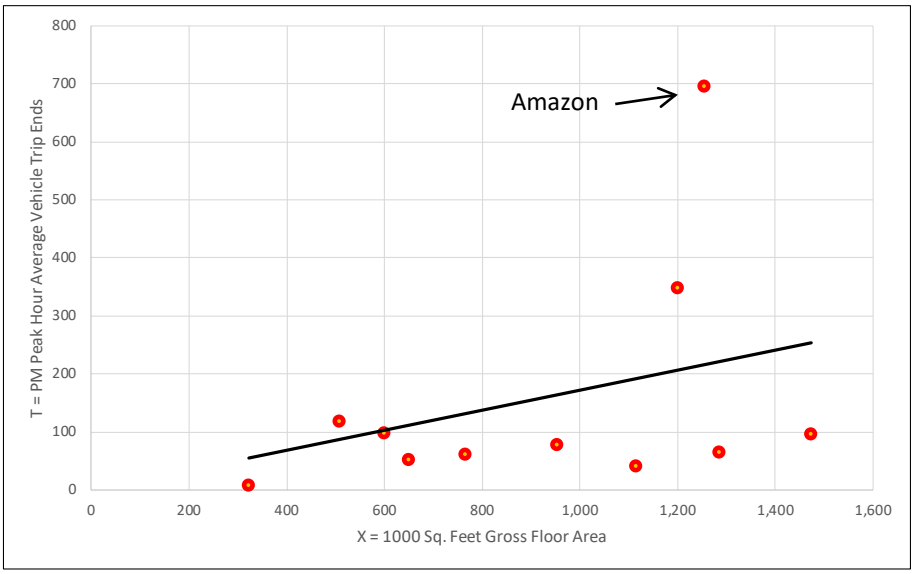
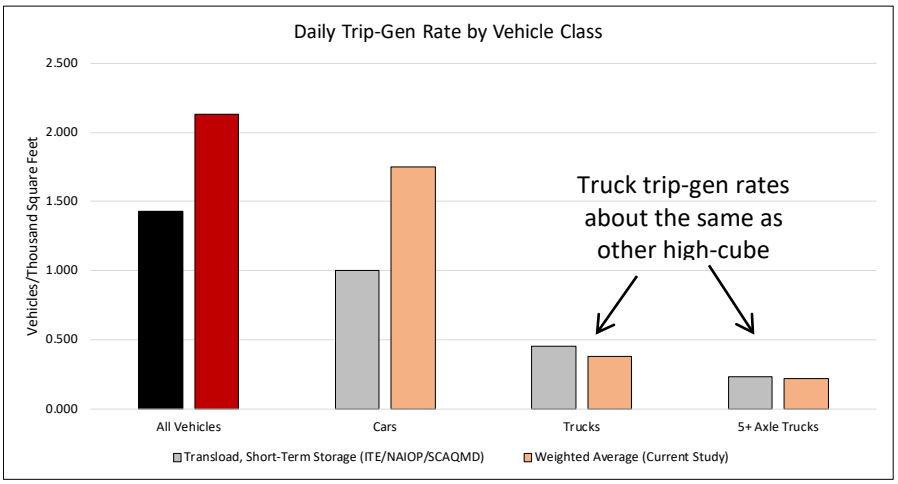


Exhibit 5 compares the average trip generation rates of 11 fulfillment centers with the rates found for conventional transload and short-term storage warehouses in the 2016 high-cube warehouse trip generation study[3] by SCAQMD/NAIOP/ITE. As shown, the fulfillment centers generate more daily vehicle trips than conventional warehouse facilities although trucks are roughly the same. This means that the additional trips by fulfillment centers are entirely due to additional car traffic, which is almost double the rate of car trips generated by conventional warehouses.

Exhibit 5: Conventional Warehouse vs Fulfillment Centers



Visual observation of the fulfillment center sites indicates the higher trip generation rates for cars appears to be mostly due to the use vans and passenger cars as delivery vehicles, particularly for the larger facilities operated by retailers such as Amazon and Walmart.

[3] *High-Cube Warehouse Vehicle Trip Generation Analysis*, Institute of Transportation Engineers, 2016

Exhibit 6 summarizes the AM and PM peak hour trip rates and the daily rates for fulfillment centers based on the findings of this study, and compares the results to rates for conventional transload and short-term storage warehouses.

Exhibit 6: Summary of Trip Generation Rates per Thousand Square Feet of Gross Floor Area for Fulfillment Centers

Vehicle Class	AM Peak Hour		PM Peak Hour		Daily	
	Conventional Warehouse*	Fulfillment Center	Conventional Warehouse	Fulfillment Center	Conventional Warehouse	Fulfillment Center
Cars	0.057	0.103	0.086	0.144	1.000	1.750
2-4 Axle Trucks	0.009	0.008	0.013	0.011	0.221	0.162
5-Axle Trucks	0.015	0.011	0.010	0.010	0.233	0.217
Total	0.082	0.122	0.108	0.165	1.432	2.129
% Higher than Conventional		49%		52%		49%

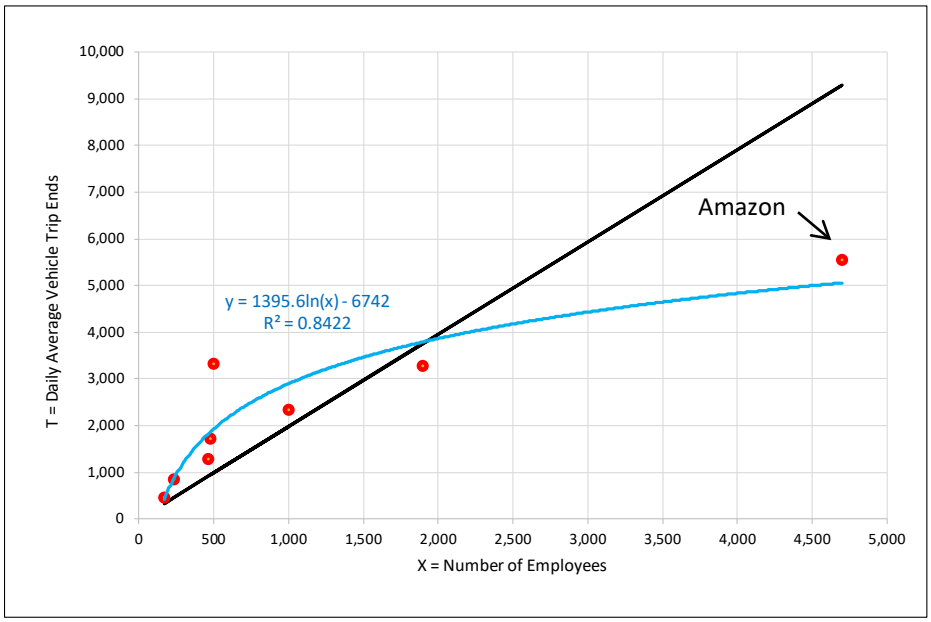
* Transload, Short-Term Storage category in 2016 TIE/ NAIOP/ SCAQMD study

By Employee

The WRCOG contacted the surveyed fulfillment centers and obtained employment data for eight of the eleven sites. Exhibit 7 shows a data plot for those eight sites for daily total vehicle trip ends against the number of employees. The best fit equation was logarithmic function which had an R^2 of 0.84, indicating a very good fit. Notably, the Amazon site, which was an outlier for trip generation based on floor area (see Exhibit 1), correlates more closely to other sites when employment is used instead. The average trip generation rate for fulfillments centers (represented by the black line in Exhibit 7) was found to be 2.0 trips/TSF

No comparison was made to any previous rates per employees because none of the previous high-cube warehouse related trip generation studies included correlation of trips with employment data.

Exhibit 7: Data Plot for Daily Total Vehicle Trip Ends against Employee (Fulfillment Center)



The data plots for the AM and PM peak hour total vehicle trip ends against the number of fulfillment center employees are shown in Exhibit 8 and Exhibit 9. The best fit equations are linear regressions (shown with black lines) which show a good R^2 for both the AM and PM peak periods.

Exhibit 8: Data Plot for AM Peak Hour Total Vehicle Trip Ends against Employee (Fulfillment Center)

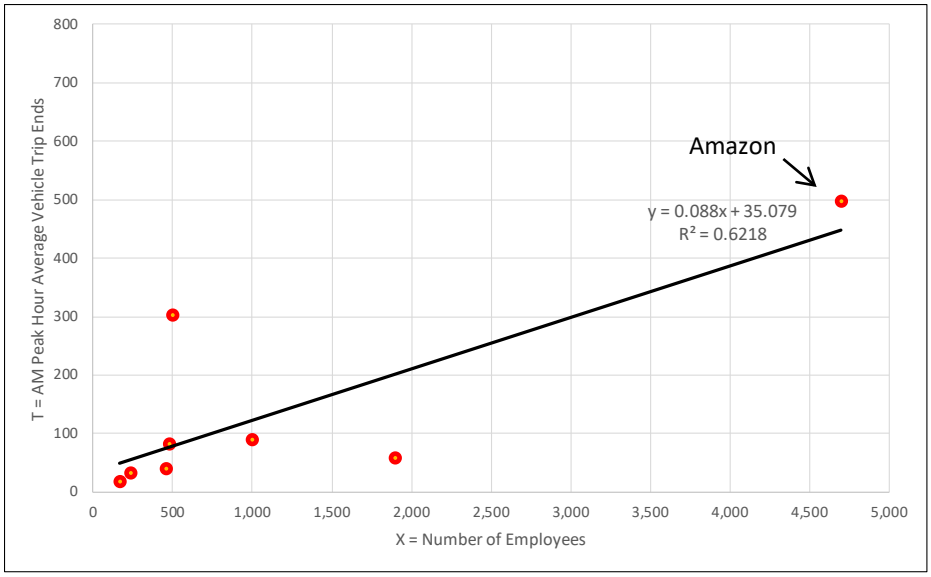


Exhibit 9: Data Plot for PM Peak Hour Total Vehicle Trip Ends against Employee (Fulfillment Center)

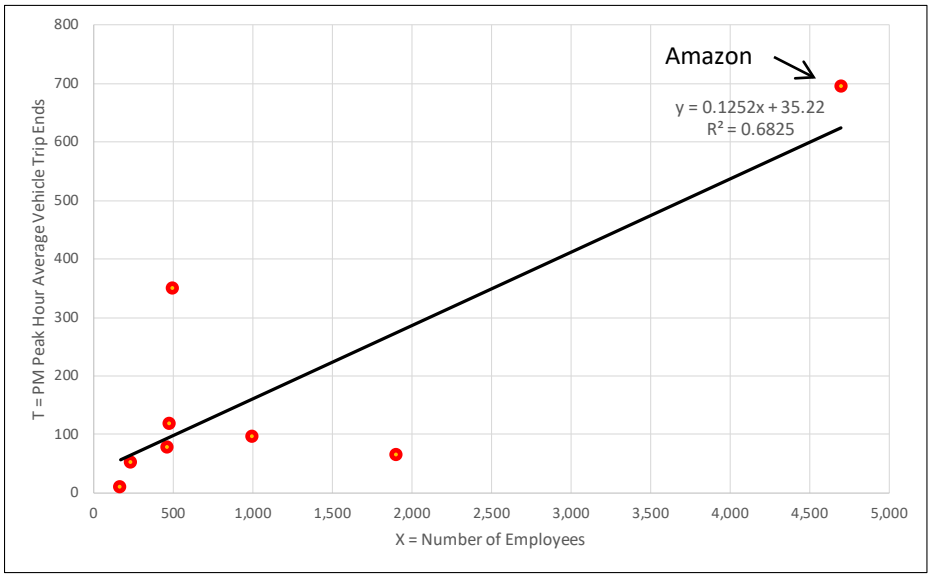


Exhibit 10 summarizes the AM and PM peak hour trip rates and the daily rates for trip generation per employee at fulfillment centers based on the findings of this study.

Exhibit 10: Summary of Trip Generation Rates per Employee for Fulfillment Centers

Vehicle Class	AM Peak Hour	PM Peak Hour	Daily
Cars	0.102	0.139	1.673
2-4 Axle Trucks	0.006	0.008	0.125
5-Axle Trucks	0.009	0.008	0.178
Total	0.118	0.155	1.977

Parcel Hubs

By Building Size

Exhibit 11 displays daily vehicle trip generation rates by building size for each of five parcel hub sites. They are sorted by the smallest to the largest building size from left to right. In this case the small sites generate significantly more trips of every kind than the larger sites, which is the opposite to the pattern observed for fulfillment centers.

Exhibit 11: Daily Trip Generation Rates at Parcel Hubs

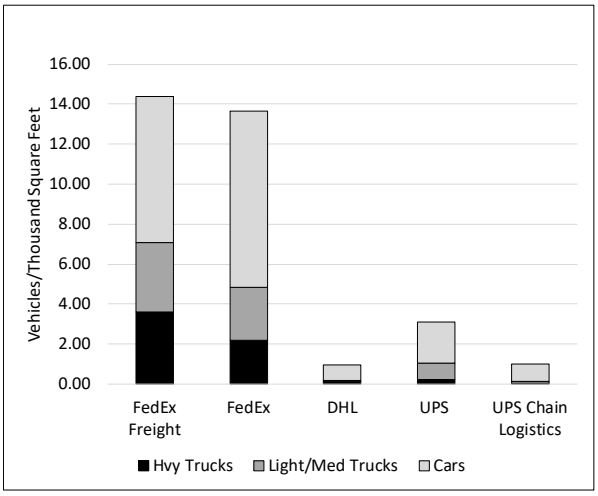


Exhibit 12 shows a data plot of daily vehicle trips of five parcel hubs against building size. As shown, a linear best fit was negative. During the collection of traffic data, construction activity was observed at the FedEx site potentially tainting the validity of these data to represent typical trip generation characteristics. To determine if the trip generation at this site was contributing to the poor data correlation, Exhibit 13 displays the same daily data plot without the FedEx site. The linear best fit shows a positive slope, but remains almost flat effectively indicating no correlation between the daily trips and building size based on the analysis of these sites.

The basic premise of the ITE trip generation approach is that the number of trips generated by a project is proportional to its size. That premise does not hold true for the parcel hubs in this sample and so no meaningful trip generation rates could be determined based on the data collected in support of this study. It should be recognized that a sample size of four or five sites represents the minimum recommended by ITE for valid trip generation studies, and for this reason, it is recommended that additional sites would need to be investigated and included in the data set to develop a more definitive finding on trip generation rates. Furthermore, it may be appropriate to determine the specific function at each site, due to the disparity between the rates observed at the FedEx sites versus the other three sites. It is likely that the function served by the respective sites is significantly different, as reflected in the trip generation rates, thereby necessitating reclassification of these uses for comparative purposes.

Exhibit 12: Data Plot for Daily Total Vehicle Trip Ends against Building Size (Parcel Hubs)

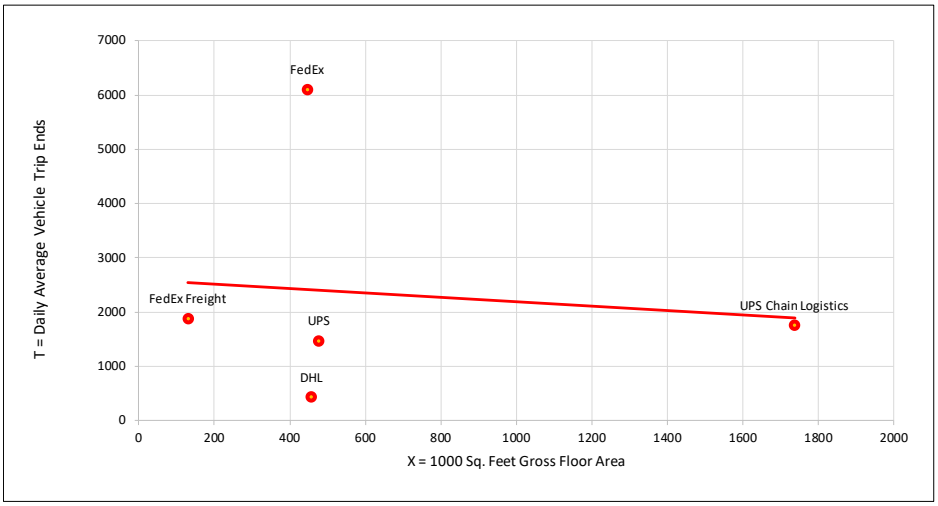
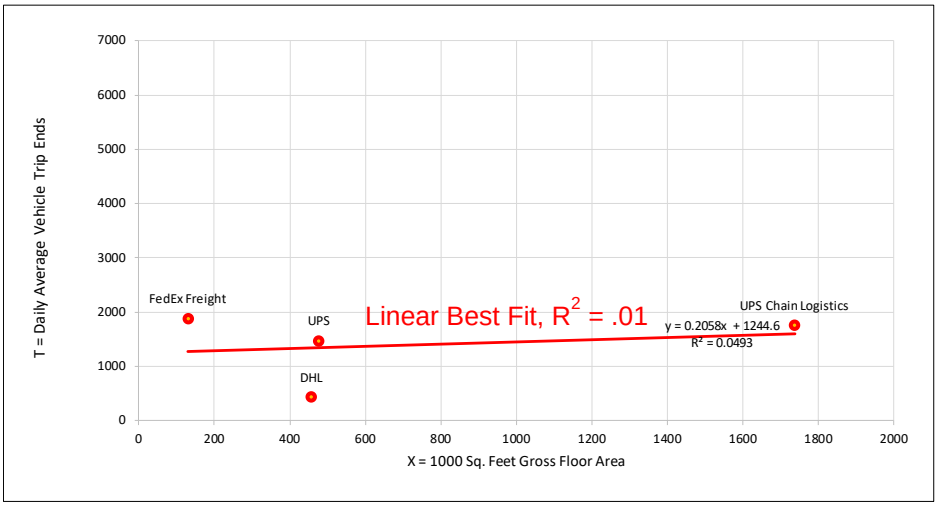


Exhibit 13: Data Plot for Daily Vehicle Trip Ends against Building Size without Construction Site



Conclusions

Our survey of 11 fulfillment centers produced trip generation rates based on the gross floor area of the sites that satisfies ITE's standards for use. The findings of the study indicate that the daily trip generation rates for fulfillment centers is approximately 2.1 trips per thousand square feet of gross floor area, which is roughly 50% higher than the comparable rate for conventional transload and short term storage warehouses previously defined in the ITE *Trip Generation Manual* Version 10. The results of the study further indicate that the higher rates were entirely due to more cars traffic at these sites; the trip generation rates for trucks was found to comparable to those at conventional warehouses.

Employment data were available for eight out of 11 fulfillment center sites. This provided the ability to determine trip generation rates per employee. The study results indicate that that trip generation for fulfillment centers is approximately 2.0 trips per employee. The study also found that the trip generation rate per employee correlated more closely that the trip generation rate per thousand square feet of gross floor area.

The data from the five parcel hubs did not show any statistically meaningful relationship between trips and building size. Therefore, no trip generation rate could be calculated. However, the data collected at these sites may provide a useful basis for further comparison with additional sites to provide more data points for analysis.

Page Intentionally Left Blank

Item 6.E

High-Cube Warehouse Trip Generation Study and Proposed TUMF Calculation Handbook Update

Attachment 2

TUMF Calculation Handbook – High Cube Warehouse

Page Intentionally Left Blank

1.1. High-Cube Warehouses

1.1.1. Summary

For the purpose of determining the TUMF obligation, all types of high-cube warehouses, including fulfillment centers, transload and short-term storage warehouses and other similar distribution facilities will be considered industrial use types. The methodology outlined in **Worksheet A.2.8** and described as follows will be applied to determine the equivalent floor area for high-cube warehouses/fulfillment centers with a minimum gross floor area of 200,000 square feet, a minimum ceiling height of 24 feet and a minimum dock-high door loading ratio of 1 door per 10,000 square feet *(for the example calculation assume a high-cube warehouse with a gross floor area of 450,000 square feet, a ceiling height exceeding 24 feet and a dock-high door loading ratio exceeding 1:10,000)*:

1. Subtract 200,000 square feet from the total gross floor area
   (*i.e. for the example facility it is 450,000 – 200,000 = 250,000 square feet*)
2. Multiply the resultant value from step 1 which is total gross floor area in excess of 200,000 square feet by 0.36
   (*i.e. for the example facility it is 250,000 x 0.36 = 90,000 square feet*)
3. Add 200,000 square feet to the resultant value of step 2
   (*i.e. for the example facility it is 200,000 + 90,000 = 290,000 square feet*)
4. Use the resultant value of step 3 as the gross floor area to calculate the TUMF obligation using **Worksheet A.2.1** for standard non-residential fee calculations.

The TUMF obligation for a warehouse facility with a gross floor area of less than 200,000 square feet, a ceiling height of less than 24 feet and/or a dock-high door loading ratio of less than 1 door per 10,000 square feet will be calculated based on the actual gross floor area using **Worksheet A.2.1** for standard non-residential fee calculations. Furthermore, where other uses such as wholesale showrooms, retail showrooms or office suites are co-located with qualifying high-cube warehouse facilities, only the qualifying warehouse portion of the premises will be calculated using **Worksheet A.2.8**. The fee obligation for all other co-located facilities will be calculated based on the actual gross floor area and the appropriate land use category using **Worksheet A.2.1** for standard non-residential fee calculations.

1.1.2. Detailed Narrative

High-cube warehouses are primarily for the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. These facilities typically have a high level of on-site automation and logistics management enable highly-efficient processing of goods through the facility. High-cube warehouses include, but may not be limited to, the following types of facilities:

- High-cube transload and short-term storage facilities typically provide for consolidation and distribution of loads for manufacturers, wholesalers or retailers.

Transload and short-term storage facilities typically provide limited storage duration, high throughput and high-efficiency distribution.

- Fulfillment centers include high-cube warehouses typically characterized by significant storage and direct distribution of ecommerce products to the end users. These facilities typically handle smaller packages and quantities than other types of high-cube warehouses.
- High-cube parcel hub warehouses typically serve as regional and local freight-forwarding facilities of time sensitive shipments via air freight and ground carriers. These sites may also include truck maintenance, wash, and/or fueling facilities ancillary to the primary use of the site.
- High-cube cold storage warehouses are facilities that provide temperature-controlled environments for the storage and distribution of frozen foods or other perishable products.

For the purpose of determining the TUMF obligation, all high-cube warehouses are defined as follows:

> *Very large shell buildings commonly constructed using steel framed and/or concrete tilt-up techniques with a minimum gross floor area of 200,000 square feet, a minimum ceiling height of 24 feet and a minimum dock-high door loading ratio of 1 door per 10,000 square feet.*

In accordance with Section 6.2 and Appendix B of the Transportation Uniform Mitigation Fee Nexus Study 2016 Update Final Report (Western Riverside Council of Governments, As Adopted July 10, 2017), high-cube warehouses are considered to be industrial use types with the primary use of the facility generally meeting the description of Motor Freight Transportation and Warehousing (SIC Major Category 42). The TUMF obligation for industrial (and all non-residential) land uses is based on the gross floor area of buildings associated with the specific land use and is calculated using **Worksheet A.2.1** for standard non-residential fee calculations. However, in the case of high-cube warehouses, vehicle trips generated to and from the site are typically lower than traditional industrial uses due to the high-level of on-site automation and logistics management. For this reason, it is necessary to determine the gross floor area equivalency for the purpose of calculating the TUMF obligation.

A review of Trip Generation 9th Edition (Institute of Traffic Engineers, 2012) indicates the average weekday daily trip generation rate for high-cube warehouses is 1.68 trips per thousand square feet, while the weekday PM peak-hour trip generation rate for the same uses is approximately 0.16 trips per thousand square feet of building area. By comparison, traditional warehouse uses have a weekday daily trip generation rate of 3.56 trips per thousand square feet, and PM peak-hour trip generation rates of 0.45 trips per thousand square feet and 0.58 trips per employee. A study of the trip generation characteristics of fulfillment centers in the Inland Empire of Southern California completed in January 2019 by WSP for the Western Riverside Council of Governments (WRCOG) found trip generation rates of these facilities to be generally consistent with the rates prescribed in Trip Generation 9th Edition for all high-cube warehouse uses, with an average weekday daily trip generation rate of 2.13 trips per thousand square feet and an average weekday PM peak rate of 0.16 trips per thousand square feet.

Table 5.7 summarizes the various characteristics of high-cube warehouses, including trip generation, and establishes the equivalent square feet for the purpose of calculating the TUMF obligation for all high-cube warehouse facilities.

Table 5.7 – Characteristics of High-Cube Warehouses and Distribution Centers

Land Use Type	*Average Daily Vehicle Trips per 1,000 sqft*	*Average PM Peak Vehicle Trips per 1,000 sqft*	*Average PM Peak Trips per Employee*	*TUMF Weighted Equivalent sqft **
Warehousing (i) (150)	3.56	0.45	0.58	
High-Cube Warehouse (i) (152)	1.68	0.16		*0.36*
Fulfillment Centers (ii)	2.13	0.16	0.16	
Warehouse/Distribution Center (iii)	1.10	0.08		
All TUMF Industrial Use Types (i)	5.33			

Source: (i) Trip Generation 9th Edition, Institute of Traffic Engineers, 2012
(ii) TUMF High-Cube Warehouse Trip Generation Study, WRCOG, January 2019
(iii) San Bernardino/Riverside County Warehouse/Distribution Center Vehicle Trip Generation Study, Crain and Associates, January 2005

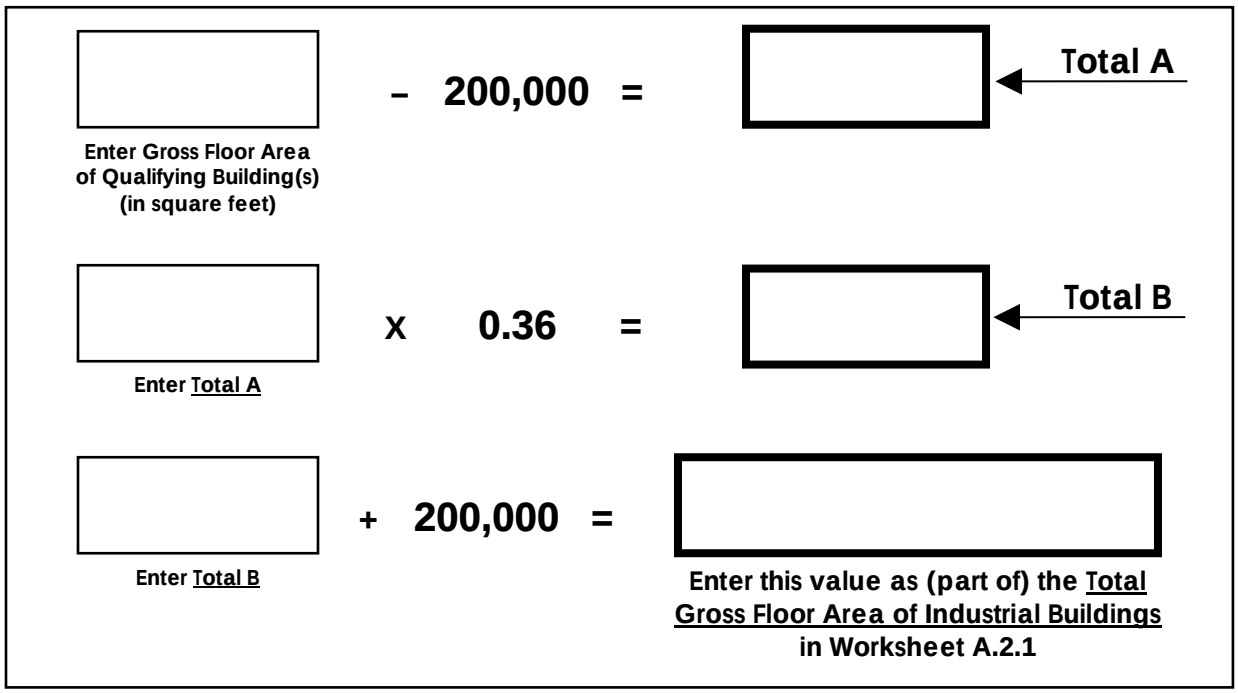
Note: * - TUMF weighted equivalent square feet based on relative trip generation per 1000 sqft between the average of High-Cube Warehouse and Fulfillment Centers and the median of all TUMF Industrial Uses (consistent with TUMF Nexus Study Trip Generation Rate Comparison).

The gross floor area equivalency for High-Cube Warehouses is based on the average of the trip generation characteristics of High-Cube Warehouse, which is quantified in the Trip Generation 9th Edition in terms of both daily and peak trips per thousand square feet gross floor area, and Fulfillment Centers, which is quantified in the TUMF High-Cube Warehouse Trip Generation Study in terms of both daily and peak trips per thousand square feet gross floor area as well as per employees. Based on this information, the simple average daily trip generation rate for a high-cube warehouse, including fulfillment centers, is approximately 1.90 trips per thousand square feet of gross floor area. To account for the variation in trip generation rates between high-cube warehouses, including fulfillment centers, and all TUMF industrial land use types, the gross floor area equivalency was weighted based on the relative trip generation between high-cube warehouses, including fulfillment centers, and the median of all TUMF Industrial Uses as used in the TUMF Nexus Study. The weighted gross floor area equivalency for high-cube warehouses is 0.36.

For the purpose of calculating the TUMF obligation for *High-Cube Warehouses* with a minimum gross floor area of 200,000 square feet, a minimum ceiling height of 24 feet and a minimum dock-high door loading ratio of 1 door per 10,000 square feet, the gross floor area *in excess of 200,000 square feet* will be multiplied by *0.36* and the resultant value *increased by 200,000 square feet* to determine the equivalent number of square feet of floor area. The *equivalent floor area will be used for the purpose of calculating the TUMF* at the rate prescribed by the respective local jurisdictions TUMF Ordinance and supported by the TUMF Nexus Study. For example, a high-cube warehouse with a gross floor area of 450,000 square feet, a ceiling height exceeding 24 feet and a dock-high door loading ratio exceeding 1:10,000 (for the example facility it is at least 45 dock-high door loading bays i.e. 450,000/10,000 = 45) the equivalent floor area would be 290,000 square feet ({[450,000 - 200,000] x 0.36} + 200,000 = 290,000)

The TUMF obligation for a warehouse facility with a gross floor area of less than 200,000 square feet, a ceiling height of less than 24 feet and/or a dock-high door loading ratio of less than 1 door per 10,000 square feet will be calculated based on the actual gross floor area using **Worksheet A.2.1** for standard non-residential fee calculations. Furthermore, where other uses such as wholesale showrooms, retail showrooms or office suites are co-located with qualifying high-cube warehouse facilities, only the qualifying warehouse portion of the premises will be calculated using **Worksheet A.2.8**. The fee obligation for all other co-located facilities will be calculated based on the actual gross floor area and the appropriate land use category using **Worksheet A.2.1** for standard non-residential fee calculations.

Worksheet A.2.8 High-Cube Warehouse TUMF Calculation Worksheet



Item 6.E

High-Cube Warehouse Trip Generation Study and Proposed TUMF Calculation Handbook Update

Attachment 3

Trip Generation Study – Stakeholder comments

Page Intentionally Left Blank

Daniel Ramirez-Cornejo

From: Frank Sherkow <fsherkow@earthlink.net>
Sent: Thursday, January 17, 2019 1:00 PM
To: Daniel Ramirez-Cornejo
Cc: 'Jonathan Shardlow'; Chris Gray; 'Sandipan Bhattacharjee, P.E., AICP'; Matt Englhard
Subject: RE: E-Commerce Trip Generation Rates
Attachments: Survey Trip Gen Average-01.16.19_v2.xlsx

Daniel:

Here are some preliminary results from our analysis. As you open the excel file, you will see a summary of facilities sorted by groups that we believe are relevant and as consistent as possible with ITE and sound traffic engineering practices. I will refer to items on this file/tab in this email.

1. We believe that the square footage used in the report for the P&G facility is wrong, and reflects the Floor & Décor company (next door). The real square footage for the P&G facility should be 1,560,046 SF.
2. We conducted a hand-count of the parking spaces using aerial photos from Google Maps.
3. The consultant's reports refers to the size of facilities' sites as the driving factor as to whether they are e-commerce (fulfillment) facilities and how much traffic they might generate. The bigger the site the more trips, they say. "Largest sites tend to generate lots of car trips but few truck trips." The size of the site is NOT the cause for more trips. The auto parking spaces per building SF is the real relationship. It is one of the key factors as to whether the building is/will be e-commerce vs. High Cube Distribution Center. When reviewing a site plan, does it have a large number of auto parking spaces or not? Directly related is also the Total Trips (employees) per 1,000 SF. More goods handling will necessitate more employees, until/unless additional automation comes on the scene.

From our analysis, the group of facilities that were studied actually consists of 5 separate land use types or combinations of land uses:

a. Fulfillment centers (e-commerce) – Walmart (Chino) and Amazon (MV)
b. Distribution with Cold Storage (maybe mixed land uses on one site) – Walmart (Columbia Ave.)
c. Distribution without Cold Storage – P&G, Big 5, Home Depot, Nestles, Petco, Komar, ACT
d. Aggregation Distribution & Handling (probably mixed land uses on one site) – Ross
e. Parcel Hubs – FedEx, UPS, DHL

Referring to the spreadsheet column "S", note the significant differences between sub groups in Total Trips per 1,000 SF (building). True High Cube facilities (Distribution Centers without Cold Storage) will have a small trip rate, because there aren't as many employees per SF. Due to their efficiency of goods movements (with less handling), the truck traffic compared to all trips is a relatively high percentage for High Cube – see column "N". These trip rates are similar to those for Transloading or High Cube facilities in the ITE Trip Generation Handbook. They are also similar to previous data points collected by ITE and AQMD. They are NOT e-commerce of fulfillment facilities.

We know (from work with AQMD and ITE) that cold storage will have slightly higher trip rates, dependent on the type of goods (frozen vs. perishable). Clearly, the Walmart facility on Columbia Ave. is partially or totally cold storage. There is evidence online about its cold storage function.

The Ross facility (Perris) is a mixture of High Cube and goods handling (but not e-commerce). The trip rates and truck % is evidence of this. Ross's business model depends on selling goods that have been for sale in other stores. So, the facilities like the one in Perris are used to resort and regroup goods for sale in Ross stores. Thus, there are many more

employees than at High Cube facilities per SF, but less than an e-commerce building. This mixture is NOT a recognized ITE land use, so we have set it aside.

The only facilities that are acting like true Fulfillment Centers or E-commerce facilities are Amazon (MV) and Walmart (Chino). Note that both of these companies have other facilities that are more like High Cube or Cold Storage, and even Parcel Hub facilities. So, each site should be viewed separately. See column "N" for the small proportion of truck trips vs. total trips. Also see column "S" to compare the higher total trip rates compared to High Cube Distribution Centers (similar for column "Q").

For purposes of establishing traffic impacts or development fees, the group of facilities that the consultant studied does NOT represent Fulfillment Centers. This is also reinforced by the data plot diagrams from the consultant's report.

The other item of note is that true e-commerce facilities are a relatively small portion of the warehouses built or being developed. Even when a facility uses the label of "fulfillment center," it does not mean that it functions as, or has the necessary characteristics of, a true e-commerce facility.

In reference to Parcel Hubs, these facilities are different from other warehouse facilities in size, shape, height, and design. Thus, they can easily be identified as a separate group for your purposes.

We welcome your questions or comments. We hope you will share this information with members of the Public Works Committee.

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

Daniel Ramirez-Cornejo

From: Frank Sherkow <fsherkow@earthlink.net>
Sent: Friday, January 11, 2019 3:46 PM
To: Daniel Ramirez-Cornejo
Cc: 'Jonathan Shardlow'; Chris Gray; 'Sandipan Bhattacharjee, P.E., AICP'
Subject: RE: E-Commerce Trip Generation Rates

Daniel:

Thanks for the quick response.

On the P&G building, here is what we had in our data:

Tenant	Address Line 1	City	Building Total SF	Building Dock High Doors	Orignial Database - Parking Stalls
Floor & Décor	24101 Iris Avenue	Moreno Valley	1,103,003	166	400
P&G	24015 Iris Avenue	Moreno Valley	1,560,046	268	862

I believe that someone has used the Floor & Decor square footage for the P&G building in your excel spreadsheet. Can you clarify?

Are you aware of any transit usage to these site? Any signs of significant ridesharing at any of these sites? The reason I ask, is that when you take each site's daily traffic flow and divide by the number of employees, the results are very puzzling in some cases. Don't know if you really care about the employment levels, but they should be within reason ranges.

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

From: Daniel Ramirez-Cornejo [mailto:dramirez-cornejo@wrcog.us]
Sent: Friday, January 11, 2019 9:34 AM
To: Frank Sherkow
Cc: 'Jonathan Shardlow'; Chris Gray; 'Sandipan Bhattacharjee, P.E., AICP'
Subject: RE: E-Commerce Trip Generation Rates

Good morning Frank,

The employment numbers were provided by the agencies in which the sites are located.

We have also provided responses to your previous questions on two sites as shown below:

1. For the P&G site, the physical address is shown as 24015 Iris Ave, Moreno Valley, CA 92551. The driveways were selected based on the building called out in the aerial photo below. Cosmos Street is an internal road of the same property as shown in the aerial photo.

2. The below is a street view from Riverside Drive to the shared driveway of Komar (building on the left) and Damco (on the right). As shown, the access from Damco (on the right) to the shared driveway is prohibited. Komar does the same for the northern aisle (on the left).

For reference, all traffic counts were collected with video cameras.

-Daniel

Daniel Ramirez-Cornejo
Program Manager
Western Riverside Council of Governments
3390 University Ave., Suite 450
Riverside, CA 92501-3315

Phone: (951) 405-6712
www.wrcog.us

"Respect Local Control...Provide Regional Perspective"

From: Frank Sherkow <fsherkow@earthlink.net>
Sent: Wednesday, January 9, 2019 11:52 AM
To: Daniel Ramirez-Cornejo <dramirez-cornejo@wrcog.us>
Cc: 'Jonathan Shardlow' <Jonathan.Shardlow@GreshamSavage.com>; Chris Gray <cgray@wrcog.us>; 'Sandipan Bhattacharjee, P.E., AICP' <sandipan@translutions.com>
Subject: RE: E-Commerce Trip Generation Rates

Daniel:

Thanks for the update.

A few items. We know from our work on development activities and working with tenants, plus our work on traffic impact studies, that the employment levels at these (and most other sites) fluctuates based on a regular seasonal pattern. Since the traffic counts appear have been gathered in Aug. 2018, we understand that this would represent an off-peak season period. This period last about 10 months during the year, but can vary based on local circumstances.

Can you tell us how you determined the employment numbers from your spreadsheet?

Based on our very preliminary work on the information from the consultant's report and other data that we possess (omitting the parcel hubs for the time being), it appears that there is a mixture of High Cube, E-commerce, and Cold Storage facilities in the list provided (11 sites). Some individual sites may have a mixture of several of these land uses, and therefore, in our opinion, would not be good candidates for this type of analysis. They don't have a pure representation of any of the recognized ITE land uses, thus, it would be difficult to apply the trips rates (and other factors) to a broader analysis or draw generalized conclusions about this sites.

When AQMD and NAIOP conducted similar studies, we always made sure of two things: 1. The sites were as pure a representative land uses as possible (not a mixture, like cold storage and high cube), and 2. The site possess driveways that could be isolated for traffic counts.

Unfortunately, some of these facilities, from your list, violate one or both of these criteria.

We are continuing to dig, so stay tuned. Thanks.

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

From: Daniel Ramirez-Cornejo [mailto:dramirez-cornejo@wrcog.us]
Sent: Wednesday, January 9, 2019 11:26 AM
To: Frank Sherkow
Cc: 'Jonathan Shardlow'; Chris Gray; 'Sandipan Bhattacharjee, P.E., AICP'
Subject: RE: E-Commerce Trip Generation Rates

Hi Frank,

Thank you for your comments on WRCOG's High-Cube Warehouse Trip Generation Study with regard to use of the facilities in the study to represent e-commerce trip rates.

We wanted to give you some further background on the study, why we did it, and how the study was performed.

Back in 2017 the Nexus Study was approved, we received some broad direction from our Executive Committee to look into the issue of whether the Nexus Study and the TUMF Program accurately reflects impacts associated with industrial uses. There was some limited direction provided to Staff to look at different industrial uses such parcel hubs, distribution centers, etc. given the perception that these uses generate more trips than typical industrial or high-cube uses.

We convened a working group of local agency staff who recommended a series of locations they were familiar with and also worked with a consultant (WSP) to identify facilities that could be classified as either a distribution center or a parcel hub.

After that, we collected data for each of the sites and summarized the data. We then presented the information to first our working group and then our Public Works Committee to get their feedback. They also recommended that we not have a separate category for these types of uses.

We will be reaching out to WSP to provide a detailed response with respect to the questions below. As requested we are including the worksheet with the data from each facility.

We would be happy to answer any additional questions that you have regarding the work that we've done and will be doing in the future.

Thank you,

-Daniel

Daniel Ramirez-Cornejo
Program Manager
Western Riverside Council of Governments
3390 University Ave., Suite 450
Riverside, CA 92501-3315
Phone: (951) 405-6712
www.wrcog.us

"Respect Local Control...Provide Regional Perspective"

From: Frank Sherkow <fsherkow@earthlink.net>
Sent: Monday, January 7, 2019 3:36 PM
To: Daniel Ramirez-Cornejo <dramirez-cornejo@wrcog.us>
Cc: 'Jonathan Shardlow' <Jonathan.Shardlow@GreshamSavage.com>; Chris Gray <cgray@wrcog.us>; 'Sandipan Bhattacharjee, P.E., AICP' <sandipan@translutions.com>
Subject: RE: E-Commerce Trip Generation Rates

Daniel:

Two preliminary questions:

1. Floor & Décor with an address of 24101 Iris and P&G with an address of 16110 Cosmos Street in MV. The traffic sheets and report says that the P&G facility was studied at 24015 Iris Ave. Can you clarify?
2. The Komar facility shares a driveway with a neighboring distribution center (Damco) onto Riverside Dr. What steps were taken to isolate the Komar traffic from other?

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

From: Frank Sherkow [mailto:fsherkow@earthlink.net]
Sent: Thursday, January 3, 2019 10:07 AM
To: 'Daniel Ramirez-Cornejo'
Cc: 'Jonathan Shardlow'; 'Chris Gray'; 'Sandipan Bhattacharjee, P.E., AICP'
Subject: RE: E-Commerce Trip Generation Rates

Daniel:

Thanks so much for your quick response. We stand ready to work with you on this important matter.

In the meantime, we will start to examine the traffic counts provided. Perhaps, we will have some comments in the near future.

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

From: Daniel Ramirez-Cornejo [mailto:dramirez-cornejo@wrcog.us]
Sent: Thursday, January 3, 2019 9:40 AM
To: Frank Sherkow
Cc: Jonathan Shardlow; Chris Gray; Sandipan Bhattacharjee, P.E., AICP
Subject: RE: E-Commerce Trip Generation Rates

Good morning Frank,

We will begin reviewing your comments and will respond accordingly. However, we wanted to ensure you receive the data requested. Per your request, we are attaching the spreadsheets with the counts taken in summer 2018.

Please let us know if you have any questions. Thank you,

-Daniel

Daniel Ramirez-Cornejo
Program Manager
Western Riverside Council of Governments
3390 University Ave., Suite 450
Riverside, CA 92501-3315
Phone: (951) 405-6712
www.wrcog.us

"Respect Local Control...Provide Regional Perspective"

From: Frank Sherkow <fsherkow@earthlink.net>
Sent: Wednesday, January 2, 2019 3:05 PM
To: Daniel Ramirez-Cornejo <dramirez-cornejo@wrcog.us>
Cc: Jonathan Shardlow <Jonathan.Shardlow@GreshamSavage.com>; Sandipan Bhattacharjee, P.E., AICP <sandipan@translutions.com>
Subject: E-Commerce Trip Generation Rates

Daniel:

I am writing to you concerning the Dec. 13, 2018 staff report about the High-Cube Warehouse Trip Generation Study and possible adjustments related to E-commerce facilities. To give you a bit of history, I represented NAIOP when the original High Cube fee levels were set. We continue to do consulting work for NAIOP and some of their members.

I have read your consultant's report about E-commerce facilities. The staff report states that, "The Trip Generation Study was conducted in a manner that meets the ITE standards for performing studies of this nature." Although the traffic counts may have done in accordance with the ITE Trip Generation Manual, the facilities selected and definitions for the E-commerce facilities do not seem to done in accordance with the ITE recent work on this issue.

I have attached a recent working prepare (referred to on page 2 of your staff report). Note that the ITE working paper refers to definitions for many of the large warehouse facilities, which I authored for ITE, with support of NAIOP members. There are physical site and buildings differences between the warehouse categories.

Having said that, not all E-commerce facilities are the same. For example, Amazon facilities may be "sort", "non-sort", "cross-dock", or some hybrids. My firm has done extensive traffic work on High Cube and E-commerce facilities in the Inland Empire. Some of these E-commerce facilities operate like High Cube facilities, while others have higher trip generation rates due to higher employee activities.

One major note of concern: Using the label, by the consultant, as "Fulfillment Centers" is most probably NOT ACCURATE.

The trip rates and parking capacity at some of these sites are significant indicators that some of these facilities are true High Cube buildings that feed local retail outlets, and not the end-customer. Even if the establishment uses the name "fulfillment center" in the title, it does not make them true E-commerce facilities for trip rates purposes.

Grouping these particular facilities together as a representation of E-commerce trip rates is not correct.

We would be glad to work with you, on behalf of NAIOP, to ensure that WRCOG has the most recent and correct information. We are glad to hear that, the WRCOG "staff is not recommending the inclusion of a separate component of the TUMF Calculation Handbook for fulfillment centers." However, as you explore possible adjustments to the TUMF fee program, NAIOP would like the opportunity to correct the record about this data and give WRCOG better information about this issue.

In the meantime, we would **formally request the electronic spreadsheets with the actual traffic counts for the 16 facilities** mentioned in the study. Please advise. Thanks.

Franklin E. Sherkow, P.E., T.E., P.S.E., Env SP, F.ASCE
Executive Vice President
Southstar Engineering & Consulting, Inc.
949-500-7878

Item 6.F

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **PACE Programs Activities Update: General Activities Update and Addition of New Providers**

Contact: **Casey Dailey, Director of Energy & Environmental Programs, cdailey@wrcog.us, (951) 405-6720**

Date: **February 21, 2019**

The purpose of this item is to *provide an update on new Commercial PACE Providers and to discuss the feasibility of and potentially pursuing legislation to support utilization of financing PACE on new residential construction.*

Requested Action:

1. Receive and file.

WRCOG's PACE Programs provide financing to property owners to implement energy saving, renewable energy, water conservation, and seismic strengthening improvements to their homes and businesses. Financing is paid back through a lien placed on the property tax bill. The HERO Program was initiated in December 2011 and was expanded in 2014 (an effort called "California HERO") to allow jurisdictions throughout the state to join WRCOG's Program and allow property owners in these jurisdictions to participate. WRCOG now offers HERO, CaliforniaFIRST, PACE Funding, and Ygrene as residential PACE providers and Greenworks, CleanFund, and Ygrene as commercial PACE providers.

Update: Exploration of Utilizing PACE Financing for New Residential Construction

On October 10, 2018, the Administration & Finance Committee received a report on the recent decision by the California Energy Commission (CEC) to require photovoltaic solar panel systems, smart home energy systems, and electric vehicle-ready wiring on all new homes beginning in 2020. Staff believes that PACE financing has the potential to become a viable tool for the development community as it strives to comply with these new requirements by adding a mezzanine financing option for developers, like Commercial PACE new construction, to finance the additional improvements required under the new 2020 building standards.

With New Construction standards for Commercial PACE, the provider works with developers or commercial builders looking to utilize PACE as part of the overall 'capital stack' of financing options. If the developer voluntarily chooses to use PACE, the amount financed can only go towards those eligible improvements that have been authorized by WRCOG. The same approach would be replicated under new legislation for Residential PACE. Additionally, the issue of transference from property owner to property owner is being addressed by proposing to automatically subordinate the PACE lien on the property tax roll from the traditional placement above the senior mortgage to a position below it. Staff believes this adjustment will alleviate concerns raised by the Realtor community as well as the Federal Housing Authority.

On December 9, 2018, staff met with members of the CEC and representatives from the PACE industry to discuss the current state of affairs for PACE and the role PACE plays in achieving the State's greenhouse gas reduction and energy efficiency goals. Legislation allowing PACE for new construction was also discussed and

was supported by CEC staff in attendance. Additionally, WRCOG staff has met with staff from various State Assembly and Senate representatives to discuss the possibility of sponsoring legislation that would allow PACE in this role in 2019. Finally, staff has previously met with representatives from the California Building Industry Association and there appears to be general support for the concept of allowing PACE on new residential construction beginning in 2020.

On January 9, 2019, the Administration & Finance Committee approved the use of up to $75,000 for legislative advocacy services. Staff has been working with WRCOG General Counsel, Best Best & Krieger, to draft a preliminary version of the bill to share with legislators so that the effort to build support can begin. The deadline to request a bill to be drafted by the Legislative Counsel's Office in Sacramento was January 25, 2019, and the deadline to introduce a bill for consideration of the Assembly and Senate is February 19, 2019.

Additional Commercial PACE Providers Under WRCOG's PACE Umbrella

On June 6, 2016, the Executive Committee established the Additional PACE Provider Ad Hoc Committee to review and complete the vetting process and provide recommendations on the possible inclusion of additional PACE Providers under the WRCOG PACE Program. The Ad Hoc Committee consists of representation from the Cities of Lake Elsinore, Murrieta, Perris, and Wildomar with assistance from WRCOG staff and WRCOG's Bond Counsel (Best & Krieger).

The PACE Ad Hoc Committee has recommended the following new Commercial Providers to operate in WRCOG's statewide umbrella: Lord Capital, Twain Financial Partners, and Lever Energy Capital, and has also recommended CleanFund and Ygrene to operate in cities within the WRCOG subregion.

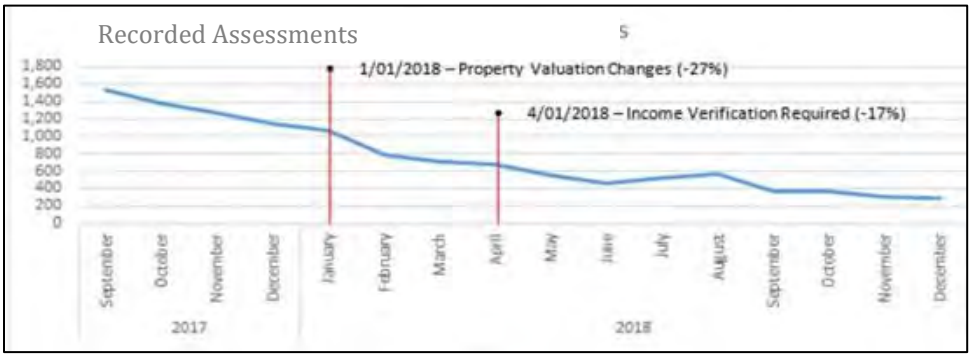
Once the Executive Committee approves a Provider, staff works to finalize policies, documents, and procedures. Once the Executive Committee approves each Provider's Administration Agreements and Program Documents, the Provider will be authorized to operate in WRCOG's Program.

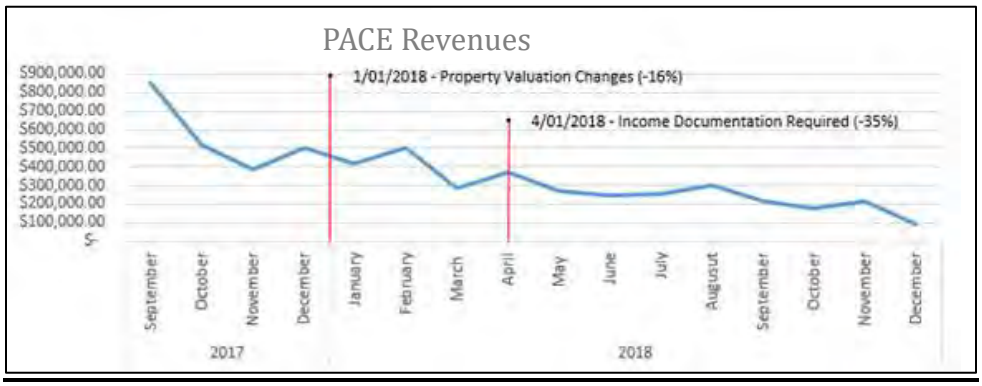
When the Executive Committee adopts an additional Provider, that Provider will automatically be able to operate in each member jurisdiction, unless a jurisdiction acts to prohibit its inclusion. If a jurisdiction desires NOT to include a specific Provider, it must adopt a resolution to opt-out of the Program. WRCOG will continue to provide outreach with the adoption of each additional PACE Program and provide each member jurisdiction with the opt-out resolution upon request.

PACE Activities Levels Update

As Committee members may be aware, WRCOG's PACE revenues have experienced significant decline over the past 18 months. There are likely several reasons for the decline in PACE activity, including increased competition from new PACE providers, additional legislation aimed at protecting PACE participants, market saturation, and property owners having better access to other types of capital that they didn't have in the past.

Staff will provide a presentation to the Committee members on the impacts to WRCOG's agency budget and programs at a future meeting. The following charts show WRCOG's PACE assessments against specific points in time where legislation went into effect.





Prior Actions:

February 13, 2019: The Administration & Finance Committee recommended that the Executive Committee authorize the Executive Director to enter into contract negotiations and execute any necessary documents to include Lever Energy Capital under WRCOG's Commercial PACE umbrella.

February 4, 2019: The Executive Committee 1) accepted the Cities of Santa Barbara and Alameda as Associate Members of the Western Riverside Council of Governments; 2) adopted WRCOG Resolution Number 02-19; A Resolution of the Executive Committee of the Western Riverside Council of Governments Declaring Its Intention to Modify the California HERO Program Report so as to Increase the Program Area within Which Contractual Assessments may be Offered and Setting a Public Hearing Thereon; 3) authorized staff to implement a $15,000.00 deposit for all new Commercial PACE Providers to work within the WRCOG Program; 4) supported the Administration & Finance Committee's recommendation to direct and authorize the Executive Director to enter into contract negotiations and execute any necessary documents to include Lever Energy Capital, LLC, under WRCOG's statewide PACE umbrella; and 5) supported the Ad Hoc Committee's recommendation to direct and authorize the Executive Director to enter into contract negotiations and execute any necessary documents to include Twain Financial Partners Holding, LLC, under WRCOG's PACE umbrella.

Fiscal Impact:

The $75,000 consultant expense will be covered by the PACE Consulting line item in the budget.

Attachment:

None.

Page Intentionally Left Blank

Item 6.G

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **2nd Quarter Draft Budget Amendment for Fiscal Year 2018/2019**

Contact: **Andrew Ruiz, Interim Chief Financial Officer, aruiz@wrcog.us, (951) 405-6741**

Date: **February 21, 2019**

The purpose of this item is to *request approval of WRCOG's 2nd Quarter Draft Budget Amendment for Fiscal Year (FY) 2018/2019. The staff report includes a summary of increases and/or decreases to both revenues and expenditures by department.*

Requested Action:

1. Recommend that the Executive Committee approve the 2nd Quarter Draft Budget Amendment for Fiscal Year 2018/2019.

Administration Department

Administration Program expenditures exceeded the budgeted amount by $7,040, primarily due to costs associated with a workers' compensation audit. These expenditures will be offset by a decrease in expenditures in event support. Administration Program revenues exceeded the budgeted amount by $31,496. WRCOG now has its reserves in CAMP, where it is generating interest revenue.

Net Revenue increase to the Administration Department: $31,496

Transportation & Planning Department

Transportation & Planning Department expenditures exceeded the budgeted amount by $50,798, primarily due to costs associated with the Active Transportation Plan (ATP) and RIVTAM Programs. The ATP Program incurred its final expenses related to the ATP through CalTrans; these costs will be reimbursed by CalTrans. Additionally, expenses were incurred with the RIVTAM update and will be reimbursed back to the Agency.

Net Expenditure increase to Transportation & Planning Department: $50,798

Energy Department

Energy Department expenditures exceeded the budgeted amount by $28,438, primarily due to costs associated with PACE provider SAMAS Capital, in the amount of $12,576. Additionally, costs associated with the WREP Holiday Light exchange in the amount of $5,000 were incurred but was approved for reimbursement by the WREP Partnership. Also, loan origination fees related to the loans issued to the jurisdictions for the Streetlight Program were incurred in the amount of $1,665.

Energy Department revenues are being reduced by $675K. The PACE Programs have continued to experience a decline in revenues and volumes in FY 2018/2019. WRCOG anticipates a continued decrease in Program volumes and currently has budgeted $3.6M in revenues and will reduce WRCOG HERO revenues by $100k and CA HERO (statewide) revenues by $750k. WRCOG has also received additional

revenues through the CA HERO Program, primarily due to the selling of delinquencies, and is now processing refunds in-house for additional revenue streams. The HERO Program revenues have corresponding expenditures based on the volumes, and WRCOG was able to balance the HERO Program's budget by a reduction of expenditures corresponding to the decreased revenues. Additionally, PACE providers PACE Funding and Greenworks exceeded their budgeted revenue amounts by $20k and $4k respectively.

Net Revenue increase to the Energy Department: $238

Environmental Department

Environmental Department expenditures exceeded the budgeted amount by $9,838, primarily due costs associated with the Used Oil Program in the amount of $8,475. WRCOG switched advertising to a local firm and was able to realize cost savings in advertising, which allowed for the Program to purchase more supplies to be able to do more events. These expenditures will be offset by a decrease in advertising expenditures.

Net Expenditure increase to the Environment Department: $0

Prior Actions:

February 13, 2019: The Administration & Finance Committee recommended that the Executive Committee approve the 2nd Quarter Draft Budget Amendment for Fiscal Year 2018/2019.

January 24, 2019: The Finance Directors Committee recommended that the Executive Committee approve the 2nd Quarter Draft Budget Amendment for Fiscal Year 2018/2019.

Fiscal Impact:

For the 2nd Quarter of Fiscal Year 2018/2019, there is a net total agency increase in expenditures of $19,064 related to the ATP and RIVTAM update, which will be paid back to WRCOG.

Attachment:

1. Fiscal Year 2018/2019 2nd Quarter Draft Budget amendment.

Item 6.G

2nd Quarter Draft Budget Amendment for Fiscal Year 2018/2019

Attachment 1

Fiscal Year 2018/2019 2nd Quarter Draft Budget amendment

Page Intentionally Left Blank

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: General Fund

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Revenues			
Interest Revenue	31,496	0	**31,496**
Expenditures			
Insurance - Gen/Business Liab/Auto	77040	70000	**(7,040)**
Event Support	29110	65000	**7,040**
Total net (increase)/decrease			**31,496**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Planning

	Thru 9/30/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 9/30/2018
Expenditures			
Salaries & Wages	120,738	542,280	1,120
General Legal Services	5,035	4,083	(952)
Parking Validations	560	220	(340)
Total net (increase)/decrease			**(172)**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Government Relations (BEYOND - 4600)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
BEYOND Salaries & Wages	2,373	1,510	(863)
General Legal Services	1,202	5,000	878
Parking Validations	15	-	(15)
Total net (increase)/decrease			**-**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Government Relations (Fellowship - 4700)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Salaries & Wages	114,077	538,483	3,984
General Legal Services	5,035	4,083	(952)
Parking Validations	560	220	(340)
General Supplies	588	500	(88)
Postage	4	-	(4)
Consulting Labor	2,600	-	(2,600)
Total net (increase)/decrease			**-**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Planning (Experience - 4900)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Salaries and Wages	4,288	2,287	(2,001)
Parking Validations	943	-	(943)
Meeting Support Services	243	-	(243)
Total net (increase)/decrease			**(3,187)**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Transportation

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Computer Software	1,124	13	(1,111)
Postage	24	3	(21)
Printing Services	1,670	1,500	(170)
Other Incidentals	675	500	175
Meals	473	2,500	1,045
Parking Validations	30	1,000	500
Seminars/Conferences	350	-	(350)
Travel - Ground Transportation	53	-	(53)
Lodging	640	-	(640)
Supplies/Materials	-	1,000	625
Salaries	10,906	-	(10,906)
Fringe Benefits	4,838	-	(4,838)
Consulting Expense	35,054	-	(35,054)
Total net (increase)/decrease			**(50,798)**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Transportation (Transportation Planning)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Parking Validations	30	1,000	500
Postage	7	-	(7)
Seminars/Conferences	350		(350)
Travel - Ground Transportation	53	-	(53)
Lodging	640	-	(640)
Meals	75	-	(75)
Supplies/Materials	-	1,000	625
Total net (increase)/decrease			-

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Transportation (TUMF - 1148)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Computer Software	1,124	13	(1,111)
Postage	17	3	(14)
Printing Services	1,670	1,500	(170)
Other Incidentals	675	500	175
Meals	398	2,500	1,120
Total net (increase)/decrease			-

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Transportation (ATP - 2030)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Salaries	10,906	-	(10,906)
Fringe Benefits	4,838	-	(4,838)
Consulting Expense	3,354	-	(3,354)
Total net (increase)/decrease			**(19,098)**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Transportation (RivTam - 2039)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Consulting Labor	31,700	-	(31,700)
Total net (increase)/decrease			**(31,700)**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Energy

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Revenues			
WRCOG HERO Sponsor Revenue	116,160	500,000	(100,000)
Pace Funding Sponsor Revenue	30,573	10,000	20,573
Greenworks Sponsor Revenue	24,078	20,000	4,078
CA HERO Other Revenue	149,833	-	149,833
CA HERO Sponsor Revenue	648,204	2,400,000	(750,000)
Expenditures			
Salaries & Wages	202,000	642,897	122,000
Fringe Benefits	107,870	256,221	31,000
PACE Residential Recording	162,192	710,000	247,000
Consulting Expense	163,045	1,071,464	293,332
Event Support	12,831	7,665	(5,166)
General Supplies	-	250	133
Parking Validations	15	-	(15)
Meeting Support Services	396	782	(66)
Bank Fees	3,378	1,713	(1,665)
Postage	157	85	(72)
Seminars/Conferences	87	-	(87)
Meals	26	6	(20)
General Legal	21,838	14,262	(10,621)
	Total net (increase)/decrease		**238**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Energy (WRCOG HERO - 2006)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Revenues			
WRCOG HERO Sponsor Revenue	116,160	500,000	(100,000)
Expenditures			
Salaries & Wages	27,380	93,743	22,000
Fringe Benefits	14,464	36,415	6,000
PACE Residential Recording	23,242	110,000	22,000
Consulting Expense	26,791	178,827	50,000
Total net (increase)/decrease			**-**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Energy (WREP - 2010)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Event Support	5,133		(5,133)
General Supplies	-	250	133
Total net (increase)/decrease			**(5,000)**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Energy (Gas Co. Partnership - 2020)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Parking Validations	15	-	(15)
Event Support	7,698	7,665	(33)
Meeting Support Services	-	500	48
Total net (increase)/decrease			**-**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Energy (Streetlights - 2026)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Bank Fees	3,378	1,713	(1,665)
Postage	157	85	(72)
Seminars/Conferences	87	-	(87)
Meals	26	6	(20)
Consulting Labor	1,863	98,197	1,843
Total net (increase)/decrease			-

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Energy (Spruce - 2102)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Consulting Labor	875	-	(875)
Total net (increase)/decrease			**(875)**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Energy (California First - 2103)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
General Legal	-	5,000	1,955
Consulting Labor	1,955	-	(1,955)
Total net (increase)/decrease			**-**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Energy (PACE Funding - 2104)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Revenues			
Pace Funding Sponsor Revenue	30,573	10,000	20,573
Expenditures			
Parking Validations	45	-	(45)
Meeting Support Services	396	282	(114)
Consulting Labor	5,848	-	(5,848)
Total net (increase)/decrease			**14,610**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Energy (Greenworks - 2105)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Revenues			
Greenworks Sponsor Revenue	24,078	20,000	4,078
Total net (increase)/decrease			**4,078**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Energy (SAMAS - 2106)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Revenues			
General Legal Services	21,838	9,262	(12,576)
Total net (increase)/decrease			**(12,576)**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Energy (California HERO - 5000)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Revenues			
CA HERO Other Revenue	149,833	-	149,833
CA HERO Sponsor Revenue	648,204	2,400,000	(750,000)
Expenditures			
Salaries & Wages	174,620	549,153	100,000
Fringe Benefits	93,406	219,807	25,000
PACE Residential Recording	138,950	600,000	225,000
Consulting Expense	125,714	794,440	250,167
Total net (increase)/decrease			-

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Environmental

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Meeting Support Services	174	100	(74)
Travel - Ground Transportation	95	-	(95)
Meals	180	-	(180)
Supplies/Materials	1,750	3,942	523
Salaries & Wages	10,370	41,144	840
Parking Validations	225	53	(172)
Event Support	31,752	23,072	(8,680)
Subscriptions/Publications	324	-	(324)
Other Expenses	286	61	(225)
Advertisement - Radio & TV	12,120	45,000	8,475
Travel - Mileage Reimbursement	188	100	(88)
Total net (increase)/decrease			**-**

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Environmental (Clean Cities - 1010)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Meeting Support Services	174	100	(74)
Travel - Ground Transportation	95		(95)
Meals	180		(180)
Supplies/Materials	-	1,000	349
Total net (increase)/decrease			-

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Environmental (Solid Waste - 1038)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Salaries & Wages	10,370	41,144	840
Parking Validations	225	53	(172)
Event Support	133	14	(119)
Subscriptions/Publications	324		(324)
Other Expenses	286	61	(225)
Total net (increase)/decrease			-

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Environmental (Statewide UO - 2051)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Event Support	28,475	20,000	(8,475)
Advertisement - Radio & TV	12,120	45,000	8,475
Total net (increase)/decrease			-

Western Riverside Council of Governments
Annual Budget
For the Year Ending June 30, 2019

Department: Environmental (Riverside UO - 2052)

	Thru 12/31/2018 Actual	Approved 6/30/2019 Budget	Amendment Needed 12/31/2018
Expenditures			
Event Support	3,144	3,058	(86)
Travel - Mileage Reimbursement	188	100	(88)
Supplies/Materials	1,750	2,942	174
Total net (increase)/decrease			-

Item 6.H

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **Fiscal Year 2017/2018 Comprehensive Annual Financial Report (CAFR)**

Contact: **Andrew Ruiz, Interim Chief Financial Officer, aruiz@wrcog.us, (951) 405-6741**

Date: **February 21, 2019**

The purpose of this item is to *provide WRCOG's Fiscal Year (FY) 2017/2018 financial audit and Comprehensive Annual Financial Report (CAFR).*

Requested Action:

1. Receive and file.

WRCOG engaged Rogers, Anderson, Malody & Scott (RAMS) to conduct WRCOG's annual financial audit. The contract with RAMS is for three years with an option for two, one-year extensions. RAMS will be assisting WRCOG with the creation of Agency financial statements and the CAFR that meet all standards of the Governmental Accounting Standards Board.

WRCOG received the distinguished "Certificate of Achievement for Excellence in Financial Report" from the Government Finance Officers Association for four consecutive years and all signs indicate that the FY 2017/2018 Report will also produce this distinguished award. The award recognizes that the Agency is transparent, has provided full disclosure of the financial statements, and that the users of the CAFR have all the information needed to draw a financial conclusion of the Agency.

WRCOG's auditors are providing an unmodified opinion on the FY 2017/2018 CAFR. An unmodified opinion is the highest form of assurance an auditing firm can provide to its client and means that the audit and associated Agency financials are both in good form and the accounting practices are solid.

WRCOG's total net position increased by 609%, or $26.4 million, during FY 2017/2018 compared to the prior year's decrease of $31.6 million. The increase in net position was mostly due to an increase in cash due to the TUMF revenue collections. Total liabilities decreased 14%, or $11.2 million, during FY 2017/2018 compared to the prior year, mostly due to the increase in TUMF revenues over what was anticipated. TUMF project liabilities are programmed according to the anticipated revenue on the Transportation Improvement Program (TIP). As such, the TIP assumed less projects to be programmed in the current fiscal year.

Current assets increased from $83.6 million in FY 2016/2017 to $99.4 million, or 19%. This increase in current assets is attributable to the difference in TUMF revenues received over projects completed and paid out.

Net investment in Capital Assets represents 1.3%, or $413,000 of WRCOG's total net position for FY 2017/2018 compared to 2.2%, or $94,000, for FY 2016/2017. The increase is attributable to the purchase of new capitalized items, including the office move construction, computers, and other equipment.

Restricted net position accounts for 72.2%, or $22.2 million, of WRCOG's total net position for FY 2017/2018 compared to 0.3%, or $11,700 for FY 2016/2017. This component of net position represents external restrictions imposed by creditors, grantors, contributors, or laws and regulations of other governments and

restrictions imposed by law through constitutional provisions or enabling legislation. All of the restricted net position applies to TUMF, as the Program's Administration Plan requires that WRCOG hold the funds until a Zone has an opportunity to claim use of the funds through the TIP. The jurisdiction located within that particular Zone must demonstrate it has expended its own funds, is requesting reimbursement, and has provided the appropriate supporting documentation.

Unrestricted net position accounts for 26.4%, or $8.1 million, of WRCOG's total net position for FY 2017/2018 compared to 97.6% or $4.2 million for FY 2016/2017. This component of WRCOG's total net position may be used to meet WRCOG's ongoing obligations to creditors.

For any questions related to the audit, Terry Shea, RAMS Auditing Partner, can be reached at (909) 889-0871 or terry@ramscpa.net.

Prior Actions:

February 13, 2019: The Administration & Finance Committee received and filed.

January 24, 2019: The Finance Directors Committee received and filed.

Fiscal Impact:

This item is informational only; therefore, there is no fiscal impact.

Attachments:

1. FY 2017/2018 Comprehensive Annual Financial Report.
2. FY 2017/2018 Statement on Auditing Standards 114 Report.
3. FY 2017/2018 Internal Standards Report.

Item 6.H

Fiscal Year 2017/2018 Comprehensive Annual Financial Report (CAFR)

Attachment 1

FY 2017/2018 Comprehensive Annual Financial Report

Page Intentionally Left Blank

WRCOG
Western Riverside Council of Governments

Fiscal Year 2017 / 2018

Comprehensive Annual Financial Report

Submitted by:
Fiscal Department
Western Riverside Council of Governments

WESTERN RIVERSIDE COUNTY | CALIFORNIA

Comprehensive Annual Financial Report

For Fiscal Year Ended June 30, 2018

Submitted by:
Fiscal Department
Western Riverside Council of Governments

WESTERN RIVERSIDE COUNTY | CALIFORNIA

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Comprehensive Annual Financial Report

For the Fiscal Year Ended June 30, 2018

Submitted by:
Fiscal Department
Western Riverside Council of Governments

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

JUNE 30, 2018
TABLE OF CONTENTS

INTRODUCTION SECTION **PAGE**

Letter of Transmittal i
Organizational Chart vii
List of Principal Officers viii
Certificate of Achievement for Excellence in Financial Reporting ix

FINANCIAL SECTION

Independent Auditor's Report 1
Management's Discussion and Analysis 4

Basic Financial Statements

Government-wide Financial Statements

Statement of Net Position 13
Statement of Activities 14

Fund Financial Statements

Balance Sheet – Governmental Funds 15
Reconciliation of the Balance Sheet of Governmental Funds to the Statement of Net Position 16
Statement of Revenues, Expenditures, and Changes in Fund Balances – Governmental Funds 17
Reconciliation of the Statement of Revenues, Expenditures, and Changes in Fund Balances of Governmental Funds to the Statement of Activities 18
Statement of Fiduciary Net Position 19

Notes to the Financial Statements 20

Required Supplementary Information

Schedule of Revenues, Expenditures, and Changes in Fund Balance – Budget and Actual General Fund 50
Schedule of WRCOG's Proportionate Share of the Net Pension Liability and Related Ratios as of the Measurement Date 51
Schedule of Plan Contributions 52
Schedule of Changes in the Net OPEB Liability and Related Ratios 53
Schedule of Other Postemployment Benefits Plan Contributions 54
Notes to the Required Supplementary Information 55

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

JUNE 30, 2018
TABLE OF CONTENTS, (Continued)

FINANCIAL SECTION, (Continued) **PAGE**

Supplementary Information

Agency Fund:

Statement of Changes in Fiduciary Assets and Liabilities 56

STATISTICAL SECTION (UNAUDITED)

Statistical Section Overview 57
Net Position by Component 58
Changes in Net Position 59
Fund Balance of Governmental Funds 60
Changes in Fund Balance of Governmental Funds 61
Revenue by Funds 62
Demographic and Economic Statistics for the County of Riverside 63
Employment Statistics by Industry for Riverside County 64
Full-time Equivalent Employees by Function/Program 65

THIS PAGE INTENTIONALLY LEFT BLANK

WRCOG
Western Riverside Council of Governments

Introductory Section

THIS PAGE INTENTIONALLY LEFT BLANK

Western Riverside Council of Governments

County of Riverside • City of Banning • City of Beaumont • City of Calimesa • City of Canyon Lake • City of Corona • City of Eastvale • City of Hemet
City of Jurupa Valley • City of Lake Elsinore • City of Menifee • City of Moreno Valley • City of Murrieta • City of Norco • City of Perris • City of Riverside
City of San Jacinto • City of Temecula • City of Wildomar • Eastern Municipal Water District • Western Municipal Water District • Morongo Band of Mission Indians • Riverside County Superintendent of Schools

TOP WORK PLACES 2017 INLAND NEWS GROUP

November 5, 2018

To the Western Riverside Council of Governments and Citizens of Western Riverside County:

Letter of Transmittal

The Comprehensive Annual Financial Report for the Western Riverside Council of Governments (WRCOG) for the fiscal year ended June 30, 2018 is hereby submitted in accordance with the provision of Section 6505 of the Government Code of the State of California (the State). The report contains financial statements that have prepared in conformity with generally accepted accounting principles (GAAP) in the United States prescribed for governmental entities. Responsibility for the accuracy of the data and the completeness and fairness of the presentation, including all disclosures, rests with the management of the Western Riverside Council of Governments (WRCOG). To the best of our knowledge and belief, the enclosed data is accurate in all material respects and is reported in a manner that presents fairly the financial position and changes in financial position of the various funds of WRCOG. All disclosure necessary to enable the reader to gain an understanding of WRCOG's financial activities have been included. Because the cost of an internal control should not exceed the benefits to be derived, the objective is to provide reasonable, rather than absolute assurance, that the financial statements are free of material misstatements.

Rogers, Anderson, Malody & Scott, LLP has issued an unmodified opinion on WRCOG's financial statements for the year ended June 30, 2018. The independent auditor's report is located at the front of the financial section of this report.

The management's discussion and analysis (MD&A) immediately follows the independent auditors report and provides a narrative, overview, and analysis of the basic financial statements. The MD&A was designed to complement this letter of transmittal and should be read in conjunction with it.

The Government Finance Officers Association (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to WRCOG for its CAFR for the fiscal year ended June 30, 2017. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized CAFR. This report must satisfy both GAAP and applicable legal requirements.

Profile of the Government

WRCOG was formed in November 1989 as a California Joint Powers Authority under the Government Code Section 6500 et. seq. of the State of California. WRCOG strives to unify Western Riverside County so that it can speak with a collective voice on important issues that affect its members. Representatives from 17 cities, the County of Riverside, the Eastern and Western Municipal Water Districts, the Riverside County Superintendent of Schools and the Morongo Band of Mission Indians have seats on WRCOG Executive Committee, the group that

sets policy for the Agency. WRCOG's many areas of activity cover such programs as transportation, energy, community growth and development, and environment.

Major Initiatives

Transportation Uniform Mitigation Fee (TUMF) Program: WRCOG developed and administers the TUMF Program, a multi-jurisdictional fee program that ensures that new development in the subregion does not create additional congestion on regional highways. Fees paid by new residential and non-residential development will contribute to the construction of nearly $3 billion in transportation and transit improvements in Western Riverside County. The TUMF Program will improve more than 3,000 lane miles, improve 47 interchanges, construct 39 bridges and 10 railroad grade separations, provide more than $43 million for regional transit improvements, and nearly $92 million for acquisition of sensitive habitat.

To date, WRCOG has received more than $780 million in TUMF revenue since program inception in 2003. 98 TUMF-funded projects have been completed; 58 projects are currently underway and are receiving TUMF funding, including 4 bridges, 5 grade separations, 14 interchanges, 24 roadway improvements, and 11 transit projects. The TUMF Program has funded and delivered more than $320 million in transportation projects since it began in 2003.

Property Assessed Clean Energy (PACE) Program: In 2011, WRCOG launched the PACE Program, a regional effort that provides financing to residential and commercial property owners to install energy-efficient, renewable energy, and water conservation improvements to homes and businesses in the subregion. The Program is the largest of its kind in the U.S.; for the fiscal year 2017/2018, more than $1.2 billion in applications was approved and over 13,500 residential projects, representing nearly $318 million in funding, were completed. Over the lifetime of the products, these projects are estimated to save over 2 billion kwh of electricity, more than 1 billion gallons of water, and remove an estimated 554,000 tons of greenhouse gas (GHG) emissions. Since implementation of the program, more than $9 billion in applications was approved and over 86,000 residential projects, representing nearly $1.8 billion in funding, were completed. Over the lifetime of the products, these projects are estimated to save over 12 billion kwh of electricity, more than 7 billion gallons of water, and remove an estimated 3.2 million tons of greenhouse gas (GHG) emissions.

Program participants simply complete an application, select a contractor, and make the improvements. Repayment occurs through the owner's annual property tax bill, and in most cases, the assessment stays with the property, to be assumed by the next owner upon sale of the property. The Program is a win-win at numerous levels. For property owners, energy and water conservation improvements will yield reduced utility bills and can improve property values. For Western Riverside County, the Program will create energy savings for the fast-growing region, reduce GHG emissions associated with energy use, and bring and retain needed jobs for area contractors.

The PACE Program has been so successful that it has now expanded statewide; over 380 jurisdictions throughout California have joined the Program as of the end of the fiscal year.

Used Oil and Filter Collection Program: WRCOG's Regional Used Oil Program helps protect groundwater and the environment from the hazards of improperly disposed motor oil. WRCOG's Used Oil and Oil Filter Exchange events have been an effective tool in educating and facilitating the proper recycling of used motor oil and used oil filters in various WRCOG

jurisdictions. The primary objective of hosting the events is to educate individuals who change their own oil, the Do-It-Yourselfer (DIYer), promoting the recycling of used oil and oil filters; therefore, an auto parts store is a great venue for educating the DIYer. In addition to promoting used oil / oil filter recycling, WRCOG staff informs the DIYer about the County-wide HHW Collection Program where residents can drop-off other automotive and household hazardous products for free.

Western Riverside Energy Partnership (WREP): This Partnership originally consisted of WRCOG, Southern California Edison, and 12 member jurisdictions. In 2013, Southern California Gas Company joined the Partnership. The Partnership is designed to optimize opportunities for participating jurisdictions to achieve both short- and long-term sustainable energy savings, reduce utility bills, and enhance the level of comfort by retrofitting municipal buildings and facilities. A public outreach program encouraging residents in Western Riverside County to conserve energy is also part of the Partnership.

Clean Cities Coalition (Coalition): WRCOG's Clean Cities Coalition is nationally-recognized for its efforts to promote clean air by encouraging the use of alternative fuel vehicles and development of alternative fuel infrastructure, technologies and education. The Coalition hosts a number of educational forums and conferences, including an annual Environmental Youth Conference which brings together more than 200 middle school students to discuss and learn about sustainable lifestyles.

Solid Waste Cooperative: Under the leadership of the California Department of Resources Recycling and Recovery (CalRecyle), the state is nearly two-thirds of the way towards achieving ambitious waste diversion goals set forth by the Legislature. Since 1990, the partnership of the State, local governments, the waste industry, businesses, environmental groups, and millions of committed Californians has diverted more than 100 million tons of materials from landfills, and nearly 60 cities and counties have already met or exceeded the mandate to cut their trash in half.

Streetlight Program: At the direction of the Executive Committee, WRCOG developed a Regional Streetlight Program that will allow jurisdictions (and Community Service Districts) to purchase streetlights within their boundaries that are currently owned and operated by SCE. Once the streetlights are owned by the member jurisdiction, the lamps will be retrofitted to Light Emitting Diode (LED) technology to provide more economical operations (i.e., lower maintenance costs, reduced energy use, and improvements in public safety). Local control of the streetlight system provides jurisdictions with opportunities for future revenue generation such as digital-ready networks, and telecommunications and information technology strategies.

The Program seeks to provide cost-efficiencies for local jurisdictions through the purchase, retrofit, and maintenance of streetlights within jurisdictional boundaries, without the need of additional jurisdictional resources. As a regional Program, WRCOG is working with participating jurisdictions to move through the acquisition process, develop financing recommendations, develop and update regional and community-specific streetlight standards, and implement a regional operations & maintenance (O&M) agreement that will enhance the level of service currently provided by SCE.

Sustainability Framework: WRCOG's Sustainability Framework provides the foundation for a healthy communities planning movement in Western Riverside County. Implementation of ideas in the Framework can yield positive co-benefits in health and move the region towards a better quality of life. For example, recently, twelve cities in Western Riverside County joined together to develop a Subregional Climate Action Plan (CAP). The CAP goals include promoting

economic development and job growth, energy and cost savings for residents and business owners, water efficiency and conservation, reduction in solid waste, improved air quality, and the promotion of active and healthy communities. The CAP strategies can be uniformly applied, or tailored as needed, for adoption by individual jurisdictions.

Beyond Program: At the end of Fiscal Year 2014/2015, WRCOG created a new program titled, "Beyond." For Fiscal Year 2016/2017, WRCOG allocated $2.3 million for use by WRCOG member agencies through its "BEYOND" initiative. BEYOND is an economic development and sustainability local assistance funding program intended to help member agencies develop and implement projects that can improve the quality of life in Western Riverside County by addressing critical growth components such as economy, water, education, environment, health, and transportation.

The cornerstone of BEYOND is WRCOG's Economic Development and Sustainability Framework. The Framework was approved by WRCOG's Executive Committee in 2012, and can be accessed on WRCOG's website at http://www.wrcog.cog.ca.us/community/sustainability. It serves, as the title implies, as a framework or guide that members can draw from in developing approaches to improve their communities. The premise of the Framework is that economic development, at its core, is tied to quality of life. While defining "quality of life" may be difficult, there is little debate that major contributing factors include critical components such as education, water, health, transportation, energy, and environment. When attention is given to each of these components, undoubtedly the subregion's quality of life improves, and as such economic desirability improves as well.

Fellowship Program: In February 2016, the Executive Committee approved the creation of a one-year pilot Public Service Fellowship Program, to be administered by WRCOG in Western Riverside County, in partnership with the University of California, Riverside (UCR), and California Baptist University (CBU). The goal of this Program is to retain local students to fulfill the subregion's need for a robust public sector workforce and to combat the often-mentioned "brain drain" that Riverside County experiences when local students graduate but then leave the region to seek full-time employment elsewhere. The Fellowship Program is geared towards students graduating from UCR and CBU to engage them in career opportunities with local governments and agencies in a way that is mutually beneficial to both the Fellows and the agency.

WRCOG is responsible for general Program administration and oversight, maintaining employment of the Fellows, soliciting interest from local government agencies, serving as the liaison between member agencies and the universities, providing Program funding, and coordinating payment of Fellowship stipends. UCR and CBU are responsible for soliciting interest from students, reviewing applications and conducting interviews, recommending local government agency placements, and communicating regularly with Fellows. WRCOG, UCR, and CBU also provide ongoing training to Fellows on career readiness and other theoretical topics during regular Networking Sessions to support their hands-on work experience. A representative from each University serves as an "advisor" to answer questions from the Fellows or host agencies, monitor the Fellows' performance, handle HR-related issues or complaints in collaboration with WRCOG, and provide needed support to ensure that the Fellowship placement is successful.

Financial Planning

A successful fiscal year always starts during the creation of the budget process. Management staff will begin to gather data and discuss planning of the budget around January of every year.

Management will describe their needs in terms of increased line items and justify that with any increases they foresee in revenues for the upcoming fiscal year.

The first time the draft budget is presented publicly at WRCOG's sub-committee level. The Administration & Finance Committee, which is comprised of 11 of WRCOG's Executive Committee members, will review and discuss the budget, usually at its March or April meeting and make any recommendations and have it forwarded on to the Technical Advisory Committee (TAC), which is comprised of the City Managers and Agency Directors of WRCOG's member agencies. This meeting of the TAC usually occurs within the same month as the Administration & Finance Committee. After it is recommended for approval, the budget's next stop is at WRCOG's Executive Committee meeting (usually in June). Once approved by the Executive Committee, the budget is approved by the General Assembly. The General Assembly is usually held at an off-site location and generally on the fourth Thursday of every June. The General Assembly is comprised of a majority of all City Councils, County Board of Supervisors, and other Board Members that represent WRCOG.

The budget itself is presented at the function level. It is displayed as follows: general government, transportation, energy, and environment. With the exception of the general government, each function is self-sufficient and able to fund its own expenditures through revenue generated. The general government; however, does not bring in enough revenue to cover all of the expenditures such as rent, legal, consulting, and payroll, and because of this, must charge overhead to offset the difference. The overhead is calculated during the budget process and allocated to each function in the most equitable method possible. This is usually based on the amount of revenue generated as a percentage of the total agency revenue.

The creation of the budget entries is part of the internal control process. One member of the Fiscal staff is to enter the journal, while another member approves. WRCOG's IT consulting firm is the only member of WRCOG that is allowed to assign functions within the accounting system. The goal of creating internal controls is to ensure that one person cannot create, approve, and issue a check, wire, or any other sensitive piece of information. WRCOG follows the policy that at least two, if not three, signatures are required to approve any check requests and the amount must be verified against the approved budget to ensure there are sufficient funds available to expend.

The Executive Committee of WRCOG has provided outstanding leadership and has provided staff with excellent resources, which are reflected in the programs delivered to the various members. WRCOG continues to be counted on to provide regional perspective while respecting local control.

WRCOG's Executive Committee approves all financial policies relevant to every aspect of the agency's accounting and as such, none of the policies approved during the year, or in year's past, had a significant impact on the current period's financial statements.

Awards and Acknowledgments

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to Western Riverside Council of Governments for its comprehensive annual financial report for the fiscal year ended June 30, 2017. This was the fifth consecutive year that the government has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual

financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current comprehensive annual financial report continues to meet the Certificate of Achievement Program's requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

Sincerely,

Andrew Ruiz
Interim Chief Financial Officer

Western Riverside Council of Governments

Organizational Chart 2018

Western Riverside Council of Governments

List of Principal Officials
As of June 30, 2018

Executive Committee Members

Name and Position	Title	Agency
Chuck Washington	Chair	County of Riverside, District 3
Bonnie Wright	Vice Chair	City of Hemet
Laura Roughton	2nd Vice Chair	City of Jurupa Valley
Debbie Franklin	Member	City of Banning
Jeff Hewitt	Member	City of Calimesa
Jordan Ehrenkranz	Member	City of Canyon Lake
Eugene Montanez	Member	City of Corona
Adam Rush	Member	City of Eastvale
Brian Tisdale	Member	City of Lake Elsinore
John Denver	Member	City of Menifee
Yxstian Gutierrez	Member	City of Moreno Valley
Kelly Seyarto	Member	City of Murrieta
Kevin Bash	Member	City of Norco
Rita Rogers	Member	City of Perris
Rusty Bailey	Member	City of Riverside
Crystal Ruiz	Member	City of San Jacinto
Maryann Edwards	Member	City of Temecula
Ben Benoit	Member	City of Wildomar
Kevin Jeffries	Member	County of Riverside, District 1
John Tavaglione	Member	County of Riverside, District 2
Marion Ashley	Member	County of Riverside, District 5
Brenda Dennstedt	Member	Western Municipal Water Dist.
David Slawson	Member	Eastern Municipal Water Dist.
Judy White	Member	Riverside County Superintendent of Schools
Robert Martin	Member	Morongo Band of Mission Indians

Management Staff

Rick Bishop, Executive Director
Casey Dailey, Director of Energy and Environmental Programs
Chris Gray, Director of Transportation
Andrew Ruiz, Interim Chief Financial Officer
Barbara Spoonhour, Director of Community Choice Aggregation Development

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Western Riverside Council of Governments, California

For its Comprehensive Annual Financial Report for the Fiscal Year Ended

June 30, 2017

Christopher P. Morrill

Executive Director/CEO

Financial Section

THIS PAGE INTENTIONALLY LEFT BLANK

ROGERS, ANDERSON, MALODY & SCOTT, LLP
CERTIFIED PUBLIC ACCOUNTANTS, SINCE 1948

735 E. Carnegie Dr. Suite 100
San Bernardino, CA 92408
909 889 0871 T
909 889 5361 F
ramscpa.net

PARTNERS
Brenda L. Odle, CPA, MST
Terry P. Shea, CPA
Kirk A. Franks, CPA
Scott W. Manno, CPA, CGFM
Leena Shanbhag, CPA, MST, CGMA
Bradford A. Welebir, CPA, MBA, CGMA
Jay H. Zercher, CPA (Partner Emeritus)
Phillip H. Waller, CPA (Partner Emeritus)

MANAGERS / STAFF
Jenny Liu, CPA, MST
Seung Hyea Lee, CPA, MBA
Charles De Simoni, CPA
Gardenya Duran, CPA
Brianna Schultz, CPA
Lisa Dongsun Goss, CPA, MSA
Samuel Segura, CPA
Jing Wu, CPA

MEMBERS
American Institute of Certified Public Accountants
EPIC The AICPA Alliance for CPA Firms
Governmental Audit Quality Center
Employee Benefit Plan Audit Quality Center
California Society of Certified Public Accountants

INDEPENDENT AUDITOR'S REPORT

Executive Committee
Western Riverside Council of Governments
Riverside, California

Report on the Financial Statements

We have audited the accompanying financial statements of the governmental activities, each major fund, and the aggregate remaining fund information of the Western Riverside Council of Governments (WRCOG), as of and for the year ended June 30, 2018, and the related notes to the financial statements, which collectively comprise WRCOG's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, each major fund and the aggregate remaining fund information of WRCOG as of June 30, 2018, and the respective changes in financial position thereof for the year then ended in conformity with accounting principles generally accepted in the United States of America.

Emphasis of a Matter

Change in Accounting Principle

As discussed in Note 1 of the financial statements, the Western Riverside Council of Governments adopted the provisions of GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions* (OPEB). Our opinion is not modified with respect to this matter.

The cumulative effects of applying the provisions of GASB Statement No. 75 have been reported as a restatement of beginning net position for the year ended June 30, 2018 in accordance with the Statement.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, schedule of revenues, expenditures, and changes in fund balance – budget and actual general fund, schedule of WRCOG's proportionate share of the net pension liability and related ratios as of the measurement date, schedule of plan contributions, schedule of changes in the net OPEB liability and related ratios, and schedule of other postemployment benefits plan contributions be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained

during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise WRCOG's basic financial statements. The introductory and statistical sections are presented for purposes of additional analysis and are not a required part of the basic financial statements. The introductory and statistical sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by Government Auditing Standards

In accordance with Government Auditing Standards, we have also issued our report dated November 5, 2018, on our consideration of WRCOG's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with Government Auditing Standards in considering WRCOG's internal control over financial reporting and compliance.

San Bernardino, California
November 5, 2018

THIS PAGE INTENTIONALLY LEFT BLANK

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Management's Discussion and Analysis
For the Year Ended June 30, 2018

This section of the Western Riverside Council of Governments (WRCOG) Comprehensive Annual Financial Report presents a narrative overview and analysis of WRCOG's financial activities for the fiscal year ended June 30, 2018. Management encourages readers to consider the information presented here in conjunction with the Letter of Transmittal.

OVERVIEW OF THE FINANCIAL STATEMENTS

This management's discussion and analysis (MD&A) is intended to serve as an introduction to WRCOG's basic financial statements. WRCOG's basic financial statements include three components:

- Government-Wide Financial Statements
- Fund Financial Statements
- Notes to the Basic Financial Statements

The following required supplemental information has been included in this report:

- Schedule of Revenues, Expenditures, and Changes in Fund Balance – Budget and Actual – General Fund
- Schedule of WRCOG's Proportionate Share of the Net Pension Liability and Related Ratios as of the Measurement Date
- Schedule of Plan Contributions
- Schedule of Changes in the Net OPEB Liability and Related Ratios
- Schedule of Other Postemployment Benefits Plan Contributions

The following supplemental information has been included in this report:

- Statement of Changes in Fiduciary Assets and Liabilities – Agency Funds
- Statistical Section

Government-Wide Financial Statements are designed to provide readers with a broad overview of WRCOG finances in a manner similar to private-sector business.

The *Statement of Net Position* presents information on all of WRCOG's assets and deferred outflows of resources as well as liabilities and deferred inflows of resources, with the difference reported as *net position*. Over time, increases or decreases in net position serve as a useful indicator of whether the financial position of WRCOG is improving or declining.

The *Statement of Activities* presents information showing how WRCOG's net position changed during the most recent fiscal year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, regardless of the timing of the related cash flows. Thus, revenues and expenses are reported in this statement for some items that will result in cash flows in future fiscal periods (such as revenues pertaining to uncollected TUMF fees or expenses pertaining to earned but unused vacation and sick leave).

Fund Financial Statements only utilizes governmental funds. The focus of governmental fund financial statements is on major funds. Major funds are determined based on minimum criteria set forth by the Governmental Accounting Standards Board (GASB). Like other state and local governments, WRCOG uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. Fund accounting is also used to aid financial management by segregating transactions related to certain government functions or activities. A fund is a separate accounting entity with a self-balancing set of accounts.

Governmental Funds are used to account for essentially the same functions as *governmental activities* in the government-wide financial statements. Unlike the government-wide financial statements, governmental fund financial statements often have a budgetary orientation, are prepared on the modified accrual basis of accounting, and focus primarily on the sources, uses, and balances of current financial resources.

Because the focus of governmental funds is narrower than that of the governmental-wide financial statements, it is useful to compare the information presented for *governmental funds* with similar information presented for *governmental activities* in the government-wide financial statements. By doing so, readers may better understand the long-term impact of the government's near-term financing decisions. The governmental funds' balance sheet and statement of revenues, expenditures, and changes in fund balances are accompanied by reconciliation to the government-wide financial statements in order to facilitate comparison between governmental funds and governmental activities.

WRCOG maintains two major governmental funds organized to their type (general and special revenue). The governmental fund statements present the financial information of each major fund in separate columns.

Notes to the Basic Financial Statements provide additional information other than that displayed on the face of the financial statements and are essential for the fair presentation of the financial information in the government-wide and fund financial statements.

Required Supplementary Information, in addition to this MD&A, presents schedules of the proportionate share of net pension liability, schedule of plan contributions, schedule of changes in net OPEB liability, schedule of OPEB contributions, plus budget and actual information.

FINANCIAL HIGHLIGHTS

- Total net position of WRCOG was $30.7 million and consisted of net investment in capital assets of $413 thousand, restricted net position of $22.2 million, and unrestricted net position of $8.1 million.

- At June 30, 2018, WRCOG's assets of $99.4 million plus deferred outflows of resources of $1.4 million exceeded its liability of $69.1 million and deferred inflows of resources of $1 million resulting in a net position of $30.7 million.

GOVERNMENT-WIDE FINANCIAL ANALYSIS

Analysis of Net Position – Net Position may serve as a useful indicator of a government's financial position. At the end of the current fiscal year, WRCOG reported positive net position, with total assets and deferred outflows of resources exceeding liabilities and deferred inflows of resources by $30.7 million.

Net pension liability is the amount needed to fully fund WRCOG's defined benefit plan. The net pension liability at June 30, 2017 was $2.3 million and increased to $2.7 million at June 30, 2018.

Deferred outflows of resources represent a consumption of net position that applies to a future period and so will not be recognized as an outflow of resources until then. WRCOG reports deferred outflows related to pensions and OPEB.

Deferred inflows of resources represent an acquisition of net position that applies to a future period and so will not be recognized as an inflow of resources until that time. WRCOG reports deferred inflows also related to pensions and OPEB.

The table below provides summarized data from the Statement of Net Position for WRCOG as of June 30, 2018, as compared to the prior year:

Statement of Net Position
As of June 30

	2018	2017
Current and other assets	$ 99,035,034	$ 83,485,828
Capital assets being depreciated	413,343	93,875
Total Assets	99,448,377	83,579,703
Deferred Outflows of Resources	1,428,977	1,197,115
Current and other liabilities	49,598,809	60,958,537
Long-term obligations	19,506,926	19,370,537
Total Liabilities	69,105,735	80,329,074
Total Deferred Inflows or Resources	1,015,899	109,364
Net Position:		
Net investment in capital assets	413,343	93,875
Restricted	22,211,582	11,702
Unrestricted	8,130,795	4,232,803
Total Net Position	$ 30,755,720	$ 4,338,380

WRCOG's total net position increased by 609%, or $26.4 million, during fiscal year 2017-2018 compared to the prior year's decrease of $31.6 million. The increase in net position was mostly due to an increase in cash due to the TUMF revenue collections. Total liabilities decreased 14%, or $11.2 million, during fiscal year 2017-2018 compared to the prior year, mostly due to the increase in TUMF revenues over what was anticipated. TUMF project liabilities are programmed according to the anticipated revenue on the Transportation Improvement Plan (TIP). As such, the TIP assumed less projects to be programmed in the current fiscal year. Current assets increased from $83.6 million in FY 2016/2017 to $99.4 million, or 19%. This increase in current assets is attributable to the difference in TUMF revenues received over projects completed and paid out. Below are the three components of net position and their respective fiscal year-end balances:

- **Net Investment in Capital Assets** represents 1.3%, or $413 thousand of WRCOG's total net position for fiscal year 2017-2018 compared to 2.2%, or $94 thousand, for fiscal year 2016-2017. The decrease is attributable to the depreciation of existing capital assets.

- **Restricted net position** accounts for 72.2%, or $22.2 million, of WRCOG's total net position for fiscal year 2017-2018 compared to 0.3%, or $11.7 thousand, for fiscal year 2016-2017. This component of net position represents external restrictions imposed by creditors, grantors, contributors, or laws and regulations of other governments and restrictions imposed by law through constitutional provisions or enabling legislation. All of the restricted net position applies to TUMF as the administration plan requires that WRCOG hold the funds until a Zone has an opportunity to claim use of the funds through the Transportation Improvement Process (TIP). The jurisdiction located within that particular zone must demonstrate it has expended its own funds and is requesting reimbursement and has provided the appropriate supporting documentation.

- **Unrestricted net position** accounts for 26.4%, or $8.1 million, of WRCOG's total net position for fiscal year 2017-2018 compared to 97.6% or $4.2 million for fiscal year 2016-2017. This component of WRCOG's total net position may be used to meet WRCOG's ongoing obligations to creditors.

Governmental Activities

Revenues: WRCOG's governmental activities rely on the following sources of revenue to finance ongoing operations:

- General revenue related to governmental activities primarily consists of fees, other revenues, and investment earnings. Investment earnings increased from $(13) thousand to $274 thousand due to an improving economy and increased interest rate yields.

- Charges for services are revenues received related to the sponsorship of the PACE Program. WRCOG receives 1.463% of the amount financed for its participation in the program. In addition, the PACE Program recording fees are included in the revenue balance.

- Operating grants and contributions increased by $24.8 million, or 56.6%, from $43.7 million in fiscal year 2016-2017 to $68.6 million in the current fiscal year. This increase was due to more TUMF revenues collected during the Fiscal Year. Total expenses decreased from $84.7 million to $47.3 million due to a decreased amount of PACE expenses and TUMF project reimbursements paid out.

- Operating Grants and Contributions are revenues received from parties outside of WRCOG, such as state agencies, and are generally restricted to one or more specific programs. TUMF revenue is the largest governmental activities program revenue with $51.3 million recognized during the year, as compared to $42.2 million for fiscal year 2016-20167, which represents an increase of 21% or $9 million.

Expenses: Total program expenses for governmental activities were $47.3 million for the current fiscal year, a decrease of 44.2%, or $37.4 million compared to prior fiscal year of $84.7 million. The decrease in expenses is mostly attributable to a lesser amount of TUMF Projects that were reimbursed during the fiscal year, as well as a decrease in PACE related expenses.

The following table provides information from the Statement of Activities for WRCOG for the fiscal year 2017-2018, as compared to the prior year:

STATEMENT OF ACTIVITIES
For the Fiscal Year Ended June 30

	2018	Percent of Total	2017	Increase (Decrease) From 2017	Percent Increase (Decrease)
Revenues					
Program revenues:					
Charges for services	$ 6,003,534	8.0%	$ 9,316,452	$ (3,312,918)	-35.6%
Operating grants and contributions	68,566,122	91.6%	43,773,262	24,792,860	56.6%
General revenues:				-	
Other revenues	-	0.0%	-	-	0.0%
Investment earnings	273,559	0.4%	(12,645)	286,204	-2263.4%
Total revenues	74,843,215	100.0%	53,077,069	21,766,146	**41.0%**
Expenses					
General government	5,416,418	11.5%	4,028,482	$ 1,387,936	34.5%
Transportation	34,971,790	73.9%	74,542,061	(39,570,271)	-53.1%
Energy	6,333,946	13.4%	5,622,980	710,966	12.6%
Environmental	570,687	1.2%	513,137	57,550	11.2%
Total expenses	47,292,841	100.0%	84,706,660	(37,413,819)	**-44.2%**
Change in Net Position	27,550,374		(31,629,591)	59,179,965	
Net Position, Beginning of Year	3,205,346		35,967,971	(32,762,625)	
Net Position, End of Year	$ 30,755,720		$ 4,338,380	$ 26,417,340	**608.9%**

FINANCIAL ANALYSIS OF FUND STATEMENTS

As previously noted, WRCOG uses *fund accounting* to ensure and demonstrate compliance with finance-related legal requirements.

Governmental Funds

The focus of WRCOG's governmental funds is to provide information on the sources, uses, and balances of spendable resources. Such information is useful in assessing WRCOG's short-term financial requirements. In particular, the total fund balance less the non-spendable amount may serve as a useful measure of a government's net resources available for spending at the end of the fiscal year. Types of governmental funds reported by WRCOG include the General and Special Revenue Funds.

The General Fund is the chief operating fund for WRCOG. At the end of the current fiscal year, the General fund's total fund balance was $11.3 million, as compared to $12.6 million for the prior fiscal year. The decrease of $1.3 million, or (10%), was mostly a result of the decreased revenues in the PACE programs. The PACE Programs have experienced a decline in revenues and volumes in FY 2017/2018 due to market saturation and other PACE providers entering the market. WRCOG is also funding its Streetlight Program and CCA Program out of its General Fund, which is expected to be paid back once the programs become self-sustaining. As a measure of the General Fund's liquidity, it is useful to compare both total fund balance and spendable fund balance to total fund expenditures. The non-spendable portion of fund balance was $44 thousand; the assigned portion was $3,048,598, which included the BEYOND Program of $2,533,866 and the Fellowship Program of $514,732, and the unassigned portion at $8.2 million. The current year's unassigned fund balance is 72% of the total general fund expenditures of $11.4 million, as compared to 89% of the total general fund expenditures for fiscal year 2016-2017. The total fund balance of the General fund for the current year is 101% of the total general fund expenditures as compared to 125% for the prior year.

GENERAL FUND FINANCIAL ANALYSIS

Revenues for the General Fund, including comparative amounts from the preceding year are shown in the following tabulation:

	2018	Percent of Total	2017	Increase (Decrease) From 2017	Percent Increase (Decrease)
Revenues					
Intergovernmental	$ 931,500	9.2%	$ 1,145,570	$ (214,070)	-18.7%
TUMF mitigation fees	2,056,285	20.3%	1,689,574	366,711	21.7%
PACE fees	5,684,817	56.0%	9,028,003	(3,343,186)	-37.0%
Other revenues	1,448,287	14.3%	894,488	553,799	61.9%
Investment income	22,819	0.2%	261	22,558	8642.9%
Total revenues	$ 10,143,708	100%	$ 12,757,896	$ (2,614,188)	**-20.5%**

The decrease in intergovernmental revenue was mainly due to a decrease in funds received from WRCOG's Used Oil Program. TUMF mitigation fees were higher because more permits were issued during the fiscal year resulting in an increased amount of revenue from the TUMF program. PACE fees decreased significantly due to market saturation and other PACE providers entering the market. Lastly, investment income increased in the general fund due to an improving economy and increased interest rate return.

Expenditures for the General fund, including comparative amounts from the preceding year, are shown in the following tabulation:

	2018	Percent of Total	2017	Increase (Decrease) From 2017	Percent Increase (Decrease)
Expenditures					
General government	$ 4,493,570	39.4%	$ 3,965,880	$ 527,690	13.3%
Energy	6,336,292	55.6%	5,632,488	703,804	12.5%
Environmental	570,687	5.0%	513,137	57,550	11.2%
Total expenditures	$ 11,400,549	100.0%	$ 10,111,505	$ 1,289,044	**12.7%**

The increase in expenditures in the General Government was due to the increase in payroll related costs such as benefits to both current and retired employees and the rising cost of pensions. Expenditures in Energy increased primarily due to increased funding of projects such as the Streetlight Program and Community Choice Aggregation (CCA) Program. In addition, the PACE program expenditures increased since the program has gone statewide, but have since dropped during the fiscal year due to market saturation. Lastly, The Environmental Program experienced an increase in expenditures mostly due to an increase in employees for this department.

GENERAL FUND BUDGETARY HIGHLIGHTS

Differences exist between final budgeted amounts versus actual mostly due to the timing in which the fourth quarter budget amendments are taken to WRCOG's Administration & Finance Committee. To be finalized for year end, the fourth quarter amendments are presented at the July Administration & Finance Committee and approved at the August Executive Committee meeting.

Because of this timing, each category of the budget for revenue has some variation with the largest occurring with the intergovernmental revenues. When the final budget was presented to the Executive Committee, it was anticipated revenues in the General Fund would be $9.9 million; however, the actual amount was only $10.1 million, leaving a variance of $238 thousand.

On the expenditure side for the General Fund, it was anticipated expenditures would be $18.1 million; however, actual expenditures were only $11.4 million, leaving a variance of $6.7 million. This was mostly due to the WRCOG BEYOND Program grant, which does not match up with WRCOG's Fiscal Year. The grant year causes expenditures to be carried forward into the next Fiscal Year.

CAPITAL ASSETS AND LONG TERM OBLIGATIONS

As of June 30, 2018, WRCOG had capital assets of $413,343, net of accumulated depreciation, invested in mostly office items such as furniture, computers, office improvements, and vehicles.

Additional information to WRCOG's capital assets can be found on Note 4 to the financial statements.

Long-term liabilities have increased from $20 million in FY 2016/2017, to $19.5 million in FY 2017/2018, or an increase of 0.66%. The increase in long-term liabilities can mostly be attributed to an increase in pension liabilities.

Additional information to WRCOG's long-term liabilities can be found on Note 5 to the financial statements

ECONOMIC FACTORS AND OTHER FACTORS

On June 22, 2018 WRCOG adopted the fiscal year 2018/2019 budget. The budget is presented by function, which includes: Administration, Transportation, Energy, and Environmental. Expenditures have shifted in that now the majority of budgeted expenditures are now in the Energy category because of the need for consulting services, payroll, and recording fees. The TUMF program, saw an increase in revenues of 21.7% in Fiscal Year 2017/2018. Leading economic indicators suggest that the housing market has stabilized, which has helped balance the WRCOG budget.

CONTACTING WRCOG'S MANAGEMENT

This financial report is designed to provide a general overview of WRCOG's finances for all those with an interest in the government's finances and to show WRCOG's accountability for the money it receives. Questions concerning any of the information provided in this report or requests for additional information should be addressed to the Interim Chief Financial Officer, Finance Department at Western Riverside Council of Governments, 3390 University Avenue, Suite 450, Riverside, California 92501.

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Statement of Net Position
June 30, 2018

	Governmental Activities
ASSETS	
Cash and investments	$ 92,386,043
Receivables:	
Grants	880,095
Interest	4,707
Mitigation fees receivable	5,718,550
Due from other governments	1,780
Prepaid items	43,859
Capital assets, net of accumulated depreciation	413,343
Total Assets	99,448,377
DEFERRED OUTFLOWS OF RESOURCES	
Deferred amounts related to pensions	1,192,341
Deferred amounts related to OPEB	236,636
Total Deferred Outflows of Resources	1,428,977
LIABILITIES	
Accounts payable	2,954,909
Due to other governments	46,333,735
Accrued wages and benefits	89,286
Unearned revenue	220,879
Non-current liabilities:	
Due within one year	25,240
Due in more than one year:	
Compensated absences	227,162
TUMF liabilities	15,898,755
Net pension liability	2,689,185
Net OPEB liability	666,584
Total Liabilities	69,105,735
DEFERRED INFLOWS OF RESOURCES	
Deferred amounts related to pensions	83,799
Deferred amounts related to OPEB	932,100
Total Deferred Inflows of Resources	1,015,899
NET POSITION	
Net investment in capital assets	413,343
Restricted for:	
Transportation Uniform Mitigation Fee Program	22,199,849
Foundation	11,733
Unrestricted	8,130,795
Total Net Position	$ 30,755,720

The accompanying notes are an integral part of these financial statements

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Statement of Activities
For the Fiscal Year Ended June 30, 2018

Functions/Programs	Expenses	Program Revenues: Charges for Services	Program Revenues: Operating Grants and Contributions	Net (Expense) Revenue and Changes in Net Position: Governmental Activities
Primary Government:				
Governmental activities:				
General government	$ 5,416,418	$ -	$ 567,640	$ (4,848,778)
Transportation	34,971,790	-	67,483,341	32,511,551
Energy	6,333,946	6,003,534	-	(330,412)
Environmental	570,687	-	515,141	(55,546)
Total Governmental Activities	$ 47,292,841	$ 6,003,534	$ 68,566,122	$ 27,276,815
	General Revenues:			
	Investment income			273,559
	Total General Revenues			273,559
	Change in Net Position			27,550,374
	Net Position, Beginning of Year, as restated (Note 16)			3,205,346
	Net Position, End of Year			$ 30,755,720

The accompanying notes are an integral part of these financial statements

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Balance Sheet – Governmental Funds
June 30, 2018

	Major Funds		Non Major Fund	Total Governmental Funds
	General Fund	Special Revenue TUMF	WRCOG Foundation	
ASSETS				
Cash and investments	$ 12,695,327	$ 79,678,983	$ 11,733	$ 92,386,043
Receivables:				
Grants	880,095	-	-	880,095
Interest	9	4,698	-	4,707
Mitigation fees receivable	-	5,718,550	-	5,718,550
Due from other governments	1,780	-	-	1,780
Prepaid items	43,859	-	-	43,859
Advances to other funds	-	777,687	-	777,687
Total Assets	$ 13,621,070	$ 86,179,918	$ 11,733	$ 99,812,721
LIABILITIES AND FUND BALANCES				
Liabilities				
Accounts payable	$ 1,207,330	$ 1,747,579	$ -	$ 2,954,909
Due to other governments	-	46,333,735	-	46,333,735
Accrued wages and benefits	89,286	-	-	89,286
Unearned revenue	220,879	-	-	220,879
Advances from other funds	777,687	-	-	777,687
Total Liabilities	2,295,182	48,081,314	-	50,376,496
Fund Balances				
Nonspendable:				
Prepaid items	43,859	-	-	43,859
Restricted:				
Transportation projects	-	38,098,604		38,098,604
Foundation	-	-	11,733	11,733
Assigned:				
BEYOND Program	2,533,866	-	-	2,533,866
Fellowship Program	514,732	-	-	514,732
Unassigned	8,233,431	-	-	8,233,431
Total Fund Balances	11,325,888	38,098,604	11,733	49,436,225
Total Liabilities and Fund Balances	$ 13,621,070	$ 86,179,918	$ 11,733	$ 99,812,721

The accompanying notes are an integral part of these financial statements

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Reconciliation of the Balance Sheet of Governmental Funds to the Statement of Net Position
June 30, 2018

Amounts reported for governmental activities in the statement of net position are different because:

Total fund balances - Governmental Funds	$	49,436,225
Capital assets, net of accumulated depreciation used in governmental activities, are not current financial resources and therefore are not reported in the funds.		413,343
Non-current liabilities are not due and payable in the current period and therefore are not reported in the funds.		
Compensated absences		(252,402)
TUMF liabilities		(15,898,755)
Net pension liability		(2,689,185)
Net OPEB liablility		(666,584)
Deferred outflows and inflows of resources are not reported in the governmental funds:		
Deferred amounts related to pensions		1,108,542
Deferred amounts related to OPEB		(695,464)
Net Position of Governmental Activities	$	30,755,720

The accompanying notes are an integral part of these financial statements

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Statement of Revenues, Expenditures, and Changes in Fund Balances – Governmental Funds
For the Fiscal Year Ended June 30, 2018

	Major Funds		Non Major Fund	
	General Fund	Special Revenue TUMF	WRCOG Foundation	Total Governmental Funds
REVENUES				
Intergovernmental	$ 931,500	$ -	$ -	$ 931,500
TUMF mitigation fees	2,056,285	49,248,746	-	51,305,031
PACE fees	5,684,817	-	-	5,684,817
Other revenues	1,448,287	15,200,000	20	16,648,307
Investment income (loss)	22,819	250,730	11	273,560
Total Revenues	10,143,708	64,699,476	31	74,843,215
EXPENDITURES				
Current:				
General government	4,493,570	-	-	4,493,570
Transportation	-	35,974,673	-	35,974,673
Energy	6,336,292	-	-	6,336,292
Environmental	570,687	-	-	570,687
Total Expenditures	11,400,549	35,974,673	-	47,375,222
Net Change in Fund Balances	(1,256,841)	28,724,803	31	27,467,993
Fund Balances, Beginning of Year	12,582,729	9,373,801	11,702	21,968,232
Fund Balances, End of Year	$ 11,325,888	$ 38,098,604	$ 11,733	$ 49,436,225

The accompanying notes are an integral part of these financial statements

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Reconciliation of the Statement of Revenues, Expenditures, and Changes in Fund Balances of Governmental Funds to the Statement of Activities
For the Fiscal Year Ended June 30, 2018

Amounts reported for governmental activities in the statement of activities are different because:

Net change in fund balances - total governmental funds	$	27,467,993
Governmental funds report capital outlays as expenditures. However, in the statement of activities, the cost of those assets is allocated over their estimated useful lives and reported as depreciation expense. This is activity is reconciled as follows:		
Cost of assets capitalized, at net book value		406,618
Depreciation expense		(87,150)
The payment of amounts pursuant to long-term TUMF agreements is recorded as an expenditure in the governmental funds. This transaction does not have an effect on the net position in the government-wide financial statements.		1,000,000
Some expenses reported in the Statement of Activities do not require the use of current financial resources and therefore are not reported as expenditures in governmental funds.		
Net change in compensated absenses		(77,668)
Increase in net OPEB liability		(788,073)
Pension expense net adjustment		(371,346)
Change in Net Position of Governmental Activities	$	27,550,374

The accompanying notes are an integral part of these financial statements

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Statement of Fiduciary Net Position
June 30, 2018

	Agency Fund
ASSETS	
Cash and investments	$ 1,833,961
LIABILITIES	
Deposits payable	$ 1,833,961

The accompanying notes are an integral part of these financial statements

THIS PAGE INTENTIONALLY LEFT BLANK

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Notes to the Financial Statements
For the Fiscal Year Ended June 30, 2018

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

A. Reporting Entity

The Western Riverside Council of Governments (WRCOG) was formed in 1989 under the California Government Code Section 6500 et. seq. WRCOG is a special district governed by twenty-four Executive Committee Members consisting of seventeen members from the cities in Western Riverside County (excluding the City of Beaumont), four Riverside County Supervisors, two members, each from the Eastern and Western Municipal Water Districts, and one member from the Riverside County Superintendent of Schools.

Accounting principles generally accepted in the United States of America require that these financial statements present the accounts of WRCOG and any of its component units. Component units are legally separate entities for which WRCOG is considered to be financially accountable or otherwise has a relationship, which is such that the exclusion of the entity would cause the financial statements to be misleading. Blended component units are considered, in substance, part of WRCOG's operations so the accounts of these entities are to be combined with the data of WRCOG. Component units, which do not meet these requirements, are reported in the financial statements as discrete units to emphasize their separate legal status.

Blended Component Unit

WRCOG Supporting Foundation (the Foundation). WRCOG has created a foundation to support its mission and objectives under IRC 509(a)(3) as an organization that is supervised and controlled in connection with a publicly supported organization. All contributions to the Foundation are exempt under section 501(c)(3) of the Internal Revenue Code. WRCOG executive committee members are the governing board of the Foundation, and management of WRCOG has operational responsibility for the component unit. The Foundation is reported as a separate nonmajor fund in these financial statements.

B. Basis of Presentation

WRCOG's basic financial statements are prepared in conformity with accounting principles generally accepted in the United States of America. The Governmental Accounting Standards Board is the acknowledged standard setting body for establishing accounting and financial reporting standards followed by governmental entities in the United States of America.

These statements require that the financial statements described below be presented.

Government-wide Financial Statements. The Statement of Net Position and the Statement of Activities report information on all activities of WRCOG. All fiduciary activities are reported only in the fund financial statements.

The effect of interfund activity has been removed from the government-wide financial statements. Governmental activities are supported by fees, taxes, and intergovernmental revenues.

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES, (Continued)

B. Basis of Presentation, Continued

The statement of activities demonstrates the degree to which the direct expenses of a given function or segment are offset by program revenues. Direct expenses are those that are clearly identifiable with a specific function or segment. Program revenues include grants and contributions that are restricted to meeting the operational or capital requirements of a particular function or segment. General assembly revenues and other items that do not meet the definition of program revenues are reported instead as general revenues.

Fund Financial Statements. Major individual governmental funds are reported as separate columns in the fund financial statements.

C. Measurement Focus and Basis of Accounting

The government-wide financial statements are reported using the economic resources measurement focus and the accrual basis of accounting. Revenues are recorded when earned, and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows. Grants and similar items are recognized as revenue in the fiscal year in which all eligibility requirements imposed by the provider have been satisfied.

Governmental fund financial statements are reported using the current financial resources measurement focus and the modified accrual basis of accounting. Under the modified accrual basis of accounting, revenues are recognized when measurable and available. WRCOG considers all revenues reported in the governmental funds to be available if they are collected within 60 days after year end, except for cost reimbursement based grants where due to the nature of these grants 180 days after year end is used. Expenditures are generally recorded when a liability is incurred, as under accrual accounting. However debt service expenditures, as well as expenditures related to compensated absences and claims and judgments, are recorded only when payment is due. General capital asset acquisitions are reported as expenditures in governmental funds.

D. Fund Classifications

WRCOG reports the following major governmental funds:

General Fund. The general fund is WRCOG's primary operating fund. It accounts for all financial resources of WRCOG, except those required to be accounted for in another fund.

Transportation Uniform Mitigation Fees (TUMF) Special Revenue Fund. This fund is used to account for the proceeds of Transportation Uniform Mitigation Fees which are legally restricted to expenditures for specified purposes.

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES, (Continued)

D. Fund Classifications, Continued

Additionally, WRCOG reports the following fiduciary fund:

Agency Fund. WRCOG's agency fund is used to account for deposits relating to the payoff of Property Assessed Clean Energy (PACE) program loans. Agency funds are custodial in nature (assets equal liabilities) and do not involve the recording of revenues and expenses.

E. Financial Statement Elements

(1) Cash and Investments

Investments are reported in the accompanying balance sheet at fair value, except for non-negotiable certificates of deposit and investment contracts that are reported at cost. These investments are not transferrable, and they have terms that are not affected by changes in market interest rate. Investment income includes interest earnings and the net increase (decrease) in fair value of investments. WRCOG categorized the fair value measurements for its investments based on the hierarchy established by generally accepted accounting principles. The fair value hierarchy, which has three levels, is based on the valuation inputs used to measure fair value: Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are significant other observable inputs; Level 3 inputs are significant unobservable inputs.

(2) Interfund Balances and Transfers

Activities between funds that are representative of lending and borrowing arrangements outstanding at year end are referred to as advances to/from other funds.

(3) Capital Assets

Capital assets, which include furniture and computers, are reported in the government-wide financial statements. WRCOG defines capital assets as assets with an initial, individual cost of more than $1,000 and an estimated useful life of more than one year. Such assets are recorded at historical cost or estimated historical cost if purchased or constructed. Donated capital assets are recorded at acquisition value at the date of donation. The costs of normal maintenance and repairs that do not add to the value of the asset or materially extend assets lives are not capitalized. Capital assets are depreciated using the straight-line method over the estimated useful lives varying from five to ten years.

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES, (Continued)

E. Financial Statement Elements, Continued

(4) Compensated Absences

A total of 10 days of vacation per year may be accumulated by each employee with three years of service, 15 days with four years of service, and 20 days with ten or more years of service. However, employees are not paid for their accumulated sick leave upon retirement until they have been employed for five years, at which time 50% of accumulated sick leave hours in excess of 240 hours is paid out. WRCOG accrued a liability for compensated absences, which meets the following criteria:

- WRCOG's obligation relating to employees' rights to receive compensation for future absences is attributable to employees' services already rendered,
- The obligation relates to rights that vest or accumulate,
- Payment of the compensation is probable,
- The amount can be reasonably estimated.

Compensated absences not expected to be liquidated with expendable available financial resources are reported in the government-wide financial statements.

(5) Fund Balance – Governmental Funds

The following fund balance classifications describe the relative strength of the spending constraints on WRCOG's fund balances:

- Nonspendable fund balance – amounts that cannot be spent either because they are in nonspendable form or because they are legally or contractually required to be maintained intact.
- Restricted fund balance – amounts constrained to specific purposes by their providers (such as grantors, contributors, or laws or regulations of other governments).
- Committed fund balance – amounts constrained to specific purposes by WRCOG itself, using its highest level of decision-making authority (i.e., Executive Committee ordinance). To be reported as committed, amounts cannot be used for any other purpose unless WRCOG takes the same highest level action to remove or change the constraint.
- Assigned fund balance – amounts WRCOG intends to use for a specific purpose. Intent is expressed by the Executive Committee.
- Unassigned fund balance – amounts that are available for any purpose. Positive amounts can only be reported in the general fund.

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES, (Continued)

E. Financial Statement Elements, Continued

(5) Fund Balance – Governmental Funds, Continued

When an expenditure is incurred for purposes for which both restricted and unrestricted fund balance is available, WRCOG considers restricted funds to have been spent first. When an expenditure is incurred for which committed, assigned, or unassigned fund balances are available, WRCOG considers amounts to have been spent first out of committed funds, then assigned funds, and finally unassigned funds, as needed, unless the Executive Committee or management has provided otherwise in its commitment or assignment actions.

(6) Estimates

The preparation of these financial statements requires management to make estimates and assumptions. Those estimates and assumptions affect the reported amounts and the disclosures. Actual results could differ from those estimates.

(7) Pensions

Information about the fiduciary net position of WRCOG's California Public Employees Retirement System (CalPERS) Plan and additions to/deductions in the Plan's fiduciary net position have been determined on the same basis as reported by CalPERS. This includes the measurement of pension expense and the net pension liability and deferred outflows/inflows of resources related to pensions. Benefit payments, including refunds of employee contributions, are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

(8) Other Post-Employment Benefit (OPEB)

For purposes of measuring the net OPEB liability, deferred outflows of resources and deferred inflows of resources related to OPEB, and OPEB expense, information about the fiduciary net position of the WRCOG'S plan (OPEB Plan) and additions to/deductions from the OPEB Plan's fiduciary net position have been determined on the same basis. For this purpose, benefit payments are reported at fair value.

Generally accepted accounting principles require that the reported results must pertain to liability and asset information within certain defined timeframes. For this report, the following timeframes are used:

Valuation Date: June 30, 2017
Measurement Date: June 30, 2017
Measurement Period: June 30, 2016 to June 30, 2017

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES, (Continued)

E. Financial Statement Elements, Continued

(9) Deferred Outflows and Inflows of Resources

In addition to assets, the statement of net position will sometimes report a separate section for deferred outflows of resources. Deferred outflows of resources represents a consumption of net position that applies to a future period and so will not be recognized as an outflow of resources until then. The government only has one item that qualifies for reporting in this category: deferred amounts related to pensions.

In addition to liabilities, the statement of net position will sometimes report a separate section for deferred inflows of resources. Deferred inflows of resources represents an acquisition of net position that applies to a future period and so will not be recognized as an inflow of resources until that time. The government has only one type of item of this: deferred amounts related to pensions. For the fund level statements, deferred inflows of resources represent unavailable resources.

(10) Implementation of New Pronouncement

The Governmental Accounting Standards Board (GASB) has issued Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions* (OPEB). The primary objective of this Statement is to improve accounting and financial reporting by state and local governments for other postemployment benefits. This statement establishes standards for measuring and recognizing liabilities, deferred outflows of resources, and deferred inflows of resources, and expenses.

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Notes to the Financial Statements
For the Fiscal Year Ended June 30, 2018

NOTE 2 – CASH AND INVESTMENTS

Cash and investments at June 30, 2018, are classified in the accompanying financial statements as follows:

Cash and investments as of June 30, 2018, consist of the following:

Deposits and petty cash	$	17,879,443
Investments		76,340,561
Total Cash and Investments	$	94,220,004

A. Authorized Investments

The following investments are authorized under California Government Code and, where more restrictive, WRCOG's Investment Policy:

Authorized Investment Type	Maximum Maturity	Maximum Percentage of Portfolio	Maximum Investment in One Issuer
U.S. Treasury Obligations	5 years	100%	None
U.S. Agency Securities	5 years	100%	None
State of California Obligations	5 years	15%	None
Local Agency Obligations	5 years	15%	None
Repurchase Agreements	7 days	25%	20%
Commercial Paper	270 days	25%	10%
Banker's Acceptances	180 days	40%	30%
Medium Term Notes	5 years	30%	None
Time Certificates of Deposit	5 years	2%	None
Negotiable Certificates of Deposit	5 years	25%	None
Money Market Mutual Funds	N/A	20%	10%
Riverside County Treasurer's Pooled Investment	N/A	None	None
Local Agency Investment Fund (LAIF)	N/A	None	$65 million **

** Limit set by LAIF governing Board, not California Government Code

NOTE 2 – CASH AND INVESTMENTS, (Continued)

B. Disclosures Relating to Interest Rate Risk

Interest rate risk is the risk that changes in market interest rates will adversely affect the fair value of an investment. Generally, the longer the maturity of an investment, the greater the sensitivity of its fair value to changes in market interest rates. As of the year end, the weighted average maturity of the investments contained in the Local Agency Investment Fund (LAIF) pool was approximately 200 days. WRCOG's investment policy recognizes the interest rate risk and therefore places maximum maturity limits (up to five years) on various types of allowable investments.

		Remaining Maturity		
Investment Type	Total	12 months or less	13 to 24 months	25 to 36 months
LAIF	$ 801,348	$ 801,348	$ -	$ -
Supranational	2,159,417	-	421,452	1,737,965
Local Agency Obligations	531,464	531,464	-	-
Medium Term Notes	9,816,924	502,129	5,310,035	4,004,760
U.S. Treasury Obligations	240,421	-	-	240,421
U.S. Agency Securities	15,134,450	492,666	4,415,936	10,225,848
Negotiable CDs	5,054,095	190,083	3,252,250	1,611,762
Commercial Paper	2,679,193	2,679,193	-	-
CAMP	39,801,653	39,801,653	-	-
Money Market Account	121,596	121,596	-	-
Total	$ 76,340,561	$ 45,120,132	$ 13,399,673	$ 17,820,756

C. Fair Value Classifications

Fair value measurements are categorized based on the valuation inputs used to measure fair value. Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are significant other observable inputs; Level 3 inputs are significant unobservable inputs. Investments categorized as Level 2 are valued using market approach using quoted market prices.

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Notes to the Financial Statements
For the Fiscal Year Ended June 30, 2018

NOTE 2 – CASH AND INVESTMENTS, (Continued)

C. Fair Value Classifications, Continued

Fair value measurements for investments are as follows as of June 30, 2018:

Investment Type	Fair Value	Level 1	Level 2	Level 3
U.S. Treasury Obligations	$ 240,421	$ -	$ 240,421	$ -
U.S. Agency Securities	15,134,450	-	15,134,450	-
Local Agency Obligations	531,464	-	531,464	-
Supranational	2,159,417		2,159,417	
Negotiable CDs	5,054,095		5,054,095	
Commercial Paper	2,679,193	-	2,679,193	-
Medium Term Notes	9,816,924	-	9,816,924	-
Total Leveled Investments	35,615,964	$ -	$ 35,615,964	$ -
Investments not Subject to Hierarchy:				
LAIF	801,348			
CAMP	39,801,653			
Money Market Account	121,596			
	$ 76,340,561			

Deposits and withdrawals to/from LAIF are made on the basis of $1 and not fair value. As such, the measurement of fair value is uncategorized and not defined as a Level 1, Level 2 or Level 3 input. The balance of the money market account is considered a cash equivalent.

D. Disclosures Relating to Credit Risk

Generally, credit risk is the risk that an issuer of an investment will not fulfill its obligation to the holder of the investment. This is measured by the assignment of a rating by a nationally-recognized statistical rating organization. Presented below is the minimum rating required by (where applicable) the California Government Code, the WRCOG's investment policy, or debt agreements, and the actual Standard and Poor's rating as of year-end for each investment type.

Investment Type	Total	Minimum Legal Rating	AAA	AA+	AA	AA-	A+	A	A-	A-1	Not Rated
LAIF	$ 801,348	N/A	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 801,348
Supranational	2,159,416	N/A	2,159,416	-	-	-	-	-	-	-	-
Local Agency Obligations	531,464	N/A	-	-	531,464	-	-	-	-	-	-
U.S. Treasury Obligations	240,421	N/A	-	240,421	-	-	-	-	-	-	-
U.S. Agency Securities	15,134,451	N/A	5,472,435	9,662,016	-	-	-	-	-	-	-
Negotiable CDs	5,054,095	N/A	-	-	-	1,969,863	1,817,364	1,076,785	-	190,083	-
Commericial Paper	2,679,193	N/A	-	-	-	-	-	-	-	2,679,193	-
Medium Term Notes	9,816,924	A	-	689,150	352,705	1,072,286	3,058,995	3,502,932	1,140,856	-	-
CAMP	39,801,653	N/A	-	-	-	-	-	-	-	-	39,801,653
Money Market Account	121,596	N/A	-	-	-	-	-	-	-	-	121,596
	$ 76,340,561		$ 7,631,851	$ 10,591,587	$ 884,169	$ 3,042,149	$ 4,876,359	$ 4,579,717	$ 1,140,856	$ 2,869,276	$ 40,724,597

NOTE 2 – CASH AND INVESTMENTS, (Continued)

E. Concentration of Credit Risk

At June 30, 2018 there were no investments in any one issuer that represented five percent or more of the total WRCOG investments (other than external investment pools).

F. Custodial Credit Risk

Custodial credit risk for deposits is the risk that, in the event of the failure of a depository financial institution, a government will not be able to recover its deposits or will not be able to recover collateral securities that are in the possession of an outside party. The custodial credit risk for investments is the risk that, in the event of the failure of the counterparty (e.g., broker-dealer) to a transaction, a government will not be able to recover the value of its investment or collateral securities that are in the possession of another party. The California Government Code and the WRCOG's policy do not contain legal or policy requirements that would limit the exposure to custodial credit risk for deposits or investments, other than the following provision for deposits:

The California Government Code requires that a financial institution secure deposits made by state or local governmental units by pledging securities in an undivided collateral pool held by a depository regulated under state law (unless so waived by the governmental unit). The market value of the pledged securities in the collateral pool must equal at least 110 percent of the total amount deposited by the public agencies. California law also allows financial institutions to secure WRCOG deposits by pledging first trust deed mortgage notes having a value of 150 percent of the secured public deposits.

Of WRCOG's deposits with financial institutions, $18,471,985 was in excess of federal depository insurance limits. The uninsured deposits were held by financial institutions, which are legally required by the California Government Code to collateralize the WRCOG’s deposits as noted above.

NOTE 2 – CASH AND INVESTMENTS, (Continued)

G. Investment in State Investment Pool

WRCOG is a voluntary participant in the Local Agency Investment Fund (LAIF) that is regulated by the California Government Code under the oversight of the Treasurer of the State of California. LAIF is a governmental investment pool managed and directed by the California State Treasurer and is not registered with the Securities and Exchange Commission. An oversight committee comprised of California State officials and various participants provide oversight to the management of the fund. The fair value of WRCOG's investment in this pool is reported in the accompanying financial statements at amounts based upon WRCOG's pro rata share of the fair value provided by LAIF for the entire LAIF portfolio (in relation to the amortized cost of that portfolio). The balance available for withdrawal is based on the accounting records maintained by LAIF, which are recorded on an amortized cost basis. All investments with LAIF are secured by the full faith and credit of the State of California. Separate LAIF financial statements are available from the California State Treasurer's Office on the Internet at www.treasurer.ca.gov.

H. Investment in JPA Pool/CAMP

WRCOG is a voluntary participant in the CAMP Trust (Trust), which was established as a nontaxable investment portfolio under provisions of the California Joint Exercise of Powers Act to provide California Public Agencies with comprehensive investment management services. There are no minimum deposit requirements or limits on deposits and withdrawals. Dividends from net investment income are declared on a daily basis and paid on the last day of the month. Dividends paid are automatically reinvested in each account by the purchase of additional shares. The contract creating the Trust specifies the types of investments that can be made by the investment portfolio with available cash: U.S. Government securities, securities of federally sponsored agencies, repurchase agreements, banker's acceptances, negotiable certificates of deposit and commercial paper. The fair value of WRCOG's investment in this pool is reported in the accompanying financial statements at amounts based upon WRCOG's pro-rata share of the fair value provided by CAMP

NOTE 3 – INTERFUND RECEIVABLES AND PAYABLES

Advances to Other Funds

WRCOG's interfund receivables and payables represent amounts advanced from the TUMF Fund to the General Fund for OPEB costs. The advance is anticipated to be repaid over a ten year period which began in fiscal year 2014-15 with equal annual payments.

The composition of interfund balance as of June 30, 2018, is as follows:

Receivable Fund	Payable Fund	Amount
TUMF	General	$ 777,687

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Notes to the Financial Statements
For the Fiscal Year Ended June 30, 2018

NOTE 4 – CAPITAL ASSETS

A schedule of changes in capital assets for the year ended June 30, 2018, is shown below:

	Beginning	Increases	Decreases	Ending
Governmental Activities:				
Capital assets, being depreciated:				
Furniture and Computer Equipment	$ 422,785	$ 406,618	-	$ 829,403
Other Capital Assets	33,037	-	-	33,037
Total Depreciable Capital Assets	455,822	406,618	-	862,440
Less Accumulated Depreciation for:				
Furniture and Computer Equipment	(355,340)	(87,150)		(442,490)
Other Capital Assets	(6,607)	-	-	(6,607)
Total Accumulated Depreciation	(361,947)	(87,150)	-	(449,097)
Capital Assets net of Accumulated Depreciation	$ 93,875	$ 319,468	$ -	$ 413,343

Depreciation expense of $87,150 was charged to the general government function of the governmental activities.

NOTE 5 – LONG-TERM LIABILITIES

A schedule of changes in the long-term liabilities for the year ended June 30, 2018, is shown below:

	Beginning	Additions	Reductions	Ending	Due within One Year
Governmental Activities:					
Compensated Absences	$ 174,734	$ 159,960	$ (82,292)	$ 252,402	$ 25,240
Refund Liability	8,745,255	-	-	8,745,255	-
City of Moreno Valley Agreement	6,493,500	-	(1,000,000)	5,493,500	-
City of Riverside Agreement	1,660,000	-	-	1,660,000	-
Net Pension Liability	2,297,048	715,337	(323,200)	2,689,185	-
OPEB Obligation	659,580	7,004	-	666,584	-
Total Long-term Liabilities	$ 20,030,117	$ 882,301	$ (1,405,492)	$ 19,506,926	$ 25,240

Compensated absences will be liquidated primarily from the General Fund.

NOTE 5 – LONG-TERM LIABILITIES, (Continued)

A. Refund Liability

WRCOG maintains a listing of developers who are owed a refund for various reasons including expired permits, duplicate payments, and credit agreements entered into with the developer. Some of the refunds are included on the Transportation Improvement Plan (TIP) and some are not but are generally not paid out until the zone has enough money to repay the refund. Each zone within the TIP maintains its own refund amounts and as funds become available, the refunds are paid out. No interest is calculated on refunds granted back to the developer. The refunds will be liquidated from the TUMF Fund.

B. City of Moreno Valley Agreement

In 2011, WRCOG entered into an agreement with the City of Moreno Valley to fund a portion of the Nason/SR-60 Interchange Project. Pursuant to the agreement, the City incurred project-related costs which will be reimbursed through TUMF as funds become available through the annual TUMF allocation process. The total authorized by the agreement was $11,128,000. As of June 30, 2018, the remaining amount to be reimbursed to the City is $5,493,500. The liability will be liquidated from the TUMF Fund.

C. City of Riverside Agreement

In 2007, WRCOG entered into an agreement with the City of Riverside to fund the Magnolia Avenue/Union Pacific Grade Separation project. Pursuant to the agreement, the City incurred project related costs which will be reimbursed through TUMF as funds become available through the annual TUMF allocation process. The total authorized by the agreement was $15,660,000. As of June 30, 2018, the remaining amount to be reimbursed to the City is $1,660,000. The liability will be liquidated from the TUMF Fund.

NOTE 6 – TRANSPORTATION UNIFORM MITIGATION FEES

WRCOG developed an ordinance and an administrative plan effective June 1, 2003, to implement the Transportation Uniform Mitigation Fee (TUMF). This ordinance and the administrative plan allows for the collection of mitigation fees over 25 years related to the planning and construction of a regional transportation system throughout the western region of Riverside County. The municipalities located within the western region of Riverside County (grouped by zones) and the County of Riverside collect these fees and remit them to WRCOG on a monthly basis. WRCOG is responsible for the administration of these fees, subject to certain restrictions, and approves plans that meet the goals (nexus) of the legislation.

NOTE 6 – TRANSPORTATION UNIFORM MITIGATION FEES, (Continued)

WRCOG is entitled to an administration fee of up to 4% annually of TUMF revenues collected, with a maximum of 1% that can be used to offset salaries and benefits related to TUMF administration. In 2018, the total administration fee collected was 4%. Riverside Conservation Agency (RCA) also receives a percentage of the TUMF revenues collected of 1.47%, which is included as an expense in the TUMF Fund.

The fees allocated among the zones, Riverside County Transportation Commission (RCTC), and Riverside Transit Authority (RTA) are 45.7%, 45.7% and 3.13%, respectively. These allocations are remitted monthly to RCTC and quarterly to RTA; however the zones must submit project plans for approval to WRCOG before funds can be released. RCA must submit potential sites designated for conservation for approval before funds are released.

NOTE 7 – EMPLOYEE BENEFITS

California Public Employees' Retirement System (CalPERS)

Plan Description

All qualified permanent and probationary employees are eligible to participate in the Public Agency Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (Plan) administered by the California Public Employees' Retirement System (CalPERS.) The Plan consists of individual rate plans (benefit tiers) within a safety risk pool (police and fire) and a miscellaneous risk pool (all other). Plan assets may be used to pay benefits for any employer rate plan of the safety and miscellaneous pools. Accordingly, rate plans within the safety or miscellaneous pools are not separate plans under GASB Statement No. 68. Individual employers may sponsor more than one rate plan in the miscellaneous or safety risk pools. WRCOG sponsors two miscellaneous rate plans. Benefit provisions under the Plan are established by State statute and WRCOG resolution. CalPERS issues publicly available reports that include a full description of the pension plan regarding benefit provisions, assumptions and membership information that can be found on the CalPERS' website, at www.calpers.ca.gov.

Benefits Provided

CalPERS provides service retirement and disability benefits, annual cost of living adjustments and death benefits to plan members, who must be public employees and beneficiaries. Benefits are based on years of credited service, equal to one year of full time employment. Members with five years of total service are eligible to retire at age 50 with statutorily reduced benefits. All members are eligible for non-duty disability benefits after 5 years of service. The death benefit is one of the following: the Basic Death Benefit, the 1957 Survivor Benefit, or the Optional Settlement 2W Death Benefit. The cost of living adjustments for each plan are applied as specified by the Public Employees' Retirement Law.

NOTE 7 – EMPLOYEE BENEFITS, (Continued)

California Public Employees' Retirement System (CalPERS), Continued

Benefits Provided, Continued

The Plan operates under the provisions of the California Public Employees' Retirement Law (PERL), the California Public Employees' Pension Reform Act of 2013 (PEPRA), and the regulations, procedures and policies adopted by the CalPERS Board of Administration. The Plan's authority to establish and amend the benefit terms are set by the PERL and PEPRA, and may be amended by the California state legislature and in some cases require approval by the CalPERS Board.

The Plan's provisions and benefits in effect at June 30, 2018, are summarized as follows:

	Miscellaneous	
	Classic	New Members
Hire Date	Prior to January 1, 2013	On or after January 1, 2013
Benefit formula	2.7% at 55	2% at 62
Benefit vesting schedule	5 years of service	5 years of service
Benefit payments	monthly for life	monthly for life
Retirement age	55	62
Monthly benefits, as a % of annual salary	2.70%	2.00%
Required employee contribution rates	8.00%	6.75%
Required employer contribution rates	12.81%	7.36%

Contributions

Section 20814(c) of the California Public Employees' Retirement Law (PERL) requires that the employer contribution rates for all public employers be determined on an annual basis by the actuary and shall be effective on the July 1 following notice of a change in the rate. The total plan contributions are determined through CalPERS' annual actuarial valuation process. For public agency cost-sharing plans covered by either the Miscellaneous or Safety risk pools, the Plan's actuarially determined rate is based on the estimated amount necessary to pay the Plan's allocated share of the risk pool's costs of benefits earned by employees during the year, and any unfunded accrued liability. The employer is required to contribute the difference between the actuarially determined rate and the contribution rate of employees. Employer contribution rates may change if plan contracts are amended. Payments made by the employer to satisfy contribution requirements that are identified by the pension plan terms as plan member contribution requirements are classified as plan member contributions. Employer contributions to the Plan for the fiscal year ended June 30, 2018, were $345,428. The actual employer payments of $323,200 made to CalPERS by the WRCOG during the measurement period ended June 30, 2017, differed from the WRCOG's proportionate share of the employer's contributions of $294,580 by $28,620, which is being amortized over the expected average remaining service lifetime in the Public Agency Cost-Sharing Multiple Employer Plan.

NOTE 7 – EMPLOYEE BENEFITS, (Continued)

California Public Employees' Retirement System (CalPERS), Continued

Net Pension Liability

WRCOG's net pension liability for the cost-sharing plan covered by miscellaneous risk pools is measured as the total pension liability, less the pension plan's fiduciary net position. The net pension liability of the Plan is measured as of June 30, 2017, using an annual actuarial valuation as of June 30, 2016, rolled forward to June 30, 2017, using standard update procedures. A summary of principal assumptions and methods used to determine the net pension liability is as follows.

Valuation Date	June 30, 2016
Measurement Date	June 30, 2017
Actuarial Cost Method	Entry Age Normal
Actuarial Assumptions:	
Discount Rate	7.15%
Inflation	2.75%
Salary Increases	Varies by Entry Age and Service
Investment Rate of Return	7.15%
Mortality Rate Table (1)	Derived using CalPERS' membership data for all funds
Post Retirement Rate Increase	Contract COLA up to 2.75% until purchasing power protection allowance floor on purchasing power applies, 2.75% thereafter

(1) The mortality table used was developed based on CalPERS' specific data. The table includes 20 years of mortality improvements using Society of Actuaries cale BB. For more details on this table, please refer to the 2014 experience study report.

All other actuarial assumptions used in the June 30, 2016, valuation were based on the results of an actuarial experience study for the period from 1997 to 2011, including updates to salary increase, mortality and retirement rates. The Experience Study report can be obtained at CalPERS' website, at www.calpers.ca.gov.

Change in Assumptions

In Fiscal Year 2016-17, the financial reporting discount rate for the PERF C was lowered from 7.65 percent to 7.15 percent. Deferred outflows of resources for changes of assumptions presented in the Schedule of Collective Pension Amounts represent the unamortized portion of this assumption change.

NOTE 7 – EMPLOYEE BENEFITS, (Continued)

California Public Employees' Retirement System (CalPERS), Continued

Discount Rate

The discount rate used to measure the total pension liability was 7.15 percent. To determine whether the municipal bond rate should be used in the calculation of the discount rate for each plan, CalPERS stress tested plans that would most likely result in a discount rate that would be different from the actuarially assumed discount rate. The tests revealed the assets would not run out. Therefore, the current 7.15 percent discount rate is appropriate and the use of the municipal bond rate calculation is not deemed necessary. The long-term expected discount rate of 7.15 percent is applied to all plans in the Public Employees Retirement Fund (PERF). The cash flows used in the testing were developed assuming that both members and employers will make their required contributions on time and as scheduled in all future years. The stress test results are presented in a detailed report called "GASB Crossover Testing Report" that can be obtained at CalPERS' website, at www.calpers.ca.gov.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class.

In determining the long-term expected rate of return, CalPERS took into account both short-term and long-term market return expectations as well as the expected pension fund (PERF) cash flows. Taking into account historical returns of all the PERF asset classes (which includes the agent plan and two cost-sharing plans or PERF A, B and C funds), expected compound (geometric) returns were calculated over the short-term (first 10 years) and the long-term (11-60 years) using a building-block approach. Using the expected nominal returns for both short-term and long-term, the present value of benefits was calculated for each fund. The expected rate of return was set by calculating the single equivalent expected return that arrived at the same present value of benefits for cash flows as the one calculated using both short-term and long-term returns. The expected rate of return was then set equal to the single equivalent rate calculated above and rounded down to the nearest one quarter of one percent.

The following table reflects long-term expected real rate of return by asset class. The rate of return was calculated using the capital market assumptions applied to determine the discount rate and asset allocation. The target allocation shown was adopted by the CalPERS Board effective on July 1, 2015.

Asset Class	Current Target Allocation	Real Return Years 1-10 (1)	Real Return Years 11+ (2)
Global Equity	47%	4.90%	5.38%
Global Fixed Income	19%	80.00%	2.27%
Inflation Sensitive	6%	60.00%	1.39%
Private Equity	12%	6.60%	6.63%
Real Estate	11%	2.80%	5.21%
Infrastructure and Forestland	3%	3.90%	5.36%
Liquidity	2%	-40%	-90%
Total	100%		

(1) An expected inflation of 2.5% used for this period

(2) An expected inflation of 3.0% used for this period

NOTE 7 – EMPLOYEE BENEFITS, (Continued)

California Public Employees' Retirement System (CalPERS), Continued

Pension Plan Fiduciary Net Position

Information about the pension plan's assets, deferred outflows of resources, liabilities, deferred inflows of resources, and fiduciary net position are presented in CalPERS' audited financial statements, which are publicly available reports that can be obtained at CalPERS' website, at www.calpers.ca.gov. The plan's fiduciary net position and additions to/deductions from the plan's fiduciary net position have been determined on the same basis used by the pension plan, which is the economic resources measurement focus and the accrual basis of accounting. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan. Investments are reported at fair value.

The plan fiduciary net position disclosed in the GASB 68 accounting valuation report may differ from the plan assets reported in the funding actuarial valuation report due to several reasons. First, for the accounting valuations, CalPERS must keep items such as deficiency reserves, fiduciary self-insurance and Other Post-Employment Benefits (OPEB) expense included as assets. These amounts are excluded for rate setting purposes in the funding actuarial valuation. In addition, differences may result from early Comprehensive Annual Financial Report closing and final reconciled reserves.

Proportionate Share of Net Pension Liability

The following table shows the Plans' proportionate share of the net pension liability over the measurement period.

	Increase (Decrease)		
	Plan Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Plan Net Pension Liability (c) = (a) - (b)
Balance at: 6/30/2016 (VD)	$ 8,945,076	$ 6,648,028	$ 2,297,048
Balance at: 6/30/2017 (MD)	$ 10,474,822	$ 7,785,637	$ 2,689,185
Net changes during 2016-2017	$ 1,529,746	$ 1,137,609	$ 392,137

Valuation Date (VD), Measurement Date (MD)

WRCOG's net pension liability for the Plan is measured as the proportionate share of the net pension liability. The net pension liability of the Plan is measured as of June 30, 2017, and the total pension liability for the Plan used to calculate the net pension liability was determined by an actuarial valuation as of June 30, 2016, rolled forward to June 30, 2017, using standard update procedures. WRCOG's proportion of the net pension liability was determined by CalPERS using the output from the Actuarial Valuation System and the fiduciary net position, as provided in the CalPERS Public Agency Cost-Sharing Allocation Methodology Report, which is a publicly available report that can be obtained at CalPERS' website, at www.calpers.ca.gov.

NOTE 7 – EMPLOYEE BENEFITS, (Continued)

California Public Employees' Retirement System (CalPERS), Continued

Proportionate Share of Net Pension Liability, Continued

WRCOG's proportionate share of the net pension liability for the Plan as of the June 30, 2016 and 2017 measurement dates was as follows:

Proportion - June 30, 2016	0.0265%
Proportion - June 30, 2017	0.0271%
Change - Increase	0.0006%

Sensitivity of the Proportionate Share of the Net Pension Liability to Changes in the Discount Rate

The following presents WRCOG's proportionate share of the net pension liability of the Plan as of the measurement date, calculated using the discount rate of 7.15 percent, as well as what the net pension liability would be if it were calculated using a discount rate that is 1 percentage-point lower (6.15 percent) or 1 percentage-point higher (8.15 percent) than the current rate:

	Discount Rate - 1% (6.15%)	Current Discount Rate (7.15%)	Discount Rate + 1% (8.15%)
Plan's Net Pension Liability	$ 4,129,964	$ 2,689,185	$ 1,495,905

Subsequent Events

There were no subsequent events that would materially affect the results presented in this disclosure.

NOTE 7 – EMPLOYEE BENEFITS, (Continued)

California Public Employees' Retirement System (CalPERS), Continued

Recognition of Gains and Losses

Under GASB 68, gains and losses related to changes in total pension liability and fiduciary net position are recognized in pension expense systematically over time. The first amortized amounts are recognized in pension expense for the year the gain or loss occurs. The remaining amounts are categorized as deferred outflows and deferred inflows of resources related to pensions and are to be recognized in future pension expense.

The amortization period differs depending on the source of the gain or loss:

Difference between projected and actual earnings	5 year straight-line amortization
All other amounts	Straight-line amortization over the average expected remaining service lives of all members that are provided with benefits (active, inactive and retired) as of the beginning of the measurement period

The expected average remaining service lifetime (EARSL) is calculated by dividing the total future service years by the total number of plan participants (active, inactive, and retired) in the Public Agency Cost-Sharing Multiple-Employer Plan (PERF C).

The EARSL for the Plan for the 2016-17 measurement period is 3.8 years, which was obtained by dividing the total service years of 490,088 (the sum of remaining service lifetimes of the active employees) by 130,595 (the total number of participants: active, inactive, and retired). Note that inactive employees and retirees have remaining service lifetimes equal to -0-. Also note that total future service is based on the members' probability of decrementing due to an event other than receiving a cash refund.

Pension Expense and Deferred Outflows and Deferred Inflows of Resources Related to Pensions

As of the start of the measurement period (July 1, 2016), WRCOG's net pension liability was $2,297,048. For the measurement period ending June 30, 2017 (the measurement date), WRCOG incurred a pension expense of $716,086.

NOTE 7 – EMPLOYEE BENEFITS, (Continued)

California Public Employees' Retirement System (CalPERS), Continued

Pension Expense and Deferred Outflows and Deferred Inflows of Resources Related to Pensions, Continued

At June 30, 2018, WRCOG reported deferred outflows of resources and deferred inflows of resources related to pensions as follows:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$ 3,523	$ 50,470
Changes in assumptions	437,092	33,329
Differences between projected and actual investment	98,852	-
Differences between employer's contributions and proportionate share of contributions	64,378	-
Change in employers proportion	243,068	-
Pension contributions subsequent to the measurement date	345,428	-
	$ 1,192,341	$ 83,799

The amount of $345,428 reported as deferred outflows of resources resulting from WRCOG's contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ended June 30, 2019. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized as pension expense as follows:

Year Ended June 30	
2019	$ 304,072
2020	320,902
2022	196,830
2023	(58,690)
	$ 763,114

Payable to the Pension Plan

At June 30, 2018, WRCOG reported a payable of $-0- for the outstanding amount of contributions to the pension plan required for the year ended June 30, 2018.

NOTE 8 – OTHER POSTEMPLOYMENT BENEFITS (OPEB)

Plan Description

WRCOG provides post-retirement health care benefits for retired employees and their dependents. Benefits are as follows:

Tier	Date of Hire	Benefit
1	< 1/1/98	100% of premium (EE + dep.)
2	1/1/98 - 6/30/01	Cost of Kaiser coverage (EE + dep.)
3	7/1/01 - 9/1/04	Up to employee + 1 Kaiser premium
4	> 9/1/04	50% of weighted average of 4 top plans + 40% of weighted average for 1 dep. for 4 top plans. Vesting is 50% of premium at 10 years graded to 100% at 20 years.

In April 2012 WRCOG joined the Public Agencies Post-Retirement Health Care Plan, a multiple-employer trust administered by the Public Agency Retirement Services.

Employees Covered

As of the June 30, 2017 actuarial valuation, the following current and former employees were covered by the benefit terms under the Plan:

Active employees	37
Inactive employees or beneficiaries currently receiving benefits	3
Inactive employees entitled to, but not yet receiving benefits	-
Total	40

Contributions

Benefit provisions are established and may be amended by the Executive Committee. WRCOG contributes 100% of the cost of health insurance premiums for retirees.

NOTE 8 – OTHER POSTEMPLOYMENT BENEFITS (OPEB), (Continued)

Net OPEB Liability

WRCOG'S net OPEB liability was measured as of June 30, 2017 and the total OPEB liability used to calculate the net OPEB liability was determined by an actuarial valuation using the Alternative Measurement Method dated June 30, 2016 that was rolled forward to determine the June 30, 2017 total OPEB liability, based on the following actuarial methods and assumptions:

Actuarial Assumptions	June 30, 2017 Measurement Date
Actuarial Valuation Date	June 30, 2017
Contribution Policy	WRCOG contributes full ADC
Discount Rate	6.25%
General Inflation	2.75%
Mortality, Retirement, Disability, Termination	RP2000 Group Annuity Mortality Table with Scale AA for future mortality improvement to 2004. Blended tables for males and females (50% / 50%).
Salary increases	3.00%
Medical Trend	4.0% for 2018, decreasing to an ultimate rate of 5.0% in 2022 and later years

Discount Rate

A discount rate of 6.25% was used in the valuation. This discount rate assumes the WRCOG continues to fully fund for its retiree health benefits

NOTE 8 – OTHER POSTEMPLOYMENT BENEFITS (OPEB), (Continued)

Changes in the OPEB Liability (Asset)

The changes in the net OPEB liability (asset) for the Plan are as follows:

	(a) Total OPEB Liability	(b) Plan Fiduciary Net Position	(a) - (b) = (c) Net OPEB Liability
Balance at June 30, 2017 (6/30/16 measurement date)	$ 2,443,082	$ 1,783,502	$ 659,580
Changes recognized for the measurement period:			
Service cost	108,879	-	108,879
Interest	159,498	-	159,498
Differences between expected and actual experience	-	-	-
Changes of assumptions	-	-	-
Contributions – employer	-	-	-
Net investment income	-	104,450	(104,450)
Benefit payments	(113,278)	(85,605)	(27,673)
Administrative expense	-	(7,361)	7,361
Transfers	-	(20,311)	20,311
Actuarial Losses for 2017/18	(156,922)	-	(156,922)
Net changes	(1,823)	(8,827)	7,004
Balance at June 30, 2018 (6/30/17 measurement date)	$ 2,441,259	$ 1,774,675	$ 666,584

Sensitivity of the Net OPEB Liability (Asset) to Changes in the Discount Rate

The following presents the net OPEB liability (asset) of the WRCOG if it were calculated using a discount rate that is one percentage point lower or one percentage point higher than the current rate, for measurement period ended June 30, 2017:

	1% Decrease (5.25%)	Current Discount Rate (6.25%)	1% Increase (7.25%)
Net OPEB Liability	$ 813,300	$ 666,584	$ 546,600

NOTE 8 – OTHER POSTEMPLOYMENT BENEFITS (OPEB), (Continued)

Sensitivity of the Net OPEB Liability (Asset) to Changes in the Health Care Cost Trend Rates

The following presents the net OPEB liability (asset) of the WRCOG if it were calculated using health care cost trend rates that are one percentage point lower or one percentage point higher than the current rate, for measurement period ended June 30, 2017:

	1% Decrease	Current Healthcare Cost Trend Rates	1% Increase
Net OPEB Liability	$ 566,600	$ 666,584	$ 793,200

OPEB Plan Fiduciary Net Position

PARS issues a publicly available financial report that may be obtained from the Public Agency Retirement Services, 4350 Von Karman Ave, Newport Beach, CA 92660.

Recognition of Deferred Outflows and Deferred Inflows of Resources

Gains and losses related to changes in total OPEB liability and fiduciary net position are recognized in OPEB expense systematically over time.

Amounts are first recognized in OPEB expense for the year the gain or loss occurs. The remaining amounts are categorized as deferred outflows and deferred inflows of resources related to OPEB and are to be recognized in future OPEB expense.

OPEB Expense and Deferred Outflows/Inflows of Resources Related to OPEB

For the fiscal year ended June 30, 2018, the WRCOG recognized OPEB expense of $345,292. As of fiscal year ended June 30, 2018, the WRCOG reported deferred outflows of resources related to OPEB from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Net difference between projected and actual earnings on OPEB plan investments	$ 51,561	$ 932,100
Contributions to OPEB plan subsequent to the measurement date	185,075	-
Total	$ 236,636	$ 932,100

NOTE 8 – OTHER POSTEMPLOYMENT BENEFITS (OPEB), (Continued)

OPEB Expense and Deferred Outflows/Inflows of Resources Related to OPEB, Continued

The $185,075 reported as deferred outflows of resources related to contributions subsequent to the June 30, 2017 measurement date will be recognized as a reduction of the net OPEB liability (asset) during the fiscal year ending June 30, 2019. Other amounts reported as deferred outflows or inflows of resources related to OPEB will be recognized as expense as follows:

Fiscal Year Ended June 30	Deferred Outflows/(Inflows) of Resources
2019	$ (62,807)
2020	(62,807)
2021	(62,807)
2022	(62,807)
2023	(62,807)
Thereafter	(566,504)
	$ (880,539)

Other Benefits

WRCOG also provides a deferred compensation plan under Section 457 of the Internal Revenue Code. As a result of changes in tax law, these benefits have been placed in a trust for the exclusive benefit of the employees requesting such deferrals.

NOTE 9 – COMMITMENTS AND CONTINGENCIES

WRCOG has participated in various federal and state assisted grant programs. These programs are subject to financial and compliance audits by the grantor or their representatives, the purpose of which is to ensure compliance with conditions precedent to the granting of funds. Management believes that any liability for reimbursement, which may arise as a result of these audits, is not material.

NOTE 10 – RELATED PARTY TRANSACTIONS

WRCOG purchased services during the current year from the County of Riverside, which is also a member of WRCOG, rent, communication and IT, which amounted to $135,409 and are included as expenditures in the General Fund.

NOTE 11 – PROPERTY ASSESSED CLEAN ENERGY PROGRAM

In 2011, WRCOG launched the Property Assessed Clean Energy (PACE) Program, a regional effort that provides financing to residential and commercial property owners to install energy-efficient, renewable energy, and water conservation improvements to homes and businesses in the subregion.

Program participants complete an application, select a contractor, and make the improvements. Repayment occurs through the owner's annual property tax bill, and in most cases, the assessment stays with the property, to be assumed by the next owner upon sale of the property. For property owners, energy and water conservation improvements will yield reduced utility bills. For Western Riverside County, the Program will create energy savings for the fast-growing region, reduce greenhouse gas emissions associated with energy use, and bring and retain jobs for area contractors.

The PACE Program has expanded statewide; nearly 150 municipalities throughout California have joined the Program. What makes the PACE Program particularly unique is that the financing is provided entirely by private investment funds to implement the Program.

Under the PACE Program, a contractual assessment is entered into by the property owner. The amount of the contractual assessment is equal to the cost to pay for the eligible improvements, the issuance of the bonds that will finance the program, and the costs to administer the program. The assessments are billed and collected on the County property tax bill. Repayments made by the property owners flow through the County to the trustee to fund the debt service. WRCOG does not receive the special assessments. As the sponsor of the PACE program, WRCOG receives a percentage of the amount financed for its participation in the program.

During the year, WRCOG received 1.463% of the amount financed, for each assessment, in the residential program. A program management fee of $55 per assessment is collected at the initiation of the assessment to pay for recordation. Also collected is a $40 annual administrative fee, per assessment, used to levy on county tax rolls.

For the commercial program, WRCOG received 1.15% of the amount financed, for each assessment, in the program. A program management fee of $95 per assessment is collected at the initiation of the assessment to pay for recordation. Also collected is a $390 annual administrative fee, per assessment, used to levy on county tax rolls.

PACE revenues are broken out by two types: Program and Recording. For FY 17/18, Program revenue totaled $4,666,279, while Recording revenue totaled $1,108,745. Recording revenues are recouped from each bond assessment and charged to recover the amount paid to each County for recording, essentially offsetting the fees paid.

NOTE 12 – BEYOND PROGRAM

In June 2015, WRCOG launched the BEYOND Framework Fund Program (BEYOND), to provide local assistance funding to help its member agencies develop and implement plans and programs that can help improve the quality of life in Western Riverside County. BEYOND projects address critical growth components such as economic development, water, education, environment, energy, health, and transportation.

The BEYOND Program is funded by net PACE program revenues. Funds are required to be expended pursuant to program guidelines. Funds are provided to member agencies on a reimbursement basis. During the year, reimbursements to various member agencies for projects approved by WRCOG totaled $593,223 from BEYOND Round I funding, and $186,330 for Round II were reimbursed. The remaining $2,533,866 is assigned within the General Fund for the BEYOND program.

NOTE 13 – FELLOWSHIP PROGRAM

In November 2015, WRCOG launched the Fellowship Program. The Fellowship Program is administered in partnership with the University of California, Riverside and California Baptist University. The purpose of the program is to encourage students to seek careers in public policy and local government. Based on available funding and member agency's needs, each member agency is provided with a student intern who is employed by WRCOG, to be used to support local government departments.

The Fellowship Program is funded by net PACE program revenues. In the fiscal year ending June 30, 2018, a total of $1.1 million was allocated to the Fellowship Program. During the year, reimbursements to various member agencies for hired interns approved by WRCOG totaled $585,268. The remaining $514,732 is assigned within the General Fund for the Fellowship Program.

NOTE 14 – RISK MANAGEMENT

WRCOG is exposed to various risks of loss related to torts; theft of, damage to and destruction of assets; errors or omissions; and natural disasters which are covered through the purchase of insurance policies.

At June 30, 2018, WRCOG's insurance policies are as follows:

- Errors & Omission/ Employment Practices Liability: WRCOG is insured up to $5,000,000 per occurrence and $25,000 deductible per occurrence.
- Office Equipment: WRCOG is insured up to $1,000,000 per occurrence and $100,000 personal property.
- Workers Compensation: WRCOG is insured up to $1,000,000 per occurrence.
- Employee Dishonest Bond: WRCOG is insured up to $25,000 bond limit.
- Business Auto Policy: WRCOG is insured up to $1,000,000 liability limit.

In each of the past three fiscal years, WRCOG had no settlements that exceeded insurance coverage.

NOTE 15 – SUBSEQUENT EVENTS

WRCOG has collected approximately $15 million related to Settlement between WRCOG and the City of Beaumont. WRCOG anticipates that they may collect additional funds within the next three to five years. The amount of any additional collections is unknown at this time.

WRCOG will be dispersing these funds to its member agencies and partner agencies, based on direction from the Executive Committee. The Settlement Agreement also allows WRCOG to use funds recovered via this process to reimburse itself for legal costs related to their collection. As such, WRCOG will be seeking reimbursement from these funds for legal costs associated with their collection.

NOTE 16 – PRIOR PERIOD RESTATEMENT

Change in Accounting Principle

As discussed in Note 1, WRCOG implemented GASB Statement No. 75 (GASB 75) effective July 1, 2017. GASB 75, among other provisions, amended prior guidance with respect to the reporting of postemployment benefits other than pensions (OPEB). GASB 75 establishes standards for measuring and recognizing liabilities, deferred outflows of resources, and deferred inflows of resources, and expenses. WRCOG's net OPEB liability was not previously recorded on the statement of net position. GASB 75 requires that accounting changes adopted to conform to the provisions of the Statement be applied retroactively by restating financial statements.

NOTE 16 – PRIOR PERIOD RESTATEMENT, (Continued)

The cumulative effects of applying the provisions of GASB 75 have been reported as a restatement of beginning net position for the year ended June 30, 2018 in accordance with the Statement as follows:

Government-Wide Statements		
Statement of Activities - Governmental Activities		
Net position, beginning of year, prior to restatement	$	4,338,380
Elimination of OPEB asset as calculated under GASB 45		(559,059)
Recording of initial OPEB liability as calculated under GASB 75		(659,580)
Recording of initial OPEB related deferred amounts as calculated under GASB 75		85,605
Restatement due to change in accounting principle		(1,133,034)
Net position, beginning of year, as restated	$	3,205,346

REQUIRED SUPPLEMENTARY INFORMATION

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
General Fund
For the Fiscal Year Ended June 30, 2018

	Budgeted Amounts			Variance with
	Original	Final	Actual	Final Budget
Revenues:				
Intergovernmental	$ 886,600	$ 886,600	$ 931,500	$ 44,900
TUMF mitigation fees	1,644,663	1,644,663	2,056,285	411,622
PACE fees	10,524,077	5,712,131	5,684,817	(27,314)
Other revenues	1,708,145	1,662,463	1,448,287	(214,176)
Investment income	-	-	22,819	22,819
Total revenues	14,763,485	9,905,857	10,143,708	237,851
Expenditures:				
Current:				
General government	10,878,209	10,906,529	4,493,570	6,412,959
Energy	7,570,120	6,563,317	6,336,292	227,025
Environmental	635,262	632,284	570,687	61,597
Total Expenditures	19,083,591	18,102,130	11,400,549	6,701,581
Net change in fund balance	$ (4,320,106)	$ (8,196,273)	(1,256,841)	$ 6,939,432
Fund balance:				
Balance, beginning of year,			12,582,729	
Balance, end of year			$ 11,325,888	

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Schedule of the WRCOG's Proportionate Share
of the Net Pension Liability and Related Ratios as of the Measurement Date
Last Ten Years*
As of the Year Ended June 30, 2018

Measurement Date	Employer's Proportion of the Collective Net Pension Liability[1]	Employer's Proportionate Share of the Collective Net Pension Liability	Employer's Covered Payroll	Employer's Proportionate Share of the Collective Net Pension Liability as a Percentage of the Employer's Covered Payroll	Pension's Plans Fiduciary Net Position as a Percentage of the Total Pension Liability
6/30/2014	0.0229%	$ 1,421,911	$ 1,422,424	99.96%	79.82%
6/30/2015	0.0263%	1,808,565	1,616,828	111.86%	78.40%
6/30/2016	0.0265%	2,297,048	1,760,643	130.47%	78.40%
6/30/2017	0.0271%	2,689,185	2,062,647	130.38%	74.33%

[1] Proportion of the collective net pension liability represents the plan's proportion of PERF C, which includes both the Miscellaneous and Safety Risk pools excluding the 1959 Survivors Risk Pool.

* Historical information is required only for measurement period for which GASB 68 & 71 were applicable.
Future years' information will be displayed up to 10 years as information becomes available.

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Schedule of Plan Contributions
Last Ten Years*
As of the Year Ended June 30, 2018

Fiscal Year	Contractually Determined Contributions	Contributions in Relation to the Contractually Determined Contributions	Contribution Deficiency (Excess)	Employer's Covered Payroll	Contributions as a Percentage of Covered Payroll
2014-15	$ 294,471	$ (294,471)	$ -	$ 1,616,828	18.21%
2015-16	305,212	(305,212)	-	1,760,643	17.34%
2016-17	323,200	(323,200)	-	2,062,647	15.67%
2017-18	345,428	(345,428)	-	2,413,255	14.31%

Notes to Schedule:

Change in Benefit Terms: None

Change in Assumptions: For measurement date 6/30/2017, the discount rate was changed from 7.65 percent (net of administrative expenses) to 7.15 percent. For measurement date 6/30/2015, the discount rate was changed from 7.5 percent (net of administrative expenses) to 7.65 percent.

* Historical information is required only for measurement period for which GASB 68 & 71 were applicable. Future years' information will be displayed up to 10 years as information becomes available.

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Schedule of Changes in Net OPEB Liability and Related Ratios
For the Year Ended June 30, 2018

Fiscal Year	2017-18
Measurement Period	2016-17
Total OPEB Liability	
Service cost	$ 108,879
Interest	159,498
Differences between expected and actual experience	-
Changes of assumptions	-
Benefit payments	(113,278)
Actuarial Losses for 2017/18	(156,922)
Net change in total OPEB liability	(1,823)
Total OPEB liability - beginning	2,443,082
Total OPEB liability - ending (a)	2,441,259
Plan Fiduciary Net Position	
Contributions – employer	-
Net investment income	104,450
Benefit payments	(85,605)
Transfers	(20,311)
Administrative expense	(7,361)
Net change in plan fiduciary net position	(8,827)
Plan fiduciary net position - beginning	1,783,502
Plan fiduciary net position - ending (b)	1,774,675
Net OPEB liability - ending (a) - (b)	$ 666,584
Plan fiduciary net position as a percentage of the total OPEB liability	72.7%
Covered-employee payroll	$ 2,211,299
Net OPEB liability as a percentage of covered payroll	30.1%

Notes to Schedule:

Changes in assumptions: none

Historical information is required only for measurement periods for which GASB 75 is applicable. Future years' information will be displayed up to 10 years as information becomes available.

Fiscal Year 2017-18 was the first year of implementation.

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Schedule of OPEB Plan Contributions – Last Ten Years*
For the Year Ended June 30, 2018

Fiscal Year	2017-18
Contractually Determined Contribution (CDC)	$ 185,075
Contributions in relation to the CDC	(185,075)
Contribution deficiency (excess)	$ -
Covered-employee payroll	$ 2,211,299
Contributions as a percentage of covered-employee payroll	8.4%

Methods and Assumptions for 2017-18 Actuarially Determined Contribution	
Valuation Date	June 30, 2017
Actuarial Cost Method	Entry age normal.
Amortization Methodology	Level percentage of payroll,open
Asset Valuation Method	Market value
Discount Rate	6.25%
General Inflation	2.75%
Medical Trend	4.0% for 2018, decreasing to an ultimate rate of 5.0% in 2022 and later years
Mortality	RP2000 Group Annuity Mortality Table with Scale AA for future mortality improvement to 2004. Blended tables for males and females (50% / 50%).

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Notes to the Required Supplementary Information
For the Year Ended June 30, 2018

NOTE 1 – BUDGETS AND BUDGETARY ACCOUNTING

By state law, WRCOG's Governing Board must approve a tentative budget no later than July 1 and adopt a final budget no later than September 15. A public hearing must be conducted to receive comments prior to adoption. WRCOG's Governing Board satisfied these requirements. A budget is adopted for all expenditures by financial responsibility for the General Fund. All budgets are adopted on a basis consistent with generally accepted accounting principles.

WRCOG is entitled to an administration fee of up to 4% annually of TUMF revenues collected, with a maximum of 1% that can be used to offset salaries and benefits related to TUMF administration. In 2018, the total administration fee collected was 4%. Riverside Conservation Agency (RCA) also receives a percentage of the TUMF revenues collected of 1.47%, which is included as an expense in the TUMF Fund.

The fees allocated among the zones, Riverside County Transportation Commission (RCTC), and Riverside Transit Authority (RTA) are 45.7%, 45.7% and 3.13%, respectively. These allocations are remitted monthly to RCTC and quarterly to RTA; however the zones must submit project plans for approval to WRCOG before funds can be released. RCA must submit potential sites designated for conservation for approval before funds are released.

The TUMF Fund does not have an adopted budget that is approved by the WRCOG General Assembly, therefore, the TUMF Fund does not present a budget to actual comparison.

SUPPLEMENTARY INFORMATION

THIS PAGE INTENTIONALLY LEFT BLANK

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Statement of Changes in Fiduciary Assets and Liabilities
Agency Fund
For the Fiscal Year Ended June 30, 2018

	Balance June 30, 2017	Additions	Deductions	Balance June 30, 2018
Assets				
Cash and investments	$ 506,005	$ 32,098,819	$ 30,770,863	$ 1,833,961
Total assets	$ 506,005	$ 32,098,819	$ 30,770,863	$ 1,833,961
Liabilities				
Deposits	$ 506,005	$ 32,507,905	$ 31,179,949	$ 1,833,961
Total liabilities	$ 506,005	$ 32,507,905	$ 31,179,949	$ 1,833,961

THIS PAGE INTENTIONALLY LEFT BLANK

WRCOG
Western Riverside
Council of Governments

Statistical Section

THIS PAGE INTENTIONALLY LEFT BLANK

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Statistical Section Overview
For the Fiscal Year Ended June 30, 2018

This section of the Western Riverside Council of Government's Comprehensive Annual Financial Report presents additional detail, historical perspective, and context to assist annual financial report users in understanding the financial statements, note disclosures, required supplementary information, and assessing WRCOG's financial condition.

Financial Trends: These schedules contain trend information to assist readers in understanding and assessing how WRCOG's financial position has changed over time.

Net Position by Component
Changes in Net Position
Fund Balances of Governmental Funds
Changes in Fund Balances in Governmental Funds

Revenue Capacity: These schedules contain information to help the reader asses WRCOG's most significant local revenue source, Member Dues and Mitigation Fees.

WRCOG Revenues

Demographic and Economic Information: These schedules offer demographic and economic indicators to help the reader understand the environment within the government's financial activities take place.

Demographic and Economic Statistics for Riverside County
Principal Employers of Riverside County

Operating Information: These schedules contain service and infrastructure data to help the reader understand how the information in the government's financial report relates to the services the government provides and the activities it performs.

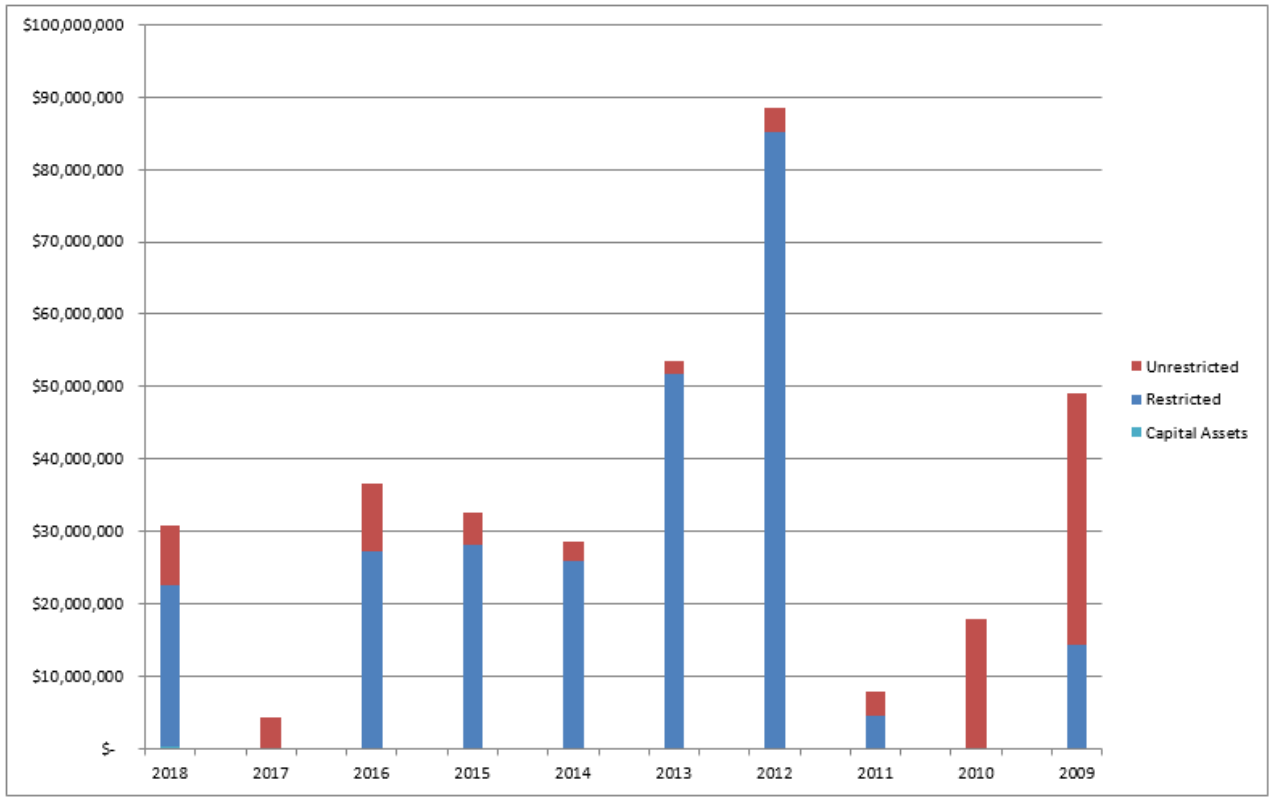
Full-time Equivalent Employees by Function/Program

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Net Position by Component
Last Ten Fiscal Years
(Accrual Basis)

	Fiscal Year									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Governmental activites:										
Net investment in										
Capital Assets	$ 413,343	$ 93,875	$ 100,296	$ 54,038	$ 30,021	$ 20,735	$ 32,918	$ 47,304	$ 60,690	$ 62,883
Restricted	22,211,582	11,702	27,079,334	28,033,173	25,869,263	51,733,864	85,054,212	4,632,048	-	14,389,308
Unrestricted	8,130,795	4,232,803	9,385,943	4,556,290	2,632,813	1,880,401	3,361,861	3,279,968	17,953,134	34,711,008
Total governmental activites net position	$ 30,755,720	$ 4,338,380	$ 36,565,573	$ 32,643,501	$ 28,532,097	$ 53,635,000	$ 88,448,991	$ 7,959,320	$ 18,013,824	$ 49,163,199

Source: Finance Department



WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Changes in Net Position
Last Ten Fiscal Years
(Accrual Basis)

	Fiscal Year Ended June 30,									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Expenses										
Governmental activities:										
General government	$ 5,416,418	$ 4,028,482	$ 2,520,688	$ 2,031,313	$ 2,245,634	$ 2,401,116	$ 3,392,955	$ 1,974,339	$ 1,987,220	$ 2,021,169
Transportation	34,971,790	74,542,061	41,631,788	33,114,224	54,779,449	50,187,717	21,194,918	18,983,962	43,206,326	35,250,572
Energy	6,333,946	5,622,980	5,629,560	4,926,278	2,445,533	1,608,694	476,844	20,033	22,812	25,522
Environmental	570,687	513,137	423,667	531,945	647,781	576,600	520,748	-	-	-
Total primary government expenses	47,292,841	84,706,660	50,205,703	40,603,760	60,118,397	54,774,127	25,585,465	20,978,334	45,216,358	37,297,263
Program Revenues										
Governmental activities:										
General government	567,640	512,876	513,188	349,268	420,810	528,756	63,102	1,515,581	1,495,290	1,256,051
Transportation	67,483,341	42,731,611	43,508,888	37,430,113	24,905,073	25,966,400	14,122,996	8,121,757	10,832,988	13,145,887
Energy	6,003,534	9,316,452	9,779,134	7,473,816	3,198,814	1,482,940	190,142	-	-	-
Environmental	515,141	528,775	464,885	620,836	618,415	619,388	712,040	-	-	-
Total primary government program revenues	74,569,656	53,089,714	54,266,095	45,874,033	29,143,112	28,597,484	15,088,280	9,637,338	12,328,278	14,401,938
Net (Expense)/Revenue										
Total primary government net expense	27,276,815	(31,616,946)	4,060,392	5,270,273	(30,975,285)	(26,176,643)	(10,497,185)	(11,340,996)	(32,888,080)	(22,895,325)
General Revenues and Other Changes in Net Position										
Governmental activities:										
Other revenues	-	-	36,112	241,763	259,349	308,294	852,752	647,701	428,092	516,688
Investment income	273,559	(12,645)	509,228	552,021	706,876	(285,642)	806,546	638,791	1,310,611	4,798,161
Special Item	-	-	-	-	-	-	-	-	-	73,713,976
Total primary government	273,559	(12,645)	545,340	793,784	966,225	22,652	1,659,298	1,286,492	1,738,703	79,028,825
Changes in Net Position										
Total primary government	$ 27,550,374	$ (31,629,591)	$ 4,605,732	$ 6,064,057	$ (30,009,060)	$ (26,153,991)	$ (8,837,887)	$ (10,054,504)	$ (31,149,377)	$ 56,133,500

Source: Finance Department

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Fund Balance of Governmental Funds
Last Ten Fiscal Years
(Modified Accrual Basis)

		Fiscal Year									
		2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
GENERAL FUND											
General fund:											
	Nonspendable										
	Prepaid Expenses	$ 43,859	$ 167,212	$ 90,762	$ 82,987	$ 70,111	$ 67,357	$ 36,386	$ 52,047		
	Restricted										
	LTF	-	-	-	-	581,358	578,909	591,273	650,397		
	Assigned	-	11,702	-	-	-	-	-	-		
	BEYOND Program	2,533,866	3,305,419	1,556,763	-	-	-	-	-		
	Fellowship Program	514,732	121,272	400,000	-	-	-	-	-		
	Unassigned	8,233,431	8,988,826	7,888,825	5,415,947	1,275,895	456,939	392,965	76,440		
Total general fund		$ 11,325,888	$ 12,594,431	$ 9,936,350	$ 5,498,934	$ 1,927,364	$ 1,103,205	$ 1,020,624	$ 778,884		
General fund:											
	Reserved									$ -	$ -
	Designated									3,077,075	3,882,403
	Undesignated									1,042,934	1,390,576
										$ 4,120,009	$ 5,272,979
ALL OTHER GOVERNMENTAL FUNDS											
All other governmental funds:											
	Committed										
	TUMF	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 72,530,712		
	Restricted										
	Transportation	38,098,604	9,373,801	51,540,293	53,379,614	49,094,887	65,104,205	95,670,753	-		
	Foundation	11,733	-	11,690	11,695	11,604	20,550	11,370	48,346		
	Assigned										
	TUMF	-	-	-	-	-	-	-	31,175,659		
Total all other governmental funds		$ 38,110,337	$ 9,373,801	$ 51,551,983	$ 53,391,309	$ 49,106,491	$ 65,124,755	$ 95,682,123	$ 103,754,717		
All other governmental funds:											
	Reserved									$ 92,968,382	$ 126,416,225
	Undesignated									30,555,061	29,287,019
Total all other governmental funds										$ 123,523,443	$ 155,703,244

Source: Finance Department

In FY 2011 WRCOG implemented GASB Statement No. 54, Fund Balance Reporting and Governmental Fund Type Defintions. Prior year amounts in this presentation have not been revised to reflect this change.

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Changes in Fund Balances of Governmental Funds
Last Ten Fiscal Years
(Modified Accrual Basis)

	Fiscal Year									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Revenues										
Intergovernmental, net	$ 931,500	$ 1,145,570	$ 1,058,265	$ 1,461,999	$ 1,350,596	$ 1,830,454	$ 1,216,550	$ 1,515,581	$ 1,495,290	$ 1,256,051
TUMF Mitigation fees	51,305,031	42,239,340	42,615,158	36,507,739	24,306,973	25,361,053	13,871,730	8,165,385	10,708,454	12,787,664
HERO fees	5,684,817	9,028,003	9,562,139	7,159,144	2,197,585	-	-	-	-	-
Other revenues	16,648,307	894,488	848,957	986,914	1,547,307	1,714,271	852,752	647,701	428,092	516,688
Investment income (loss)	273,560	(12,645)	509,229	552,021	420,526	(285,642)	806,546	638,791	1,310,611	4,798,161
Total revenues	74,843,215	53,294,756	54,593,748	46,667,817	29,822,987	28,620,136	16,747,578	10,967,458	13,942,447	19,358,564
Expenditures										
Current:										
General Government	4,493,570	3,965,880	2,681,489	2,070,885	2,191,112	2,321,713	3,969,631	3,650,185	3,832,989	3,638,627
Programs:										
Transportation	35,974,673	82,703,352	44,125,019	30,998,608	44,901,088	52,612,593	23,624,407	28,039,139	43,421,151	33,605,661
Energy	6,336,292	5,632,488	5,647,563	4,929,398	2,431,687	1,589,887	675,950	-	-	-
Environmental	570,687	513,137	435,670	534,027	638,549	564,061	653,485	-	-	-
Debt service	-	-	-	-	-	1,500,000	-	-	-	-
Capital outlay	-	-	-	-	-	-	-	6,647	20,617	6,893
Total expenditures	47,375,222	92,814,857	52,889,741	38,532,918	50,162,436	58,588,254	28,923,473	31,695,971	47,274,757	37,251,181
Excess (deficiency) of revenues over (under) expenditures	27,467,993	(39,520,101)	1,704,007	8,134,899	(20,339,449)	(29,968,118)	(12,175,895)	(20,728,513)	(33,332,310)	(17,892,617)
Other financing sources (uses):										
Loan proceeds	-	-	-	-	-	1,500,000	-	-	-	-
Total other financing sources (uses)	-	-	-	-	-	1,500,000	-	-	-	-
Net change in fund balances	$ 27,467,993	$ (39,520,101)	$ 1,704,007	$ 8,134,899	$ (20,339,449)	$ (28,468,118)	$ (12,175,895)	$ (20,728,513)	$ (33,332,310)	$ (17,892,617)
Debt service as a percentage of noncapital expenditures	0.0%									

Source: Finance Department

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Revenue by Funds
Last Ten Fiscal Years
(Accrual Basis)

	Fiscal Year Ended June 30									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
GENERAL FUND:										
Member dues:										
Banning	$ 3,941	$ 3,941	$ 3,941	$ 3,957	$ 3,957	$ 3,957	$ 3,957	$ 3,957	$ 3,957	$ 5,361
Beaumont	-	-	-	5,255	5,255	5,255	5,255	5,255	5,255	2,486
Calimesa	1,049	1,049	1,049	1,102	1,102	1,102	1,102	1,102	1,102	1,739
Canyon Lake	1,406	1,406	1,406	2,256	2,256	2,256	2,256	2,256	2,256	3,410
Corona	20,290	20,290	20,290	25,886	25,886	25,886	25,886	25,886	25,886	35,226
Eastvale	7,171	7,171	7,171	-	-	-	-	-	-	-
Hemet	9,797	9,797	9,797	10,386	10,386	10,386	10,386	10,386	10,386	13,158
Jurupa Valley	12,710	12,710	12,710	-	-	-	-	-	-	-
Lake Elsinore	6,933	6,933	6,933	7,904	7,904	7,904	7,904	7,904	7,904	7,160
Menifee	10,491	10,491	10,491	10,147	10,147	10,147	10,147	10,147	10,147	-
Moreno Valley	25,780	25,780	25,780	25,413	25,413	25,413	25,413	25,413	25,413	30,749
Murrieta	13,794	13,794	13,794	17,954	17,954	17,954	17,954	17,954	17,954	12,880
Norco	3,573	3,573	3,573	4,482	4,482	4,482	4,482	4,482	4,482	6,058
Perris	9,215	9,215	9,215	8,173	8,173	8,173	8,173	8,173	8,173	7,624
Riverside	40,512	40,512	40,512	42,894	42,894	42,894	42,894	42,894	42,894	62,876
San Jacinto	5,889	5,889	5,889	5,504	5,504	5,504	5,504	5,504	5,504	5,111
Temecula	13,424	13,424	13,424	18,714	18,714	18,714	18,714	18,714	18,714	17,854
Wildomar	4,298	4,298	4,298	4,863	4,863	4,863	4,863	4,863	4,863	-
County of Riverside	48,136	48,136	48,136	43,520	43,520	43,520	43,520	43,520	43,520	68,788
County of Riverside - Office of Superintendent	17,000	17,000	17,000	17,000	17,000	17,000	17,000	-	-	-
Eastern Municipal Water District	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	20,000
Western Municipal Water District	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	20,000
Morongo Band of Mission Indians	17,000	17,000	9,500	10,000	10,000	-	-	-	-	-
Total Member dues	$ 306,410	$ 306,410	$ 298,910	$ 299,410	$ 299,410	$ 289,410	$ 289,410	$ 272,410	$ 272,410	$ 320,480
ALL OTHER GOVERNMENTAL FUNDS										
Transportation Uniform Mitigation Fee (TUMF):										
Banning	$ 16,040	$ 40,930	$ 6,326	$ 54,738	$ 4,116	$ -	$ 89,603	$ 2,057	$ 36,319	$ 12,606
Beaumont	514,351		-	-	-	-	-	-	-	-
Calimesa	4,055	103,835	10,359	133,217	65,387	1,310	1,144	22,963	154,051	-
Canyon Lake	38,832	18,525	20,583	27,055	22,642	4,117	1,028	6,169	2,259	2,313
Corona	140,921	1,153,262	2,743,488	1,989,728	114,644	104,773	1,272,328	215,876	109,292	422,457
Eastvale	1,735,201	1,249,621	1,705,338	1,241,685	1,438,152	1,478,348	665,522	434,531	-	-
Hemet	217,626	52,392	351,010	545,597	736,612	531,470	194,078	145,284	1,026,097	536,448
Jurupa Valley	995,072	2,400,109	2,302,649	1,738,387	242,216	112,044	32,901	-	-	-
Lake Elsinore	56,629	800,725	969,533	898,098	868,004	646,241	259,098	263,885	115,607	392,960
March JPA	1,668,406	765,627	222,482	239,874	-	227,695	-	-	156	-
Menifee	1,944,365	1,374,603	1,203,549	909,230	1,665,304	821,673	628,138	1,108,611	1,136,869	4,430,855
Moreno Valley	300,521	883,562	1,356,327	2,343,895	1,138,394	693,588	29,612	425,411	413,086	641,423
Murrieta	2,585,547	884,391	1,452,155	1,496,315	70,944	81,192	64,386	702,612	360,959	152,991
Norco	1,867,070	304,411	100,355	101,444	11,288	8,232	-	65,000	5,764	83,055
Perris	918,236	1,235,325	1,167,113	1,069,887	1,498,823	320,608	124,896	187,814	107,272	412,229
Riverside	1,484,544	3,113,205	1,852,839	1,461,429	594,363	1,365,025	955,549	837,989	299,033	1,000,099
San Jacinto	3,212,024	843,818	698,893	259,021	200,630	70,674	90,480	123,462	235,158	355,874
Temecula	1,448,548	810,938	809,664	679,386	227,028	1,772,534	944,090	1,288,039	940,530	1,746,599
Wildomar	87,114	826,659	384,865	83,178	219,722	1,032,017	16,451	30,063	310,670	4,625
County - Northwest	272,790	569,203	414,258	216,343	183,616	189,161	248,635	685,058	1,545,271	2,352,587
County - Southwest	1,643,915	863,473	636,493	1,529,926	1,288,379	1,622,276	598,885	367,429	639,407	2,575,582
County - Central	1,125,077	911,716	1,040,489	593,671	46,173	434,159	37,570	127,594	144,747	833,937
County - Pass	815,242	12,349	20,581	16,502	4,116	431,198	2,181	3,347	23,962	31,344
County - Hemet/San Jacinto	538,808	376,151	299,821	91,090	82,324	30,103	15,701	6,316	33,120	169,059
Regional Transit Authority	1,203,022	692,725	698,889	314,621	367,630	423,339	194,423	185,257	341,681	563,184
Riverside County Transportation Commission	23,630,935	19,594,830	19,769,172	17,480,991	10,899,357	11,978,440	5,494,327	5,438,916	6,603,169	10,548,866
WRCOG	2,056,290	1,689,574	1,704,607	2,076,008	974,049	1,027,871	505,866	544,408	663,267	2,453,241
MSHCP	783,850	667,382	673,319	602,662	369,011	407,929	191,743	194,668	223,217	358,564
Total TUMF	$ 51,305,031	$ 42,239,340	$ 42,615,159	$ 38,193,977	$ 23,332,924	$ 25,816,019	$ 12,658,634	$ 13,412,759	$ 15,470,963	$ 30,080,898

Source: Fiscal Department

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Demographic and Economic Statistics for the County of Riverside
Last Ten Calendar Years

Calendar Year	Population	Personal Income (thousands)	Per Capita Personal Income	Unemployment Rate
2018	2,415,955	$ 87,827,068	$ 36,782	4.70%
2017	2,390,702	88,000,000	35,883	5.80%
2016	2,317,924	89,500,000	31,762	6.90%
2015	2,329,271	83,500,000	31,344	8.40%
2014	2,292,507	76,289,477	30,815	9.80%
2013	2,227,577	70,376,019	29,986	11.50%
2012	2,239,620	67,024,780	29,927	13.20%
2011	2,189,641	63,900,000	29,035	14.70%
2010	2,125,440	63,228,086	29,748	13.40%
2009	2,077,183	64,503,728	31,053	8.50%

Sources: California State Department of Finance as of January 1
U.S. Department of Commerce Bureau of Economic Analysis
Riverside County Economic Development Agency

Represents most recent data available
Data not available solely for Western Riverside County

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Employment Statistics by Industry for Riverside County
Calendar Years 2017 and Nine Calendar Years

Industry Type	2017	% of Total Employment	2008	% of Total Employment
Agricultural service, forestry, fishing and other	133,200	18.0%	115,100	19.4%
Mining	400	0.1%	500	0.1%
Construction	64,400	8.7%	47,800	8.1%
Manufacturing	42,700	5.8%	44,200	7.5%
Transportation, warehousing, and public utilities	45,800	6.2%	20,900	3.5%
Wholesale trade	24,700	3.3%	19,800	3.3%
Retail trade	98,300	13.3%	87,200	14.7%
Professional & business services	69,700	9.4%	56,400	9.5%
Education & health services	109,500	14.8%	70,900	12.0%
Other services	23,000	3.1%	17,800	3.0%
Federal government, civilian	7,200	1.0%	6,800	1.1%
State government	19,300	2.6%	16,000	2.7%
Local government	101,600	13.7%	88,400	14.9%
Total	739,800	100.0%	591,800	100.0%

Source: State of California Economic Development Department

Represents most recent data available
Data not available solely for Western Riverside County

http://www.labormarketinfo.edd.ca.gov/county/river.html

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS
(A Joint Powers Authority)

Full-time Equivalent Employees by Function/Program
Last Ten Fiscal Years

	As of June 30									
Function/Program	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Management services and administration	7.0	9.0	7.8	7.2	5.5	5.9	6.0	6.5	7.3	5.1
Transportation	4.0	3.5	5.5	4.9	4.9	5.8	5.0	6.3	6.5	7.7
Energy	14.0	15.3	8.3	7.2	4.6	3.1	2.2	3.2	3.2	3.2
Environmental	4.5	2.3	1.3	3.4	3.0	3.0	2.0	3.0	3.0	3.0
Total full time equivalents	29.5	30.1	22.8	22.7	18.0	17.8	15.2	19.0	20.0	19.0

Source: Fiscal Department

Item 6.H

Fiscal Year 2017/2018 Comprehensive Annual Financial Report (CAFR)

Attachment 2

FY 2017/2018 Statement on Auditing Standards 114 Report

Page Intentionally Left Blank

ROGERS, ANDERSON, MALODY & SCOTT, LLP
CERTIFIED PUBLIC ACCOUNTANTS, SINCE 1948

735 E. Carnegie Dr. Suite 100
San Bernardino, CA 92408
909 889 0871 T
909 889 5361 F
ramscpa.net

PARTNERS
Brenda L. Odle, CPA, MST
Terry P. Shea, CPA
Kirk A. Franks, CPA
Scott W. Manno, CPA, CGMA
Leena Shanbhag, CPA, MST, CGMA
Bradford A. Welebir, CPA, MBA, CGMA
Jay H. Archer, CPA (Former Partner)
Phillip H. Wade, CPA (Former Partner)

MANAGERS/ STAFF
Jenny Liu, CPA, MST
Sapna (Rez) Lee, CPA, MBA
Charles De Simoni, CPA
Carmenya Duran, CPA
Brianna Schultz, CPA
Lisa Glongboonlue, CPA, MSA
Jarrod Sanjorjo, CPA
Jing Wu, CPA

MEMBERS
American Institute of
Certified Public Accountants

CPE Trac (AICPA Alliance
for CPA Firms)

Government Audit
Quality Center

Employee Benefit Plan
Audit Quality Center

California Society of
Certified Public Accountants

REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH GOVERNMENT AUDITING STANDARDS

Independent Auditor's Report

To the Executive Committee
Western Riverside Council of Governments
Riverside, California

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of Western Riverside Council of Governments (WRCOG) as of and for the year ended June 30, 2018, and the related notes to the financial statements, which collectively comprise WRCOG's basic financial statements, and have issued our report thereon dated November 05, 2018.

Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered WRCOG's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of WRCOG's internal control. Accordingly, we do not express an opinion on the effectiveness of WRCOG's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over financial reporting was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over financial reporting that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control over financial reporting that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether WRCOG's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, and noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of WRCOG's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering WRCOG's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Rogers, Anderson, Malody & Scott, LLP.

San Bernardino, California
November 05, 2018

Item 6.H

Fiscal Year 2017/2018 Comprehensive Annual Financial Report (CAFR)

Attachment 3

FY 2017/2018 Internal Standards Report

Page Intentionally Left Blank

ROGERS, ANDERSON, MALODY & SCOTT, LLP
CERTIFIED PUBLIC ACCOUNTANTS, SINCE 1948

735 E. Carnegie Dr. Suite 100
San Bernardino, CA 92408
909 889 0871 T
909 889 5361 F
ramscpa.net

PARTNERS
Brenda L. Odle, CPA, MST
Terry P. Shea, CPA
Erik A. Franks, CPA
Scott W. Manno, CPA, CGMA
Leena Shambhag, CPA, HST, CGMA
Bradford K. Winkler, CPA, MBA, CGMA
Jay H. Zarymer, CPA (Partner Emeritus)
Phillip H. Walker, CPA (Partner Emeritus)

MANAGERS / STAFF
Jenny Liu, CPA, MST
Sonia Hess Kim, CPA, MBA
Charles De Simoni, CPA
Carmen Duran, CPA
Brianna Schultz, CPA
Lisa Hongsun Gao, CPA, MSA
Samuel Gregory, CPA
Eva Wu, CPA

70 YEARS ANNIVERSARY 1948 2018

MEMBERS
American Institute of Certified Public Accountants
PCPS The AICPA Alliance for CPA Firms
Governmental Audit Quality Center
Employee Benefit Plan Audit Quality Center
California Society of Certified Public Accountants

To the Executive Committee
Western Riverside Council of Governments

We have audited the financial statements of Western Riverside Council of Governments (WRCOG) as of and for the year ended June 30, 2018, and have issued our report thereon dated November 05, 2018. Professional standards require that we advise you of the following matters relating to our audit.

Our Responsibility in Relation to the Financial Statement Audit

As communicated in our engagement letter dated May 9, 2018, our responsibility, as described by professional standards, is to form and express an opinion about whether the financial statements that have been prepared by management with your oversight are presented fairly, in all material respects, in accordance with accounting principles generally accepted in the United States of America. Our audit of the financial statements does not relieve you or management of your respective responsibilities.

Our responsibility, as prescribed by professional standards, is to plan and perform our audit to obtain reasonable, rather than absolute, assurance about whether the financial statements are free of material misstatement. An audit of financial statements includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control over financial reporting. Accordingly, as part of our audit, we considered the internal control of WRCOG's solely for the purpose of determining our audit procedures and not to provide any assurance concerning such internal control.

We are also responsible for communicating significant matters related to the audit that are, in our professional judgment, relevant to your responsibilities in overseeing the financial reporting process. However, we are not required to design procedures for the purpose of identifying other matters to communicate to you.

Planned Scope and Timing of the Audit

We conducted our audit consistent with the planned scope and timing we previously communicated to you.

Compliance with All Ethics Requirements Regarding Independence

The engagement team, others in our firm, as appropriate, our firm, and our network firms have complied with all relevant ethical requirements regarding independence.

Qualitative Aspects of the Entity's Significant Accounting Practices

Significant Accounting Policies

Management has the responsibility to select and use appropriate accounting policies. A summary of the significant accounting policies adopted by WRCOG is included in Note 1 to the financial statements. As described in Note 1 to the financial statements, during the year, WRCOG changed its method of accounting for Other Postemployment Benefits (OPEB) by adopting Governmental Accounting Standards Board (GASB) Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions (OPEB). Accordingly, the cumulative effect of the accounting change as of the beginning of the year has been reported in the Statement of Activities. No matters have come to our attention that would require us, under professional standards, to inform you about (1) the methods used to account for significant unusual transactions and (2) the effect of significant accounting policies in controversial or emerging areas for which there is a lack of authoritative guidance or consensus.

Significant Accounting Estimates

Accounting estimates are an integral part of the financial statements prepared by management and are based on management's current judgments. Those judgments are normally based on knowledge and experience about past and current events and assumptions about future events. Certain accounting estimates are particularly sensitive because of their significance to the financial statements and because of the possibility that future events affecting them may differ markedly from management's current judgments.

The most sensitive accounting estimates affecting the financial statements are:

Management's estimate of the fair value of investments is based on observable market inputs and information from WRCOG's safekeeping custodian banks. We evaluated the key factors and assumptions used to develop the fair value of investments and determined that it is reasonable in relation to the basic financial statements taken as a whole and in relation to the applicable opinion units.

Management's estimate of the net pension liability/net OPEB liability and related deferred inflows and deferred outflows is based on actuarial reports provided by independent actuaries. We evaluated the key factors and assumptions used to develop the estimate in determining that it is reasonable in relation to the financial statements taken as a whole.

Financial Statement Disclosures

Certain financial statement disclosures involve significant judgment and are particularly sensitive because of their significance to financial statement users. The most sensitive disclosures affecting WRCOG's financial statements relate to:

The disclosure of fair value of investments in Note 2 to the financial statements represents amounts susceptible to market fluctuations.

The disclosure of net pension liability in Note 7 to the financial statements is based on actuarial assumptions. Actual future liabilities may vary from disclosed estimates.

The disclosure of the net OPEB liability and related deferred inflows and deferred outflows in Note 8 to the financial statements is based on actuarial assumptions. Actual future liabilities/assets may vary from disclosed estimates.

Significant Difficulties Encountered during the Audit

We encountered no significant difficulties in dealing with management relating to the performance of the audit.

Uncorrected and Corrected Misstatements

For purposes of this communication, professional standards require us to accumulate all known and likely misstatements identified during the audit, other than those that we believe are trivial, and communicate them to the appropriate level of management. Further, professional standards require us to also communicate the effect of uncorrected misstatements related to prior periods on the relevant classes of transactions, account balances or disclosures, and the financial statements as a whole and each applicable opinion unit. Management has corrected all identified misstatements.

In addition, professional standards require us to communicate to you all material, corrected misstatements that were brought to the attention of management as a result of our audit procedures. None of the misstatements identified by us as a result of our audit procedures and corrected by management were material, either individually or in the aggregate, to the financial statements taken as a whole or applicable opinion units

Disagreements with Management

For purposes of this letter, professional standards define a disagreement with management as a matter, whether or not resolved to our satisfaction, concerning a financial accounting, reporting, or auditing matter, which could be significant to WRCOG's financial statements or the auditor's report. No such disagreements arose during the course of the audit.

Representations Requested from Management

We have requested certain written representations from management, which are included in the attached letter dated November 05, 2018.

Management's Consultations with Other Accountants

In some cases, management may decide to consult with other accountants about auditing and accounting matters. Management informed us that, and to our knowledge, there were no consultations with other accountants regarding auditing and accounting matters.

Other Significant Matters, Findings, or Issues

In the normal course of our professional association with WRCOG, we generally discuss a variety of matters, including the application of accounting principles and auditing standards, operating and regulatory conditions affecting the entity, and operational plans and strategies that may affect the risks of material misstatement. None of the matters discussed resulted in a condition to our retention as Western Riverside Council of Government's auditors.

We applied certain limited procedures to management's discussion and analysis, the schedule of proportionate share of net pension liability, the schedule of plan contributions, the schedule of changes in the net OPEB liability, schedule of OPEB plan contributions and the General Fund budgetary comparison schedules, which are required supplementary information (RSI) that supplements the basic financial statements. Our procedures consisted of inquiries of management regarding the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We did not audit the RSI and do not express an opinion or provide any assurance on the RSI. We were not engaged to report on the introductory section or the statistical section, which accompany the financial statements but are not RSI. Such information has not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

This report is intended solely for the information and use of the Executive Committee, and management of WRCOG and is not intended to be and should not be used by anyone other than these specified parties.

Rogers, Anderson, Malody & Scott, LLP.

San Bernardino, California
November 05, 2018

Western Riverside Council of Governments

County of Riverside • City of Banning • City of Beaumont • City of Colimesa • City of Conyon Lake • City of Corono • City of Eastvale • City of Hemet
City of Jurupa Valley • City of Lake Elsinore • City of Menifee • City of Moreno Volley • City of Murrieta • City of Norco • City of Perris • City of Riverside
City of San Jacinto • City of Temecula • City of Wildomor • Eastern Municipal Water District • Western Municipal Water District • Morongo Band of Mission
Indians • Riverside County Superintendent of Schools

TOP WORK PLACES 2017 INLAND NEWS GROUP

November 05, 2018

Rogers, Anderson, Malody and Scott, LLP
735 E. Carnegie Dr. Suite 100
San Bernardino, CA 92408

This representation letter is provided in connection with your audit of the financial statements of Western Riverside Council of Governments (WRCOG) as of June 30, 2018 and for the year then ended, and the related notes to the financial statements, for the purpose of expressing opinions on whether the basic financial statements present fairly, in all material respects, the financial position, results of operations, and cash flows, where applicable, of the various opinion units of WRCOG in accordance with accounting principles generally accepted for governments in the United States of America (U.S. GAAP).

Certain representations in this letter are described as being limited to matters that are material. Items are considered material, regardless of size, if they involve an omission or misstatement of accounting information that, in the light of surrounding circumstances, makes it probable that the judgment of a reasonable person relying on the information would be changed or influenced by the omission or misstatement.

We confirm that, to the best of our knowledge and belief, having made such inquiries as we considered necessary for the purpose of appropriately informing ourselves as of November 05, 2018.

Financial Statements

- We have fulfilled our responsibilities, as set out in the terms of the audit engagement dated May 9, 2018 for the preparation and fair presentation of the financial statements of the various opinion units referred to above in accordance with U.S. GAAP.

- We acknowledge our responsibility for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

- We acknowledge our responsibility for the design, implementation, and maintenance of internal control to prevent and detect fraud.

- We acknowledge our responsibility for compliance with the laws, regulations, and provisions of contracts and grant agreements.

- We have reviewed, approved, and taken responsibility for the financial statements and related notes.

- We have a process to track the status of audit findings and recommendations.

- We have identified and communicated to you all previous audits, attestation engagements, and other studies related to the audit objectives and whether related recommendations have been implemented.

- Significant assumptions used by us in making accounting estimates, including those measured at fair value, are reasonable.

- Related party relationships and transactions have been appropriately accounted for and disclosed in accordance with the requirements of U.S. GAAP.

- All events subsequent to the date of the financial statements and for which U.S. GAAP requires adjustment or disclosure have been adjusted or disclosed.

- The effects of all known actual or possible litigation and claims have been accounted for and disclosed in accordance with U.S. GAAP.

- All component units, as well as joint ventures with an equity interest, are included and other joint ventures and related organizations are properly disclosed.

- All funds and activities are properly classified.

- All funds that meet the quantitative criteria in GASB Statement No. 34, *Basic Financial Statements—and Management's Discussion and Analysis—for State and Local Governments*, GASB Statement No. 37, *Basic Financial Statements—and Management's Discussion and Analysis—for State and Local Governments: Omnibus* as amended, and GASB Statement No. 65, *Items Previously Reported as Assets and Liabilities*, for presentation as major are identified and presented as such and all other funds that are presented as major are considered important to financial statement users.

- All components of net position, nonspendable fund balance, and restricted, committed, assigned, and unassigned fund balance are properly classified and, if applicable, approved.

- Our policy regarding whether to first apply restricted or unrestricted resources when an expense is incurred for purposes for which both restricted and unrestricted net position/fund balance are available is appropriately disclosed and net position/fund balance is properly recognized under the policy.

- All revenues within the statement of activities have been properly classified as program revenues, general revenues, contributions to term or permanent endowments, or contributions to permanent fund principal.

- All expenses have been properly classified in or allocated to functions and programs in the statement of activities, and allocations, if any, have been made on a reasonable basis.

- All interfund and intra-entity transactions and balances have been properly classified and reported.

- Special items and extraordinary items have been properly classified and reported.

- Deposit and investment risks have been properly and fully disclosed.

- Capital assets, including infrastructure assets, are properly capitalized, reported, and if applicable, depreciated.

- All required supplementary information is measured and presented within the prescribed guidelines.

- With regard to investments and other instruments reported at fair value:
  - The underlying assumptions are reasonable and they appropriately reflect management's intent and ability to carry out its stated courses of action.

  - The measurement methods and related assumptions used in determining fair value are appropriate in the circumstances and have been consistently applied.

  - The disclosures related to fair values are complete, adequate, and in accordance with U.S. GAAP.

  - There are no subsequent events that require adjustments to the fair value measurements and disclosures included in the financial statements.

Information Provided

- We have provided you with:
  - Access to all information, of which we are aware that is relevant to the preparation and fair presentation of the financial statements of the various opinion units referred to above, such as records, documentation, meeting minutes, and other matters;

  - Additional information that you have requested from us for the purpose of the audit; and

  - Unrestricted access to persons within the entity from whom you determined it necessary to obtain audit evidence.

- All transactions have been recorded in the accounting records and are reflected in the financial statements.

- We have disclosed to you the results of our assessment of the risk that the financial statements may be materially misstated as a result of fraud.

- We have no knowledge of any fraud or suspected fraud that affects the entity and involves:
  - Management;

  - Employees who have significant roles in internal control; or

  - Others where the fraud could have a material effect on the financial statements.

- We have no knowledge of allegations of fraud, or suspected fraud, affecting the entity's financial statements communicated by employees, former employees, vendors, regulators, or others.

- We *are* not aware of any pending or threatened litigation, claims, and assessments whose effects should be considered when preparing the financial statements.

- We have disclosed to you the identity of the entity's related parties and all the related party relationships and transactions of which we are aware.

- There have been no communications from regulatory agencies concerning noncompliance with or deficiencies in accounting, internal control, or financial reporting practices.

- WRCOG has no plans or intentions that may materially affect the carrying value or classification of assets and liabilities.

- We have identified and disclosed to you the laws, regulations, and provisions of contracts and grant agreements that could have a direct and material effect on financial statement amounts, including legal and contractual provisions for reporting specific activities in separate funds.

- There are no:

  - Violations or possible violations of laws or regulations, or provisions of contracts or grant agreements whose effects should be considered for disclosure in the financial statements or as a basis for recording a loss contingency, including applicable budget laws and regulations.

  - Unasserted claims or assessments that our lawyer has advised are probable of assertion and must be disclosed in accordance with GASB-62.

  - Other liabilities or gain or loss contingencies that are required to be accrued or disclosed by GASB-62.

- WRCOG has satisfactory title to all owned assets, and there are no liens or encumbrances on such assets nor has any asset or future revenue been pledged as collateral, except as disclosed to you.

- We have complied with all aspects of grant agreements and other contractual agreements that would have a material effect on the financial statements in the event of noncompliance.

Required Supplementary Information

With respect to the Schedule of the WRCOG's Schedule of Revenues, Expenditures, and Changes in Fund Balance, Schedule of Changes in the Net Other Post-Employment Benefits Liability, Schedule of Other Post-Employment Benefit Plan Contributions, Proportionate Share of Plans' Net Pension Liability and the Schedule of Plan Contributions accompanying the financial statements:

- We acknowledge our responsibility for the presentation of the RSI in accordance with U.S. GAAP.
- We believe the RSI, including its form and content, is measured and fairly presented in accordance with the applicable criteria.
- The methods of measurement or presentation have not changed from those used in the prior period.
- We believe the significant assumptions or interpretations underlying the measurement or presentation of the RSI, and the basis for our assumptions and interpretations, are reasonable and appropriate in the circumstances.

Rick Bishop
Executive Director

Andrew Ruiz
Interim Chief Financial Officer

Page Intentionally Left Blank

Item 6.I

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **Environmental Department Activities Update**

Contact: **Kyle Rodriguez, Staff Analyst, krodriguez@wrcog.us, (951) 405-6721**

Date: **February 21, 2019**

The purpose of this item is to *provide the status of the Solid Waste Cooperative, updates to the Used Oil Program, and the status of the Clean Cities Coalition.*

Requested Action:

1. Receive and file.

Background

WRCOG's Environment Department assists member jurisdictions with addressing state mandates which requires education and outreach programs that reduce greenhouse gases. The Environment Department houses three programs to meet California's goals: 1) The Solid Waste Cooperative, which assists in strategies of reduction of short-lived climate pollutants; 2) A regional Used Oil Recycling Program, designed to promote the proper recycling and disposal of used oil, oil filters, and Household Hazardous Waste (HHW); and 3) the Clean Cities Coalition, which aims to cut petroleum use in the transportation sector through integration of technology.

Solid Waste Cooperative

WRCOG's Solid Waste Cooperative (Cooperative) is formed of 18 WRCOG member agencies, local waste haulers, California Department of Resources Recycling and Recovery (CalRecycle), and other guests of interest. The Cooperative was formed to help the subregion discuss issues of importance and learn challenges and successes of recycling programs invoked.

In October 2018, staff held one-on-one meetings with members of the Cooperative and was asked to focus on recently-chaptered legislation SB 1383, Short-Lived Climate Pollutants (SLCP): Organic Waste Methane Emissions Reduction. SB 1383 aims to achieve a 50% reduction in statewide greenhouse gas emissions from organic waste disposal by the year 2020.

On February 20, 2019, from 1:00 p.m. to 3:00 p.m., WRCOG will host a workshop on SB 1383. CalRecycle will be presenting general information on the legislation as well as answer any questions or concerns. The workshop will be in Citrus Towers Suite 450, Riverside, CA. Access to a live webinar will be available through uberconfrence.com/WRCOG, dial in number (951) 407 – 0430. Staff will continue to work with the Cooperative to clearly define what activities it can undertake to assist member agencies comply with this bill.

Used Oil and Filter Exchange Events

The Used Oil Program is paid for by a grant from CalRecycle which funds jurisdictions to provide outreach and education on recycling of used motor oil, oil filters, and HWW. Used oil and filter exchange events help

educate and facilitate the proper recycling of used motor oil and used oil filters. WRCOG provides this outreach on behalf of the 18-member jurisdictions that participate in the Program. The primary objective is to teach "Do It Yourself" (DIY) individuals who change their oil how to properly dispose of their used oil and oil filters; therefore, an auto parts store is an excellent venue for events. During oil events, every individual that brings in their used oil filter will be provided with a brand new, equal or lesser price filter at no cost. In addition to promoting used oil and oil filter recycling, staff provides information about future County-wide HHW Collection Programs, which allows residents to drop-off other automotive and hazardous household products for free. WRCOG staff utilizes an electronic survey on an iPad to interact with residents at these events and collect information to help better inform community members of future opportunities to recycle used oil. In 2019, the first two events advertised on social media reached 97,000 users through Facebook promotion alone.

The following is a list of "completed" Used Oil Outreach and Filter Exchange Events:

Date	Event	Location	Oil Filters
1/12/2019	Oil & Filter Event	Hemet	26
1/26/2019	Oil & Filter Event	Riverside	127
2/2/2019	Oil & Filter Event	Eastvale	75

The following is a list of "upcoming" Used Oil Outreach and Oil Filter Exchange Events:

Date	Event	Location	Time
2/16/2019	Oil & Filter Event	Riverside	9:00 a.m. – 1:00 p.m.
2/23/2019	Oil & Filter Event	Murrieta	9:00 a.m. – 12:00 p.m.
3/23/2019	Oil & Filter Event	Lake Elsinore	9:00 a.m. – 12:00 p.m.
3/30/2019	Community Event	Perris	8:00 a.m. – 12:00 p.m.
4/6/2019	Oil & Filter Event	Riverside	9:00 a.m. – 1:00 p.m.
4/6/2019	Community Event	Canyon Lake	9:00 a.m. – 12:00 p.m.

Clean Cities Coalition

The WRCOG Clean Cities Coalition seeks to integrate technology with alternative fuels and infrastructure. Clean Cities Coalitions work with the Department of Energy (DOE) to improve efficiency, increase domestic energy security, and improve operating costs for consumers and business. Transportation is a large part of our Energy Economy; 70% of total U.S. petroleum usage is for transportation. Clean Cities National Network will track and report fuel pricing, openings and closings of fuel stations, vehicle and station costs equipment to the DOE to provide a picture of Alternative Fuel Vehicles (AFV) technology adoption, petroleum fuel use reductions, and air quality improvement to the subregion. Through Clean Cities Coalitions, DOE funds additional activities designed to help advance the AFV market in the subregion. WRCOG selected four activities:

- Fuel and technology feedback listening sessions
  - *The Coalition will organize and facilitate fuel and technology-specific listening sessions with fleets and other stakeholders to identify technology gaps and critical research needs to improve vehicle / infrastructure performance and usability in the subregion.*
- AFV infrastructure development and corridor planning
  - *The Coalition will organize and facilitate alternative fuel infrastructure planning activities, alternative fuel corridor development (including support of the FAST Act Section 1413, Alternative Fuel Corridor Designation initiative activities), research and preparation of alternative fueling readiness plans, and planning for future fueling infrastructure development where current corridor gaps exist in the subregion.*

  - *The Coalition will continue development and build out of its GIS planning tool and will work to nominate State Route 91 corridor as a FAST-ACT corridor for electric vehicle charging.*
- Fuel / technology outreach and demonstration events
  - *The Coalition will organize and facilitate fuel and technology specific end-user workshops and outreach event(s) including (but not limited to) hands-on ride & drives, demonstrations, educational showcases of alternative fuel and advanced technology vehicles, and refueling / charging systems. The Coalition will be assisting with the planning of an AltCar Expo being held within the Inland Empire area.*
- Targeted coaching and technical assistance
  - *The Coalition will continue to provide direct technical assistance and coaching to its member's fleets, end-users, and other appropriate stakeholders. Examples include assisting with project planning, aggregate purchasing initiatives, reviewing equipment specifications, coordinating performance testing of new fueling stations, orientation training for end-users receiving new AFVs or fueling equipment, problem-solving, etc.*

Prior Action:

January 7, 2019 The WRCOG Executive Committee received and filed.

Fiscal Impact:

This item is informational only; therefore, there is no fiscal impact.

Attachment:

None.

Page Intentionally Left Blank

Item 7.A

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **Report from the League of California Cities**

Contact: **Erin Sasse, Regional Public Affairs Manager, League of California Cities, esasse@cacities.org, (951) 321-0771**

Date: **February 21, 2019**

The purpose of this item is to *provide an update of activities undertaken by the League of California Cities.*

Requested Action:

1. Receive and file.

This item is reserved for a presentation from the League of California Cities Regional Public Affairs Manager for Riverside County.

Prior Action:

February 4, 2019: The Executive Committee received and filed.

Fiscal Impact:

This item is for informational purposes only; therefore, there is no fiscal impact.

Attachment:

None.

Page Intentionally Left Blank

Item 7.B

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **Census Update – Report from UCR and Riverside County**

Contact: **Sono Shah, UCR, sshah018@ucr.edu, and Jason Farin, Riverside County Executive Office, JFarin@RIVCO.ORG, (951) 955-1124**

Date: **February 21, 2019**

The purpose of this item is to *provide an update on current efforts by Riverside County and the University of California, Riverside (UCR) on initial outreach and coordination efforts related to the 2020 Census.*

Requested Action:

1. Receive and file.

The 2020 Decennial Census represents a significant event for all regions in the United States, particularly Riverside County. The population counts from the Census are key inputs into diverse topics such as Congressional Redistricting and the allocation process for Federal Grants and other funds. As such, it is critical that there is a full and accurate count of everyone in Riverside County.

To ensure that the 2020 Census accurately records all the residents of Riverside County, the County of Riverside and the UCR Center for Social Innovation have partnered on a joint effort to develop a framework to facilitate this process. The County of San Bernardino is also participating in this effort.

Much of this initial work is related to the establishment of a Complete Count Committee for the Inland Empire, which will include representatives of Riverside County, San Bernardino County, non-profits, and other interested parties. The Complete Count Committee will primarily be responsible for outreach and coordination activities.

Staff from UCR (Sono Shah) and the Riverside County's Executive Office (Jason Farin) will be providing a presentation on these and other initial efforts related to the 2020 Census. This update is anticipated to be the first in a series of updates over the remainder of 2019 and 2020 as needed.

Prior Action:

None.

Fiscal Impact:

This item is for informational purposes only; therefore, there is no fiscal impact.

Attachment:

None.

Page Intentionally Left Blank

Item 7.C

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **Presentation on Riverside County Efforts to Address Homelessness**

Contact: **Natalie Profant Komuro, Deputy County Executive Officer – Homelessness Solutions**
nkomuro@rivco.org, (951) 955-1145

Date: **February 21, 2019**

The purpose of this item is to *provide an update on Riverside County's on-going efforts related to homelessness.*

Requested Action:

1. Receive and file.

Homelessness is a critical issue for Riverside County, which touches on all government agencies in the WRCOG subegion. What is particularly challenging regarding homelessness is that it is simultaneously a national and local issue, requiring significant coordination between multiple agencies, departments and even private parties, such as non-profits to address.

In 2018, Riverside County created a new staff position, Deputy County Executive Officer – Homelessness Solutions, and hired Natalie Profant Komuro for the role to oversee the issue of homelessness within the County. Ms. Profant Komuro began working in homeless services in 1987. Prior to coming to Riverside County, she led planning at the Los Angeles Homeless Services Authority for ten years and then spent eleven years as the Executive Director of a comprehensive non-profit working with homeless families and individuals in Glendale.

Ms. Profant Komuro will provide an update on the County's current efforts regarding homelessness. Staff anticipates that this update will be the first of recurring updates on this key issue.

Prior Action:

None.

Fiscal Impact:

This item is for informational purposes only; therefore, there is no fiscal impact.

Attachment:

None.

Page Intentionally Left Blank

Item 7.D

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **Options for Potential WRCOG Assistance for Regional Housing Needs Assessment Update**

Contact: **Christopher Gray, Director of Transportation & Planning, cgray@wrcog.us, (951) 405-6710**

Date: **February 21, 2019**

The purpose of this item is to *provide an update on potential approaches to assist WRCOG member jurisdictions for the upcoming development of the Sixth Cycle Regional Housing Needs Assessment (RHNA).*

Requested Action:

1. Discuss and provide input.

Background

The state-wide housing crisis is creating challenges locally in housing the subregion's growing population, complying with changing legislation, meeting RHNA targets, and avoiding growing risks of non-compliance. New bills are likely to continue to emerge in a variety of areas aimed at increasing housing production. For example, greater attention is being given at the state-level to impact fees, perhaps indicating interest in imposing a cap on fees. There have also been discussions within the legislature regarding the withholding of gas tax funds or other transportation funds from agencies which are not meeting their RHNA targets.

Newly elected Governor Gavin Newsom's campaign platform centered on a plan to solve California's housing crisis and a proposal to construct 3.5 million new units across the State in the next six years. Consistent with this plan, the Governor's 2019-2020 Budget provides significant funding for Housing. Governor Newsom recently took a bold stance behind this platform by bringing a lawsuit against the City of Huntington Beach, accusing the City of deliberately blocking affordable housing.

The new legislation and the Governor's actions may be contributing to an adversarial relationship between the State and local cities, though cities likely recognize the great need to address the housing crisis. A report, The Cost of Not Housing, synthesizes some of the most pertinent issues that stem from the housing shortage, and makes it clear that many local jurisdictions would likely agree that housing is a top priority, though there is significant disagreement in how to best provide housing needs on a regional basis. Additionally, much of the efforts at the statewide level are oriented towards the imposition of "one size fits all requirements" rather than developing incentive-based programs or developing more nuanced solutions.

WRCOG's Planning Directors Committee met on February 14, 2019, and discussed potential solutions and long-term changes to the RHNA process. Based on a request from multiple member agencies, staff is currently developing a White Paper regarding housing issues in the WRCOG subregion which also touches on potential changes to RHNA. However, it is unlikely that there will be any significant changes to RHNA in time to substantively impact the next RHNA cycle.

RHNA Cycle 6 Assistance Options

Information provided by SCAG indicates that the next cycle of RHNA updates will commence in the fall of 2019 for incorporation into the SCAG 2020 RTP/SCS. Staff expects that this cycle will proceed using a similar process to previous updates, in which local agencies will be provided with their targets. As in previous cycles, local agencies will have opportunities to review and comment on their targets. Staff has identified three potential options for how WRCOG can best assist member agencies during the upcoming RHNA process.

First, as with many issues, WRCOG could facilitate information sharing within its member agencies. This process might include scheduling presentations by SCAG staff, facilitating discussions, etc. This approach is one which WRCOG has taken previously during previous RHNA update cycles. This approach would likely use WRCOG's existing staff and Committee structure to implement and would not likely require additional funds.

As a second option, WRCOG and our consultants could provide technical assistance to member agencies to facilitate their review of RHNA data. In the fall of 2018, WRCOG offered this type of assistance to members to review SCAG's initial growth projections. Seven member agencies requested this assistance. Providing more direct technical assistance would likely require some level of cost sharing with member agencies.

The third and final option involves more direct assistance through the Subregional Delegation process. Under the Subregional Delegation Process, WRCOG would utilize consultant services to allocate the SCAG assigned housing targets in participating member agencies, rather than the traditional practice of SCAG leading the allocation. SCAG has allocated $1,500 per jurisdiction which elects to participate in the Subregional Delegation process, which is likely insufficient to cover all associated costs, meaning that some type of cost sharing process would be required for any agency wishing to participate in this process. Both the City of Riverside and the County of Riverside have requested that staff consider the SCAG RHNA Delegation process. Staff is currently reviewing the draft guidelines for Subregional Delegation and seeking additional information from others who have exercised this option in the past. There are significant questions regarding the likely cost of an effort and legal implications that need to be addressed. WRCOG will need to formally notify SCAG of any decision regarding the Subregional Delegation process by June 2019.

Staff is evaluating each of the options above and will report back to member agencies in the March/April timeframe with a recommendation on how to proceed for their review and approval.

Prior Action:

None.

Fiscal Impact:

This item is for informational purposes only; therefore, there is no fiscal impact.

Attachment:

None.

ERRATA TO THE FINAL EIR

INTRODUCTION

The City of Fresno (City) has prepared this Errata sheet to clarify and correct information in the Final Environmental Impact Report (Final EIR) for the 2740 West Nielsen Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map Application No. P21-05930) (proposed project). Pursuant to State CEQA Guidelines Section 15088.5, recirculation is not required where the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR. This Errata sheet includes minor text edits to the Final EIR for the project and subsequent revisions herein do not contain significant new information that alter the conclusions of the Final EIR, result in any new significant environmental impacts, or deprive the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project.

STAFF INITIATED TEXT CHANGES

Revisions to the Draft EIR are shown below as excerpts from the EIR text. Added or modified text is double-underline, while deleted text is shown as strikeout text (~~example~~).

Public Review Draft EIR Chapter 1.0, Introduction

Section 1.2, Environmental Review Process

The information contained in the EIR must be reviewed and considered by the City of Fresno Planning Commission ~~and City Council~~ prior to a decision to approve, disapprove, or modify the project.

Section 1.7, Public Participation

The City will provide opportunities for the public to present comments and concerns regarding the CEQA and planning processes. These opportunities will occur during the Draft EIR public review and comment period and public hearing~~s~~ before the City of Fresno Planning Commission ~~and City Council~~.

Written public comments may be submitted to the Planning and Development Department during the specified public review and comment period, and oral comments may be presented at the Draft EIR public hearing before the City of Fresno Planning Commission ~~and City Council~~.

Recirculated Public Review Draft EIR Chapter 1.0, Introduction

Section 1.3, Commenting on the Recirculated Draft EIR

Written public comments may be submitted to the Planning and Development Department during the specified public review and comment period, and oral comments may be presented at the Draft EIR public hearing before the City of Fresno Planning Commission ~~and City Council~~.

Exhibit 2
CEQA Findings of Fact

FINDINGS OF FACT

2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

FRESNO, CALIFORNIA

LSA

September 2023

This page intentionally left blank

FINDINGS OF FACT

2740 WEST NIELSEN AVENUE OFFICE/WAREHOUSE PROJECT

FRESNO, CALIFORNIA

Submitted to:

City of Fresno
Planning and Development Department
2600 Fresno Street
Fresno, California 93721

Prepared by:

LSA
2565 Alluvial Avenue, Suite 172
Clovis, California 93611
(559) 490-1210

Project No. SNN2102

LSA

September 2023

This page intentionally left blank

TABLE OF CONTENTS

TABLE OF CONTENTS i
INTRODUCTION 1
PROCEDURAL FINDINGS 3
RECORD OF PROCEEDINGS 5
FINDINGS REQUIRED UNDER CEQA 7
Aesthetics 7
Air Quality 9
Biological Resources 11
Cultural and Tribal Resources 12
Energy 14
Greenhouse Gas Emissions 15
Hazards and Hazardous materials 15
Hydrology and Water Quality 16
Noise 17
Transportation 19
Utilities and Service Systems 19
Agriculture and Forestry Resources 20
Geology and Soils 21
Land Use and Planning 22
Mineral Resources 22
Population and Housing 23
Public Services 23
Recreation 24
Wildfire 24
Mitigation Monitoring 25
Significant Irreversible Environment Effects 25
Growth Inducement 26
PROJECT ALTERNATIVES 28
Alternatives Considered in the EIR 28

This page intentionally left blank

INTRODUCTION

The following Findings of Fact are based in part on the information contained in the 2740 West Nielsen Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map Application No. P21-05930) Recirculated Draft and Final Environmental Impact Report (State Clearinghouse #2022050265) that was prepared by the City of Fresno (City) acting as lead agency pursuant to the California Environmental Quality Act (CEQA). Hereafter, unless specifically identified, the Notice of Preparation (NOP), Notices of Availability and Completion (NOA/NOC), Recirculated Draft Environmental Impact Report (Recirculated Draft EIR), Appendices, Technical Studies, Final Environmental Impact Report containing Responses to Comments and textual revisions to the Recirculated Draft EIR (in the Final Environmental Impact Report), and Mitigation Monitoring and Reporting Program (MMRP) will be referred to collectively herein as the "EIR." These Findings are based on the entire record before the Planning Commission, including the EIR. The EIR is hereby incorporated by reference and is available for review at the City of Fresno, 2600 Fresno Street, Fresno, California, and electronically on the City's website at: https://www.fresno.gov/darm/planning-development/plans-projects-under-review.

The purpose of these Findings is to satisfy the requirements of Sections 15091 and 15092 of the CEQA Guidelines, associated with approval of proposed 2740 West Nielsen Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map Application No. P21-05930) (herein referred to as the proposed project).

This page intentionally left blank

PROCEDURAL FINDINGS

On September 9, 2022, the City circulated an NOP notifying responsible agencies and interested parties that an EIR would be prepared for the proposed project and indicated the environmental topics anticipated to be addressed in the EIR. The NOP was sent to the State Clearinghouse, responsible agencies, interested parties, and organizations likely to be interested in the potential impacts of the proposed project. A scoping session was held virtually on September 22, 2022, to solicit feedback regarding the scope and content of the EIR. Comments received by the City on the NOP were considered during preparation of the Draft EIR.

The Draft EIR was made available for public review on February 24, 2023, and was distributed to local and State responsible and trustee agencies. The Draft EIR and an announcement of its availability were posted electronically on the City's website at: https://www.fresno.gov/darm/planning-development/plans-projects-under-review. The NOA for the Draft EIR was submitted to the State Clearinghouse, provided to all individuals and organizations who made a written request for notice, and filed with the Fresno County Clerk. In addition, the City issued a Recirculated Draft EIR on April 4, 2023, that included Chapters 6.0 and 7.0, which were previously omitted from the Draft EIR. No other changes were made to the Draft EIR.

The CEQA-mandated 45-day public comment period ended on May 19, 2023. The City accepted and responded to all comments received between February 24, 2023, and May 19, 2023 for both the Draft EIR and Recirculated Draft EIR.

Following public review of the Draft EIR, a Final EIR was prepared. The Final EIR was made available in September 2023 and consists of the following items:

- The Recirculated Draft EIR released on April 4, 2023.
- Responses to Comments; and
- Text revisions to the Recirculated Draft EIR.

As required by CEQA Guidelines Section 15088(b), public agencies that commented on the Recirculated Public Review Draft EIR were provided at least 10 days to review the proposed responses contained in the Final EIR prior to the date for consideration of the Final EIR for certification.

This page intentionally left blank

RECORD OF PROCEEDINGS

In accordance with Public Resources Code (PRC) Section 21167.6(e), the record of proceedings for the City's decision on the project includes the following documents, which are incorporated by reference and made part of the record supporting these Findings:

- City staff reports and all attachments;
- The Recirculated Draft EIR and all appendices to the Recirculated Draft EIR;
- The Final EIR and all appendices to the Final EIR;
- All notices required by CEQA and presentation materials related to the project;
- All comments submitted by agencies or members of the public during the comment period on the NOP, the Draft EIR, and the Recirculated Draft EIR;
- All studies conducted for the project and contained or referenced in the Recirculated Draft EIR and the Final EIR;
- All documents cited or referenced in the Recirculated Draft EIR and the Final EIR;
- All public reports and documents related to the project prepared for the City and other agencies;
- All other documents related to the project;
- The MMRP for the project; and
- Any additional items not included above if otherwise required by law.

The documents constituting the record of proceedings are available for review by responsible agencies and interested members of the public during normal business hours at the City's offices at 2600 Fresno Street, Room 3043, Fresno, California.

The Recirculated Draft EIR and Final EIR are incorporated into these Findings in their entirety, unless and only to the extent that these Findings expressly do not incorporate by reference the Recirculated Draft EIR and Final EIR. Without limitation, this incorporation is intended to elaborate on the scope and nature of mitigation measures, the basis for determining the significance of impacts, and the comparative analysis of alternatives.

This page intentionally left blank

FINDINGS REQUIRED UNDER CEQA

The Recirculated Draft EIR identified a number of less than significant impacts associated with the project that do not require mitigation. The Recirculated Draft EIR also identified a number of significant and potentially significant environmental effects (or impacts) that may be caused in whole or in part by the project. All of these significant effects can be fully avoided or substantially lessened through the adoption of feasible mitigation measures.

The findings of the City with respect to the project's significant effects and mitigation measures are set forth in the EIR and these Findings of Fact. The Summary of Findings does not attempt to replicate or restate the full analysis of each environmental impact contained in the EIR. Please refer to the Recirculated Draft EIR and Final EIR for more detail.

The following provides a summary description of each potentially significant impact, describes the applicable mitigation measures identified in the Final EIR and adopted by the City, and states the findings of the City regarding the significance of each impact after imposition of the adopted mitigation measures. A full explanation of these environmental findings and conclusions can be found in the Recirculated Draft EIR and Final EIR and associated record (described herein), both of which are incorporated by reference. The City hereby ratifies, adopts, and incorporates the analysis and explanation in the record into these Findings, and ratifies, adopts, and incorporates into these Findings the determinations and conclusions of the EIR relating to environmental impacts and mitigation measures, except to the extent any such determinations and conclusions are specifically and expressly modified by these Findings.

To the extent any of the mitigation measures are within the jurisdiction of other agencies, the City finds those agencies can and should implement those measures within their jurisdiction and control (CEQA Guidelines, Section 15091[a][2]).

AESTHETICS

Environmental Effects of the Project Found to Have No Impact on the Environment or to Have a Less Than Significant Impact on the Environment

- ***Threshold 4.1.1:*** *The proposed project would not have a substantial adverse effect on a scenic vista.*

- ***Threshold 4.1.2:*** *The proposed project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.*

- ***Threshold 4.1.3:*** *The proposed project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from a publicly accessible vantage point). Due to the location of the project in an urbanized area, the project would not conflict with applicable zoning and other regulations governing scenic quality.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- ***Threshold 4.1.4:*** *The project would create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 California Code of Regulations [CCR] § 15091(a)(1)).

Rationale for the Finding: Implementation of the proposed project would result in an increase of nighttime lighting levels over current levels in the project area, associated with parking lot lights and security-related lighting in the project site. While compliance with California Building Code (CCR Title 24) standards would minimize the proposed project's light and glare impacts, the proposed project's lighting systems could constitute substantial new sources of light relative to baseline conditions if the project's lighting systems are significantly more intense than existing lighting sources or if they are not appropriately shielded to prevent light diffusion. Additionally, the proposed project could create a substantial new source of glare if highly reflective building materials are used.

All exterior lighting at the project site would be pointed downward toward the project site to minimize lighting levels at nearby uses. In addition, the proposed project would be required to comply with Article 25, Performance Standards, of the Zoning Ordinance, which includes standards related to lighting and glare. Further, Mitigation Measures AES-1 through AES-3 would ensure that the proposed project's lighting systems do not create a substantial new source of light by requiring shielding mechanisms to direct light away from nearby uses. As a result, any new sources of light resulting from the proposed project would not be substantial in the context of existing lighting sources. Implementation of Mitigation Measure AES-4 would ensure that the proposed project's lighting systems do not create a substantial new source of light by imposing a cap on the intensity of lighting systems based on the average intensity of the surrounding streets.

Additionally, while the project does not propose use of highly reflective glass elements or building materials, Mitigation Measure AES-5 requires materials used on building façades to be nonreflective. Therefore, any new source of glare would not be substantial.

Accordingly, with the incorporation of Mitigation Measures AES-1 through AES-5, the project's potential impacts would be less than significant.

- ***Threshold 4.1.5:*** *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to aesthetics.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: Although the project and other projects in the project area would increase the amount of nighttime light and glare in Fresno, all projects are subject to Article 25, Performance

Standards, of the Zoning Ordinance, which includes standards related to lighting and glare. Additionally, the project's contribution of the illumination of the night sky would be less than significant with implementation of Mitigation Measures AES-1 through AES-5. As such the proposed project would not contribute to cumulative aesthetic impacts in the study area. Therefore, the combined increase in light and glare would not be substantial. With the implementation of Mitigation Measures AES-1 through AES-5, the project would not make a considerable contribution to cumulative light and glare impacts.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

AIR QUALITY

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- ***Threshold 4.2.4:*** *The project would not result in significant odors that could adversely affect a substantial number of people.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- ***Threshold 4.2.1:*** *The project would not conflict with or obstruct implementation of the applicable air quality plan.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: For a project to be consistent with San Joaquin Valley Air Pollution Control District (SJVAPCD) air quality plans, the pollutants emitted from a project should not exceed the SJVAPCD emission thresholds or cause a significant impact on air quality. In addition, emission reductions achieved through implementation of offset requirements are a major component of the SJVAPCD air quality plans. Construction of the proposed project is anticipated to occur in two phases occurring over a total 24-month period, starting in the third quarter of 2023 and ending in 2025, and would not result in the generation of criteria air pollutants that would exceed SJVAPCD thresholds of significance. Implementation of Mitigation Measure AIR-1, which requires the implementation of measures required under SJVAPCD's Regulation VIII, would further reduce construction dust impacts. In addition, long-term operational emissions associated with the proposed project, including area, energy, and mobile-source emissions, would also not exceed SJVAPCD established significance thresholds. Therefore, impacts related to the proposed project's potential to conflict with or obstruct implementation of the applicable air quality plan would be less than significant with implementation of Mitigation Measure AIR-1.

- ***Threshold 4.2.2:*** *Implementation of the proposed project would not result in a cumulatively considerable net increase of criteria pollutants for which the project region is non-attainment under an applicable federal or State ambient air quality standard.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: Construction emissions for the proposed project would not exceed the SJVAPCD annual threshold for construction emissions. In addition to the construction period thresholds of significance, the SJVAPCD has implemented Regulation VIII measures for dust control during construction. These control measures are intended to reduce the amount of particulate matter less than or equal to 10 microns in diameter (PM_{10}) emissions during the construction period. Implementation of the fugitive dust control measures outlined in Mitigation Measure AIR-1 would ensure that the proposed project complies with Regulation VIII and further reduces the short-term construction period air quality impacts.

- ***Threshold 4.2.3:*** *Implementation of the proposed project would expose sensitive receptors to substantial pollutant concentrations.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: To determine the potential health risk associated with the exhaust of diesel-powered trucks and equipment and construction activities to people living and working near the proposed project, a Health Risk Assessment (HRA) for the proposed project was prepared for the proposed project. To reduce the potential health risks for nearby sensitive receptors, implementation of Mitigation Measure AIR-2 would be required to reduce substantial pollutant concentrations during project construction by requiring the use of Tier 4 construction equipment. Once operational, although the health risks would be below SJVACPD thresholds, since the project area is already at an elevated risk level, Mitigation Measure AIR-3 requires the proposed project to provide the infrastructure for AC and/or DC chargers for electric heavy-duty trucks, which would further reduce emissions. With implementation of Mitigation Measures AIR-2 and AIR-3, the proposed project's potential air quality impacts from construction and operation would not expose sensitive receptors to substantial pollutant concentrations.

- ***Threshold 4.2.5:*** *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to air quality.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: If the proposed project's annual emissions of construction- or operation-related criteria air pollutants exceed any applicable threshold established by the SJVAPCD, the proposed project would result in a considerable contribution to a cumulatively significant impact. With implementation of Mitigation Measure AIR-1, the proposed project would not generate significant construction or operational emissions. In addition, with implementation of Mitigation Measures AIR-2 and AIR-3, health risk levels to nearby residents from project construction- and operation-related emissions would be well below the SJVAPCD's thresholds. Cumulative impacts would be considered less than significant.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less than Significant

- None.

BIOLOGICAL RESOURCES

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- ***Threshold 4.3.2:*** *The project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community.*

- ***Threshold 4.3.3:*** *The project would not have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*

- ***Threshold 4.3.4:*** *The project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.*

- ***Threshold 4.3.5:*** *The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

- ***Threshold 4.3.6:*** *The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- ***Threshold 4.3.1:*** *The project would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: The project site contains suitable nesting habitat for a few urban-adapted native avian species. The on-site trees and shrubs have the potential to support nesting birds such as northern mockingbird or mourning dove. In addition, the project site also has the potential to support the ground-nesting and disturbance-tolerant killdeer. Nearly all native birds are protected by the Federal Migratory Bird Treaty Act, the California Migratory Bird Protection Act, and the California Fish and Game Code. Construction activities that occur during the nesting bird season (typically February 1 through August 31) have potential to result in the mortality/disturbance of nesting birds.

Avoidance, conducting pre-construction surveys and establishing buffers would prevent or compensate for impacts on special-status bird species. Therefore, implementation of Mitigation

Measure BIO-1, which would require avoidance, conducting pre-construction surveys, and establishing buffers, would effectively mitigate any impacts on special-status species to less than significant levels. No other special-status species were determined to have a moderate or high probability of occurrence on the project site.

- ***Threshold 4.3.7:*** *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to biological resources.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: The project would implement Mitigation Measure BIO-1 to reduce impacts on nesting birds, as described above. The proposed project is not expected to have a substantial adverse effect on any other special-status species. Thus, the project would not contribute to any significant cumulative impacts to biological resources, and cumulative impacts to these resources would be less than significant.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

CULTURAL AND TRIBAL RESOURCES

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- None.

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- ***Threshold 4.4.1:*** *The project would cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: No historical resources were identified within or adjacent to the project site. In the event that unknown resources are discovered during project construction, existing federal, State, and local laws and regulations would require construction activities to cease until such artifacts are properly examined and determined to not be of significance by a qualified professional. Implementation of Mitigation Measure CUL-1 would require consultation with a historical resources specialist to assess whether the discovered resource qualifies as a historical resource and to identify appropriate mitigation measures, if applicable. Therefore, potential impacts related to a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5 would be less than significant with mitigation.

- ***Threshold 4.4.2:*** *The project would cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5 of the CEQA Guidelines.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: No archaeological resources were identified in the project site. However, there is a potential for unknown archaeological resources to be discovered during construction of the proposed project. Mitigation Measure CUL-1 requires that if unknown archaeological resources are discovered during construction, work in the area would halt and a qualified archaeologist would be contacted and consulted regarding how to appropriately address the situation. This would minimize or eliminate any potential for an adverse change to the significance of any discovered archaeological resources. Therefore, adherence to the requirements of Mitigation Measure CUL-1 would reduce potential impacts from a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 to less than significant with mitigation.

- ***Threshold 4.4.3:*** *The project would disturb human remains, including those interred outside of formal cemeteries.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: Disturbance of human remains interred outside of formal cemeteries would result in a significant impact. If human remains are identified during project construction, Section 7050.5 of the California Health and Safety Code and PRC Section 5097.98 shall apply, as appropriate. Mitigation Measure CUL-2 requires adherence to Section 7050.5 of the California Health and Safety Code and PRC Section 5097.98. With implementation of Mitigation Measure CUL-2, potential impacts related to disturbance of any human remains, including those interred outside of formal cemeteries, would be less than significant with mitigation.

- ***Threshold 4.4.4:*** *The project would result in a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: While there is no evidence to suggest the presence of tribal cultural resources, if any artifacts are inadvertently discovered during ground-disturbing activities, existing federal, State, and local laws and regulations would require construction activities to cease until such artifacts are properly examined and determined not to be of significance by a qualified cultural resource professional. In addition, Mitigation Measure CUL-1 requires that if unknown archaeological resources are discovered during construction, work in the area would halt and a qualified archaeologist would be contacted. Therefore, adherence to the requirements of Mitigation Measure

CUL-1 would reduce potential impacts related to the substantial adverse change in the significance of a tribal cultural resource to less than significant.

- ***Threshold 4.4.5:*** *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to cultural resources.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: Archaeological and historical resources are recorded throughout of Fresno, and it is possible that previously unknown archaeological and historical resources also exist within the city. Mitigation Measure CUL-1 would ensure that the proposed project would not make a cumulatively considerable contribution to any cumulative impact on cultural resources. In addition, no known precontanct or Native American human remains have been identified within or in the vicinity of the project site. There is a possibility that ground-disturbing activities associated with cumulative development may uncover previously unknown buried human remains. With implementation of Mitigation Measure CUL-2, potential impacts related to the potential disturbance of any human remains would be less than significant with mitigation. In addition, if tribal cultural resources are found during construction of the proposed project, compliance with applicable federal, State, and local laws and regulations and compliance with Mitigation Measure CUL-1 would reduce impacts to tribal cultural resources to less than significant.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

ENERGY

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- ***Threshold 4.5.1:*** *The project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.*

- ***Threshold 4.5.2:*** *The project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.*

- ***Threshold 4.5.3:*** *The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative impact with respect to energy.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

GREENHOUSE GAS EMISSIONS

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- ***Threshold 4.6.1:*** *The project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.*

- ***Threshold 4.6.2:*** *The project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

- ***Threshold 4.6.3:*** *The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative impact with respect to greenhouse gas emissions.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

HAZARDS AND HAZARDOUS MATERIALS

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- ***Threshold 4.7.1:*** *The project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.*

- ***Threshold 4.7.3:*** *The project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.*

- ***Threshold 4.7.4:*** *The project would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment.*

- ***Threshold 4.7.5:*** *The project would not be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, and would not result in a safety hazard for people residing or working in the project area.*

- ***Threshold 4.7.6:*** *The project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.*

- ***Threshold 4.7.7:*** *The project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- ***Threshold 4.7.2:*** *The project would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: Based on the Phase I Environmental Site Assessment (ESA) and Phase II ESA prepared for the proposed project, a Soil Management Plan (SMP) shall be prepared prior to construction to address soil management procedures that may arise based on historical use of the project site and the known total petroleum hydrocarbons and arsenic impacts. Therefore, implementation of Mitigation Measure HAZ-1, which would require preparation of an SMP, would effectively mitigate any impacts related to a significant hazard to the public or the environment to less than significant levels.

- ***Threshold 4.7.8:*** *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to hazards and hazardous materials.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: Implementation of the proposed project in combination with other projects in the project area and larger region could increase hazard-related impacts (e.g., hazardous waste/material potential release, interference with emergency plan, wildland fires) in the project area; however, compliance with applicable federal, State, and local policies and implementation of Mitigation Measure HAZ-1 would reduce potential cumulative impacts to a less than significant level.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

HYDROLOGY AND WATER QUALITY

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- ***Threshold 4.8.1:*** *The project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.*

- ***Threshold 4.8.2:*** *The project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.*

- ***Threshold 4.8.3:*** *The project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.*

- ***Threshold 4.8.4:*** *The project would not release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone.*

- ***Threshold 4.8.5:*** *The project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan (SGMA).*

- ***Threshold 4.8.6:*** *The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative impact with respect to hydrology and water quality.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

NOISE

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- ***Threshold 4.9.2:*** *The proposed project would not generate excessive groundborne vibration or groundborne noise levels.*

- ***Threshold 4.9.3:*** *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, the proposed project would not expose people residing or working in the project area to excessive noise levels.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- ***Threshold 4.9.1:*** *The proposed project would generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, State, or federal standards.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: Although the project's potential construction-related noise level increase would be below thresholds, to reduce noise levels at the nearest off-site sensitive residential use, Mitigation Measure NOI-1 would be required to ensure that all construction equipment, fixed or mobile, is equipped with properly operating and maintained mufflers consistent with manufacturers' standards, which would reduce the potential impacts associated with construction equipment. Additionally, Mitigation Measure NOI-1 requires the project to designate a "disturbance coordinator" at the City who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem. In addition, once operational, Mitigation Measure NOI-2 would reduce potential impacts related to loading dock and delivery noise by prohibiting loading dock activities at the loading dock doors and trailer parking activities south of Building 1 during nighttime hours. Loading dock and parking activities at all other locations would be shielded by the proposed buildings and would not exceed the City's nighttime noise standards.

- ***Threshold 4.9.4:*** *The proposed project, in combination with past, present, and reasonably foreseeable projects, would contribute to a significant cumulative impact with respect to noise.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: With implementation of Mitigation Measure NOI-1, the proposed project would not result in adverse noise impacts from construction activities. Although the proposed project may be under construction at the same time as one or more cumulative development projects, each project would be required to implement measures similar to those identified in Mitigation Measure NOI-1 in order to ensure that construction noise levels are reduced to the extent feasible and that construction activities comply with the City's Noise Ordinance.

In addition, long-term operation of the proposed project would not create a significant increase in stationary-source noise, including noise associated with equipment and truck deliveries and truck loading and unloading activities, with implementation of Mitigation Measure NOI-2. Because cumulative development projects are not located immediately adjacent to the project site, permanent increases in noise generated by these projects would not combine with the noise levels generated by the proposed project to create a cumulatively considerable increase in ambient noise levels, and this impact would be less than significant with mitigation.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

TRANSPORTATION

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- ***Threshold 4.10.1:*** *The project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.*

- ***Threshold 4.10.2:*** *The proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b).*

- ***Threshold 4.10.3:*** *The project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).*

- ***Threshold 4.10.4:*** *The project would not result in inadequate emergency access.*

- ***Threshold 4.10.5:*** *The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative impact with respect to transportation.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

UTILITIES AND SERVICE SYSTEMS

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- ***Threshold 4.11.1:*** *The project would not require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.*

- ***Threshold 4.11.2:*** *The project would have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.*

- ***Threshold 4.11.3:*** *The project would result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.*

- ***Threshold 4.11.4:*** *The project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.*

- ***Threshold 4.11.5:*** *The project would comply with federal, State, and local management and reduction statutes and regulations related to solid waste.*

- ***Threshold 4.11.6:*** *The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative impact with respect to aesthetics.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

AGRICULTURE AND FORESTRY RESOURCES

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.*

- *Conflict with existing zoning for agricultural use or a Williamson Act contract.*

- *Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).*

- *Result in the loss of forest land or conversion of forest land to non-forest use.*

- *Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

GEOLOGY AND SOILS

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- *Directly or Indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:*
    - *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*
    - *Strong seismic ground shaking.*
    - *Seismic-related ground failure, including liquefaction.*
    - *Landslides.*
- *Result in substantial soil erosion or the loss of topsoil.*
- *Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.*
- *Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.*
- *Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.*

Finding: Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment (14 CCR § 15091(a)(1)).

Rationale for the Finding: No paleontological resources or unique geological features are known to exist within or near the project site, and the proposed project is not expected to alter or destroy a paleontological resource, site, or unique geologic feature. However, as required by Mitigation Measure GEO-1, in the event that unique paleontological/geological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified paleontologist shall be consulted to determine whether the resource requires further study. Mitigation Measure GEO-1 would reduce potential impacts related to the project's potential to

directly or indirectly destroy a unique paleontological resource or site or unique geologic feature to less than significant with mitigation.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

LAND USE AND PLANNING

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- *Physically divide an established community.*
- *Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

MINERAL RESOURCES

Environmental Effects of the Project Found to Have No Impact on the Environmental or Have a Less Than Significant Impact on the Environment

- *Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State.*
- *Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

POPULATION AND HOUSING

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- *Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).*

- *Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

PUBLIC SERVICES

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- *Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:*

    - *Fire protection?*
    - *Police protection?*
    - *Schools?*
    - *Parks?*
    - *Other public facilities?*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

RECREATION

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- *Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.*
- *Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

WILDFIRE

Environmental Effects of the Project Found to Have No Impact on the Environment or Have a Less Than Significant Impact on the Environment

- *Substantially impair an adopted emergency response plan or emergency evacuation plan.*
- *Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.*
- *Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.*
- *Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.*

Environmental Effects of the Project That Are Potentially Significant, but That Can Be Mitigated to a Less Than Significant Level

- None.

Environmental Effects of the Project That Cannot Be Mitigated to a Level Less Than Significant

- None.

MITIGATION MONITORING

An MMRP was prepared for the project and approved by the City (PRC Section 21081.6, Subd. [a][1]; CEQA Guidelines Section 15097). The City will use the MMRP to track compliance with the project mitigation measures. The MMRP will remain available for public review during the compliance period.

SIGNIFICANT IRREVERSIBLE ENVIRONMENT EFFECTS

The State CEQA Guidelines (Section 15126) require a discussion of the significant irreversible environmental changes that would be involved in a project should it be implemented. The irreversible and irretrievable commitment of resources is the permanent loss of resources for future or alternative purposes. Irreversible and irretrievable resources are those that cannot be recovered or recycled or those that are consumed or reduced to unrecoverable forms.

CEQA requires that EIRs assess whether the proposed project would result in significant irreversible changes to the physical environment. The CEQA Guidelines discuss three categories of significant irreversible changes that should be considered. Each is addressed below.

As mandated by the CEQA Guidelines, an EIR must address any significant irreversible environmental change that would result from project implementation. According to Section 15126.2(d) of the CEQA Guidelines, such a change would occur if one of the following scenarios is involved:

- The project would involve a large commitment of nonrenewable resources;
- Irreversible damage would result from environmental accidents associated with the project; or
- The proposed consumption of resources is not justified (e.g., the project would result in the wasteful use of energy).

The environmental effects of the proposed project are thoroughly discussed in Section 4.0, Evaluation of Environmental Impacts, and summarized in the Executive Summary. Implementation of the project would require the long-term commitment of natural resources, as discussed below.

Changes in Land Use Which Commit Future Generations

The proposed project would involve the development of land in the project site that is currently vacant, but formerly consisted of industrial warehouses that have been demolished. Although the proposed development would commit future generations to using the project site for developed uses rather than vacant land, such a commitment is consistent with planned industrial and employment for the project site, as identified in the City's General Plan. The General Plan has anticipated development in the project site that commits future generations, which was assessed under the General Plan EIR; the proposed project merely implements and carries out the vision of the General Plan (Recirculated Draft EIR, page 6-2).

Irreversible Damage from Environmental Accidents

Construction activities associated with implementation of the proposed project would involve some risk of environmental accidents. However, as discussed in Section 4.7, Hazards and Hazardous

Materials, the accidental spills and soil contamination would be addressed by City, State, and federal agencies and would follow professional industry standards for safety and construction. Although there is a possibility for contaminated soil to be encountered during grading, excavation, and/or ground disturbance associated with implementation of the proposed project, it is likely that such contamination may have resulted from agricultural operations within the project site. However, the risks of accidental contamination from handling construction materials or transport of these materials off site would be reduced to a less than significant level through compliance with the many federal, State, and local regulations regarding the handling and disposal of such construction materials. Additionally, the heavy industrial land use proposed by the proposed project would not include any uses or activities that are likely to contribute to or be the cause of a significant environmental accident, such as industrial-related spills or leaks. As a result, the proposed project would not pose a substantial risk of environmental accidents (Recirculated Draft EIR, page 6-2).

Consumption of Nonrenewable Resources

Approval and implementation of actions related to development of the project would result in an irretrievable commitment of nonrenewable resources such as energy and construction materials. As discussed in Section 4.5, Energy, the projected electricity and natural gas demands of the proposed project would be consistent with typical usage rates for industrial uses in the City of Fresno and would not result in a significant adverse impact related to the provision of electricity or natural gas. In addition, the proposed project would comply with Title 24 of the CCR, which requires conservation practices that would limit the amount of energy (California Energy Code Building Energy Efficiency Standards [Title 24, Part 6]) consumed through implementation of the proposed project, as well as with all California Green Building Standards Code (CALGreen Code) building efficiency standards (Title 24, Part 11) and mandatory nonresidential building requirements in the California Energy Code Building Energy Efficiency Standards (Title 24, Part 6) (as required by State law). Additionally, the project would also result in an increased demand for potable water and generation of wastewater. As discussed in Section 4.8, Hydrology and Water Quality, and Section 4.11, Utilities and Service Systems, the project site is included in the land use area covered by the City's 2020 Urban Water Management Plan (UWMP) and is designated as Heavy Industrial in the City's General Plan. Land use acreages and water demand in the 2020 UWMP were based on the City's General Plan land use designations for 2020 and buildout in 2056. As such, the acreage associated with the proposed project was assumed Industrial in the 2020 UWMP; therefore, it is assumed that demand for water was accounted for in the 2020 UWMP.

Although the construction and ongoing operation of the proposed project would involve the use of nonrenewable resources, through the inclusion of energy-conserving features of the proposed project and compliance with the General Plan and applicable standards and regulations, the proposed project would not represent an unjustified use of such nonrenewable resources (Recirculated Draft EIR, page 6-3).

GROWTH INDUCEMENT

Section 15126.2(d) of the CEQA Guidelines requires that an EIR discuss the ways in which a proposed project or the construction of additional housing, either directly or indirectly, could foster economic or population growth in the surrounding environment.

As described in Section XVI, Population and Housing, of the Initial Study prepared for the EIR, the proposed project would include four office/warehouse buildings that would be configured for heavy industrial uses. The proposed project would not result in direct population growth as the use proposed is not residential and would not contribute to permanent residency on site. Further, the site is designated Heavy Industrial by the General Plan and would not generate employment growth beyond that anticipated in the General Plan. Therefore, the proposed project would not induce substantial unplanned population growth in an area, either directly or indirectly, and this impact would be considered less than significant.

As discussed in Section XV, Public Services, of the Initial Study, and Section 4.11, Utilities and Service Systems, of the Recirculated Draft EIR, the project site would be served by the City's public service or utility providers, including police protection services, fire prevention services, water, wastewater, telecommunications, electricity, and natural gas. The proposed project includes physical improvements to accommodate growth which would create an increased demand for public services and utilities within the project site. To address impacts to public services and utilities, the Project Applicant would be required to pay applicable impact fees in effect at the time the development application for the proposed project is submitted. City staff would review the site plan for the project to ensure the adequate provision of public services and utilities.

Development of the proposed project would involve construction activities that could generate some temporary employment opportunities. However, given the temporary nature of such opportunities, it is unlikely that construction workers would need to relocate to the City as a result of the proposed project. In addition, as discussed above, the site is designated Heavy Industrial by the General Plan and would not generate employment growth beyond that anticipated in the General Plan. Thus, the proposed project would not be considered growth-inducing from an employment perspective (Recirculated Draft EIR, page 6-1 and 6-2).

PROJECT ALTERNATIVES

Where a lead agency has determined that, even after the adoption of all feasible mitigation measures, a project as proposed will still cause one or more significant environmental effects that cannot be substantially lessened or avoided, the agency, prior to approving the project as mitigated, must first determine whether, with respect to such impacts, there remain any project alternatives that are both environmentally superior and feasible within the meaning of CEQA.

As noted under the heading "Findings Required under CEQA," an alternative may be "infeasible" if it fails to achieve the lead agency's underlying goals and objectives with respect to the project. Thus, "'feasibility' under CEQA encompasses 'desirability' to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors" of a project (*City of Del Mar v. City of San Diego* [1982] 133 Cal.App.3d 401, 417).

ALTERNATIVES CONSIDERED IN THE EIR

The following alternatives to the project are evaluated in detail in the EIR, as described below:

- **Alternative 1: No Project Alternative:** Under the No Project Alternative, the project site would continue to be vacant. No modifications to existing site access or infrastructure would occur.

- **Alternative 2: Reduced Project Alternative:** The Reduced Project Alternative would reduce the size of Building 1 to 250,956 square feet and the project's total square footage to 683,582 square feet. The building would have similar site access and infrastructure improvements as those identified for the proposed project.

Alternative 1: No Project Alternative

The No Project Alternative would avoid all of the less than significant impacts of the proposed project. However, the No Project Alternative would also not achieve any of the objectives of the proposed project. The No Project Alternative would not provide industrial warehousing that is consistent with the General Plan land use and zoning designation and that helps fulfil the unmet demands of businesses located in Fresno; provide a variety of new employment opportunities for the residents of Fresno and surrounding communities; develop new industrial businesses in proximity to major transportation infrastructure and similar type of businesses to minimize land use conflicts with surrounding existing uses; or promote sustainable development and operations.

Alternative 2: Reduced Project Alternative

The Reduced Project Alternative would reduce the overall size of the project by reducing the square footage of project components. The Reduced Project Alternative would provide industrial warehousing that is consistent with the General Plan land use and zoning designation and that helps fulfil the unmet demands of businesses located in the City; provide a variety of new employment opportunities for the residents of Fresno and surrounding communities; provide new industrial development that is attractive and minimizes conflicts with the surrounding existing uses; or promote sustainable development and operations. However, due to the reduced nature of the project under

this alternative, demands for industrial businesses in the city might not be completely fulfilled. Additionally, this alternative would result in reduced employment opportunities compared to the proposed project.

Environmentally Superior Alternative

The No Project Alternative has the least impact to the environment because it would not result in any development or new physical impacts. While this alternative would lessen or avoid the impacts of the proposed project, the beneficial impacts of the proposed project—including creating job growth and providing new industrial development to meet demand of businesses in Fresno—would not occur. Further, none of the Project Objectives would be met, including providing industrial warehousing that is consistent with the General Plan land use and zoning designation and that helps fulfil the unmet demands of businesses located in the city; providing new employment opportunities for the residents of Fresno and surrounding communities; developing new industrial businesses in proximity to major transportation infrastructure and similar type of businesses to minimize land use conflicts with surrounding existing uses; or promoting sustainable development and operations. As such, this alternative is rejected as infeasible. In addition, under CEQA, if the No Project Alternative is the environmentally superior alternative, the EIR must identify an environmentally superior alternative from among the other alternatives (*CEQA Guidelines* Section 15126.6(e)(2)).

The Reduced Project Alternative would have less than significant impacts in most resource topics that would be comparable to the proposed project. The alternative would have potentially reduced construction-phase air quality and noise impacts, and reduced operational-phase air quality and noise impacts due its smaller size, and lesser aesthetic impacts due to reduced development in the site. Therefore, the Reduced Project Alternative is considered the environmentally superior alternative. The Reduced Project Alternative would achieve most of the Project Objectives by providing industrial warehousing that is consistent with the General Plan land use and zoning designation and that helps fulfil the unmet demands of businesses located in the city; providing a variety of new employment opportunities for the residents of Fresno and surrounding communities; providing new industrial development that is attractive and minimizes conflicts with the surrounding existing uses; and promoting sustainable development and operations. However, overall this alternative would not achieve all of the objectives of the proposed project to the same extent or degree because the reduced development of industrial uses would not help fully address the demand for industrial businesses in the city. Additionally, this alternative would result in reduced employment opportunities for the residents of Fresno and surrounding communities. As such, this alternative is rejected as infeasible.

Exhibit 3
Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PROGRAM

This Mitigation Monitoring and Reporting Program (MMRP) has been formulated based upon the findings of the Environmental Impact Report (EIR) prepared for the 2740 West Nielsen Office/Warehouse Project (Development Permit Application No. P21-02699 and Tentative Parcel Map Application No. P21 05930) (herein referred to as the project), for which the City of Fresno (City) is the CEQA Lead Agency for environmental review. The MMRP, which is provided in Table A, lists mitigation measures recommended in the EIR for the proposed project and identifies mitigation monitoring requirements. The Final MMRP must be adopted when the City makes a final decision on the project.

This MMRP has been prepared to comply with the requirements of State law (Public Resources Code Section 21081.6). State law requires the adoption of an MMRP when mitigation measures are required to avoid significant impacts. The MMRP is intended to ensure compliance during implementation of the project.

The MMRP is organized in a matrix format:

- The first column identifies the mitigation measure that would be implemented for each project impact.
- The second column refers to the party or agency responsible for implementing the mitigation measure.
- The third column refers to the action that prompts implementation and/or implementation timing.
- The fourth column refers to the agency responsible for oversight or ensuring that the mitigation measure is implemented.
- The fifth column refers to the action that prompts the commencement of monitoring.
- The sixth column refers to when the monitoring will occur to ensure that the mitigation action is completed.
- The seventh and final column is where the lead agency contact initials and dates are provided as verification of mitigation measure implementation.

Table A: EIR Mitigation Monitoring and Reporting Program

Mitigation Measures	Party Responsible for Implementation	Implementation Trigger/Timing	Agency Responsible for Monitoring	Monitoring Action	Monitoring Frequency	Verified Implementation
4.1: AESTHETICS						
Mitigation Measure AES-1: Lighting systems for street and parking areas shall include shields to direct light to the roadway surfaces and parking areas. Vertical shields on the light fixtures shall also be used to direct light away from adjacent light sensitive land uses such as residences.	Project Applicant and project architect	Lighting systems to be confirmed during plan check, prior to issuance of building permits	Planning and Development Department	Plan review and approval	Prior to approval	Initials:_____ Date:_____
Mitigation Measure AES-2: Lighting systems for public facilities such as active play areas shall provide adequate illumination for the activity; however, low intensity light fixtures and shields shall be used to minimize spillover light onto adjacent properties.	Project Applicant and project architect	Lighting systems to be confirmed during plan check, prior to issuance of building permits	Planning and Development Department	Plan review and approval	Prior to approval	Initials:_____ Date:_____
Mitigation Measure AES-3: Lighting systems for non-residential uses, not including public facilities, shall provide shields on the light fixtures and orient the lighting system away from adjacent properties. Low intensity light fixtures shall also be used if excessive spillover light onto adjacent properties will occur.	Project Applicant and project architect	Lighting systems to be confirmed during plan check, prior to issuance of building permits	Planning and Development Department	Plan review and approval	Prior to approval	Initials:_____ Date:_____
Mitigation Measure AES-4: Lighting systems for freestanding signs shall not exceed 100 foot Lamberts (FT-L) when adjacent to streets which have an average light intensity of less than 2.0 horizontal footcandles and shall not exceed 500 FT-L when adjacent to streets which have an average light intensity of 2.0 horizontal footcandles or greater.	Project Applicant and project architect	Lighting systems to be confirmed during plan check, prior to issuance of building permits	Planning and Development Department	Plan review and approval	Prior to approval	Initials:_____ Date:_____
Mitigation Measures AES-5: Materials used on building facades shall be non-reflective.	Project Applicant and project architect	Building materials to be used confirmed during plan check, prior to issuance of building permits	Planning and Development Department	Plan review and approval	Prior to approval	Initials:_____ Date:_____

Table A: EIR Mitigation Monitoring and Reporting Program

Mitigation Measures	Party Responsible for Implementation	Implementation Trigger/Timing	Agency Responsible for Monitoring	Monitoring Action	Monitoring Frequency	Verified Implementation
4.2: AIR QUALITY						
Mitigation Measure AIR-1: Consistent with SJVAPCD Regulation VIII (Fugitive PM_{10} Prohibitions), the following controls are required to be included as specifications for the proposed project and implemented at the construction site: ● All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover. ● All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant. ● All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking. ● When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container shall be maintained. ● All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.) Following the addition of materials to, or the removal of materials from, the surface of out-door storage piles, said piles shall be effectively stabilized of fugitive dust emission utilizing sufficient water or chemical stabilizer/suppressant.	Project Applicant and Construction Contractor	Prior to issuance of a building permit and throughout the construction period	Planning and Development Department	Plan review and approval	Prior to approval and during scheduled site visits	Initials:_____ Date:_____

Table A: EIR Mitigation Monitoring and Reporting Program

Mitigation Measures	Party Responsible for Implementation	Implementation Trigger/Timing	Agency Responsible for Monitoring	Monitoring Action	Monitoring Frequency	Verified Implementation
Mitigation Measure AIR-2: During construction of the proposed project, the project contractor shall ensure all off-road diesel-powered construction equipment of 50 horsepower or more used for the project construction at a minimum meets the California Air Resources Board Tier 4 emissions standards or equivalent.	Project Applicant and Construction Contractor	Prior to issuance of a building permit and throughout the construction period	Planning and Development Department	Plan review and approval	Prior to approval and during scheduled site visits	Initials:_____ Date:_____
Mitigation Measure AIR-3: The project applicant shall ensure that the proposed project provides the infrastructure for AC and/or DC chargers for electric heavy-duty trucks. The infrastructure provided shall accommodate a minimum of one future charger per 50,000 square feet.	Project Applicant	Prior to issuance of a building	Planning and Development Department	Plan review and approval	Prior to approval and during scheduled site visits	Initials:_____ Date:_____
4.3: BIOLOGICAL RESOURCES						
Mitigation Measure BIO-1: If project construction activities occur during nesting season (between February 1 and August 31), a qualified biologist shall conduct pre-construction surveys for active migratory bird nests at the project site within 14 days of the onset of these activities. Should any active nests be discovered in or near proposed construction zones, the biologist shall identify a suitable construction-free buffer around the nest. This buffer shall be identified on the ground with flagging or fencing, and shall be maintained until the biologist has determined that the young have fledged.	Project Applicant and Construction Contractor	Prior to project construction if during the nesting season (February 1 to August 31)	Planning and Development Department	Plan review and approval	During project construction if during the nesting season (February 1 to August 31)	Initials:_____ Date:_____

Table A: EIR Mitigation Monitoring and Reporting Program

Mitigation Measures	Party Responsible for Implementation	Implementation Trigger/Timing	Agency Responsible for Monitoring	Monitoring Action	Monitoring Frequency	Verified Implementation
4.4: CULTURAL AND TRIBAL RESOURCES						
Mitigation Measure CUL-1: If previously unknown resources are encountered before or during any ground disturbing activities, construction shall stop in the immediate vicinity of the find and a qualified archaeologist shall be consulted to determine whether the resource requires further study. The qualified archaeologist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the State CEQA Guidelines and the City's Historic Preservation Ordinance. If the resources are determined to be unique archeological resources as defined under Section 15064.5 of the State CEQA Guidelines, measures shall be identified by a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology and recommended to the lead agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further ground disturbing activity shall occur in the area of the discovery until the lead agency approves the measures to protect identified resources. Any significant or unique recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.	Project Applicant and Construction Contractor	During construction	Qualified archaeologist approved by the Planning and Development Department	Initiated in the event that a find is made during construction	During regularly scheduled site inspections that would be initiated in the event that a find is made during construction	Initials:_____ Date:_____

Table A: EIR Mitigation Monitoring and Reporting Program

Mitigation Measures	Party Responsible for Implementation	Implementation Trigger/Timing	Agency Responsible for Monitoring	Monitoring Action	Monitoring Frequency	Verified Implementation
Mitigation Measure CUL-2: In the event that human remains are unearthed during excavation and grading activities of any future development project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.	Project Applicant and Construction Contractor	During construction	The Fresno County Coroner	Initiated in the event that a find is made during construction	During regularly scheduled site inspections initiated after a find is made during construction	Initials:_____ Date:_____

Table A: EIR Mitigation Monitoring and Reporting Program

Mitigation Measures	Party Responsible for Implementation	Implementation Trigger/Timing	Agency Responsible for Monitoring	Monitoring Action	Monitoring Frequency	Verified Implementation
4.7: HAZARDS AND HAZARDOUS MATERIALS						
Mitigation Measure HAZ-1: Prior to soil disturbance, a consultant qualified under American Society for Testing and Materials (ASTM) International Standard E1527-13 for the purposes of identifying hazardous materials shall be retained to prepare a Soil Management Plan (SMP) address soil management procedures that may arise based on historical use of the project site and the known total petroleum hydrocarbons (TPH) and arsenic impacts. Construction may not proceed until the extent and nature of the TPH and arsenic impacts are determined by qualified personnel and in consultation with appropriate City staff. The removal and/or disposal of any contaminants shall be in accordance with all applicable local, State, and federal standards to the degree that adequate public health and safety standards are maintained, to the satisfaction of the City.	Project Applicant and a consultant qualified under American Society for Testing and Materials (ASTM) International Standard E1527-13	Prior to permit issuance	Planning and Development Department	Plan review and approval	Prior to approval	Initials:_____ Date:_____
4.9: NOISE						
Mitigation Measure NOI-1: The project contractor shall implement the following measures during construction of the project: ● Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards. ● Designate a "disturbance coordinator" at the City who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem.	Project Applicant and Construction Contractor	Prior to issuance of construction permits	Planning and Development Department	Plan review and approval	During construction	Initials:_____ Date:_____

Table A: EIR Mitigation Monitoring and Reporting Program

Mitigation Measures	Party Responsible for Implementation	Implementation Trigger/Timing	Agency Responsible for Monitoring	Monitoring Action	Monitoring Frequency	Verified Implementation
Mitigation Measure NOI-2: All loading dock activities shall be prohibited at the loading dock doors on the south end of Building 1 during the nighttime hours (10:00 p.m. to 7:00 a.m.) or once operational, the project proponent shall provide documentation to the City of Fresno Planning and Development Department that demonstrates that nighttime loading dock activities would comply with the noise level specifications of the City's Municipal Code.	Project Applicant	prior to issuance of building permits	Planning and Development Department	Plan review and approval	Prior to approval	Initials:_____ Date:_____
Initial Study						
GEOLOGY AND SOILS						
Mitigation Measure GEO-1: Subsequent to a preliminary City review of the project grading plans, if there is evidence that a project will include excavation or construction activities within previously undisturbed soils, a field survey and literature search for unique paleontological/geological resources shall be conducted. The following procedures shall be followed: ● If unique paleontological/geological resources are not found during either the field survey or literature search, excavation and/or construction activities can commence. In the event that unique paleontological/geological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified paleontologist shall be consulted to determine whether the resource requires further study. The qualified paleontologist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to, excavation of the finds and evaluation of the finds. If the resources are determined to be significant, mitigation measures shall be identified by the monitor and recommended to the lead agency. Appropriate mitigation measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or	Project Applicant and Construction Contractor	During construction	Qualified paleontologist approved by the Planning and Development Department	Initiated in the event that a find is made during construction	During regularly scheduled site inspections that would be initiated in the event that a find is made during construction	Initials:_____ Date:_____

Table A: EIR Mitigation Monitoring and Reporting Program

Mitigation Measures	Party Responsible for Implementation	Implementation Trigger/Timing	Agency Responsible for Monitoring	Monitoring Action	Monitoring Frequency	Verified Implementation
open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the lead agency approves the measures to protect these resources. Any paleontological/geological resources recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study. If unique paleontological/geological resources are found during the field survey or literature review, the resources shall be inventoried and evaluated for significance. If the resources are found to be significant, mitigation measures shall be identified by the qualified paleontologist. Similar to above, appropriate mitigation measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. In addition, appropriate mitigation for excavation and construction activities in the vicinity of the resources found during the field survey or literature review shall include a paleontological monitor. The monitoring period shall be determined by the qualified paleontologist. If additional paleontological/geological resources are found during excavation and/or construction activities, the procedure identified above for the discovery of unknown resources shall be followed.						

This page intentionally left blank